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CO·VAL

D3.2: Policy and Process Tracing of International Digital Transformation Practices

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1   Executive Summary

This report aims to describe the mechanisms, activities and policies that have led to digital transformation in selected European public administrations. As a result, we aim to answer the following research question:

What factors (policies, processes, activities and events) contribute to achieving the digital transformation in your country's public administration as reflected by the current DESI index?

The DESI score of each country is displayed on an annually updated index that is prepared by the European Commission and shows factors, such as connectivity, human capital, use of internet services, integration of digital technology and digital public services. Each country represented in WP3 scored on different places on the DESI index, ranking from #1 (Denmark) to #26 (Italy).

The goal of this part of the overall WP3 research project is to understand which mechanisms in each of the individual countries has led to the current scoring on the DESI index. For that purpose, we used the research design explained in chapter 2.

The working package 3 partners used a policy/process tracing and explanatory case study approach that focuses on the following outcome variable: the current DESI (*Digital Economy and Society Index*) score. The aim is to show the presence or absence of causal mechanisms that contributed to the DESI score and the digital transformation of public administrations in each country.

For this purpose, we collected media coverage, official press releases, and formal documents, such as digital agendas, digital strategy documents and answered the following questions to derive the corresponding policy mechanisms:

I.   **Situational mechanisms**
   1. Political system
       How does political decision making influence implementation of digital transformation?
II.   **Action formation & transformation mechanisms**
   2. Necessary policy changes
       How are policy changes articulated in government press releases?
   3. Resulting digital transformation agenda
       • How have policy changes resulted in digital agendas/strategies?
       • What are the resulting e-government or innovation concepts?
III.   **Macro-level observation**
   4. Traceable results of digital transformation approaches
       • What are the outcomes/outputs/impacts of digital transformation approaches?
       • How are they articulated in official country reports?

The findings are presented case by case in chapters 3-8 with a concluding summary in chapter 9.

2   Research design

The following section explains the research design, including the overall methodology, data collection and analysis steps, as well as potential limitations of the chosen approach.

2.1   Research question

What factors (policies, processes, activities, and events) contribute to achieving the digital transformation in each partner's country's public administration as reflected by the current DESI index?

2.2   Case study approach

Yin (2014) defines a case study as an empirical enquiry that investigates a contemporary phenomenon in depth, in its real-world context, is able to deal with many variables of interest and relies on multiple sources of evidence. A case study needs to be temporally and spatially bounded, and the use of the policy and process tracing approach allows a mechanism-based explanation that describes the causal process in the case selectively – it is not an exhaustive account of all details, but seeks to capture the crucial elements (Brady & Collier, 2010).

The use of the case study approach depends on the research question, but it is an ideal method when trying to explain the present circumstances, answering questions about complex social phenomena whilst retaining "a holistic and real-world perspective" (Yin, 2014 p.4) without requiring control of behavioural events. Cases can be viewed in terms of variables (the presence or absence of certain variables), they also represent "configurations of characteristics" where the value lies in understanding rather than measuring differences (Palmberger & Gingrich, 2014 p. 95).

2.3   Explanatory-outcome process and policy tracing case study

According to Yin (2014), case study approaches are the preferred method when answering questions that consider the "operational links to be traced over time, rather than mere frequencies or incidence" (p.10). Yin points out that although the case study focuses on a contemporary phenomenon, this does not exclude the recent past.

A particular analytic technique used in case study research is to build an explanation about the case, also known as process-tracing. Process-tracing methods allow to study causal mechanisms in single case research design, and the focus of explaining-outcome process tracing allows to describe a "minimally sufficient explanation" of the outcome in a historical context (Beach & Pedersen, 2013 p. 3). Whilst it can resemble historical scholarship, Beach and Pedersen (2013) suggest that it is still a form of social science research as the outcome is to trace complex and case-specific mechanisms that led to a specific outcome. Process and policy tests are a methodology for testing hypotheses in the social sciences, where the researcher combines pre-existing generalizations and specific observations gained from a case study to make causal inferences about that specific case (Mahoney, 2012). As Bennett (2010) points out, process tracing can be used to look backward from the observed outcomes to potential causes. Mahoney argues that process tracing is a valuable tool for making causal inferences in qualitative and case study research as it allows to:

1. Establish that an event or process occurred;
2. An outcome occurred;
3. The former (1) was the cause of the latter (2). (from p. 570)

Rather than looking at structures or entities, the focus of the case study is on a fine analysis of the processes and flows (Pouliot, 2014). By using explanatory-outcome process-tracing, the aim is to provide an explanation of the outcome of each case. The aim is thus to propose or rather "stipulate a presumed set of casual links about it, or "how" or "why" something happened" (Yin, 2014 p. 147). By using explaining outcome process tracing, it is possible to answer, in addition to those how and why questions, the question: "What mechanismic explanation accounts for the outcome (sic)?" (Beach & Pedersen, 2013 p.12). Process tracing methods go beyond making correlations: the method allows to make inferences about the specific case, the absence, and presence of causal mechanisms, and Beach and Pedersen (2013) summarize explaining-outcome process tracing as follows (from p.21):

- Purpose of the analysis (research situation): to explain a historical outcome using a case study that provides a minimally sufficient explanation
- The ambition of the study: case-centric
- Understanding the causal mechanisms: systematic, non-systematic i.e. case specific mechanisms and conglomerates
- What is being traced: case –specific mechanism(s) to explain the case
- Type of inference being made: minimal sufficiency of the explanation

Process and policy tracing is suitable for the analysis of the causal links that are able to reflect critical insights into public policy processes (Yin, 2014). Causal-process tracing is especially suited to tracing the combination and interaction of divergent causal factors in the process that lead to an outcome, allowing the researcher to look for the explanations or mechanisms that may lead to the hypothesized explanation (George & Bennett, 2005). It is by understanding the whole chain of situational, action-formation, and transformational mechanisms that the observed macro-level relationship can be explained (Hedström & Swedberg, 1998). The gradual building of the explanation is similar to a process of refining a set of ideas: the aim is to consider the intervening steps in the hypothesized causal process.

As can be seen in Figure 1 below, explanations often simply relate macro-properties to each other (arrow 4). The aim of policy and process tracing studies is to identify the situational mechanisms by which social structures constrain individuals' action and how cultural environments play a role:

- Arrow 1: Situational mechanisms (e.g. the individuals or units, their beliefs);
- Arrow 2: Action-formation mechanisms (linking individuals or units to their actions);
- Arrow 3: Transformational mechanisms (by which individuals, through their actions and interactions, generate various intended and unintended social outcomes).

Figure 1: A typology of social mechanisms (Hedström & Swedberg, 1998)
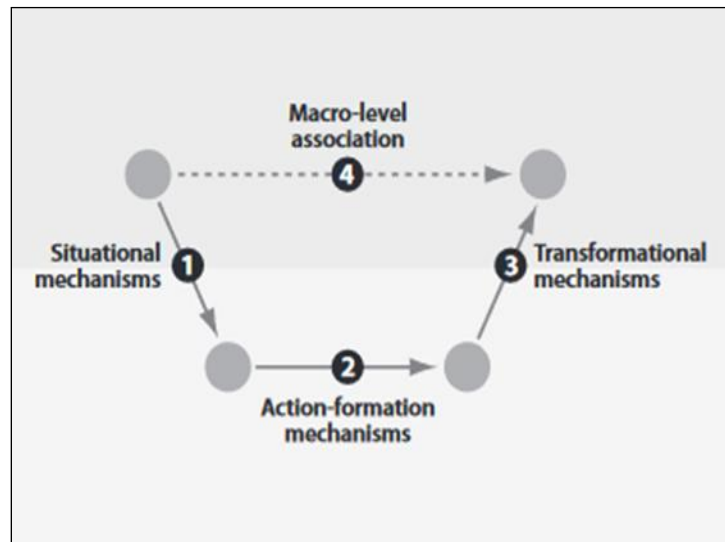
Although process tracing is based on a finer level of detail and evidence, it is not a matter of the amount of evidence, nor does every "line of evidence" (Bennett & Checkel, 2014 p. 209) need to be examined at the same level of details: some evidence may strongly affirm an explanation whilst others offer no explanations at all.

2.4   Methodology
In the following, we are explaining how we proceeded to collect and then analyze the collected documents to arrive at explanations for the current status of digital transformation in each of the partner countries.

2.5   Data Collection
Qualitative research is often undertaken in settings that are documented, and many research questions could not be answered without drawing on and referring to the production and use of documents: there is a wide spectrum as to what can be included, such as official records, organisational and state documents, records of action and activity and newspaper reports as well as private papers, autobiographies, novels, and adverts, etc. (Coffey, 2014). Documents represent textual records of individual actions and social situations, may also be produced at differing levels of formality and informality, depending on the intention of the documents. These documents can be seen as the evidence or data of the "ways in which individuals, groups, social settings, institutions, and organisations represent and account for themselves" but they also "provide a mechanism and vehicle for understanding and making sense of social and organisation practices" (Coffey, 2014 p. 367).

2.6   Data collected for each policy tracing case studies

Case study research relies on documents, and case study research is more complex than just deciding which documents need to be collected (Coffey, 2014 see below). Yin (2014) proposes four principles of data collection:

1. Using multiple sources of evidence
2. Creating a database for the study
3. Ensuring a chain of evidence
4. Taking the necessary care when using electronic sources

According to Yin, case studies not only require more sources of evidence (in comparison to other study methods), those case studies with multiple sources of evidence are also rated more highly. The explanatory process and policy tracing method requires a broad range of documentation in order to uncover the causal mechanisms as well as test their validity. In order to allow a cross-case comparison, all cases draw on documents from similar sources (UN and EU documents specific to the country, EGOV Monitor, etc), but each case study draws on the documents relevant to the country being investigated in the case. As Yin points out, the "multiple sources of evidence essentially provide multiple measures of the same phenomenon" (p.121).

This database allows other persons to read and inspect the electronic files used, increasing the reliability of the case study (Yin, 2014). In order to ensure the reliability of the case study, Yin also suggests maintaining a chain of evidence, that the case studies draw on the evidence they provide and that no evidence is lost. The process and policy tracing method used for the case studies presented relies heavily on the documentation in order to make hypotheses about the causal mechanisms in the case. Thus, each case must adequately cite the relevant sources, sources that will also contain the evidence.

As Yin also points out, particular care is necessary for the information that is available electronically, which needs to be cross-checked to ensure the validity of its contents. Given that this case study relies on information provided by authorities at differing governmental levels, there should be no need to fear that the documents used should contain incorrect information or data. Nonetheless, as Willig (2014) notes, even official documents are edited documents that reveal a certain or chosen formality and political reality.

For the policy tracing approach in this study, we, therefore, selected each of the partner's countries and collected data dating back to 2000. This timeframe was chosen for two reasons: 1) Around 2000, e-government approaches – and especially web-based approaches – started to be implemente din the public sector; and, 2) the time period from 2000-2018 roughly includes four legislative periods in each of the studied countries. We, therefore, focused our search on the existing – and changing or evolving – digital agendas. Which represent a formal articulation of the directions each country aimed to take toward digital transformation. In addition, we limited the public explanations of potential changes in agendas to press releases directly related to a new digital agenda. Press releases, therefore, focused on the explanations on why political changes were necessary at the time and the potential change in directions.

2.7 Limitations of process-policy tracing case studies

There are a few limitations that need to be considered. In particular, the bias that may come with the selection of documents (mainly digital agendas andrelated press releases), the interpretation of data, and the generalisability of the results gained.

We limited out data collection to a certain set of formal documents: WE included only government digital agendas in each of the countries. These documents provide a formal strategic direction and can be seen as a political plan that then needs to be implemented by the public admininistrations studied in WP3. In addition, we have chosen to analyze press releases that are releated to the publication of a new digital agenda – presumably explaining what has been accomplished since the last release of a digital agenda and the potential changes necessary to go down the same path or expand implementation into a different direction. These choices might obviously limit the data collection – at the same tme, they provide insights into formal strategic thinking, which can then be supplemented by the expert interview in D3.1 and the indepth cases in D3.4.

The iterative process of the data collection and analysis is challenging and a great deal of "analytic insight and sensitivity are demanded of the explanation builder" (Yin, 2014 p. 150). It is both necessary and important to collect diverse data to be evaluated (Bennett & Checkel, 2014), but also to anticipate and account for potential bias in the evidence: "especially important in process tracing on social and political phenomena for which participating actors have strong instrumental or ideational reasons for hiding or misrepresenting information about their behaviour or motives" (Bennett, 2010 p.211). It is important when working with documents, to consider the ways documents are classified and conceptualised (Coffey, 2014). The classification of documents itself provides some information on the authority and authenticity claimed, but it is important to remember when using them as evidence that they represent a "constructed account rather than necessarily an 'accurate' portrayal of complex social reality" (p. 377). Coffey reminds us that documents can be used as resources and as topics for research and inquiry, but that they are produced according to certain conventions and thus present a specific reality. A selective bias of the materials is always possible, key data may be ignored, and, as causal links may be complex and difficult to measure, the researcher may also lose sight of the original research topic or question (Yin, 2014). The act of interpreting the data is central to qualitative research, it allows to find out about social practices, and a better understanding of the social, political or another context, but the interpretation of the data is not just the result of asking different questions, but also on the researcher's position data (Willig, 2014).

Using a case study approach allows researchers to "agree that the social world is very complex, multifactored, extremely context-specific" (Beach & Pedersen, 2013 p.13) and this also means that the results and knowledge gained may be generalised only with great difficulty. Process-tracing is a within-case method of analysis, so, as Bennett and Checkel (2014) point out, the causal mechanisms uncovered are specific to the case. This means that generalisation can be problematic. Bennett and Checkel, therefore, suggest that: "Explanation via reference to causal mechanisms (…) involves a commitment in principle to being consistent with the lowest level of analysis and finest degree of detail observable" (p.12). Pouliot (2014) argues that process-tracing case studies are particularly useful as they are both particular and general, that is they describe actions that stem from a particular context and at the same time they represent patterns of action. He argues that the case study needs to "demonstrate local causality" and "produce analytically general insights" (p. 239). So, whilst the bias in this report may stem from the initial selection of documents that partners are to study for answering the research question in relation to their country, this is also the advantage of this report and allows to address Pouliot's points, i.e. all partners undertake to investigate their case according to the same or very similar reports and documents that have the same aim, role and status. Thus, this report allows a cross-country and cross-case comparison and increases the generalisability of the results gained. By providing a common research question and the guidelines for the selection of documents to be studied, it is also

possible to avoid another problem, that the process-tracing case study is reduced to a story-telling narrative (Bennett & Checkel, 2014). The collection and summary of the cases presented here allows to include the following best practices of process tracing suggested by Bennett and Checkel (2014): to allow for alternative explanations and to consider the bias of the source, but in particular: "combine process tracing with case comparisons when useful for the research goal and feasible" (p.21). The case studies analysed here could lead to the next step, theory-building process tracing.

2.8 Overview of the report

In the following, we provide a country policy tracing report for each of the WP3 partners' countries (Belgium, Denmark, France, Germany, Italy, and Spain). Each report first provides the current status of the country according to the DESI index, an overview of the development of digital agendas, related policies/bills, as well as an explanation of the situational, action formation and transformational mechanisms each partner derived from the reviewed documents.

3 Case 1: Germany

DESI (The Digital Economy and Society Index) tracks the progress of a country's digitisation, focusing on connectivity, human capital, user of internet services, integration of digital technology and digital public services.

The current European Digital Progress Report (EDPR) describes Germany as progressing, in particular in terms of broadband uptake and prices, Germans as having good digital skills (rank 7) and very active online shoppers, and German enterprises as active in terms of selling online (European Commission, 2018a). Thus, in 2018, Germany's DESI rank is 14 out of the 28 EU Member States, so Germany belongs to the medium performing cluster of countries (that includes Spain, Austria, Malta, Lithuania, Germany, Slovenia, Portugal, Czech Republic, France and Latvia). On the downside, the DESI country report notes that there is an obvious urban-rural digital divide regarding fast Internet coverage, the share of fibre connections is very low throughout the country and that there is a shortage of ICT professionals, a factor that may hamper the potential of Germany's economy.

Information society indicators (European Commission, 2018b) show (see Table below) that most households and businesses have internet access and 87% of the German population uses the internet at least once a week.

Table 1: Broadband and connectivity in Germany

Broadband and connectivity in Germany	Year: 2018
Households with internet access	93%
Businesses with internet access	97%
% of individuals using the internet at least 1/week (including every day)	87%
% of individuals who never use the internet	7%
Households with a broadband connection	92%
Businesses with a broadband connection	95%

The EDPR report describing Germany suggests that fixed broadband is stable at 98%, and inhabitants use the internet regularly and possess above average digital skills, nonetheless there is a shortage in terms of skills (there is a great demand for ICT specialists). Businesses do not invest more in new digital business models as there is a lack of skilled personnel. In addition, Germany does not perform well in terms of its digital public services, it is one of the countries with the lowest online interaction between public authorities and citizens. The country's greatest digital challenge is to improve the online interaction between public authorities and citizens: only 19% of the population are e-government users and so ranks 23 among the Member States. In comparison to the other EU countries, German citizens use the internet more for interacting with public authorities (53%), to obtain information from public authorities (52%), downloading official forms (34%) but use the internet less to send filled out forms to public authorities (18%) (European Commission, 2018b).

3.1 Digital Agendas

Table 2: German Digital Agendas

Year published	Digital Agenda
2003	Action Programme: 2006 "Information Society Germany"
2010	iD2010 Information Society Germany Action Programme 2010
2014	Digital Agenda 2014 – 2017
2016	Digital Strategy 2025

3.2 Policies/bills related to digital transformation

Table 3: Policies and bills related to digital transformation in Germany

Year	Policy	Description/Implication
1997	Legislation (eProcurement): Digital Signature Act	*The purpose of this Act is to establish general conditions under which digital signatures are deemed secure and forgeries of digital signatures or manipulation of signed data can be reliably ascertained (German Law Archive, 1997)*
2004	Legislation (Telecommunication) Telekommunikationsgesetz	*The purpose of this law is to promote competition in the telecommunications sector and efficient telecommunications infrastructures through technology-neutral regulation and to ensure adequate and sufficient services throughout the country.* (German Law Archive, 1996)
2005	Legislation (eCommunications): Federal Act Governing Access to Information held by the Federal Government (Freedom of Information Act)	*Everyone is entitled to official information from the authorities of the Federal Government in accordance with the provisions of this Act. The authority may furnish information, grant access to files or provide information (Bundesgesetzblatt, 2005).*
2006	Legislation (E-Government): Law on re-use of Public Sector Information	*Law that applies to the re-use of information held by public authorities, in particular for the provision of products and services of the digital economy.*

Year	Policy	Description/Implication
		(Bundesministerium der Justiz und für Verbraucherschutz, 2006)
2006	Act on electronic commercial registers, cooperatives" register, and business register	*Represents the implementation of the Directives 2003/58/EC and 2004/109/EC of the European Parliament and of the Council regarding the disclosure requirements of companies" legal forms and the partial transposition of the on the harmonisation of transparency requirements with regard to information on issuers (Bundesgesetzblatt, 2006).*
2008	Act to follow the Council of Europe Convention on cybercrime	*The convention supports the adoption of powers sufficient for effectively combating such criminal offences, by facilitating their detection, investigation and prosecution at both the domestic and international levels and by providing arrangements for fast and reliable international co-operation (Link NA).*
2009	Legislation (eSignatures): Changes in the German "Grundgesetz"	*Article 91c ensures the simplification of IT- bodies and decision-making processes, thus increasing their effectiveness and enabling their adaptation to the needs of the fast evolving technical progress. The amendment describes the legal requirements for a complete and media-uninterrupted electronic communication between German authorities in a federal context, the economy and the citizen.* (Grundgesetz, 2018b)
2009	Legislation (eCommerce) "Law on the combination of information technology networks of federal and state governments"	*The Federal Government establishes a network to connect the IT networks of the Federal Government and the Länder. The Federation and the Länder shall cooperate for this purpose in accordance with the provisions of this Act; in particular, they shall make the necessary common specifications for the connection network.* (Bundesministerium der Justiz und für Verbraucherschutz, 2009)
2010	Announcement of technical guidelines by the Federal Office for Information Security	*The Federal Office for Information Security provides new technical guidelines regarding cryptographic methods, biometrics for public sector applications, official documents, security mechanisms for machine readable travel documents (passports), eCard (Bundesamt für Sicherheit in der Informationstechnik, 2005).*
2011	Legislation: De-Mail Services	*De-Mail services are services on an electronic communications platform that provide secure, ensure confidential and verifiable business transactions for everyone on the Internet. The De-Mail service must provide secure registration, the use of a P.O. Box and shipping service, as well as the use of the De-Mail service for secure electronic mail and the use of a directory service. It is to enable identity verification and document storage services. A De-Mail service is sent from one a service provider accredited to this law.*

Year	Policy	Description/Implication
		https://www.gesetze-im-internet.de/de-mail-g/De-Mail-G.pdf (Bundesgesetzblatt, 2011)
2012	Announcement of guidelines for the promotion of research and development projects on "Highly integrated 3D electronic systems for intelligent production (InPro3D)".	*The funding measure is part of the German government's high-tech strategy. The Federal Ministry of Education and Research (BMBF) therefore intends to support research and development projects with high innovation potential for the further development of cyber-physical production systems (CPPS) with a view to achieving intelligent production through advanced electronic systems. The purpose of the announcement is to strengthen the manufacturing industry by researching and developing innovative 3D electronic systems (Link NA).*
2013	Act to promote electronic government (E-Government Act - EgovG)	*This Act applies to administrative activities under public law of the federal authorities, including bodies, institutions and foundations under public law which are directly accountable to the Federal Government. It also applies to the administrative activities of authorities of the Länder, local authorities, local authority associations and other legal entities under public law which are subject to Land supervision in executing federal law. (Bundesministerium der Justiz und für Verbraucherschutz, 2018)*
2016	Legislation (eGovernment): Germany's Federal Ministry of Transport and Digital Infrastructure (BMVI) makes funds available to bring fast internet to underserved areas.	
2017	Legislation (eGovernment): Verordnung über die elektronische Rechnungsstellung im öffentlichen Auftragswesen des Bundes	*This Regulation applies to all invoices with which a public delivery or service is billed for.* (Die Bundesregierung, 2017)
2017	Policy (eGovernment) Act for a transitional arrangement for the opening of electronic legal transactions with fine authorities in the area of responsibility of the Federal Ministry of Transport and Digital Infrastructure	*The submission of electronic documents to the Federal Ministry of Transport and Digital Infrastructure and the authorities for the payment of fines 2018-2020.* (Bundesministerium der Justiz und für Verbraucherschutz, 2017c)
2014	Act implementing the EU Directive 2014/55/EU on electronic invoicing in the field of public procurement	*For the issue, transmission and reception of electronic invoices after the fulfilment of a public contract (Federal Ministry for Economic Affairs and Energy, 2018k).* https://www.bgbl.de/xaver/bgbl/start.xav?start=%2F%2F*%5B%40attr_id%3D%27bgbl117s0770.pdf%27%5D#__bgbl

Year	Policy	Description/Implication
		__%2F%2F*%5B%40attr_id%3D%27bgbl117s0770.pdf%27%5D__1526925881707
2014	Technical Guideline „De-Mail"	*The Federal Office for Information Security announces the technical guideline for De-Mail (TR, 2016).*
2014	Federal Ministry of the Interior Announcement Decisions of the IT Planning Council 2010 and 2014)	*Describes the decisions of the IT Planning Council 2010-2014 (IT-Planungsrat, 2014)*
2014	Announcement of guidelines for the promotion of 'sensor-based electronic systems for applications for industry 4.0"	*The Federal Ministry of Education and Research (BMBF) is promoting innovations that strengthen Germany's high-tech competence in electronics, maintain technological leadership in mechanical engineering, and increase the attractiveness of Germany as a business location. Sensor-based electronic systems embedded in production plants and products that capture, process and exchange process data in real time make networked production possible and thus make a decisive contribution to the implementation of the Industry 4.0 vision of the future. The high demands of the manufacturing industry on speed, degree of networking, safety and reliability of these sensor systems require a boost of innovation from which other areas of application, such as automotive engineering or environmental technology, can also benefit in the long term (Link NA).*
2015	Amendment of the Re-Use of Information Act	*Amendment of the Information Reuse Act. This law is intended to implement the EU Directive 2003/98/EC on the re-use of public sector information (Bundesministerium der Justiz und für Verbraucherschutz, 2006).*
2015	Act for secure digital communication and applications in the health care sector and to amend other laws	*Act regulating the eCard and data transmission in the area of eHealth (Bundesanzeiger, 2015).*
2015	Guidelines to support research initiatives in the field of "high-tech for IT security". as part of the "ICT 2020 - Research for Innovations" funding programme	*Funding guideline to support research into new, innovative and risky approaches and the development of future-proof hardware-based IT security solutions that can withstand attacks in the long term and can be integrated efficiently and cost-effectively into ICT systems (Bundesanzeiger, 2016a).*
2016	Act for the digitalisation of the energy transition	*Act on via measurement operation and data communication in intelligent energy networks (Deutscher Bundestag, 2016).*
2016	Act to facilitate the development of high-speed digital networks	*(Bundesanzeiger, 2016c)*
2016	Announcement of the "De-Mail" technical guidelines	*By the Federal Office for Information Security (D. B. d. B. f. Informationstechnik, 2018b)*

Year	Policy	Description/Implication
2016	Announcement of the guidelines on protective profiles and technical guidelines for "eHealth VSDM"	*The Federal Office for Information Security presents the criteria protection profiles for the electronic health card terminals and cards (Link NA).*
2016	Announcement for the promotion of research and technology projects in the framework of the fifth national civil aviation research programme	*The Federal Ministry of Economics and Energy (BMWi) supports research and technology development projects with the fifth civil aviation research programme. The German aviation sector is to make a decisive contribution to an environmentally friendly, efficient aviation system, which represents an important pillar of the entire economy (Bundesministerium für Wirtschaft und Energie, 2016).*
2016	Directive on the promotion of research initiatives in the field of "reliable, intelligent and efficient electronics for electromobility (eMobility)" as part of the funding programme "Microelectronics from Germany - innovation driver of digitization	*The Federal Ministry of Education and Research (BMBF) funds collaborative research projects in the field of electronics that make a significant contribution to increasing the intelligence and efficiency of electric vehicles. Electric vehicles enable the use of energy from renewable sources and are particularly energy-efficient through recuperation in urban traffic scenarios (Bundesministerium der Finanzen, 2016)*
2017	Data privacy Verordnung über das automatisierte Verfahren zur Auskunft über Kundendaten nach § 112 des Telekommunikationsgesetze	*Ordinance on the automated procedure for information on customer data in accordance with § 112 of the Telecommunications Act.* (Bundesministerium für Wirtschaft und Energie, 2013)
2017	Legislation on electronic invoicing in federal public procurement	*The Regulation is applied to all invoices after the fulfilment of public contracts (Bundesanzeiger, 2017b).*
2017	Legislation on a transitional arrangement for opening electronic legal transactions with fine authorities in the area of responsibility of the Federal Ministry of Transport and Digital Infrastructure	(Bundesanzeiger, 2017a)
2017	Funding regulation on "Automated and networked driving" by the Federal Ministry for transport and digital infrastructure	*A five-year "Research programme on automation and networking in road traffic aims to examine technological, transport and social policy issues. The present funding guideline is part of the research programme and aims to find innovative solutions for the following areas to promote, in the context of the strategy, the introduction of automated driving functions and networked transport systems. Projects funded within the framework of this funding guideline should provide a considerable gain in knowledge, how these can be integrated into the existing transport system, how the functional safety over the entire transport system can be improved (Bundesanzeiger, 2016b).*

Year	Policy	Description/Implication
2017	Announcement of the Guidelines for research projects that aim to improve the exploration and integration phases ICT Research	*With the research programme "ICT 2020 - Research for Innovations", the Federal Government focuses on innovation policy on information and communication technologies.*
2017	Funding Guidelines for the research programme "Intelligent energy - digital agenda for the energy transition"	*Governs the necessary framework for participants of the and energy-driven promotional programme "Intelligent energy - digital agenda for the Energiewende". In particular, it regulates the reimbursement of economic disadvantages which* *participants arise as a result of the project activity (Bundesministerium der Justiz und für Verbraucherschutz, 2017d)*
2017	Online Access Act (Onlinezugangsgesetz–OZG)	*To expand and improve eGovernment services and to provide easy, secure and mobile access for citizens and businesses. The OZG obliges the federal government and the Länder to offer their administrative services online within five years and to link their respective portals in a portal network and allow access via a single user account. (Bundesministerium der Justiz und für Verbraucherschutz, 2017b)*
2018	New Federal Data Protection Act ("BDSG ")	*Enters into force on 25 May 2018 and bring substantial changes to the current Federal Data Protection Act ("BDSG") in order to align national data protection law with the General Data Protection Regulation (Regulation (EU) 2016/679, "GDPR") and make use of the opening clauses in the GDPR and the Directive (EU) 2016/680 on data protection in criminal justice (Bundesministerium der Justiz und für Verbraucherschutz, 2017a).*
2018	Legislation on Electronic Legal Transactions	*Describes the technical requirements for the transmission of electronic documents to the courts of the federal states and the federal government as well as the processing of electronic documents by these courts (Bundesministerium der Justiz und für Verbraucherschutz, 2013b).*

Year	Policy	Description/Implication
2018	Guidelines for funding for ICT research by German alliance partners within the European EUREKA Cluster ITEA 3	*The Federal Ministry of Education and Research (BMBF) has recognized this development and is participating in the European cluster ITEA 3 "European Leadership in Software-intensive Systems and Services" as part of the research initiative EUREKA. The strategic goal of the cluster is to strengthen the European position in the field of embedded software-intensive systems and services and to bundle the potentials in industry and research from the participating countries. ITEA 3 also supports projects that support the worldwide standardization of software-intensive systems and services (Bundesministerium für Bildung und Forschung, 2018).*

3.3   Press releases

Table 4: Press releases 2017-2018

Year	Press Release	Topic
2017	https://www.bmwi.de/Redaktio n/EN/Pressemitteilungen/2017/ 20171127-deutsche-g20-praesidentschaft-hat-weltweiten-digitaldialog-in-gang-gesetzt.html	*Minister Zypries: "German G20 Presidency has triggered global digital dialogue"(Federal Ministry for Economic Affairs and Energy, 2017a)*
2017	https://www.bundesregierung.d e/Content/EN/Artikel/2017/09_ en/2017-09-14-merkel-eroeffnet-iaa_en.html?nn=709674	*Automotive industry is key industry, says Merkel (The Federal Government Germany, 2017b)*
2017	https://www.bundesregierung.d e/Content/EN/Artikel/2017/06_ en/2017-06-13-merkel-digital-gipfel_en.html?nn=709674	*Turning data into new business models (The Federal Government Germany, 2017d)*
2017	https://www.bmwi.de/Redaktio n/EN/Pressemitteilungen/2017/ 20171214-zypries-digital-germany-increasingly-attractive-for-venture-capitalists.html	*Minister Zypries: Digital Germany increasingly attractive for venture capitalists (Federal Ministry for Economic Affairs and Energy, 2017b)*
2017	http://www.bmvi.de/SharedDoc s/EN/PressRelease/2017/077-dobrindt-opens-itf.html	*Minister Dobrindt opens 2017 International Transport Forum (Federal Ministry of Transport and Digital Infrastructure, 2017b)*

Year	Press Release	Topic
2017	http://www.bmvi.de/SharedDocs/EN/PressRelease/2017/128-dobrindt-federal-government-action-plan-automated-driving.html	*Federal Government adopts an action plan on automated driving (Federal Ministry of Transport and Digital Infrastructure, 2017a)*
2018	https://www.bundesregierung.de/Content/EN/Artikel/2018/04_en/2018-04-23-freihandelsabkommen-eu-mexiko_en.html?nn=709674	*Breakthrough for new free trade agreement (The Federal Government Germany, 2018a)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180410-machnig-das-digitale-europa-vorantreiben.html	*Machnig: Moving closer to a Digital Europe! (Federal Ministry for Economic Affairs and Energy, 2018f)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180327-machnig-g7-intensivieren-austausch-und-kooperation-zu-kuenstlicher-intelligenz.html	*State Secretary Machnig: G7 intensify dialogue and cooperation on artificial intelligence (Federal Ministry for Economic Affairs and Energy, 2018n)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180321-altmaier-wir-bringen-startups-und-investoren-zusammen.html	*Minister Altmaier: we"re bringing start-ups and investors together (Federal Ministry for Economic Affairs and Energy, 2018i)*
2018	https://www.de.digital/DIGITAL/Redaktion/EN/Meldungen/2018/2018-03-20-second-round-of-the-successful-start-up-night-africa.html	*A second round of the successful Start-up Night! Africa (Federal Ministry for Economic Affairs and Energy, 2018l)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2017/20171214-zypries-digital-germany-increasingly-attractive-for-venture-capitalists.html	*Minister Brigitte Zypries visits TechQuartier in Frankfurt am Main (Federal Ministry for Economic Affairs and Energy, 2017b)*

Year	Press Release	Topic
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180123-machnig-d21-digital-index-belegt-zunehmende-digitalisierung.html	*State Secretary Machnig: D21 Digital Index shows digital progress – a good sign for Germany's future (Federal Ministry for Economic Affairs and Energy, 2018m)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180611-altmaier-eroeffnet-cebit-2018.html	*Federal Minister Altmaier opens CEBIT 2018 (Federal Ministry for Economic Affairs and Energy, 2018d)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180525-altmaier-digitale-innovationen-made-in-eu-stellen-grundrecht-auf-datenschutz-sicher.html	*Minister Altmaier: Digital innovations "Made in EU" guarantee the basic right to data protection (Federal Ministry for Economic Affairs and Energy, 2018h)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180516-bmi-und-bmwi-setzen-dialogreihe-zur-umsetzung-des-neuen-datenschutzrechts-in-unternehmen-fort.html	*Federal Ministry of the Interior, Building, and Community and Federal Ministry for Economic Affairs and Energy continue series of meetings on new data protection rules in companies (Federal Ministry for Economic Affairs and Energy, 2018e)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/2018-04-26-minister-altmaier-talks-with-commission-vice-president-ansip-about-artificial-intelligence-and-the-digital-single-market.html	*Minister Altmaier talks with Commission Vice-President Ansip about artificial intelligence and the digital single market (Federal Ministry for Economic Affairs and Energy, 2018g)*
2018	https://www.bmwi.de/Redaktion/EN/Pressemitteilungen/2018/20180124-gem-bmwi-und-bmi-setzen-dialog-mit-der-wirtschaft-zur-umsetzung-der-eu-datenschutz-grundverordnung-fort.html	*The Federal Economic Affairs Ministry and the Federal Ministry of the Interior continue dialogue with industry on the implementation of the European General Data Protection Regulation (Federal Ministry for Economic Affairs and Energy, 2018c)*
2018	https://www.bundesregierung.de/Content/EN/Pressemitteilungen/BPA/2018/2018-06-19-meseberg-declaration.html?nn=454908	*Meseberg Declaration Renewing Europe's promises of security and prosperity (Die Bundesregierung, 2018b)*

Year	Press Release	Topic
2018	https://www.bundesregierung.de/Content/EN/Pressemitteilungen/BPA/2018/2018-06-11-merkel-trifft-internationale-wirtschaftsorganisationen_en.html?nn=454908	*Joint press release by Federal Chancellor Angela Merkel, IMF Managing Director Christine Lagarde, OECD Secretary-General Angel Gurría, ILO Director-General Guy Ryder, WTO Director-General Roberto Azevêdo, World Bank Chief Executive Officer Kristalina Georgieva and AfDB President Akinwumi Adesina on the occasion of their meeting in Berlin on 11 June 2018 (The Federal Government Germany, 2018b)*
2018	https://www.bmi.bund.de/SharedDocs/pressemitteilungen/EN/2018/datenschutzgrundverordnung.html	*More rights to protect personal data* *General Data Protection Regulation and Federal Data Protection Act 2018 take effect (Federal Ministry of the Interior Building and Community, 2018c)*

3.4   Situational mechanisms

3.4.1   Political structure

Germany's political structure described below is based on the eGovernment report provided by the European Commission (2018b): Reunified in 1990, Germany is a federal republic consisting of 16 states ("Länder"), of which one is the capital city, Berlin. Each of the Länder has its own legislative and executive bodies

- At the federal level, legislative power is exercised by a Parliament made up of two chambers with different powers. Members of the Lower House (Federal Diet or Bundestag) are elected every four years by direct suffrage, based on a combination of majority voting and proportional representation. Their number, which varies with each legislature since parties may obtain supplementary seats in electoral districts, currently stands at 620.
- Parties must win at least 5% of the national vote, or three constituency seats to gain representation. The Upper House (Federal Council or Bundesrat) consists of 69 members, designated by the governments of the Länder, in proportion to their population.

The Head of State is the Federal President, elected for a five-year period by the Federal Convention (a body made up of representatives of the Bundestag and of the parliaments of the Länder). Executive power is in the hands of the Federal Government, nominated by the lower house (Bundestag) and headed by the Chancellor. Currently the Head of State is President Frank-Walter Steinmeier, and the Head of Government is Chancellor Angela Merkel.

In 2000, the Federal Government launched the initiative entitled "Federal Government On-Line 2005" to modernise government services and reduce bureaucracy using IT and in 2003, the "Germany On-Line" initiative, a strategy for integrated e-government in Germany was agreed upon by the Federal, Länder and local governments. With this strategy, all levels of government committed themselves to provide joint on-line administration services, network their portals and develop common infrastructures and standards.

The CIO for Technology has the function of the Federal Government Commissioner for Information Technology, a position created by the Cabinet by the Federal IT Control Decision of 5 December 2007. Dr. Hans-Bernhard Beus was the first Federal Commissioner for Information Technology. Since 1 October 2015, Klaus Vitt, State Secretary at the Federal Ministry of the Interior, is the Federal Government Commissioner for Information Technology (IT-Planungsrat, 2018c).

The IT planning Council was set up in 2010, and is responsible for coordinating and steering cross-disciplined eGovernment projects involving both the Federation and the Länder. It replaces the "Conference of State Secretaries responsible for eGovernment", the "Committee for Automatic Data Processing at the Federal, State, the Local Level (KoopA ADV)", as well as related sub-committees (JOINUP)

The Federal Government Commissioner for Information Technology heads the IT Council, is spokesman and chairman of the IT Steering Group. The Commissioner is the central contact for the federal states and industry in their cooperation with the Federal Government on IT issues and responsible for coordination with the following IT management bodies - the IT Council, the conference of the IT representatives of the departments and the federal IT management group. In accordance with the Cabinet's decision, the following aspects form part of the central area of responsibility of the Representative:

- Elaboration of the e-government, IT and IT security strategy of the Federal Government,
- Control of federal IT security management,
- Development of architecture, standards and methods for federal IT,
- Control of the provision of central federal IT infrastructures.

The CIO expands the cross-departmental IT coordination into cross-departmental IT management, is responsible for the development of strategic issues relating to the use of IT in the federal administration and participates in all legislative procedures and other government projects that have a significant impact on the design of IT in public administration.

3.4.2   Demographic structure

According to the German Statistics Office (Destatis, 2017), in 2017, Germany has a total population of 82,413,000 inhabitants, and the demographic structure of Germany currently looks as follows:

Table 5: German population

German population (2015) (from WB-WDI)	
Total population	81,413,000
• Population aged under 15 years	12.9% of the total population
• Population aged 15-64	65.9%
• 65 and over	21.2%
• Foreign-born population	14.9%

In 2014, life expectancy was given as 78.6 years for men and 83.2 years for women (based on UN prognosis from Destatis (2017): The 13th coordinated population projection for Germany in 2060 (based on population figures from 31 December 2013), based on the assumption that life expectancy will increase by seven years (for men) and six years (for women), and that the number of births remains

stable suggests that despite a rise in life expectancy, the number of deaths will increase, and the ageing of the currently large middle-aged cohorts will lead to dramatic shifts in the age structure. In terms of migration, two scenarios are described:

- The first migration scenario – "continued trend based on lower immigration" - assumes that the initially very high annual net immigration of 500,000 persons will level out to 100,000 persons within the six years to 2021. Afterwards, net migration will remain stable at 100,000 persons per year.
- The second migration scenario - "continued trend based on higher immigration" - is based on the assumption that annual net migration will gradually drop to 200,000 by 2021 and will then remain at this level.

In terms of labour, the report "Europe 2020 indicators – Germany" (eurostat, 2017) reveals that long-term unemployment, used in Germany as a national target in the area of poverty and social exclusion, was reduced by 56 % between 2008 and 2015. This allowed the country to significantly exceed its target of reducing long-term unemployment by 20 % by 2020. Germany met its 77 % employment target by 2013 and has continued to increase its employment rate until 2016.

Drawing on the ILO's Key Indicators of the Labour Market (KILM), the German Statistics Office (Destatis, 2017) states that in Germany the labour force and unemployment figures as follows:

- Labour force (aged 15+): 42,412,000
- Labour force participation rate: 60.3%
- Unemployment rate: 3.4% (2017)

In this report, the 20-64 age bracket is considered to be the working age population. The working age population will be greatly affected by a decline in population and the issue of ageing. In 2013, this age group included 49.2 million people, but their number will decline after 2020, and in 2060, about 38 million people will be of working age if net migration drops to 200,000 in 2021 and remains constant thereafter (variant 2), or even smaller, 34 million persons (–30%) if immigration drops to 100,000 persons by 2021 (variant 1). The level of immigration has an impact on the scale of population decline as from 2030 onwards. In addition, the current working-age population is dominated by the large cohorts aged between 40 and 60, a group that in the next two decades will largely leave the working-age population.

The population statistics make clear that the changing age structure (decreasing births, increasing life expectancy), migration and integration present great challenges in socio-political terms (Destatis, 2017). A national digital skills and jobs coalition could facilitate the building of synergies between different stakeholders for the design and implementation of strategies addressing the shortage of people with digital skills, and the migration of skilled personnel to Germany could mitigate the shortage of   ICT specialists (Commission, 2018a).

3.4.3 Summary

Germany ranks 14 on the DESI index, so belongs to the medium performing cluster of countries. It ranks particularly low in the area of e-government. In comparison to the other EU countries, Germans use the internet more for interacting with and to obtain information from public authorities, but less to use the internet to send filled out forms to public authorities (Commission, 2018b).

In 2000, the Federal Government launched the initiative entitled "Federal Government On-Line 2005" to modernise government services and reduce bureaucracy using IT and in 2003, the "Germany On-Line" initiative, a strategy for integrated e-government that is supported by the Federal, Länder and local governments. With this strategy, all levels of government committed themselves to provide joint on-line administration services, network their portals and develop common infrastructures and standards.

Improvements from political decisions are to be expected with further collaboration supported by IT planning Council set up in 2010 that is responsible for coordinating and steering cross-disciplined e-government projects involving both the federal and the Länder governments. The CIO for Technology has the function of the Federal Government Commissioner for Information Technology and heads the IT Council. The CIO is responsible for the elaboration of the e-government, IT and IT security strategy of the Federal Government, as well as cross-departmental IT coordination into cross-departmental IT management, is responsible for the development of strategic issues relating to the use of IT in the federal administration and participates in all legislative procedures and other government projects that have a significant impact on the design of IT in public administration.

In addition, the report by the German Statistical Office points out that migration and integration present great challenges in socio-political terms, and a national digital skills and jobs coalition and implementation of strategies addressing the shortage of people with digital skills, and the migration of skilled personnel to Germany could mitigate the shortage of ICT specialists that may be needed in industry, business and public administration (Destatis, 2017).

3.5   Action formation & transformation mechanisms

3.5.1   Ariculation of policy changes in government press releases

In 2017, Germany led the presidency of the G20 (Digital Ministers Meeting), an international meeting that focuses on digital issues and the political relevance they have. Former Economic Affairs Minister Brigitte Zypries states that the participating ministers agreed to ensure internet access for everyone by 2025, to remove the gender gap in the use of the internet by 2020, on common solutions to make the participating countries more competitive and to enable all people to benefit from the digital transformation. All the policies agreed upon by the G20 are described in the "ROADMAP for Digitalisation: Policies for a Digital Future" (Federal Ministry for Economic Affairs and Energy, 2017) In this document, the G20 Ministers agree that policies need to adapt to the "digital and information and knowledge driven global economy" (p.2). Other key issues from the digital agendas considered in a press release made by The Federal Government Germany (2017d) are the need to strengthen collaboration through digital communication and the importance of e-health. In particular data and big data are core issues in the Digital Strategy 2025 mentioned by Chancellor Merkel at the Digital Summit. Here the Chancellor points out that Germany needs to improve the digitisation of public administration as well as make efforts in regards to education so that it provides to the needs (demands) of digital society.

Further government press releases in 2017 consider digital issues in the German economy (Federal Ministry for Economic Affairs and Energy, 2017b) in particular the transport (Federal Ministry of

Transport and Digital Infrastructure, 2017b), automotive industry (The Federal Government Germany, 2017b), and automated driving (Federal Ministry of Transport and Digital Infrastructure, 2017a).

In 2018, Germany, in terms of its digital position, is viewed with some optimism. State Secretary Machnig, drawing on figures on digitisation from the D21 Digital Index, suggests that progress is being made regarding the use of mobile internet, smart devices and artificial intelligence. The State Secretary also points out to the need for future policy to consider the development of digital skills (Federal Ministry for Economic Affairs and Energy, 2018m).

Several events on digital transformation are reported in the government press releases. The former Federal Minister for Economic Affairs and Energy Brigitte Zypries visits the TechQuartier in Frankfurt am Main (Federal Ministry for Economic Affairs and Energy, 2018j), as Frankfurt is one of the 12 hubs from the Ministry's Digital Hub Initiative (Germany's Centres of digital innovation) (Federal Ministry for Economic Affairs and Energy, 2018a). This particular innovation hub focuses on financial and business issues as well as cybersecurity and helping Germany move forward on digital issues. Whilst all the German digital agendas have considered how to support digital business, the last digital agenda in particular (Digital Strategy 2025) and the most recent JoinUp Report on Germany (2018) consider the issue of cybersecurity in particular (Federal Ministry for Economic Affairs and Energy, 2018j). Current Federal Minister for Economic Affairs and Energy, Peter Altmaier, emphasises at the opening of CEBIT 2018 (Federal Ministry for Economic Affairs and Energy, 2018d), that although the focus is on topics such as artificial intelligence, blockchain, smart mobility, the Internet of Things, and IT security, it is necessary that in Germany, policymakers and businesses consider the exploitation of innovative ideas, such as the transfer of digital innovations from academia to the market. Again these are topics addressed in the recent digital agendas. At a meeting with Andrus Ansip, Vice-President of the European Commission and European Commissioner for the Digital Single Market (Federal Ministry for Economic Affairs and Energy, 2018g), Federal Minister Altmaier discusses the EU's position and new strategy on artificial intelligence, the Commission's new package of measures to deepen the digital single market, and the impact of large online organisations (e.g. Amazon and Google). The focus on EU cooperation on digital matters is pointed out in the recent digital agendas. The Hannover Messe trade fair shows that industry is becoming increasingly digitalised, including automation and energy technology, intralogistics, IT platforms and artificial intelligence. At the opening Chancellor Merkel also welcomed the new free trade agreement between the EU and Mexico (The Federal Government Germany, 2018a). At the 2018 conference of G7 Innovation Ministers attended by the German State Secretary Machnig, the main topics are the need to continue cooperation regarding artificial intelligence, jobs in the future and discussing current issues related to digital policy (Federal Ministry for Economic Affairs and Energy, 2018n). State Secretary Machnig also attends the "Digital Day" on 10 April, along with other high-ranking representatives of the EU Member States, the European Commission and other stakeholders. The main topic is "digital transformation" but also high-investment projects into digital innovation, artificial intelligence, blockchain, and e-health are discussed. The State Secretary emphasises the need to collaborate at EU-level in order to make use of digital innovations and ensure benefits to a European digital economy and society (Federal Ministry for Economic Affairs and Energy, 2018f). One way of supporting the exploitation of innovative ideas, is the Federal Ministry for Economic Affairs and Energy's Digital Hub pitch night that provides start-ups to present their ideas and attract investors (Federal Ministry for Economic Affairs and Energy, 2018i). Another similar event that supports investment in innovative ideas is the Start-Up Night Africa, organised by the Federal Ministry of Economic Affairs and Energy. It offers five entrepreneurs from Africa the opportunity to present their

digital business models and solutions that could be of interest to the German market (Federal Ministry for Economic Affairs and Energy, 2018l).

In 2018, Germany and France renew their bilateral cooperation, a new "Elysée Treaty" by the end of 2018 (Die Bundesregierung, 2018b). A joint press release by Federal Chancellor Angela Merkel, IMF Managing Director Christine Lagarde, OECD Secretary-General Angel Gurría, ILO Director-General Guy Ryder, WTO Director-General Roberto Azevêdo, World Bank Chief Executive Officer Kristalina Georgieva and AfDB President Akinwumi Adesina is made on the occasion of their meeting in Berlin on 11 June 2018. They agree to an international economic policy cooperation to address global challenges and to improve inclusive and sustainable growth by collaborating, for example through networks (e.g. G20) that focus on digitalisation (The Federal Government Germany, 2018b).

A number of press releases in 2018 consider the EU General Data Protection Regulation (EGDPR), it provides the legal basis for data protection rules in all Member States within the European Union, and companies need to adapt their business and data processes by 25 May 2018 (Federal Ministry for Economic Affairs and Energy, 2018c, 2018e; Federal Ministry of the Interior Building and Community, 2018c). It provides a uniform legal framework for data protection in all Member States, and Federal Minister for Economic Affairs and Energy Peter Altmaier points out the need to harmonise rules regarding personal data, addressing in particular those businesses situated outside the EU (as they were explicitly addressed in the latest Digital Agenda) (Federal Ministry for Economic Affairs and Energy, 2018h).

3.5.2 Summary

Press releases from the federal government and ministries often describe central events attended by politicians such as the G7 and G20 meetings, industry or trade fairs, as well as meetings with members of the European Commission or events organised by ministries. At such meetings, politicians will relate their openings, presentations and speeches, to key issues from the German digital agenda as well as current or future policies that have or are to have an impact on the digitalisation or digital transformation in Germany. Thus, in the last two years (2017-2018), government press releases have considered several key issues, such as supporting the exploitation of innovative ideas, the development of key skills, specific new technologies and processes, e.g. artificial intelligence or blockchain. The press releases presented here show that at the moment, Germany is particularly concerned with the digitalisation of businesses, the impact of digitalisation in economy and industry and the role of big data and large online companies. Digitalisation in public administration or any policies relevant to this are not considered in the most recent press releases – only one press release, the attendance of Chancellor Merkel at G20 Meeting in 2017 points out the need to address this area of digitalisation.

3.6 Resulting digital transformation agenda

The German Digital Agendas are prepared by Federal Ministry for Economic Affairs and Energy, and during the period 2000-2016, 4 Digital Agendas were published (2003, 2006, 2014 and 2016). In 2003 and 2006 the digital agendas were published as "Information Society Action Programmes". In 2003, the focus was on German economic market in the context of an information society, in 2006 on making Germany a knowledge-based society, whilst in 2014, the focus moved onto German society and values in the context of digital transformation. The digital agenda published in 2016 focuses on data and big data, the need to provide access to data for business and economic success. Whilst the focus and the

main topics of the agendas varies over the years, some issues are addressed in every digital agenda. All the agendas consider the need to provide nationwide broadband especially in rural areas that are not economically viable for companies to provide for. Other issues always addressed are the need for IT security, research and development, but also developing the opportunities for exploiting innovative ideas and measures, the role of digitisation. Digitalisation in the public sector and e-government strategies for public administration are always discussed, as well as the development of necessary policies to support the German digital agenda. In terms of the development of policies, the first digital agenda considers the policies at a national level, whilst the focus of the 2010 Digital Agenda addresses the development of ICT policies in cooperation with others both at European and global level, policies that have an impact on Germany. In the last two digital agendas, the focus is more on calling policymakers to be involved in developing policies for Germany, ensuring that these are based on German values, and, in the 2016 Digital Agenda, even urging the European Commission to update its ICT policies (in particular, regarding broadband). Over the years (and in particular in the Digital Agendas published in 2014 and 2016), the increasing collaboration between the different German government services, projects, levels, agencies and other organisations is increasingly emphasised as well as the need to implement measures that impact the whole country in a coordinated and effective manner.

3.6.1   2003: The Society Germany 2006 Action Programme

The focus of the Information Society Germany 2006 Action Programme (The Federal Government of Germany, 2003) is the Germany economic market:
"_Germany aims to be "among the frontrunners in the global information society if we want to strengthen growth, bolster the employment market and further the Federal Government's main projects aimed at modernising the job market and the social welfare systems." (p.3)._

In this programme, the main challenges to be addressed are the digital economy, education and research, IT-security, e-government and e-health. In order to address these challenges, the report urges the cooperation between industry and government (German Broadband Initiative, 2018; German Broadcasting Initiative, 2018; Initiative D21, 2018) to be supported and strengthened. Broadband is to be the dominant access technology by 2005 and the cooperation should result in 40% of businesses to use e-business solutions for the entire value chain by 2008 and more than half of German homes to have a broadband Internet line by 2010. New media products and services are to drive innovation, in particular in the areas of mobile Internet/ambient intelligence, IT-system reliability and security, nano-electronics. Innovation in Germany is to be supported by the Federal Government's funding of ICT research and driven by a research policy (German Federal Ministry of Education and Research, 2018).

In the 2006 Action Programme, e-government is seen as central to modernising public administration and reducing bureaucracy. The long-term e-government strategy, "Federal Government On-Line 2005" is to help build a robust infrastructure for the provision of on-line services. The joint e-government strategy "Germany On-Line" combines the Federal, Länder and local governments" projects into a joint e-government strategy and uses the solutions developed by MEDIA@Komm (Governent of the Federal Republic of Germany, 2006). The Federal Government is also to promote an e-card initiative that synchronises all card projects, the use of signature cards by ensuring appropriate applications (e.g. bank cards, job cards, identity cards, health cards, electronic certification with tax services) and by making the next generation of ID cards digital. The electronic health card is to be introduced by 01.01.2006

(Federal Ministry of Health, 2018). In addition, at all levels of government, electronic signatures are to be used for "Federal Government On-Line" and "Germany On-Line" services. The Federal Government's IT security strategy (Federal Ministry of the Interior Building and Community, 2018a) is to build confidence in the security and reliability offered by modern IT, and includes a national plan for the protection of critical infrastructure, plan various public-private partnership projects. The BSI is to cooperate with industry and business partners to develop better protective measures in order to reduce the volume of spam and address a younger audience by producing special information on IT security for young people by the end of 2004.

The Federal Government also presents its "IT Research 2006" support programme, which will run until 2006 and provides three billion euros in research development in the field of ICT.

As part of the "D21 Initiative", the agenda points out the need for several policies to be implemented:
- Act on Electronic Commerce (Bundesanzeiger, 2001a)
- Signatures Act
- Revision of the Telecommunications Act (Bundesanzeiger, 2004)
- Reform of the copyright law (Bundesanzeiger, 2016d)
- Implementation of the EU's directive on the patentability of computer-implemented inventions
- Simplified media regulations and measures to harmonise data protection
- Federal Government's sponsorship of technology to help German business (German Federal Ministry of Education and Research, 2018)
- Funding for ICT research (German Federal Ministry of Education and Research, 2018)

3.6.2 2006: iD2010 Information Society Germany Action Programme 2010

The focus of the iD2010 Information Society Germany Action Programme 2010 (published in 2006) is the German ICT sector:
 "The ICT sector is among Germany's largest and is now number one in terms of gross value added, having overtaken mechanical and automotive engineering. ICTs play a key role in our progressively knowledge-oriented economy and, as such, they act as a catalyst for growth in many other sectors. Roughly 40 % of current macroeconomic growth stems from ICT use."(p.5)

Programmes initiated within the previous digital agenda and new programmes are to be supported, such as the "Deutsche Breitbandinitiative" (German Broadband Initiative, 2018), or the Netzwerk Elektronischer Geschäftsverkehr" (Electronic Commerce Network) (Federal Ministry for Economic Affairs and Technology, 2011).

One of the priority tasks of iD2010 is to build a new internet-based infrastructure for organising and disseminating knowledge and aims to support the EU in its implementation of the "i2010 – A European Information Society for Growth and Employment" strategy (EurLex Europa, 2005a).

To build a new knowledge infrastructure for the internet of the future, ICT security needs to be improved, and iD2010 is based on the "Hightech-Strategie für Deutschland" (High-Tech Strategy for Germany) (German Federal Ministry of Education and Research, 2018) in particular the IT security at federal level of government and of the critical infrastructures (Federal Office for Information Security, 2018). Several plans are to be initiated, in addition to the aforementioned, the "Nationale Plan zum

Schutz der Informationsinfrastrukturen"(Bundesministerium des Innern, 2006) and include the development and piloting of biometric applications ("RFID-Dialogplattform", "RFID und Verbraucherschutz" (RFID and Consumer Protection) (FVI Das Netzwerk, 2018).

Through its "BundOnline 2005" (Federal Government On-Line) (Bundesregierung, 2006) initiative, the Federal Government is able to offer 440 services online – this is seen as enabling government bodies, industry and citizens to save on costs and achieving better quality of service. But future emphasis is not only on enhancing the quality and quantity of the online services: the "E-Government 2.0" programme, part of the Government's "Zukunftsorientierte Verwaltung durch Innovationen" (Innovation-Driven, Forward-Looking Government) (Bundesministerium des Innern Deutschland, 2009) programme foresees the introduction of an electronic ID card and formulation of an e-identity strategy.(Federal Ministry of the Interior Building and Community, 2018b) In addition, to ensure secure communication infrastructure for citizens, enterprises and public authorities, further steps for public administration include an IT strategy for federal agencies(IT-Planungsrat, 2010a) as well as e-government between the federal-government (national), federal-state and local levels, such as the continuation of "Deutschland Online" (the federal structure of Germany's government, the Federal Government, the federal states, local governments and self-governing bodies have to agree the way in which their procedures are organised and the technology used to perform them) (IT-Planungsrat, 2010a). A further, important aim mentioned is the strengthening of the cooperation between public authorities and industry, for example by linking up process chains between public administration and industry electronically and by setting up an e-government centre of excellence operated by the Federal Government that is to provide industry with advice and information on all sections of e-government (planned as from 2007).

The ICT 2020 research programme (Bundesministerium für Bildung und Forschung, 2006) is to help invest in IT research, but it is also important to commercially exploit the results in Germany. Thus several new or amended policies are necessary:

- The Act on the Amendment of Telecommunications (German Law Archive, 2018)
- European legislative framework for electronic communication services (EurLex Europa, 2012)
- European Commission's legislation on roaming fees within the European Union (EurLex Europa, 2015)
- Telemedia Act (German Law Archive, 1996)
- Inter-State Agreement on Broadcasting (German Law Archive, 2018)
- E-Commerce Directive (EurLex Europa, 2000)
- European Television Directive (EurLex Europa, 2005b)
- Radio Frequency policy (EurLex Europa, 2018)
- Wireless Access Policy for Electronic Communications Services (EurLex Europa, 2016)
- Second Act on Copyright Regulation in the Information Society (Lex, 2007)
- Act on the Re-Use of Public Sector (Bundesministerium der Justiz und für Verbraucherschutz, 2006)

3.6.3 2014: Digital Agenda 2014 - 2017

The Digital Agenda 2014-2017 focuses on digitisation in society, emphasising the value systems in a society:

"The positive effects of digitisation can only unfold if this transformation is firmly rooted in the centre of society and is accepted and actively shaped by all societal groups. We, the Federal Government, acknowledge our responsibility to foster and actively assist this development. Accordingly, we view the implementation of the Digital Agenda as an open and ongoing process that is inclusive of all relevant groups in our society" (p.2)

The digital environment must be able to support all citizens:
"We advocate the continuing development of the global Internet as an open, safe and free space that protects diversity of opinion and the exchange of ideas, and enables all citizens to inform themselves about and engage in social processes." (p.2)

The emphasis of this digital agenda is on society and the value systems it contains, and how this is transferred to the digital world, where there is no longer a distinction between the analogue and the virtual world. Rather, digitisation is simply a dimension of citizens' lives. German policies are to be developed and guided by the core values and accepted rules based on the German constitution, and the government is seen as having a clear "*responsibility in the networked world to avert risks and criminality. We acknowledge this responsibility for public IT security and want to play our part in protecting society and the economy in the digital age. This requires a strategic realignment of the cyber security architecture and better resources for security authorities in terms of technology and staffing*." (p.32). It is important to ensure access and participation through technology (e.g. by providing nation-wide broadband) and education measures as the internet are seen as the gateway to the digital world.

As in previous digital agendas, the Federal Government once again points out the need for widespread access to high-performance broad-band networks, and the government aims to have bandwidths of at least 50 Mbit/s for nationwide use by 2018. The Digital Agenda 2014-2017 considers the role of digital networks, high-quality education and training as drivers for growth and employment, and how the use of several technologies is to provide ubiquitous broadband infrastructure, infrastructure and intelligent network transport systems in areas where commercial development is not viable by providing a fund for broadband network development (Premiumförderung Netzausbau) (Bundesregierung, 2016).

This agenda also extensively addresses security issues and how to provide secure communication in digital networks, protect access, and promote the use of simple encryption methods. Other national security mechanisms are to be provided by the Data Protection Foundation (Stiftung Datenschutz, 2018), the Federal Office for Information Security (Bundesamt für Sicherheit in der Informationstechnik, 2018a) and the National Cyber Response Centre, (Bundesamt für Sicherheit in der Informationstechnik, 2018a) the Federal Criminal Police Office and the Federal Police in the areas of cybercrime, cyber espionage and cyber security (Bundeskriminalamt, 2018). The Federal Network Agency (BNetzA) (B. f. S. i. d. Informationstechnik, 2018a) is also to address telecommunications security, the European regulation on electronic identification and trust services for electronic transactions in the internal market. German technology expertise in trustworthy IT is to be provided and further developed with „Trusted IT" (Vertrauenswürdige IT) platform, and Interstate Agreement on IT. The Federal Office for the Protection of the Constitution is to be able to respond better to terrorists" activities. To prevent infringements of the law at the individual level, further measures aim to increase users" media literacy.

In the public sector, the Federal Government aims to further modernise public administration by implementing measures in a coordinated and effective manner. A cross-departmental approach is used

in the government programme "Digital Administration 2020" (Bundesregierung, 2016) and brings together a series of measures.

The basic services for Federal Government departments are to be developed once only and in a single location through the programme 'sharing Government IT" (Gemeinsame IT des Bundes) (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018e), the services are then made available to all federal authorities, achieving uniform standards and greater interoperability. Support uniform standards and greater interoperability. This needs to be accompanied by a comprehensive legislative framework for ICT standardisation within the federal administrative authorities.

System security and data protection are again central issues of digitisation and other activities mentioned in the Digital Agenda. In this digital agenda though, it is pointed out that government IT must remain trustworthy and autonomous, and not rely on global IT corporations. Thus it is necessary to develop national networks for data belonging to the federal administrative authorities: a major government network consolidation project is the "Netze des Bundes" (D. B. d. B. f. Informationstechnik, 2018a), to provide a cross-departmental communication infrastructure and high-level security. The three cross-departmental or Federal and Länder networks (IVBB & IVBV/BVN and DOI) are to be migrated to this infrastructure, and in future may also be used as an integration platform for all of the federal administrations" networks. In terms of information security, there is a need for collaboration with representatives from all government and public administration levels and by drawing on the expertise of the IT Planning Council (IT-Planungsrat, 2018b).

The Federal government is to work closely with the Länder and local authorities to provide useful and efficient interfaces and user-friendly local e-government services. Examples are the single government contact or citizen accounts, secure authentication using the eID function on identity cards for the simple and secure use of the administration services at the local authority, Länder and government level. In addition, De-Mail (IT-Planungsrat, 2018b), the encrypted electronic letter system, is to be rolled out at the national level and is to be used to contact public authorities via a range of channels. Further developments are made to achieve efficient e-procurement and e-invoicing processes The provision of open data in Germany, described in the "National Action Plan on Implementing the G8 Open-Data Charta" (Federal Ministry of the Interior, 2014), is one of the steps mentioned in the digital agenda.

In terms of policies, the federal Government plans the introduction of the right of associations to take legal action to improve data protection and to adapt the criminal law to the digital age and in particular close any loopholes in criminal law relating to the handling of stolen data. But given the opportunities, potentials and of course the risks, policymakers are called upon to support and provide a framework that enables all to participate in the digital transformation. A regulatory framework must consider digitalisation in all aspects of society, and new regulations are necessary as digitisation and internationalisation have an impact on every person in society, amendments are only be made where existing law fail to cover new developments or where a lack of enforcement arises. To achieve aims set out in the agenda, close collaborations are urged.

At the European level, several cooperations are also considered to be necessary. On the one hand, it is necessary to enable all citizens to use electronic identification(Connecting Europe Facility, 2018) in a secure manner and the use of electronic signatures, including company signatures. The European data protection law in the digital internal market must strengthen the rights of citizens in the networked world and recognise the importance of data protection as a crucial factor in a business location, so the

EU's General Data Protection Regulation is to be adopted by 2015 (Intersoft Consulting, 2018). International international cooperations will also be necessary for this area, such as with the ENISA (European Network and Information Security Agency) and Europol's European Cybercrime Centre. The international and European legal frameworks, such as the regulations must address the competition between companies and investment, are to support free market expansion and make digital services available to all citizens. In particular, those providers based in non-EU countries must adhere to the same regulatory requirements as providers from EU countries in relation to business activities conducted in the EU. The funding and the development of broadband measures are considered, such as the funds provided by the Joint Task for the Improvement of Agricultural Structures and Coastal Protection (GAK).

3.6.4   2016: Digital Strategy 2025

The focus of the Digital Strategy 2025 is the technological progress, and that what has been achieved so far simply provides the basis for the future steps. The basis for digital transformation is data:
"The basic raw material of this digital transformation is data. How data is handled is a decisive factor in the success of modern business. Big Data is one of many buzzwords – a catch-all phrase for today's unprecedented magnitude of data. Data can capture more and more aspects of our everyday lives with increasingly greater precision. Data is more and more frequently a decisive factor for success" (p.6)

The aim is to create an environment in Germany and Europe that will ensure capabilities in information and communications technologies and in software development. But there are other areas that need to be addressed, such as the provision of infrastructures that support further digitisation, new distribution channels and logistics processes, broadband and an optical fibre network in Germany. There is a need for skills development and training as well as the need to ensure that the necessary technological innovations and the development of new business models are funded, for example through government research and development funding. It also requires a think tank in Germany that is able to provide service and advice, coordinates the communication of participants in this process and creates expertise for functioning market structures.

By the time this digital agenda is published, the government has auctioned off mobile broad-band radio frequencies, promoted a federal programme for broadband, set up the interministerial programme Smart Networks Strategy (Strategie Intelligente Vernetzung) (Bundesministerium für Wirtschaft und Energie, 2015) as well as the funding programme Digital Technologies for Business (Digitale Technologien für die Wirtschaft PAiCE: Platforms | Additive Manufacturing | Imaging | Communication | Engineering) (Bundesministerium für Wirtschaft und Energie, 2018a). Mittelstand 4.0 Centres of Excellence assist SMEs in the digitisation process. The Digitisation Campaign for SMEs (Digitalisierungsoffensive Mittelstand) also offers SMEs specific incentives for investing in the digital transformation and would provide €1 billion available until 2018. This campaign addresses identified deficiencies and expand existing innovation programmes aimed at SMEs, such as the Central Innovation Programme for SMEs (ZIM: Zentrales Innovationsprogramm Mittelstand) and the Industrial Collective Research programme (IGF: Industrielle Gemeinschaftsforschung). But another important issue is encouraging 'smart networks" that are not only important in key commercial infrastructure areas of the economy such as enhanced productivity, efficiency gains, and growth but enable citizens social and political participation. Several initiatives for promoting smart networks, including the Smart Networks

Strategy as a measure for implementing the Digital Agenda 2014 – 2017, a law to digitise the energy transition and the e-Health Act came into force in early 2016.

In view of the rapid development and disruptive innovation, the German government must actively work on setting up regulations, but in cooperation with municipalities, the federal states, European and international bodies, business, associations, and other stakeholders. In particular, the regulatory framework is to be based on competition, administrative and cartel law so that digitisation can be a creative and far-reaching process for business, ensure fair competition and strengthen rights of the individual data subject. Thus regulation must make investment and innovation possible, prevent abuse of dominant market positions, ensure the informational autonomy of consumers and guarantee an open Internet. Whilst digitisation is to be promoted in everyday life by creating an innovation-friendly legal framework (e.g. smart meters: Act on Digitisation of the Energy Transition (Federal Ministry for Economic Affairs and Energy, 2018b), the E-Health Act (Bundesgesetzblatt, 2015)), investment, innovation, and growth also have to be taken into consideration in legislation and regulatory frameworks.

The German legal framework is to be re-evaluated in the contest of digitisation. The current legal framework is to be expanded to include digital issues by creating a uniform legal framework for similar services, bringing Internet service providers into the process (over-the-top providers: OTTs), stronger integration of digital effects (e.g. network effects, lock-in effects) with transparency requirements, data security and data portability, to the extent that the EU General Data Protection Regulation (GDPR) allows for national provisions. In this digital agenda, a suggestion is made to provide a legal code that adheres to open and fair competition, data security, and informational autonomy, as well as European harmonisation. Such a legal framework is to include all types of media and contains regulations relevant to the Internet, or relevant provisions from the Telecommunications Act (Telekommunikationsgesetz) (Bundesanzeiger, 2004) the Telemedia Act (Telemediengesetz) (christoph; German Law Archive, 1996) and the Act on Radio Equipment and Telecommunications Terminal Equipment (Gesetz über Funkanlagen und Telekommunikationsendeinrichtungen) (Bundesanzeiger, 2001b). Other necessary policies are needed that relate to liability regulations, copyright law and fair competition.

The European ICT policy is to be promoted by setting up model regions and the basis for smart networks on a European level. This can be seen in the efforts made by the Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railway (Bundesnetzagentur) to update the Rolling Plan for ICT Standardisation (Federal Ministry for Economic Affairs and Energy, 2018b), the Smart Networks initiative (Bundesministerium für Wirtschaft und Energie, 2015) and the Open Innovation Platform (Bundesministerium für Wirtschaft und Energie, 2017). In addition there is a need for standards for EU-wide secure and reliable electronic transactions in the international implementation of electronic identification (The Information Technology& Innovation Foundation, 2011), a qualified electronic signature (Bundesnetzagentur, 2018b), the electronic seal for businesses and government agencies, as well as other electronic trust services (Tabor, 2018). The German digital agenda also supports the agreement between the European Commission and the USA on an EU-US Privacy Shield for transatlantic data communication (Tabor, 2018).

Further funding programmes must be made available, but needs to be linked to both federal and European funding guidelines, for example regarding broadband: these are to be linked with the national joint task Improving Regional Economic Structures (Verbesserung der regionalen Wirtschaftsstruktur:

GRW) (Bundesministerium für Wirtschaft und Energie, 2018b) and the European telecommunications review process. The digital agenda recommends that the broadband guidelines issued by the European Commission (European Commission, 2013) be updated as current regulations hinder investments in gigabit networks.

3.6.5 Summary

The German Digital Agendas are prepared by the Federal Ministry for Economic Affairs and Energy, and during the period 2000-2016, 4 Digital Agendas were published (2003, 2006, 2014 and 2016). The focus of the Digital Agendas has been the German economic market in the context of an information society, making Germany a knowledge-based society, German society and values in the context of digital transformation, and finally, the role of data and big data for business and economic success.

The focus and the main issues of the agendas vary over the years, some issues are addressed in every digital agenda. All the agendas consider the need to provide nationwide broadband especially in rural areas that are not economically viable for companies to provide for. As described in Section 1, the EDPR report shows that 93% of German households and 97% of businesses have internet access and that broadband access in Germany is stable at 98%. Ensuring broadband access (in rural areas) was and is a priority issue which seems to have been successfully achieved. Other issues always addressed are the need for IT security reflected in the digital agendas as the collaborative strategies developed by the IT Planning Council, the BSI standards for security and, as mentioned in particular in the Digital Strategy 2025, the support for organisations in the fight against cyber-crime. The government has provided several funding programmes for research and development in several areas and has recognise, again in the last digital agenda, that it is not only necessary to provide funding for creating innovation but to support the exploitation of innovation too.

Digitalisation in the public sector and e-government strategies for public administration have always played a prominent role in the German digital agendas. This is reflected in the increasing number of government collaborations and joint strategy development at federal, Lände and local level. Over the years common, federal e-government solutions (rather than single solutions) have become more important than single e-government solutions, such as the citizen's portal, the De-Mail communciation system or the eID. The last two Digital Agendas have also focused on the role of European and other international collaborations and legal developments. In terms of the development of policies, the first digital agenda considers the policies at a national level, whilst the focus of the 2010 Digital Agenda addresses the development of ICT policies in cooperation with others both at the European and global level, policies that have an impact on Germany. In the last two digital agendas, the focus is more on calling policymakers to be involved in developing policies for Germany, ensuring that these are based on German values, and, in the 2016 Digital Agenda, even urging the European Commission to update its ICT policies (in particular, regarding broadband). Over the years (and in particular in the Digital Agendas published in 2014 and 2016), the increasing collaboration between the different German government services, projects, levels, agencies, and other organisations is increasingly emphasised as well as the need to implement measures that impact the whole country in a coordinated and effective manner.

3.7   Traceable results of digital transformation approaches

3.7.1   Outcomes of digital transformation articulated in official country reports

This section summarises the outcomes of digital transformation in Germany's public administration 2000-2017 described in the EU's JoinUp Reports (Horizon 2020 Support Facility, 2018).

3.7.1.1   2000-2003

2000
The former German Chancellor Gerhard Schröder launches the eGovernment programme of the Federal government "BundOnline2005". The main objective is to make all federal public services provide electronic delivery by the end of 2005. The initiative forms part of the programme „Internet for All-Ten Steps on the Path to the Information Society" (Governent of the Federal Republic of Germany, 2006).

2001
The government information and services portal Bund.de is launched (Bundesverwaltungsamt, 2018b), providing central access to online services of the Federal administration. The BundOnline 2005 Implementation Plan presents 376 federal administration services considered to be suitable for internet delivery and sets a schedule for these services to be made available online.

The Federal Information Security Agency (BSI) publishes an eGovernment Manual (Bundesamt für Sicherheit in der Informationstechnik, 2018c) to be used as a reference book and to provide information on all aspects of eGovernment development.

2002
The "BundOnline 2005" Progress Report, an update of the implementation plan for the eGovernment initiative, is approved by the Federal Cabinet. According to the report, the targets have been met, with more than 160 services of the Federal Administration now provided online. The eGovernment portal Bund.de (Bundesverwaltungsamt, 2018b) additionally contains links to information and services offered by German cities and municipalities and brings the whole of Germany's administration onto a single platform. The Online Form Centre on the eGovernment portal Bund.de (Federal Ministry for Economic Affairs and Energy, 2018k) and the Government's eProcurement Platform are launched. The Government establishes a strategy, standards and framework conditions for introducing the electronic signature, as well as for authenticating and encoding online communications.

The Federal Ministry of the Interior (BMI) establishes the office of the Chief Information Officer (Der Beauftragte der Bundesregierung für Informationstechnik, 2018), a role that brings together the BundOnline 2005 Project Group, the Coordination and Advisory Agency for IT in the Federal Administration (KBSt), and the Federal Information Security Agency (BSI) as well as the Ministry of the Interior's tasks relating to IT policy and strategy, IT Management and IT security.

3.7.1.2   2003-2005

2003

The German Federal Labour Office launches the employment portal Arbeitsagentur.de.

The German Chancellor Gerhard Schröder, the heads of government of the federated states (Länder) and the representative associations of German local authorities agree on a common country-wide eGovernment strategy entitled "Deutschland-Online"(Germany Online).

The German Federal Government publishes the BundOnline 2005 Annual Report, third Implementation Plan, and a programme for the optimisation of public procurement where all federal authorities are to switch to eProcurement by the end of 2005 (Zypries, 2005). It also launches the Initiative to Reduce Bureaucracy (Initiative Bürokratieabbau), particularly for businesses (Bundesministerium des Innern Deutschland, 2003). The third law on the modification of the provisions of Administrative Procedural Law comes into force, providing electronic signatures with the same legal status as hand-written signatures for all dealings with public authorities.

2004

The MEDIA@Komm-Transferproject (Richter, 2005) is to identify and develop e-government solutions for all German local and regional authorities. The German Federal Administrative Court is the first federal institution to use the "BundOnline 2005 ePayment" platform. The e-payment platform can be integrated into most of Germany's e-government transactional services.

2005

The German government presents the results from the "Bund Online 2005" initiative (Governent of the Federal Republic of Germany, 2006) and the "eCard" strategy (Bundesamt für Sicherheit in der Informationstechnik, 2005). The Federal Parliament adopts the Electronic File Management Act, designed to allow the German judiciary to process legal files and documents electronically and to pave the way for a paperless judiciary system in the country. At the same time, Germany starts issuing biometric passports that include an RFID chip that stores personal information and a digital facial image of the holder (Bundesamt für Sicherheit in der Informationstechnik, 2018b).

3.7.1.3   2006-2014

2006

The German Federal Government adopts the strategy "Focused on the Future: Innovations for Administration"(Bundesministerium des Innern Deutschland, 2006) that includes the eGovernment 2.0 programme. The aim is to modernise the Federal State Administration, downsize bureaucracy and to improve the quality and efficiency of public sector services. The German Federal Government also adopts the programme for "Bureaucracy Reduction and Better Regulation" (Bundesregierung, 2018) to further reduce administrative costs whilst providing opportunities for private commitment, innovation and investment. The "Deutschland-Online" action plan continues the co-operation between the German Federal Government and the Länder on e-government and electronic procedures in public administration (IT-Planungsrat, 2010a).

The German Ministry of the Interior launches a new and updated version of the Federal Coordination and Advisory Agency (KBSt) online information website containing comprehensive information on the

IT strategies and coordination activities of the government. The Federal Coordination and Advisory Agency (KBSt) provides an IT Infrastructure Library (ITIL) on its official website.

2007

The renewed "Deutschland Online" portal goes online and offers information on the German e-government Strategy, action plans and current e-government projects. In addition, a comprehensive database of Germany's federal administrative regulations becomes operational.

The Revision of the Passport Act is approved by the Federal Council (Bundesministerium der Justiz und für Verbraucherschutz, 2007), providing the legal basis for second-generation electronic passports with fingerprints. These start being issued in 2007 (Bundesamt für Sicherheit in der Informationstechnik, 2018b). Germany begins to introduce unique identifying numbers for taxation purposes (Tax ID) (Bundeszentralamt für Steuern, 2018) assigned to every natural person subject to tax liability in Germany.

A comprehensive database of Germany's federal administrative regulation, Germany's anti-terror database (Bundesamt für Verfassungsschutz, 2018) and the Digital Image Archives of the Federal Archives (Bundesarchiv, 2018) go online.

2008

The Federal Government approves the Implementation Plan 2008 of Germany's strategy "Focused on the Future: Innovations for Administration" (including the eGovernment 2.0 programme) (Bundesministerium des Innern Deutschland, 2006), aimed at downsizing bureaucracy and at improving the quality and efficiency of public sector services. The new Federal IT Steering System within the federal government comes into force, it aims to improve IT management, optimise Federal Administration services, enhance effectiveness and efficiency in IT-based operations and promote IT innovation. The high-ranking IT-Steering Group oversees and coordinates large-scale projects, IT-issues, budgeting and overall political steering. Dr Hans-Bernhard Beus is appointed the first Federal Commissioner for Information Technology.

The Federal Government adopts the General Administrative Regulation Governing the Electronic Office ID Card, thus paving the way for the introduction of the electronic ID card for public employees and military personnel in the federal administration (Bundesverwaltungsamt, 2016). This new card will include an electronic ID function and can also include a qualified electronic signature according to the German signature law (Bundestag, 2010).

2009

The Federal Government approves the Implementation Plan 2009 of Germany's Government strategy "eGovernment 2.0 programme" (Bundesministerium des Innern Deutschland, 2010) which aims to downsize bureaucracy and improve the quality and efficiency of public sector services. The implementation plan presents the federal government's view of an innovative and modern Public Administration with eGovernment. The Federal Cabinet also adopts the new Broadband Strategy of the Federal Government (Bundesnetzagentur, 2018a) that is to provide households and businesses with high-capacity broadband connections.

The public service number 115 (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018a) becomes operational in the regions of Berlin, Hamburg, North-Rhine Westphalia, and Hesse for approximately ten million people.

XRepository (IT-Planungsrat, 2018d), the new online library for XML based Data Exchange Formats is launched. The new website is the location for the publication of a broad spectrum of data relating to eGovernment projects, including Data-Models, XML schemes, and relevant documentation.

Changes are made to the German Basic Law Grundgesetz (1949): the two new articles 91c and 91d. Article 91c (Grundgesetz, 2017) aims to ensure the simplification of IT-bodies and decision-making processes and provides the legal basis electronic communication between all German authorities. The Article 91d (Grundgesetz, 2017) provides the legal basis for allowing federal and Länder government to directly and effectively benchmark their administrations in order to increase their effectiveness. In addition, the law to Improve the Security of the Federal Government's IT (Bundesamt für Sicherheit in der Informationstechnik, 2009) comes into force, central to the Federal Government's security efforts. At the same time, the act for employment and stability in Germany passed, it foresees €4 billion for federal investments, €500 million of which is to be used to modernise the federal administration's ICT and to strengthen the German ICT sector during the economic crisis. German electronic passports for foreigners contain an additional biometric feature to increase security and protection of the travel documents (Zeit Online, 2010).

2010
The Inter-Länder Agreement comes into force. This agreement implements Article 91c of the German Basic Law and provides the basis for the cooperation of the Federal Government and the States with respect to the utilisation of Information Technology in federal and state administrations. Moreover, this agreement provides for the establishment of the IT Planning Council (IT-Planungsrat, 2018a). It replaces the Conference of State Secretaries responsible for eGovernment, the Committee for Automatic Data Processing at the Federal, State, the Local Level (KoopA ADV), as well as related sub-committees and is responsible for coordinating and steering cross-disciplined e-government projects involving both the Federation and the Länder. The IT-Planning Council holds its constituent session (IT-Planungsrat, 2018a) and adopts the National eGovernment Strategy that provides a common framework for e-government activities at federal, state and local levels (IT-Planungsrat, 2010c).

The Minister for the Interior and Sports of the federal state of Rhineland-Palatinate announces the official launch of a two-year pilot to develop a mobile citizen service in collaboration with fifteen municipalities of the area and equips local government staff with a modern mobile workstation (Kommune 21, 2010). The Ministry of the Environment and Conservation, Agriculture and Consumer Protection of the German State of North Rhine-Westphalia launches the Geoinformation System for Integrated Rural Developmentportal (GISILE) (Ministerium für Umwelt, 2018), a portal that provides spatial data for rural development in North Rhine-Westphalia.

Germany's new electronic ID card is launched (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018c). The new eID card in credit card format replaces the existing national identity card and offers more functions than the current conventional ID, e.g. online functions, online identification, to deal with government authorities and private service providers (online shopping, banking). Selected IT companies to provide cardholders with an IT-Security toolkit to facilitate and ensure a secure use of

the new eID card. It contains a secure chip card reader, information about the use of the new eID and the electronic health cards, as well as assembled components made by the companies, such as access to web-based applications or antivirus software.

The 115 services, the single phone number for contacting government authorities in Germany is made available in Magdeburg, and a further 50 federal agencies are to join.

2011

The IT Planning Council begins with the implementation of the new National Government Strategy ("IT-Planungsrat - Nationale E-Government Strategie - Nationale E-Government Strategie (NEGS),") The members of the IT Planning Council agree on the joint development of an eID Strategy and on the simple and secure use of the services.

The "Act to regulate De-Mail services and amendments to other legislation" enters into force (Bundesministerium der Justiz und für Verbraucherschutz, 2011). The De-Mail allows confidential documents and messages to be sent and traced online. De-Mail providers must be accredited, and include Deutsche Telekom AG, GMX.DE, WEB.DE, and Mentana Claimsoft GmbH.

Germany's e-tendering cross-platform communication standards project "XVergabe" is online and has an official website (Innern, 2018). The platform allows the exchange of documents and data between the bidders and the e-tendering platforms.

2012

The German Federal Ministry of the Interior announces the launch of a new eGovernment initiative that provides the federal, state and local authorities with the necessary information and implementation support for De-Mail and the new identity card (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018d).

2013

The 115 telephone number (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018a) for contacting government authorities in Germany is to be expanded and made available to 27 million citizens in 340 municipalities. The prototype of GovData (Hamburg, 2018), the national data portal, goes online, providing citizens and businesses with easier access to and allows reuse of administrative data.

The federal parliament passes the eGovernment Act (Act on the promotion of eGovernment and to amend other provisions -eGovG) (Bundesministerium der Justiz und für Verbraucherschutz, 2013a). This makes administrative matters easier for citizens and business, as authorities can be contacted at all times. Authorities are encouraged to offer citizens and businesses an electronic payment option, electronic access to documents, electronic files management and extensive online information. Citizens have more opportunities to use the eID function of the new identity card and use them to access online forms. The IT Planning Council kicks-off the "Digital Agenda Germany" (IT-Planungsrat, 2014) that is to improve cooperation between the different levels of government in the IT sector.

3.7.1.4   2014-2017

2014

The National IT summit on "Work and life in times of digitisation -Together. Innovative. Self-determined." (Bundesministerium für Wirtschaft und Energie, 2014) discusses several topics raised in the digital agenda and the pilot project "Model Community eGovernment" (Die Bundesregierung, 2016) is kicked-off. Cornelia Rogall-Grothe, State Secretary at the Federal Ministry of the Interior and Federal Government Commissioner for Information Technology, pointed out the importance of secure e-government services. Furthermore, she announces the new ID-application, which can be used for a quick and easy electronic identity-verification. Furthermore, the German government plans to improve the universal broadband coverage in order to implement an effective digital infrastructure.

The IT Planning Council (IT-Planungsrat) sets its work priorities, including the Digital Agenda. The programme "Digital Government 2020", is to promote eGovernment and modernise the administration. The Federal Cabinet approves the Digital Agenda (The Federal Government Germany, 2014), and adopts the "National Action Plan to implement the G8 Open Data Charter" to achieve the central goal of the G8 Open Data Charta, "Open Data by default" (Federal Ministry of the Interior, 2014). All federal agencies are to publish at least two datasets as open data by the 1st quarter of 2015. The project "Digital Signature" ('screening of Laws") is a critical review, if possible, of the deletion of requirements, and aims to lead to simpler and user-friendly electronic administrative proceedings. The Federal Ministries will then be able to give binding opinions on which Federal administrative legal provisions are dispensable. The Länder, municipalities, and associations of municipalities have the possibility to comment on the respective provisions.

The single phone number for contacting government authorities in Germany, 115, has new channels.

2015

The Ministry of the Interior is accessible via De-Mail (Bundesministerium des Innern für Bau und Heimat Deutschland, 2018b) and further German federal public administrations are to gradually use the De-Mail gateway service. At the same time, the German Federal Office for Information Security (BSI) validates ownCloud (Informationstechnik, 2015) and the German Ministry of the Interior presents "The Federal Government's National Action Plan to implement the G8 Open Data Charter" and provides the meta-data portal GovData (Federal Ministry of the Interior, 2014) to act as a central open data portal for federal, state and local government, as well as engage with members for civil society, business, the media and the research community.

2016

The IT -Planning Council adopts the updated National eGovernment Strategy (IT Planning Council, 2018).

The Cabinet decides to launch a virtual platform (Bürgerportal) (IT Planning Council, 2018) for all eGovernment services. To set up the Bürgerportal, the Basic Law (Art. 91C (5)) (Bundestag, 2017) that regulates the financial relations between the Federal Government and the federal states is amended. The Federal Government adopts a new Cyber Security Strategy (Cyber-Sicherheitsstrategie für Deutschland 2016) (Federal Ministry of the Interior Building and Community, 2018a), a cross-departmental strategy to regulate cyber security.

The German government also launches an online study allowance system for students (BAföG) (Bundesverwaltungsamt, 2018a). Germany's Federal Ministry of Transport and Digital Infrastructure (BMVI) makes funds available to bring fast internet to underserved areas (Infrastruktur, 2018).

2017
Germany is among the European countries that announce its intention to join the Open Government Partnership (Open Government Partnership, 2018)

The Act for the improvement of Online Access to Administration Services (Bundesministerium der Justiz und für Verbraucherschutz, 2017b), so that at federal, länder, local level, governments are required to provide all administrative services online within 5 years, through mutually linked online portals and single-user access.

Germany amends the Federal Data Protection Act to comply with the basic data protection ordinance and implementing an EU Data Protection Directive. The amendments will come into force in May 2018. Germany implements the eID scheme in accordance with the eIDAS regulation to the European Commission – this allows people and businesses to use their e-identification to digitally authenticate themselves in order to use online services in the EU (B. f. S. i. d. Informationstechnik, 2018b).

3.7.2 Summary
The digital agendas show that over the years the increasing collaboration between the different German government services, projects, levels, agencies, and other organisations has increasingly emphasised as well as the need to implement measures that impact the whole country in a coordinated and effective manner. This also extends to the need for collaboration at European and international levels. As is pointed out in the Digital Agenda 2014-2017, the rules and conditions for the global network cannot be created solely at the national level but supported at European and international level. Germany aims to participate actively in the relevant European and international negotiations and discussions about network development, network neutrality, the digital single market, data protection, the protection of intellectual property on the Internet, IT security and research.

In Digital agenda 2010, the Federal Government aims to increase the level of digital integration, to digitise transmission paths and to introduce the electronic health card. Based on the "Hightech-Strategie für Deutschland" (High-Tech Strategy for Germany), the iD2010 focuses on the future development of this strategy as part of a policy area that supports all the industry sectors and society. What is particular about this digital agenda is that it recognises that international and national activities must be part of national policy-making and that most ICT policy issues require cooperation at European and global level, for example, the telecommunication and frequency policies, ICT research, anti-spamming measures, as well as consumer, copyright and youth protection in the context of new media. Thus, it suggests the need to support the EU and the implementation of the EU's "i2010 – A European Information Society for Growth and Employment" strategy. In the digital agenda 2014-2017 The German Bundestag, the Länder and local authorities, civil society, industry and science, as well social partner (such as those responsible for data protection), and representatives of the Internet community are called to further develop and implement the Digital Agenda, for example at the Alignment of the IT Summit with the Digital Agenda. In addition, the Federal Government's "Digital Agenda" steering committee is to include the State Secretaries of the Federal Ministry for Economic Affairs and Energy

(the Ministry charged with special responsibility for the Digital Agenda within the Federal Government), the Federal Ministry of the Interior, and the Federal Ministry of Transport and Digital Infrastructure. The steering committee will involve the other relevant federal departments in the implementation and further development of the Digital Agenda. The "Network Alliance for a Digital Germany" is a forum established by the government for comprehensive discussion by telecommunications and network operators of the conditions for incentivising market investments. It acts both as a forum for new ideas and as a discussion platform. By autumn 2014, the Network Alliance for a Digital Germany presents a roadmap out-lining all action areas relevant for digital expansion together with key milestones for network expansion. The Digital Strategy 2025 emphasises that innovation projects are to support business, SMEs and industry, but need to be supervised and regulated, recommending that a federal Digital Agency carry out this supervising task.

3.8   A timetable of policies and policy changes and digital agendas in Germany

Table 6: Timetable of policies, policy changes, and digital agendas

Year	Policy/Process/Activity/Event	Description/Implication
1997	Digital Signature Act	*The purpose of this Act is to establish general conditions under which digital signatures are deemed secure and forgeries of digital signatures or manipulation of signed data can be reliably ascertained (German Law Archive, 1997).* http://germanlawarchive.iuscomp.org/?s=Digital+Signature+Act%09&submit=
2004	Telekommunikationsgesetz	*The purpose of this law is to promote competition in the telecommunications sector and efficient telecommunications infrastructures through technology-neutral regulation and to ensure adequate and sufficient services throughout the country (Bundesanzeiger, 2004).* http://www.gesetze-im-internet.de/tkg_2004/index.html
2005	Federal Act Governing Access to Information held by the Federal Government (Freedom of Information Act)	*Everyone is entitled to official information from the authorities of the Federal Government in accordance with the provisions of this Act. The authority may furnish information, grant access to files or provide information.* http://www.bfdi.bund.de/SharedDocs/IFG/IFGBundesgesetz UndGebuehrenO/TextIFG_EN.pdf?__blob=publicationFile
2005	eCard Strategy	*The eCard strategy aims to achieve the harmonisation of the various federal government projects that use smart cards (eCards) with authentication. Includes the electronic health card, electronic identity card, electronic passport, electronic tax return, electronic proof of income (Kowalski, 2006).* https://subs.emis.de/LNI/Proceedings/Proceedings108/gi-proc-108-008.pdf
2005	BundOnline	*Over 440 Federal Administration services are online, 244 for businesses.* *Link not available.*

2006	Action Programme: 2006 "Information Society Germany"	*Outlines the 36 objectives to be reached (mainly by 2005, although some objectives to be reached by 2010), focusing on the digital economy, research and development of technology, education and training, e-government, e-card initiative and digital signatures, e-health, and IT security (The Federal Government of Germany, 2003).* http://staff.uks.ac.id/%23LAIN%20LAIN/KKNI%20DAN%20AIPT/Undangan%20Muswil%2023-24%20Jan%202016/references/kkni%20dan%20skkni/referensi%20int%20dan%20kominfo/ICT%20competency/GERMAN/bmbf/aktionsprogramm_2006_gb.pdf
2006	Government Programme: Zukunftsorientierte Verwaltung durch Innovation	*Focuses on the modernisation of public administration by ensuring staff development; developing control mechanisms for different processed in the authorities; ensuring transparency; setting up a process-oriented organisation; developing the e-government portfolio; ensure the government is a partner in national and international networks (Bundesministerium des Innern Deutschland, 2006).* https://www.verwaltung-innovativ.de/SharedDocs/Publikationen/Regierungsprogramm/regierungsprogramm_zukunftsorientierte_verwaltung.pdf?__blob=publicationFile&v=
2006	Law on re-use of Public Sector Information	*Law that applies to the re-use of information held by public authorities, in particular for the provision of products and services of the digital economy (Bundesministerium der Justiz und für Verbraucherschutz, 2006)* .http://www.gesetze-im-internet.de/iwg/index.html
2006	Government Programme: eGovernment 2.0	*Strategic paper, sets the aims regarding e-government in Germany: Demand-oriented, qualitative and quantitative expansion of the Federal eGovernment services; Electronic cooperation between business and industry; Management through common process chains; Introduction of an electronic identity card and Development of E-Identity concepts; Secure communication infrastructure for citizens, businesses and administrations (Bundesministerium des Innern Deutschland, 2009).* https://www.verwaltung-innovativ.de/SharedDocs/Pressemitteilungen/1070448_programm_e_government_2_0.pdf?__blob=publicationFile&v=2
2009	Changes in the German "Grundgesetz"	*Article 91c ensures the simplification of IT- bodies and decision-making processes, thus increasing their effectiveness and enabling their adaptation to the needs of the fast evolving technical progress. The amendment describes the legal requirements for complete and media-uninterrupted electronic communication between German authorities in a federal context, the economy and the citizen (Grundgesetz, 2018a).* https://www.gesetze-im-internet.de/gg/art_91c.html

2009	Law on the combination of information technology networks of federal and state governments	*The Federal Government establishes a network to connect the IT networks of the Federal Government and the Länder. The Federation and the Länder shall cooperate for this purpose in accordance with the provisions of this Act; in particular, they shall make the necessary common specifications for the connection network (Bundesministerium der Justiz und für Verbraucherschutz, 2009).* http://www.gesetze-im-internet.de/it-netzg/BJNR270600009.html
2010	iD2010 Information Society Germany Action Programme 2010	*Describes the aims following on from the 2006 Action Programme: convergence, mobility and networked systems (to improve the legislative and technical Framework); online services, digital integration (accelerate the integration of citizens and government into the information society); security in the information society (create a secure information society); implementation of research and development results (cultivate innovation potential by ICT research, ICT investment, exploit results) (Federal Ministry for Economics and Technology, 2006).* https://www.bmwi.de/Redaktion/EN/Publikationen/information-society-germany-id2010.pdf?__blob=publicationFile&v=1
2010	Aktionsplan Deutschland Online 2010	*Describes the set-up, role, tasks and projects of the IT-Planungsrat (IT Planning Council).* http://www.it-planungsrat.de/SharedDocs/Downloads/DE/Projekte/Aktionsplan_2010.pdf?__blob=publicationFile
2010	National eGovernment Strategy (IT Planungsrat)	*Describes the six goals and objectives of the National E-Government Strategy and shows exemplary fields of action for the objectives, whereby the principle of economic efficiency and cost-saving to be taken into account: Orientation towards benefits for citizens, business and administration; Economy and efficiency; Transparency, data protection and data security; Social participation; Sustainability and sustainability; Powerful IT support; (includes a description of the Implementation and financing of the national eGovernment strategy) (IT-Planungsrat, 2010b)* http://www.cio.bund.de/SharedDocs/Publikationen/DE/Aktuelles/nationale_e_government_strategie_beschluss_20100924_download.pdf?__blob=publicationFile
2011	De-Mail Services	*De-Mail services are services on an electronic communications platform that provides secure, ensure confidential and verifiable business transactions for everyone on the Internet. The De-Mail service must provide secure registration, the use of a P.O. Box and shipping service, as well as the use of the De-Mail service for secure electronic mail and the use of a directory service. It is to enable identity verification and document storage services. A De-Mail service is sent from one a service provider accredited to this law (Bundesministerium der Justiz und für Verbraucherschutz,*

		2011). https://www.gesetze-im-internet.de/de-mail-g/De-Mail-G.pdf
2013	Act to promote electronic government (E-Government Act - EgovG)	*This Act applies to administrative activities under public law of the federal authorities, including bodies, institutions, and foundations under public law which are directly accountable to the Federal Government. It also applies to the administrative activities of authorities of the Länder, local authorities, local authority associations and other legal entities under public law which are subject to Land supervision in executing federal law (Bundesministerium der Justiz und für Verbraucherschutz, 2018).* http://www.gesetze-im-internet.de/egovg/
2014	Digital Agenda 2014 - 2017	*(The Federal Government Germany, 2014)* *https://www.digitale-agenda.de/Content/DE/_Anlagen/2014/08/2014-08-20-digitale-agenda.pdf;jsessionid=473B3C91BB5615BAE53089FEB2415B19.s5t2?__blob=publicationFile&v=6*
2014	National Action plan for Implementing the G8 open Data Charter	*This Action Plan takes into account the results already achieved in the promotion of Open Data and Open Government under the government programme "Networked and Transparent Administration" of the 17. Legislation period, the control project "Promotion of Open Government" of IT - planning council and the development of the prototype of the data portal GovData (http://www.govdata.de/). The Action Plan describes the implementation of the 5 G8 Open Data principles by 2015 and beyond (Bundesministerium des Innern Deutschland, 2014)* https://www.bmvg.de/resource/blob/20686/55536214b782b9d04c7ae29b0f12c29a/g-01-nationaler-aktionsplan-open-data-data.pdf
2016	Digital Strategy 2025	*The Digital Strategy 2025 programme demonstrates how the Federal Ministry for Economic Affairs and Energy (BMWi) has been setting priorities in recent years, developing capabilities and using new tools to make a digitised Germany possible. In this strategy the aim is to show which areas require immediate action, to enable the German economy to respond to new challenges, ensure its leading position both in quality and technology. In particular, however, we want to demonstrate that the era of isolated solutions must come to an end. Only by working across organisations, in a network, and in a concerted effort as a community and society, will we be able to find and implement answers to questions arising in the immediate future. Businesses, unions, the scientific community, the government, and a motivated public are already developing approaches and projects for the digital transformation in Germany. Particular focus is on digital infrastructure, future work opportunities, data security,*

		future-oriented education and the legal framework (Federal Ministry for Economic Affairs and Energy, 2016a). https://www.de.digital/DIGITAL/Redaktion/EN/Publikation/digital-strategy-2025.pdf?__blob=publicationFile&v=9
2017	Ordinance on Electronic Billing in Federal Public Procurement	*This Regulation applies to all invoices with which a public delivery or service is billed for (Die Bundesregierung, 2017)* https://www.bmi.bund.de/SharedDocs/downloads/DE/gesetztestexte/e-rechnungsverordnung.pdf?__blob=publicationFile&v=3
2017	Ordinance for a transitional arrangement for the opening of electronic legal transactions with fine authorities in the area of responsibility of the Federal Ministry of Transport and Digital Infrastructure	*The submission of electronic documents to the Federal Ministry of Transport and Digital Infrastructure and the authorities for the payment of fines 2018-2020 (Bundesministerium der Justiz und für Verbraucherschutz, 2017c)* http://www.gesetze-im-internet.de/ervbu_behbmvi_v/BJNR403200017.html
2014	"Gesetz zur Umsetzung der Richtlinie 2014/55/EU über die elektronische Rechnungsstellung im öffentlichen Auftragswesen*"	*For the issue, transmission and reception of electronic invoices after the fulfilment of a public contract (Federal Ministry for Economic Affairs and Energy, 2018k)* https://www.bgbl.de/xaver/bgbl/start.xav?start=%2F%2F*%5B%40attr_id%3D%27bgbl117s0770.pdf%27%5D#__bgbl__%2F%2F*%5B%40attr_id%3D%27bgbl117s0770.pdf%27%5D__1526925881707
2017	Data privacy: "Verordnung über das automatisierte Verfahren zur Auskunft über Kundendaten nach § 112 des Telekommunikationsgesetzes"	*Ordinance on the automated procedure for information on customer data in accordance with § 112 of the Telecommunications Act (Bundesministerium für Wirtschaft und Energie, 2013)* https://www.juraforum.de/gesetze/kdav/
2017	The legal framework for the programme 'intelligent energy - digital agenda for the Energy"	*Governs the necessary framework for participants of the and programme 'intelligent energy - digital agenda for the Energy". In particular, it regulates the reimbursement of economic disadvantages which participants arise as a result of the project activity (Bundesministerium der Justiz und für Verbraucherschutz, 2017d)* https://www.gesetze-im-internet.de/sinteg-v/SINTEG-V.pdf
2017	Zukunftsoffensive Gigabit-Deutschland	*Alliance and the Federal Ministry of Transport and Digital Infrastructure (BMVI) declare the need to install fibre infrastructure on a large scale. Al together the Network Alliance plans to invest around EUR 100 billion until 2023 in order to realise gigabit capable converged infrastructures by 2025 (Bundesministerium der Justiz und für Verbraucherschutz, 2017b).* http://www.bmvi.de/SharedDocs/DE/Publikationen/DG/netzallianz-digitales-deutschland.pdf?__blob=publicationFile Network
2017	White Paper on Digital Platforms	*Aims and measures: to boost companies" and people's willingness to take risks, whilst also establishing trust in the*

		digital future of the economies of Germany and Europe. The growth stimuli must primarily come from industry. The state should exercise an additional, positive, influence on developments (Federal Ministry for Economic Affairs and Energy, 2016b). https://www.bmwi.de/Redaktion/EN/Publikationen/weissbuch-digitale-plattform-kurzfassung-eng.pdf?__blob=publicationFile&v=5
2017	5G strategy for Germany	*Federal Government publishes its position as a lead market for 5G applications and to support the rapid and successful introduction of 5G technology:* • *step up network rollout* • *Make available frequencies based on demand* • *Promote cooperation between telecommunications and user industries; take account of requirements, ideas and solutions of the affected user industries in standardisation* • *Targeted and coordinated research* *Initiate 5G in towns and cities early on (The Federal Government Germany, 2017a)* https://www.bmvi.de/SharedDocs/EN/publications/5g-strategy-for-germany.pdf?__blob=publicationFile
2017	Online Access Act (Onlinezugangsgesetz–OZG)	*To expand and improve eGovernment services and to provide easy, secure and mobile access for citizens and businesses.* *The OZG obliges the federal government and the Länder to offer their administrative services online within five years and to link their respective portals in a portal network and allow access via a single user account (Bundesministerium der Justiz und für Verbraucherschutz, 2017b).* https://www.gesetze-im-internet.de/ozg/OZG.pdf
2017	Funding guideline on connected and automated driving	*Focuses on:* *Automated and networked driving is a mobility revolution that holds enormous potential for road traffic in the 21st century.* *In order to tap this potential, in September 2015 the German government adopted the 'strategy for Automated and Networked Driving - Remaining a Lead Market, Becoming a Lead Supplier, Initiating Regular Operations" (Strategy AVF), which it is now consistently implementing under the leadership of the Federal Ministry of Transport and Digital Infrastructure (BMVI). In July 2016, the BMVI published a five-year "Research Programme on Automation and Networking in Road Traffic "1. The programme aims to examine technological, transport and social policy issues. This funding guideline is part of the research programme and aims to specifically promote innovative solutions in the context of the strategy in order to support the introduction of automated driving functions and networked transport systems in Germany. Projects funded within the framework of this funding directive should provide considerable knowledge on how these can be integrated into the existing transport system, how functional safety can be*

		ensured over the entire service life of the vehicle and which factors can contribute to broad social acceptance (Bundesanzeiger, 2016b). https://www.bundesanzeiger.de/ebanzwww/wexsservlet?page.navid=to_bookmark_official&bookmark_id=xenVjD85L1160DDYF9u
2017	The Federal Government's action plan on the report by the Ethics Commission on Automated and Connected Driving (Ethical rules for self-driving computers)"	*Includes:* • *The amendment of the Road Traffic Act to cover the operation of conditionally and highly automated driving functions;* • *The adaptation of German road traffic law to the technological advances made in the field of automated systems will be automated and connected systems,* • *The Federal Government will expedite the development of an appropriate regulatory framework for the programming of self-driving computers that mandates the principles governing unavoidable accident situations set out in the ethical guidelines (The Federal Government Germany, 2017c).* http://www.bmvi.de/SharedDocs/EN/publications/action-plan-on-the-report-ethics-commission-acd.pdf?__blob=publicationFile
2017	Digital Agenda: IT Strategy of the federal Administration	*Specifies the following activities* • *Consolidation, standardization and bundling of demand* • *Digitization: Replacement of paper-based administrative work by means of electronic* • *Systems in particular digitisation of administrative processes and extension of* • *eGovernment and the electronic finance* • *Strengthening the ability to innovate through digital systems and provide modern infrastructure for administration* • *Implementation of information security, IT* • *and data protection* • *Development of IT Personnel* • *Increase the attractiveness of the Federal Administration as an employer* • *Specialist personnel* • *Federal control and construction of a transparent report and control system (Der Beauftragte der Bundesregierung für Informationstechnik, 2017)* https://www.cio.bund.de/SharedDocs/Publikationen/DE/Strategische-Themen/it_strategie_der_bundesverwaltung_download.pdf?__blob=publicationFile
2018	Government Coalition agreement (14. March 2018)	*Includes* • *A state minister for digital affairs attached to the Chancellor 's Office* • *EUR 10-12 billion Gigabit Investment Fund was included in the new Federal (to be spent by 2021)*

		• *The legal right to fast internet from 1 January 2025, to be designed by 2019* • *Direct fibre connections for socio-economic drivers (schools, hospitals, business parks etc.) by 2021 (Die Bundesregierung, 2018a)* https://www.bundesregierung.de/Content/DE/StatischeSeite n/Breg/koalitionsvertrag-inhaltsverzeichnis.html
2018	New Federal Data Protection Act ("BDSG ")	*Enters into force on 25 May 2018 and bring substantial changes to the current Federal Data Protection Act ("BDSG") in order to align national data protection law with the General Data Protection Regulation (Regulation (EU) 2016/679, "GDPR") and make use of the opening clauses in the GDPR and the Directive (EU) 2016/680 on data protection in criminal justice (Bundesministerium der Justiz und für Verbraucherschutz, 2017a).* https://www.gesetze-im-internet.de/englisch_bdsg/

4   Case 2: Italy

4.1   Italy's current Digital Economy and Society Index

This case study begins describing the current situation of digital transformation in Italy, comparatively to the other 27 European countries, through the lens of the Digital Economy and Society Index (DESI). DESI is a metric developed by the European Commission, it is presented yearly in the Europe Digital Project Report (EDPR)[1]. Scope of the case study is hence to explain this state of things collecting various policy documents and enlightening the changes in digital strategy over time.

DESI is a composite index that summarises relevant indicators about European countries' digital performance and tracks the evolution of EU member states in digital competitiveness. In 2018, Italy ranks 25th out of 28 EU Member States, belonging to the low-performing cluster of EU countries together with Romania, Greece, Bulgaria, Poland, Hungary, Croatia, Cyprus, and Slovakia. Indeed, there are 9 positions between Italy and Slovenia, the median-ranked country, and 23 positions between Italy and Denmark, the ranking-leader in 2018. As Table 1 demonstrates, Italy made some progress over the last year and increased its DESI score, but its DESI ranking remained unchanged.

Table 7: Comparative DESI Scores and Ranking

	ITALY Rank	ITALY Score	CLUSTER Average Score	EU 28 Average Score
DESI 2018	25	44.3	43.5	54.0
DESI 2017	25	41.4	40.4	50.8

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[1] https://ec.europa.eu/digital-single-market/en/news/europes-digital-progress-report-2017

The DESI score is computed considering the state of the art for each country on five dimensions: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology, and Digital Public Services. In 2018 Italy ranks poorly in all five dimensions, all below the European average. As Figure 1 shows, the score in all subdimensions is slowly increasing in time. Relevant lags are still present in the fields of Connectivity, Human Capital, and Use of the Internet. We present a comparative summary of the five dimensions in the following Table 2 and briefly comment the relevant insights for each dimension.

Table 8: DESI Dimensions in 2018

	ITALY Score (Rank)	CLUSTER Score	EU Score
CONNECTIVITY	52.8 (26)	55.0	62.6
HUMAN CAPITAL	40.8 (25)	42.2	56.5
USE OF INTERNET	37.4 (27)	41.0	50.5
INTEGRATION OF DIGITAL TECHNOLOGY	36.8 (20)	29.2	40.1
DIGITAL PUBLIC SERVICES	52.5 (19)	48.0	57.5

With an overall Connectivity score of 52.8, made of 9 sub-indicators, Italy ranks 26th among the EU countries. The areas of major criticality are the fixed broadband take-up (57% of households with respect to the EU average of 75%), the fast broadband take-up (12% of households with respect to the EU average of 33%), and the ultra-fast broadband coverage and take-up (respectively 22% and 4.8% with respect to the EU averages of 58% and 15.4%). Nevertheless, Connectivity is the subdimension in which Italy made more progress in the last four years, as Figure 1 shows clearly.

The Human Capital dimension, made by 4 subdimensions, presents instead a score of 40.8 and Italy ranks 25th among the EU countries. All the four dimensions are far below the average. Italy shows a 69% of Internet users (81% in the EU), a 44% of individuals with at least basic digital skills (57% in the EU), a 2.6% of ICT specialists (3.7% in the EU), and 13.5 graduates in Science, Technology, Engineering and Mathematics over 1 000 individuals aged 20-29 (19.1 in the EU). These data represent a significant barrier to the development of a strong demand and supply of digital services in Italy.

With an overall score of 37.4, the Use of Internet represents the worst DESI dimension for Italy, raked at the 27th place. Italy is below the EU average in six out of seven indicators; only 56% of Italians use Internet for news, 43% for banking services, and 44% for shopping (respectively compared to 72%, 61% and 68% in the EU). This is probably the result of the low performance in the Human Capital subdimension.

As far as Digital Integration is concerned, the Italian score is 36.8 and the country ranks 20th among the EU countries. Large enterprises show a good level of integration in business solutions and e-commerce. On the contrary, Small and Medium Enterprises (SMEs), that constitute the core of the Italian economic system, is struggling to keep pace with the EU competitors; for example, only 7.9% of the Italian SMEs sell online compared to 17.2% in the EU.

With an overall score of 52.5, Digital Public Service is the best-performing dimension of DESI for Italy, ranked 19th among the EU countries. This positioning is mainly due to a good level of open data and e-health services (both ranked at the 8th place) that is unfortunately offset by a very poor performance in the e-Government Users subdimension, where Italy ranks at the last place in Europe.

Figure 2: Italian DESI in time by main dimensions[2]
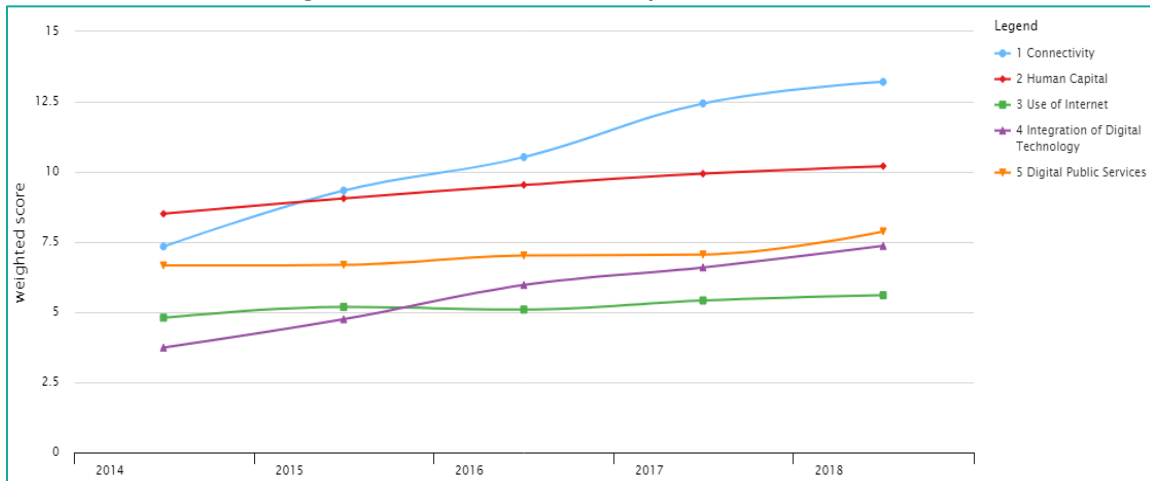
4.2   Data collection

This section summarises the relevant documents collected that will be analysed in the following sections, entailing strategic documents, policy documents, and press releases. Due to the Italian legislative tradition, based on a strong and persistent administrative paradigm (Capano, 2003), digital strategies were, especially in the past, included into laws without producing or disclosing to the public official strategic documents. Even the first Italian Digital Agenda (ADI) was introduced in 2012 by the means of a Legislative Decree. This path has been changed since the establishment of the Agency for a Digital Italy ("Agenzia per l'Italia Digitale" (AgID), in Italian) in 2012 and the settlement of the Team for Digital Italy in 2016. Furthermore, due to the complexity and the timing of Italian legislative procedures, many digital policies are part of broader legislative acts treating also other subjects. For this reason, it is not always easy to identify relevant digital transformation policies through keyword-searches in online legislative archives.

4.2.1   Strategic Documents and Digital Agenda

The first e-Government plan was introduced in 2000 but, as well as a series of plans for the digitisation of Italian Public administrations produced before 2014, it is not available online on official websites. The following Table 3 reports the main official documents related to digital transformation strategies in Italy available on official websites.

Table 9: Italian Digital Agendas and Strategies

Year	Digital Agenda
2007	Toward the National E-Government System: Strategic Lines
2014	Strategy of Italy for the Ultra Broadband
2014	Strategy for Digital Growth 2014-2020
2015	Strategy of the National Coalition for Digital Skills

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[2] Data from the European Commission.

| 2017 | Three-year plan for ITCs in Public Administration 2017-2019 |

4.2.2   Policy Documents regarding Digital Transformation

With the limitations presented at the beginning of the section, the following Table 4 reports policies and bills related to digital transformation in Italy. Following the Italian administrative tradition, the principal legislative tool to implement digital transformations within the public domain is the Code of Digital Administration ("Codice dell'Amministrazione Digitale" (CAD) in Italian), revised and updated many times since its first adoption in 2005.

Table 10: Policies and bills related to digital transformation in Italy

Year	Policy	Description/Implication
2005	Legislative Decree 7 March 2005, n. 82	*First introduction of the Code of Digital Administration (CAD).*
2006	Legislative Decree 4 April 2006, n. 159	*Integrations and corrections to the Code of Digital Administration.*
2009	Legislative Decree 1 December 2009, n. 177	*The National Centre for ICTs in Public Administration (CNIPA) becomes DigitPA.*
2010	Legislative Decree 30 December 2010, n. 23	*Major changes and integrations to the Code of Digital Administration (the "New Code of Digital Administration").*
2012	Legislative Decree 9 February 2012 (art. 47)	*Establishment of a steering committee to coordinate the implementation of the Italian Digital Agenda.*
2012	Legislative Decree 22 June 2012, n. 83 (art. 18-22)	*Establishment of AgID, the agency responsible for the implementation of the Italian Digital Agenda.*
2012	Legislative Decree 7 May 2012, n. 52	*eProcurement advances to make government spending more efficient.*
2012	Legislative Decree 6 July 2012, n. 94 and 95	*eProcurement advances to make government spending more efficient.*
2012	Legislative Decree 18 October 2012, n. 179	*Measures to implement the Italian Digital Agenda in the fields of digital identity, open data, education, health, justice, digital-divide, eCurrency, and business innovation.*
2016	DPCM 16 September 2016	*Establishment of the Team for Digital Transformation chaired by Diego Piacentini.*
2016	Legislative Decree 26 August 2016, n. 179	*Changes and integrations to the Code of Digital Administration*
2017	Legislative Decree 13 December 2017, n. 217	*Changes and integrations to the Code of Digital Administration.*

In addition to the Code of Digital Administration, the other crucial policy document is the Legislative Decree 18 October 2012, n. 179, that implemented for the first time digital transformation measures in a comprehensive manner.

4.2.3   Government Press Releases

In Italy, a digital archive of past Government press releases open to public consultation does not exist. Only the press releases related to the incumbent Government are available online but, as far as the incumbent Government took place in June 2018, no press releases regard digital transformation. Instead, AgID reports its official press releases online since 2015[3]. Since March 2015, the governmental agency has disclosed 42 press releases, all reported in the following Table 5.

Table 11: Press releases 2015-2018

Year	Press Release	Topic
28-6-2018	https://www.agid.gov.it/sites/default/ files/repository_files/firmato_il_primo _accordo_per_velocizzare_lattuazione _dellagenda_digitale_sui_territori_1.p df	*Signed the first deal agreement to speed up the implementation of Digital Agenda over the territories.*
22-6-2018	https://www.agid.gov.it/sites/default/ files/repository_files/comunicato_sta mpa_dis_agid_confindustria.pdf	*The Information Service encourages public-private synergies in cybersecurity: AgID and Confindustria sign a protocol of agreement.*
7-9-2017	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c omunicato_stampa_-_ia.pdf	*The taskforce on Artificial Intelligence to better public services becomes operative.*
31-5-2017	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/a pprovato_il_piano_triennale_una_stra tegia_allunisono_per_la_trasformazio ne_digitale.pdf	*The strategic three-year plan 2017-2019 is adopted: a common strategy for digital transformation.*
14-4-2017	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/_ com_stampa_e.bollo_agid-ic-ae.pdf	*Agenzia delle Entrate (the Revenue Agency), AgID and Infocamere present the @e.bollo, the online payment of administrative fees.*
20-9-2016	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/a gid_quirinale_premio_nazionale_inno vazione_2016.pdf	*At Quirinale Palace, AgID receives the "National Award for Innovation for 2016"*
28-7-2016	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c omunicato_linee_guida_design_mb.p df	*Simple, clear and inclusive services: the guide for public administrations enters the consultation phase.*
26-7-2016	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/s pid_accordo_con_mise_e_mibact_per _accesso_unico_a_wi- fi_pubblico._aruba_e_sielte_nuovi_id entity_provider_da_settembre.pdf	*SPID: agreement with MISE and MIBACT to unique access to public wi-fi. Aruba and Sielte new identity provider from September.*
4-7-2016	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/li nee_guida_design_siti_web_regioni_c omuni_0.pdf	*Guidelines for designing Regions and Municipalities' websites: a common language to speak to citizens.*

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[3] Available at the following link: https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/comunicati-stampa

Year	Press Release	Topic
20-6-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cittadino_digitale_dopo_spid_inps_attiva_anche_pagopa.pdf	*"Digital Citizen": after SPID, INPS activates also PagoPA.*
24-5-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/consip_e_agid_sottoscritti_i_contratti_per_la_connettivita_e_aggiudicati_i_primi_due_lotti_della_gara_per_i_servizi_cloud.pdf	*Consip and AgID sign the contracts for the connectivity and assigned the first two slots for Cloud services in Public Administration.*
29-4-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/spid_al_via_la_campagna_istituzionale_per_presentare_il_sistema_pubblico_di_identita_digitale_agli_italiani.pdf	*SPID: the institutional campaign to present the Public System of Digital Identity has started.*
11-4-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/spid_al_via_laccesso_con_ununica_identita_digitale_anche_ai_servizi_di_inail_emilia_romagna_friuli_venezia_giulia_e_comune_di_venezia.pdf	*SPID: single digital identity access available for INAIL, Emilia Romagna, Friuli Venezia Giulia, and Comune di Venezia.*
17-3-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/inps_e_agid_insieme_per_avvicinare_i_cittadini_ai_servizi_digitali_della_pa_i_cittadini_non_digitalizzati_verranno_invitati_a_dotarsi_di_spid_attraverso_linvio_a_casa_delle_buste_con_la_simulazione_della_pensio.pdf	*INPS and AgID together to make citizens closer to digital public services. Citizens will be invited to join SPID through a mail about their future pension.*
8-3-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/comunicato_stampa_-_spid.pdf	*SPID: from March 15 the first digital identities, by June 600 services connected.*
22-2-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_linee_guida_fp_-_2202_0.pdf	*Guidelines for websites of the national public administrations and Ministries.*
14-1-2016	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/comunicato_stampa_14012016.pdf	*The workshop "The Implementation of the Italian Digital Agenda" is available online[4].*
19-12-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/comunicato_accreditamento_spid_1.pdf	*SPID: InfoCert, Poste Italiane and Telecom Italia are the first digital identity providers.*
17-12-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_competenze_digitali_1712.pdf	*Digital skills: the new strategy of the Italian coalition.*
14-12-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/c	*Single Digital Registry: the first two municipalities join the project today.*

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[4] Link to the workshop is https://www.youtube.com/watch?v=DTR5Itdd1b0.

Year	Press Release	Topic
	s_anagrafe_unica_primi_comuni_0.pdf	
25-12-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_m2m_2511.pdf	*First meeting of the permanent Committee for communication services M2M.*
21-11-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_linee_guida_design_siti_per_pa.pdf	*Guidelines for designing public websites: the pilot project for a common image is governo.it*
5-10-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_spid_incontro_cittacomuni_0510.pdf	*SPID: meeting with Metropolitan Cities and big Municipalities*
29-9-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_fatturazione_elettronica_31_agosto_2015.pdf	*E-invoicing: about 90% of the files managed by the SdI is forwarded correctly to public administrations.*
21-9-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_spid_incontro_amministrazioni_0.pdf	*SPID and e-payments: meeting with central public administrations*
15-9-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_accreditamento_spid_15.pdf	*SPID: Digital Identity providers start the accreditation process.*
14-9-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_cloud_for_europe_.pdf	*Cloud for Europe: AgID closes the first part of the tender.*
31-7-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/agid-cs-luglio-2015-fatturazione-elettronica-v2.pdf	*E-invoicing: in June the lowest level of files discarded by the SdI.*
28-7-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/comunicato_agid_-_garante_spid.pdf	*AgID and Garante Privacy present the technical requirements for activating SPID.*
26-7-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_report_fe_maggio_2015_0.pdf	*Lower and lower the margin error of e-invoicing, still 340 subjects over 22,442 are not registered on IPA.*
8-6-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_dati.gov_.pdf	*Online the new version of the open data portal dati.gov.it*
27-5-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_fatturazione_30_aprile_15.pdf	*More than five million of e-invoicing since the activation*
13-4-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/cs_piattaforma_competenze_digitali.pdf	*The platform for the promotion and diffusion of Digital skills is now online.*
6-3-2015	https://www.agid.gov.it/sites/default/files/repository_files/ufficio_stampa/c	*9 March: training day about e-invoicing in 110 provincial chambers of commerce*

Year	Press Release	Topic
	omunicato_stampa_formazione_fattu razione_elettronica_9_marzo_0.pdf	
17-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_lista_amministrazioni_no_ipa_0.pdf	*Listing the public administrations without IPA (data required for implementing e-invoicing)*
23-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_protocollo_intesa_regioni_centrali_ 0.pdf	*Signed the protocol of agreement to implement the Digital Agenda in Regions on central Italy.*
4-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c omunicato_stampa_crescita_digitale_ 0.pdf	*Digital Growth: a clear plan to accompany the digital transformation of the country.*
1-4-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_fatturazione_22mila_enti.pdf	*E-invoicing activated for 22,000 public administrations.*
30-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_dimissioni_poggiani.pdf	*Alessandra Poggiani resigned as General Director of AgID.*
30-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_switch_on_fatturazione_elettronica. pdf	*Switch on e-invoicing: tomorrow the switch on for 12,800 public administrations.*
26-3-2015	https://www.agid.gov.it/sites/default/ files/repository_files/ufficio_stampa/c s_amministrazioni_su_ipa_26_marzo. pdf	*All Regions and Municipalities have their own IPA (data required for E-invoicing) and can are ready for e-invoicing.*

4.3   Situational Mechanism

Scope of this section is to understand how political decision-making influences the implementation of digital transformation, even considering the demographic situation of Italy.

4.3.1   Political Structure

Italy is a Parliamentary Republic with a perfect bicameral legislation, consisting of the Chamber and the Senate of the Republic, since the approval of the Constitution in 1948. The executive, chaired by the Prime Minister, governs with the confidence of the Parliament. The Government must be sustained by a majority in both houses of the legislature and usually the formation of a new government requires a coalition of parties. The Parliament is elected for a five-year mandate, but the President of the Republic can anticipate national elections if there is no coalition in Parliament able to sustain the formation of a new government. The President of the Republic, i.e. the head of State, is elected by the Parliament for a seven-year mandate and has minor executive prerogatives, acting mainly as an arbiter of the political system.

Italy traditionally represented an example of strongly unitary state. However, decentralisation of power has taken place from 1970s onwards. In those years, twenty regions were established as a new layer of government, which benefits from relevant degrees of autonomy in governing policy processes, especially in the field of education and healthcare. A more significant transfer of power towards regional authorities and municipalities occurred in the 1990s, when numerous competences and responsibilities were eventually devolved to such actors. Together with decentralisation, innovation should have been favoured also by the public sector reforms in the same years that contributed to implement privatisations and to introduce other NPM provisions (e.g. establishment of regulatory agencies, reform of public employment). However, such measures often struggle in being translated in concrete changes within public sector environments, which are likely to be still characterised by a persistent risk-averse and change-averse culture.

In the last thirty years, the Italian political system has been characterised by the alternation in government of centre-left and centre-right coalitions. Especially centre-left coalitions displayed high instability, mainly due to the electoral rules that have always entailed some degree of proportionality, favouring the formation of heterogenous, and consequently instable, party-coalitions. As Table 6 shows, since 2000 Italy has elected its parliament with three different electoral rules and the Prime Minister has changed ten times.

Table 12: Italian Prime Ministers since 1996

Electoral rule	Election	Prime Minister [Coalition] (Year in office)	Direct responsibility for digital innovation
Law 277/1993 majoritarian with proportional corrections	1996	Romano Prodi [Centre-left] (1996-1998)	No
		Massimo D'Alema [Centre-left] (1998-2000)	No
		Giuliano Amato [Centre-left] (2000-2001)	No
	2001	Silvio Berlusconi [Centre-right] (2001-2006)	L. Stanca (under the PCM)
Law 270/2005 proportional with majoritarian corrections	2006	Romano Prodi [Centre-left] (2006-2008)	L. Nicolais (under the PCM)
	2008	Silvio Berlusconi [Centre-right] (2008-2011)	R. Brunetta (under the PCM)
		Mario Monti [Grand coalition] (2011-2013)	F. Profumo (Ministry of Education)
	2013	Enrico Letta [Grand coalition] (2013-2014)	No
		Matteo Renzi [Centre-left] (2014-2016)	No
		Paolo Gentiloni [Centre-left] (2016-2018)	No
Law 165/2017 majoritarian with proportional corrections	2018	Giuseppe Conte [Populist] (2018)	No

Currently the Head of State is President Sergio Mattarella and the Prime Minister is Giuseppe Conte, sustained by a populist coalition that has broken the traditional alternation between centre-left and centre-right coalitions in government.

4.3.2 Digital Transformation Responsibilities

Traditionally, the Prime Minister together with the Minister of Public Administration are responsible for digital innovation policies but, before 2012, there was not a stable set-up for the allocation of this responsibility. Indeed, some Prime Ministers managed directly the issue through the Presidency of the Council of Ministries (PCM) and its agencies, others decided to appoint a specific minister. As previously shown in Table 6, only three governments explicitly allocated digital responsibilities to politicians between 2001 and 2011. Furthermore, the Ministry of Economic Development (MISE) has always been in charge of digital infrastructures. Hence, responsibilities were split and the policy coordination was poor. Before 2011, the issue of digital transformation was not compelling and probably the Lisbon Strategy activated 2000 at the EU level gave the necessary input to make things change. After 2011, instead, politicians have decided to allocate the responsibility for digital innovation to a single agency under the Presidency of the Council of Ministers. The proof of the governance difficulties in the digital domain is indeed shown by the number of digital agencies established in time under the PCM, in particular:

- 1993 - 2003: Authority for ICTs in the Public Administration (AIPA)
- 2001 - 2009: National Centre for ICTs in Public Administration (CNIPA)
- 2009 - 2012: DigitPA (CNIPA with a different name and governance structure)
- 2008 - 2012: Agency for the diffusion of innovative technologies
- 1938 - 2012: Department for technological innovation
- 2012 - 2018: Agency for Digital Italy (AgID)

As anticipated, responsibilities were split and sometimes overlapping, creating problems of policy coordination and implementation. Moreover, regarding the subjects under the responsibility of regions, innovation policies are implemented at the subnational level, generating differences in implementation even in this domain.

4.3.3 Political events related to digital transformation

Significant political events that contributed to a change in the Italian situation regarding digital transformation are mainly three: stakeholders' pressure, economic consolidation needs, and political priorities. In 2011, indeed an heterogenous set of stakeholders, among which there were consultants, experts, artists and journalists, launched a public debate on the absence of a Digital Agenda in Italy. They built a private website[5] providing various contributions to the debate and brought the theme even on traditional media outlets, generating pressure from the public opinion. As a result, at the end of 2011 the government launched a public consultation[6] on the website of the Ministry of Economic

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[5] www.agendadigitale.org

[6] The name of the initiative was "Progetto Strategico Agenda Digitale Italiana: implementare infrastrutture di rete. Caratteristiche e modalità attuative."

Development (MISE), with the aim of involving public and private stakeholders in the definition and implementation of the first Italian Digital Agenda.

The second element regards the Italian government debt crises, with the BTP-BUND spread reaching 574 points in November 2011 that convinced the former President of the Republic Giorgio Napolitano to appoint Mario Monti as Prime Minister of a technical government. The risk of bankruptcy of Italy obliged the new Government to cut spending, closing and merging a series of governmental agencies and public institutions. This pressure, with the fundamental contribution of Ministries Passera and Profumo, posed the first pillar to overcome the fragmentation of responsibilities in the digital innovation domain. The Monti's Government decided to close all the beforementioned digital structures under the PCM and blend them into the new Agency for Digital Italy (AgID). Even the Advanced Institute for Communication and ICTs, an agency under the Ministry of Economic Development, was supposed to become part of AgID but has never been merged. Nevertheless, this step renewed the governance of digital innovation, attributing clear responsibilities.

The transition to the new setup created some problems regarding the former heads of the dismissed agencies and the performances of the new agency more generally. In March 2014, only 17 over 55 actions to be performed were carried out and for 21 deadlines were expired. Furthermore, the agency did not present its organisational structure and provisional budget.

In this context, the third significant political event was the appointment of Matteo Renzi as Prime Minister. This occurrence impressed a strong political discontinuity, changing the heads of AgID and introducing in 2016 the Team for a Digital Italy chaired by Diego Piacentini, later appointed even as Italian Digital Champion at the European Commission.

4.3.4 Italian Demographic Structure

From a demographic point of view, it is worth analysing the population growth path and the age structure of the population. Italy counts about 60 million inhabitants at the end of 2017, 68% of the population is classified as urban population. Since 2015, Italy has been experiencing a period of slightly flat population growth due to a very low birth rate, about 8.6 births per 1000 inhabitants. Indeed, the total fertility rate is 1.44 children born per woman, far below the replacement rate. Low fertility, together with the increase in life expectancy, is resulting in a consistent aging of the population. The current structure of the population at the end of 2017 can be observed in Table 7.

Table 13: Italian demographic structure

Italian population (2016)	
Total population	60,627,498
• Population aged under 15 years	13.65% of the total population
• Population aged 15-64	64.82%
• 65 and over	21.53%
• Foreign-born population	9%

In 2016, the life expectancy at birth reached an average of 83.4 years, 85.6 for females and 81 for men. The median age in the population is already high, about 45.9 years. Population aging in the last years pushed the ageing index from 131.4 in 2002 to 165.3 in 2017 and the dependency ratio from 49.1 in 2002 to 55.8 in 2017.

4.3.5 Current E-Government Press Releases Government Press Releases

This section reports Information Society Indicators, based on Eurostat's data, and E-Government Indicators, based on European Commission's data and United Nations' data. The following Table 8 shows relevant information on the access and use of internet in Italy.

Table 14: Internet Access and Use in Italy

INTERNET ACCESS (% of household)	INTERNET DAILY USE (% of individuals 16-74)	SOCIAL NETWORKING (% of individuals 16-74)	BUY GOODS OR SERVICES (% of individuals 16-74)	ARRANGE ACCOMODATION (% of individuals 16-74)	ARRANGE TRANSPORTS (% of individuals 16-74)
81%	68%	43%	32%	17%	4%

Clearly, about 20% of the Italian population does not have access to the Internet that is a huge share compared to other EU countries. Even if 68% of the population accesses the Internet every day, it is still underused to interact with markets and mainly used for social networking.

According to the UN E-Government Survey 2018, Italy ranks 24th in the world for e-Government development, belonging to the very high E-Government Development Index (EGDI) cluster of countries. Considering only European countries, Italy ranks 14th according to EGDI in 2018. Similar considerations emerge even from the European Commission's E-Government Benchmark, that analysis EU countries based on User Centricity, Transparency, Citizens Cross Border Mobility, Businesses Cross Border Mobility, and Key Enablers. The following Table 15 recaps the Italian score in these five dimensions in a comparative manner.

Table 15: E-Government Ranking in 2016

	USER CENTRICITY	TRANSPARENCY	CITIZENS MOBILITY	BUSINESSES MOBILITY	KEY ENABLERS
ITALY RANK	18	18	30	12	14
EU 28+ SCORE (ITALIAN SCORE)	80 (82)	59 (54)	61 (38)	65 (78)	52 (61)

The main areas of improvement are thus: Transparency (with a focus on Service Delivery), Citizens Cross Border Mobility (with a focus on E-Documents), and Key Enablers (with a focus on Authentic Sources). User Centricity and Business Cross Border Mobility score well comparatively to other EU countries. Italy is characterised by a low level of Penetration (only 19% of individuals who submit official forms to

administrative authorities used online forms, the lowest level in the EU) and a medium-low level of Digitisation. Therefore, Italy is not fully exploiting ICT opportunities.

4.3.6   Summary of the country's profile

Political instability and population aging seem to be crucial factors hindering the digital transformation process. Indeed, political instability may damage the planning of digital infrastructures and potentially impede the development of a long-term coherent strategy for digital transformation. Furthermore, an aging population may not demand digital infrastructures and services as a core need or may lack the necessary skills to exploit it. From a digital society point of view, Italy seems significantly backward with respect to other EU countries, as reflected by the DESI index. On the E-Government side, this lag results softened, and Italy is closer to the EU average but still with significant improvements needed.

4.4   Action formation & transformation mechanism

4.4.1   Government Press Releases

Up to our knowledge, in Italy a digital archive of Government press releases open to public consultation does not exist. Only the press releases related to the incumbent Government are available online but, as far as the incumbent Government took place in June 2018, no release regards digital transformation. Instead, AgID has been reporting its official press releases online[7] since 2015; therefore, this section tries to explain how policy changes are articulated in government press releases since that year.

In slightly more than three years, AgID has disclosed 42 press releases. Between March 2015 and September 2017, the press releases concentrated on the implementation of ongoing projects and strategic documents. In particular, AgID reported the progress of the projects Single Digital Identity (SPID), e-invoicing, and e-payment (PagoPA); less attention is devoted to website accessibility, Cloud services, the Single Digital Registry, Digital Skills, and Open Data Platforms. From the strategic point of view, AgID reported the availability of three major plans: Digital Growth (March 2015), Digital Skills (December 2015), and the three-year plan for ICTs (2016).

From these data emerges a coherent implementation of previously defined projects and the definition of new plans for the future; no relevant changes in strategies or implementations happened, probably due to the political stability of that phase. It is worth noticing here that the transition between the Renzi's Government and the Gentiloni's Government in late 2016 did not constitute a discontinuity in policies, even because both governments were sustained by the same coalition in the Italian Parliament. Instead, between September 2017 and June 2018, no communications were disclosed by AgID. This is probably due to the political uncertainty of that period, with the general elections coming at the beginning of March 2018 and the institutional instability that reigned since the formation of the new populist Government in June 2018.

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[7] Available at the following link: https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/comunicati-stampa

4.4.2 Digital Agenda and Strategic Documents

The concept of Digital Agenda was introduced in the Italian legislation only in 2012 via a Legislative Decree. This evidence constitutes a proof of the lag that the country faces in the digital domain. Consequently, before that year, strategies for digital transformation were not organised and presented in a clear manner. The only strategic plan that is worth mentioning in this domain, even if very simple and concise, dates back to 2007.

Toward the National eGovernment System: Strategic Lines
Minister of Public Administration Nicolais launched in 2007 the second e-government plan, called "Towards the national e-government system: Strategic Lines". The plan had 7 strategic pillars, summarised in the following Table 16.

Table 16: Strategic Lines

Main Objective	Sub-objectives
Bettering internal efficiency	Promoting innovative processes Implementing the CAD Online training for public employees
Realizing interoperability and cooperation between different PAs	Defining a cooperative model Integrating national databases and public records
Increasing the transparency of public spending	Using ICTs to help public finances Increasing the use of the Internet to buy goods and services
Building Digital Citizenship	Defining an e-democracy model Making the access to digital services safe and simple Implementing digital payments Guaranteeing quality and accessibility of public national websites
Adopting a systemic approach to quality and efficiency	Monitoring PAs' initiatives, measuring their quality and efficiency Building a network of excellence in innovation
Favoring the competitiveness of businesses and the growth of the ICT industry	Making the public administrations promoters of development Sustaining the software-development
Making Italy at the center of European Union innovation process	Reinforcing the Italian position in the international arena Implementing the Lisbon Strategy

Plan for Digital Growth 2014-2020
In 2014 came the first comprehensive strategic plan for digital transformation in Italy: a six-year plan entailing strategic objectives, the analysis of the Italian context, a SWOT analysis, organizational considerations, proposed actions, monitoring, and funding. The strategic objectives defined are:

- Planning the digitisation of all public services from a user-centered perspective and coordinating the work of all public administration
- Developing digital skills among citizens and businesses to create a demand for innovative services
- Coordinating in a unitary way planning and investments in the digital domain

Actions for digital growth are proposed in three domains: infrastructures, enabling platforms and acceleration programmes, summarised in the following Table:

Table 17: Infrastructures, enabling platforms, acceleration programs

Infrastructures	Enabling Platforms	Acceleration Programs
• Public system of connectivity and public wi-fi in all public buildings • Digital Security for PAs • Rationalizing the ICT assets, consolidating data center and cloud computing • Public Service of Digital Identity (SPID)	• Resident population registry • Electronic payments • Electronic invoicing • Open Data • Digital Healthcare • Digital Education • Digital Justice	• Italia Login - The house of citizen • Digital skills • Smart city and communities

Strategy of Italy for the Ultra Broadband

The new national plan for Banda Ultrawide 2014-2020 proposes a virtuous mix of public and private investments. Public resources are available to European funds ERDF and EAFRD, the Development Fund and Cohesion, for a total of 6 billion euro, to which are added the Plan Junker funds.

The objective of the Strategy is to remedy the infrastructure gap, creating the most favorable conditions for the integrated development of telecommunications infrastructure fixed and mobile. Crucial actions to be performed are: 1) incentives aimed at bringing down the barriers of cost of implementation, simplifying and reducing administrative burdens, 2) coordination in the management of the subsurface through the establishment of a cadaster of below and above ground to ensure the monitoring of operations and the best use of existing infrastructure, 3) adaptation to other European countries in the field of electromagnetism limits, 4) tax incentives and credit at subsidized rates in the most profitable areas to promote the "quantum leap", 5) public incentives to invest in marginal areas, and 6) direct realisation of public infrastructure in the areas of market failure.

Strategy of the National Coalition for Digital Skills

The National Coalition for Digital Skills aims at enabling the deployment and monitoring of digital literacy projects throughout the country. The National Coalition for Digital Skills was created in the context of the "Grand Coalition for Digital Jobs", and it is based on the cooperation of national public institutions, professional communities and nonprofit organisations in order to promote the diffusion and the improvement of digital skills, in compliance with the Italian Digital Agenda. The Italian Coalition for Digital Skills aims to promote, support and integrate national and regional projects, by linking them to the initiatives of the Digital Agenda, and also aims to promote the exchange and implementation of best practices. The members of the National Coalition have so far uploaded 119 and 56 projects into the platform.

Three-year plan for ITCs in Public Administration 2017-2019

The Three-Year Plan for IT in the Public Administration has been defined in accordance with what is stated in the Digital Growth Strategy, including actions, definition of financial needs and the indicators represented therein, with the aim of targeting public sector ICT investments according to government guidelines and in line with European goals and programmes. The Plan proposes a systematic,

distributed and shared model of management and use of the most innovative digital technologies, characterised by an agile and evolutionary management style, based on clear governance of the various levels of public administration. The synergy and balance between the three directives (innovative technologies, agile management style and clear and effective model of governance) ensures the country's system uses more effectively the benefits of new technologies and provides citizens with an advantage in terms of ease of access and improvement of existing digital services.

The Agency for Digital Italy has assumed the responsibility of the execution of the Plan, and the coordination of the assistance to Central and Local Public Administration bodies in the implementation of the Plan.

4.4.3   Relevant policies

This section analyses the main policy documents contributing to the digital transformation strategies in Italy.

Bassanini Reforms (1999)

Before 2000, the "Bassanini Reforms"[8] constituted the first significant pillar of the Italian digital transformation journey. Although digital innovation was not the object of this legislation, the reform stated a seminal action plan for e-government in Italy, consisting of three objectives: 1) Bettering the internal efficiency of public administrations, 2) Offering to citizens and businesses integrated services, and 3) Guaranteeing the digital access to information about public services. The reform also introduced the possibility of teleworking in public administrations.

Code of Digital Administration (2005)

In 2005, the "Code of Digital Administration" (CAD) was introduced, focusing on the digitization of public administration's internal processes. The code stressed the importance of the digitization of public documents and data, the creation of a digital network of public administrations (even at the supranational level), the digital transmission of documents between public offices, and the online availability of public digital documents.

New Code of Digital Administration (2010)

In 2010, an updated version of the Code of Digital Administration (CAD) is drafted with new objectives and instruments. The bill focused, in particular, on: Digitisation of administrative activities, Business government relations, Transparency, Digital payments, Custormers' satisfaction, Certified email usage, Documents' digitisation and storage, Digital protocol, Digital access to services, Operation continuity, and disaster recovery, and Data sharing and open data.

Legislative Decree "Urgent provisions on simplification and development"

The article 47 of the Legislative Decree 9 February 2012 n. 5 introduced in the legislation the concept of Italian Digital Agenda (ADI), with the object of modernising the relations between public administrations, citizens and business through 1) the development of demand and supply of innovative

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[8] A serie of four Legislative Decrees adopted between 1997 and 1999.

digital services, and 2) the development of the ultrabroadband connectivity. A steering committee, coordinating central administrations, regions, and municipalities, is established under the control of the Ministry of Economic Development to implement the Italian Digital Agenda.

Legislative Decree "Urgent measures for the growth of the country"
With a specific Legislative Decree (22 June 2012, n. 83) the Agency for Digital Italy (AgID) is established. Its mission is to digitalise the country, making the economic environment more transparent and competitive, and providing new e-government services to citizens and businesses. The agency works under the control of the Presidency of the Council and responds to four ministries: Economic Development (MISE), Infrastructures and transportations, Public administration, Economics, and finances.

Legislative Decree "Other urgent measures for the growth of the country"
The first policy document to implement the Italian Digital Agenda was finally introduced with a specific Legislative Decree (22 June 2012, n.83) by the technical government chaired by Mario Monti. The scope of the decree was hence to implement a comprehensive set of measures regarding digital identity, open data, education, health, justice, overcoming the digital-divide, currency, and business innovation.

DPCM 16 September 2016
Prime Minister Matteo Renzi established the Team for Digital Transformation under the PCM and appointed Diego Piacentini as director. The team, composed of 43 highly specialized profiles, has the scope to implement the Italian Digital Agenda in coordination with AgID. The team is established for a term of two years, ending in September 2018.

4.5   Tracable results of digital transformation approaches

This section summarises the outcomes of digital transformation in Italy's public administration between 2000 and 2018, as described by the JoinUp Reports[9] compiled by the European Commission. After a summary of results before year 2001, the subsections follow the term of each government in office to develop a coherent structure from a political point of view.

4.5.1   Nineties and up to June 2001

- The **Authority for Information Technology in the Public Administration** (AIPA) is created in 1993.
- The **Information Society Forum** composed of representatives from several Ministries, is established in 1996 to promote initiatives for the development of the information society and to support the creation of a favourable regulatory framework.
- The first **eGovernment Action Plan 2000-2002** is adopted in 2000 (document not available).

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[9] The versions 2014, 2015, 2016, 2017, and 2018 are available online at the following link: https://joinup.ec.europa.eu/collection/national-interoperability-framework-observatory-nifo/egovernment-factsheets-and-infographics

4.5.2 Berlusconi's Government (June 2001 – May 2006)

2001
- The new Government appoints a Minister for Innovation and Technologies, providing political leadership and holding responsibility for the country's ePolicies.
- The Minister for Innovation and Technologies publishes the **2002 Guidelines for the digitisation of Public Administration** setting eGovernment priorities for that year (document not available).

2002
- The Presidential Decree 101/2002 introduces the possibility to adopt a new electronic procedure ("Gara telematica" in Italian) for **public procurement** and to implement a new tool for **electronic purchases**, the eMarketplace ("Mercato elettronico" in Italian).
- The National eGovernment Portal for Citizens **Italia.gov.it** is launched.
- The **2003 Guidelines for the digitisation of Public Administration** are adopted, setting operational priorities for that year.

2003
- A Ministerial directive defines the rules and criteria for the development, acquisition and re-use of software by public sector bodies.
- The Conference State-Regions approves the launch of the second phase of the Italian local and regional eGovernment programme.
- The authority for Information Technology in the Public Administration (AIPA) is replaced by the **Italian National Agency for Digital Administration (CNIPA)**, responsible for the implementation of eGovernment plans devised by the Minister for Innovation and Technologies.
- The **2004 Guidelines for the digitisation of Public Administration** are adopted.

2004
- The directive on "Administrative Transparency and the Management of Document Flows" (better known as the IT Protocol", comes into force on 1 January, foreseeing the **management and storage of all government documents electronically.**
- The Council of Ministers adopts a Decree on the introduction of the **National Services Card (CNS)**, a smart card for accessing eGovernment services.
- A decree grants **Registered electronic mail** with the same legal status as that of recorded delivery letters.

2005
- The **2005 Guidelines for the digitalisation of Public Administration** are adopted, setting operational priorities for that year (document not available).
- Adoption of the Legislative Decree on the **eGovernment Code** ("Codice dell'Amministrazione Digitale" in Italian), aiming at providing a clear legal framework for the development of eGovernment and for the emergence of an efficient and user-friendly public administration.
- The Italian business portal **www.impresa.gov.it** is officially launched to promote effective government-businesses relations.
- The **2006 Guidelines for the digitisation of Public Administration** are adopted (document not available).

2006
- The **Public Procurement Code** is adopted, introducing provisions relating to **eAuctions, dynamic purchasing system, eCatalogues** and other electronic means used in public procurement procedures.

4.5.3 Prodi's Government (May 2006- May 2008)

2006
- A new Minister for Reform and Innovation in Public Administration is appointed.

2007
- The Minister for Innovation presents the strategic document **"Towards the National eGovernment System: Strategic Lines"**.
- The Minister for Innovation signs a **Directive on the interchange of data among public administrations** and on the publication of negotiation activities (known as "Innovation Directive"). Its objective is to give a strong boost to the computerisation of the Italian public offices while contributing to the enforcement of the eGovernment Code.
- The **"Public Connectivity and Cooperation System" (SPC)**, the new network of the Italian Public Administration becomes operational. This broadband network brings together central Public Administrations as well as hundreds of Italian public bodies across the world.
- The use of the **eMarketplace of the Public Administration (MEPA)** on the eProcurement portal "Acquisti in Rete" becomes mandatory for all central Public Administrations purchasing goods and services below the EU threshold (137 000 €).
- Italy's standardisation body (UNI) publishes the national standard UNI CEI ISO/IEC 26300:2007, as an adoption of the **Open Document Format (ODF)**.

2008
- As part of a new migration law, the Ministry for Internal Affairs launches an online service which makes it possible to check the status of an **application to hire extra-Community workers electronically**.

4.5.4 Berlusconi's Government (May 2008 - November 2011)

2008
- A new Minister of Public Administration and Innovation is appointed.
- The Ministry of Public Administration and Innovation unveils the **Government's Strategic Plan for Innovation**, providing 60 joint initiatives structured around the concrete needs of both Central and Local Government.

2009
- The **eGovernment Plan 2012** is launched (official document not available), promoting government innovation, spreading online services and reinforcing the accessibility and transparency of the Public Administration, to bring it closer to the needs of citizens and businesses. The Plan consists of 80 digital innovation projects, citizens can monitor online the progress status of each planned project.

- The **knowledge management web platform** of the Italian Public Administration "Magellano" goes online, aiming to facilitate the work and the collaboration among public authorities through a unique access point to the expertise of the Public Administration.
- The national cyber-crime center is unveiled, with the goal of preventing and handling potential cyber-attacks conducted against the country's critical infrastructures.
- The Minister for Public Administration and Innovation signs the Memorandum of Understanding regarding "Reti Amiche on the job" with an IT consulting company: the project aims to install an electronic desk through which the company's employees can interact with the Public Administration, either personally or with remote assistance.
- The Minister for Public Administration and Innovation and the President of the Antitrust Authority signs a Memorandum of Understanding for the project "Mettiamoci la faccia" (in Italian) for the measurement of the users' customer satisfaction.
- The Minister for Public Administration and Innovation and the Rector of the University of L'Aquila sign a Memorandum of Understanding for the **'Digital University' project**.
- The Legislative Decree 150/2009 implements the Law on the efficiency and transparency of public administration, enforcing innovation and **digitalization within PA and between PA and citizens and business.**
- The Minister for Innovation publishes the Directive 8/2009 for the rationalization and reduction of the public websites, foreseeing the registration of the public administrations websites under the **domain name "gov.it".**
- The Decree n. 177/2009 establishes **DigitPA** a new agency for ICT in the Italian Public Administration, placed under the responsibility of the Minister for Public Administration and Innovation. The mission of the new body is to contribute and provide value for citizens and businesses, implementing the eGovernment policies.
- A new portal, www.accessibile.gov.it, is launched, provided by the Public Administration and dedicated to the Observatory on the **Accessibility of Internet services.** The two main goals of this initiative are: the constant updating of the national legislation on access, following the adoption of the Web Content Accessibility Guidelines (WCAG) 2.0, and the management of alerts for the citizens experiencing difficulties in enjoying the services provided through public websites.

2010

- The Italian Council of Ministers approves the new version of the **eGovernment Code** in compliance with the eGovernment Plan 2012.
- The Ministry of Environment and Land and Sea Protection launches a new system to monitor the transportation and management of special waste (SISTRI).
- The Ministry for Public Administration and Innovation announces the availability of the service **"Posta Elettronica Certificata al Cittadino"**, free of charge, aiming at providing Italian citizens with certified mailboxes for communications with the Italian Public Administration.
- The **next generation of passports** now contains the owner's digital facial image and signature, as well as two fingerprints stored on a microchip.
- A non-profit non-loss national consortium on open source software for business intelligence applications, the Italian Competence Centre on Open Source, goes online, aiming at fostering the development and adoption of open source software in the Italian public administration.
- The Italian Ministry of Labor and Social Policy launch a **portal that serves as a broker between job supply and demand**, and to connect the systems formed by businesses, educational/training

bodies and social policy. The portal has a section on job opportunities in the public sector, the databank of those benefiting from income support and an information and communication area.

* The new version of the **"Italia.gov.it"** portal is officially presented.

2011

* Consip launches the new edition of **"www.acquistinretepa.it"**, the national **eProcurement platform** on behalf of the Ministry of Economy and Finance. The platform presents a more efficient performance overall and is completely revamped and enriched with new and more advanced functionalities (in 6 months it will handle over 12 000 orders and post 2 500 calls for tenders, more than 6 500 new users will register registered)
* The Minister for Innovation unveils the new **portal for Italian citizens**.
* The Ministry for Innovation publishes the updated version of the **"Guidelines for the public administration's websites"**, comprehensive principles able to improve the quality of online information and public services.
* It is now compulsory for doctors of the National Healthcare System (NHS) to forward **sick leave certificates to the National Institute for Social Security (INPS) via the web**, resulting in simplified procedures fully respecting privacy and security requirements, consistent cost savings, productivity gains, better health surveillance, and data monitoring.
* The Minister for Innovation unveils Operation **"Open Government, open data and App"**. This initiative is the natural evolution to web 2.0 for Internet and job mobility that the Government began three and a half years ago. To make this possible, a new portal was created, **www.dati.gov.it**, meant to be a benchmark for open data in Italian Public Administration.
* Three eInvoices based on specifications of the PEPPOL project (Pan-European Public Procurement OnLine) are exchanged by Italian PEPPOL partners and their suppliers.

4.5.5 Monti's Government (November 2011 – April 2013)

2012
* A public consultation is initiated for the "Guidelines on Digital Stamps" ("Linee guida su Contrassegno Elettronico", in Italian) issued by the newly constituted Agency for Digital Italy.
* The second "Growth Decree" introduces various infrastructure and digital services, the creation of new innovative companies (start-up companies), the development of fiscal instruments to facilitate the implementation of infrastructure projects with the private capital attraction of foreign investments, liberalisation measures.

4.5.6 Letta, Renzi, and Gentiloni's Government (April 2013- June 2018)

2014
* Documents sent between municipalities on electoral, civil status matters and population register certificates, as well as the communications sent to municipalities by notaries relating to marital agreements, must be exclusively sent via **electronic means**.
* Ministries, tax agencies and organizations of national social security agencies is mandatory to receive invoices in electronic means.
* 15 000 Public Administrations had notified to AgID their own datasets.

- AgID, National Italian Television-RAI and Digital Champions have developed a communication **plan for the promotion of culture and digital skills**.
- The decree on the **Public System of Digital Identity (SPID)** defines characteristics, timing and methods of implementation of the new public system for managing digital identity of citizens and businesses.
- The platform **"soldipubblici.gov.it"** is designed to make transparent expenditure data of public administrations. In the first version, citizens can access the data of payments to the local administrations and help authorities.

2015

- The Italian government has published the official guidelines that dictate the rules for the creation and storage and transmission of documents and telecommunication tools, both for individuals and for public administrations.
- Initiated the development of **Italian Login**, the platform that will allow online access from a single point to all services of the PA. A single platform where citizens with a single profile can: receive and sends all communications with the PA and retains the history, access to all services available gradually, receive notices of deadlines, make and receive payments, store documents, interact with the digital registry, express evaluations of services and provides feedback and suggestions, and participate in the democratic life.
- AgID realizes the **national catalogue data of PA**. Users can search, analyses and download metadata in an open format. The individual administrations can upload and update their own datasets. The catalogue does not report the data from the individual datasets but the list of databases along with some context information.
- The Italian government approves strategic documents for **Digital Growth and Ultra-wideband.** The main goals are: the coordination of all interventions of digital transformation and the start of a process of centralization of planning and of public spending; the principle of Digital First, through the switch-off of the traditional use of the services to the citizen; dissemination of digital culture and the development of digital skills in businesses and citizens; modernization of public administration, starting from processes, overcoming the logic of technical rules and guidelines guide and pointing to the centrality of the experience and needs users; an architectural approach based on logic and open standards, to ensure maximum accessibility and interoperability of data and services.
- The public system for managing digital identity (SPID) is extended to all public administrations.
- AgID promoted the establishment of the National Coalition for the digital skills. 10 projects are already participating in the trial phase of the web platform that will facilitate the sharing, promotion and monitoring of initiatives to direct national policies towards the development of digital literacy in the country.
- The whole public administration **switched to electronic management for more than 2 million suppliers involved.** This is a critical step in the digitization of public administration that will allow significant savings in administration management, and to make more transparent the cycle of Italian public spending.
- The Agency for Digital Italy launched a new version of the **National Open Data portal: dati.gov.it** to promote the quality of the data published. The new portal ensures uniformity of the contents of the catalogue, which now includes metadata that describe open data held by the public authorities involved.

- The Agency for Digital Italy launched the **#Data4all**, a platform which gathers three thematic portals: **SoldiPubblici, ItaliaSicura and OpenExpo** (PublicMoney, SecureItaly, and Open Expo).
- The first tender in the framework of the European Project "Cloud For Europe" (flagship initiative for the development of a single market of cloud in Europe) is awarded.
- Stakeholders can present request for accreditation to AgID for SPID.
- Agenzia delle Entrate, INAIL, INPS, the Regions: Piedmont, Friuli Venezia Giulia, Emilia Romagna, Liguria, Tuscany and Marche are the first public administrations that will implement the new login system by December 2015. AGID will guide the other public administrations through the process. In 24 months, Italian public administrations will have to allow access to their digital services through SPID. At the time of the update of the factsheet, 10 public administrations were already involved in the process and 3 identity providers started the accreditation procedure.
- In September 2015, the European Commission awarded to AgID the project **FICEP - First Italian Crossborder eIDAS Proxy**. As continuation of the activities implemented in the framework of the EU projects Stork and Stork 2.0, FICEP will allow on the one hand foreign citizens to access with their eID to public and private Italian services and on the other hand Italian citizens will be able to use their eID to benefit from public and private services in other EU countries. This project will facilitate secure and trusted access to Italian service providers for foreign citizens and to foreign service providers for Italian citizens. This translated into more choice and competition among different service providers at European level.
- Italy, together with other 16 governments, adopted the **International Open Data Charter**. The Charter consists of six key principles, namely, that government data must be: 1) Open by Default; 2) Timely and Comprehensive; 3) Accessible and Usable; 4) Comparable and Interoperable; 5) For Improved Governance and Citizen Engagement; 6) For Inclusive Development and Innovation. The Charter also includes specific actions, practical advices and guidance on implementation of Open Data strategies and policies.
- The forthcoming activation of the **Italian Digital Register of Population** (In Italian: "Anagrafe Unica Nazionale") will reduce the fragmentation of personal data which at the moment are distributed in 8 057 municipal databases. The ultimate goal is to create a centralized database.

2016

- The Government released the newest version of the **"Minimal security guidelines for ICT in Public Administration"** to face the increasingly more threatening cyber-environment. The guidelines encompass a series of different areas, such as secure website design among other formal security rules.
- In October 2016, a dedicated **Digital Team** was established under the leadership of an extraordinary Commissioner for digital transformation.
- Teachers in public education are able to access their professional allowance through a special eCard, which relies on an individual eID.
- Italy is opening up its **FatturaPA payments services**. The system can also be used for free by companies to send invoices to other companies and citizens. The FatturaPA electronic invoicing solution is used by public administrations to submit, manage and settle invoices.

2017

- The number of digital identities issued from March 2016 reached over one million.

- A total of 15,292 public administrations joined the **pagoPA** system (an initiative that allows citizens and companies to pay electronically Public Administration) of which 10 758 were active.
- AgID launched a new version of the **National Open Data portal**, http://www.dati.gov.it/, in order to present a collaborative platform on the topic of open data. Some of the main innovations of the new release are: exposure of about 18,000 datasets in open format, automatic transmission of metadata collected and displayed in the catalogue of the European data portal, availability on GitHub of the catalogue of additional implementation modules carried out by the portal's development team, accessibility to the dataset through a set of APIs (application programming interfaces) available in the developers section, and the possibility for any Italian public administrations to add data into the portal.
- The Agency for Digital Italy has drafted and is responsible for the execution of the **Three-Year Plan for IT in the Public Administration**. It has been defined in accordance with what is stated in the Digital Growth Strategy. The Plan proposes a systematic, distributed and shared model of management and use of the most innovative digital technologies, characterized by an agile and evolutionary management style, based on clear governance of the various levels of public administration.
- The **latest reform of the Digital Administration Code** lays down the legal foundations for many of the services established in the Three-Year Plan for ICT in the Public Administration.
- The **National Resident Population Register (ANPR)**, a database combining the demographic data of all Italian residents, is launched.
- AgID along with the Ministry of Economy and Finance has established an eProcurement Forum, which has the task of creating a space suitable for carrying out consultation, proposal and monitoring activities in the scope of eProcurement.
- The website **Developers Italia** was launched, it is a community of developers who design and make Italian digital public services.
- Italy established a **"digital drawer of the entrepreneur"**: a platform on which every entrepreneur is able to access information and official documents of his company without any charges. It is a point of contact between entrepreneurs and public administrations.

4.6   A timetable of policies, poliy changes, and digital agendas in Italy

This section summarises political events, strategic documents, and policies relevant to the Italian digital transformation journey, all reported in the following Table 18.

Table 18: Timetable of policies, policy changes, digital agendas

Year	Policy/Process/Activity/Event	Description/Implication
2007	Toward the National E-Government System: Strategic Lines	First strategic official government plan available online.
2011	The private website www.agendadigitale.org is launched.	Stakeholders and public opinion push the government for the adoption of a digital strategy.
2011	Mario Monti becomes Prime Minister	Political impetus for rationalization and spending cuts in Public Administration
2012	Legislative Decree 22 June 2012, n. 83 (art. 18-22)	AgID is established, bringing together different governmental agencies.
2012	Legislative Decree 9 February 2012 (art. 47)	The concept of Digital Agenda is now part of the Italian legislation, a steering committee is established.

Year	Policy/Process/Activity/Event	Description/Implication
2012	Legislative Decree 18 October 2012, n. 179	The implementation of ADI starts.
2014	Renzi becomes Prime Minister	Strong political impetus toward the digital transformation of the country
2014	Strategy of Italy for the Ultra Broadband	First comprehensive strategic document to modernize public digital infrastructure.
2014	Strategy for Digital Growth 2014-2020	First comprehensive strategic document that sets and objectives and projects for Italian digital transformation.
2015	Strategy of the National Coalition for Digital Skills	First comprehensive strategic document to increase the digital skills of citizens and businesses.
2016	The team for a Digital Italy is established.	Advanced skills for the Italian Digital transformation planning and implementation are available under the PCM.
2017	Three-year plan for ITCs in Public Administration 2017-2019	First comprehensive strategic document for the digitization of Italian Public Administration.

5   Case 3: Spain

The DESI index tracks the progress made by Member States in terms of their digitisation. According to the index, in 2018 Spain ranks 10th and is well placed above the EU average. This also implies a relevant increase with respect to 2017, when it ranked 12th, and, as a matter of fact, Spain experienced, along with Ireland, the best performance between 2017 and 2018. Spain belongs to the medium performance cluster of countries, along with Austria, Malta, Lithuania, Germany, Slovenia, Portugal, Czech Republic, France and Latvia. Compared with the other big European economies, Spain outpaces Germany (14), France (18) and Italy (25), but falls behind the United Kingdom (7).

Figure 3: DESI 2018: performance by dimension in Spain
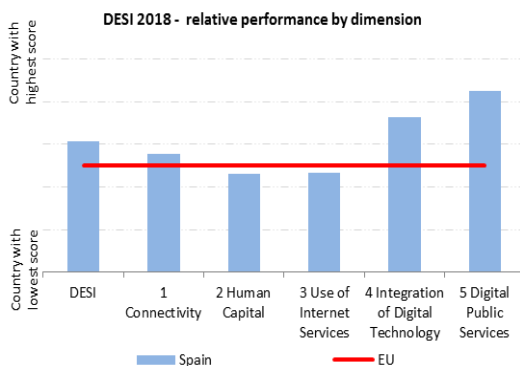
Figure 4 DESI 2018: evolution over time 2015-2018. Spain vs EU-28
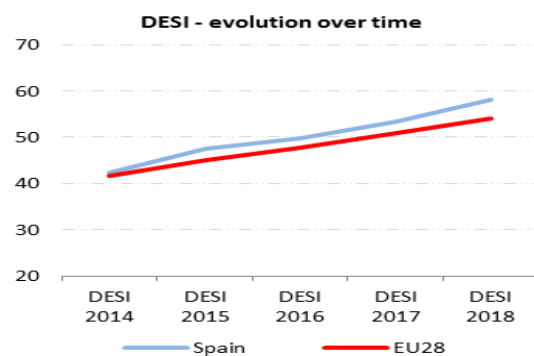
European Commission (2018b)

This progress is indebted to a steady improvement in the five dimensions comprising the index (connectivity, human capital, uses of Internet, integration of digital internet and digital public services) and, especially, the relevant increase of the digital technology in Spanish firms.

When inspecting the different dimensions of the index, the best position is obtained in digital public services (4) and integration of digital technologies (7), followed by human capital (14), connectivity (14) and use of internet (18). The good score in digital public services is basically explained by the striking performance in open data (2) and the high level of online interaction with public administrations. When compared with the other big European economies, Spain outpaces Germany (14), France (18) and Italy (25), but falls behind the United Kingdom (7). If a comparison is made with respect to the previous year, Spain improves in several fields, for example digital public services in firms (3), and the new digital health services indicator (29% of Spaniards use on-line health services).

As far as the integration of digital technology is concerned, Spain also climbs up three places and is placed above the European average. It is one of the leaders in terms of business electronic information interaction (4), use of RFDI (2), social media (7) and electronic invoicing (6), but falls behind in electronic commerce (13). With respect to 2017, all indicators have seen improvement with the solely exception of SMEs online sales, which remains the same. The progress in electronic data exchange has been striking (11 places increase).

Human capital dimension has witnessed an improvement, thanks to a better performance of citizens using Internet regularly, employees with ICT skills and citizens with basic digital skills. Notwithstanding this, it is still below the EU average, thus reflecting the shortage of basic skills in the country. In fact, despite the growing demand on the labour market, the supply of ICT specialists is still below the EU average. The connectivity dimension is very much in line with the results in 2017 (14). As such, it ranks above average in mobile band deployment (11) and fast broadband subscriptions (12). In contrast, it ranks below the average in fixed band deployment (15), NGA coverage (14), 4G coverage (16), fixed broadband coverage (21) and broadband price (22).

Figure 5: DESI 2018 in EU28

Digital Economy and Society Index (DESI) 2018 ranking

■ 1 Connectivity ■ 2 Human Capital ■ 3 Uses of Internet ■ 4 Integration of Digital Technology ■ 5 Digital Public Services
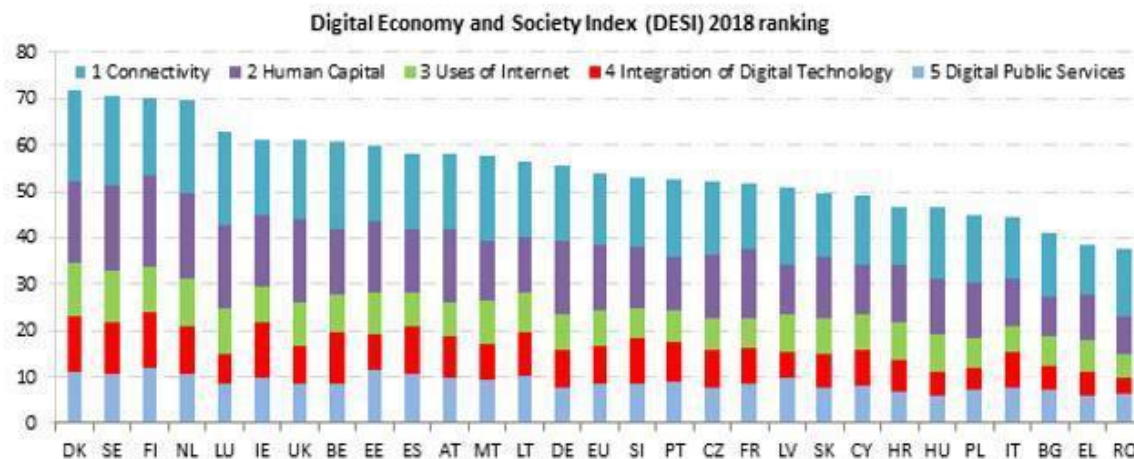
European Commission (2018b)

The Spanish Achilles' heel is the use of Internet (18). Indeed, improvements have taken place in electronic commerce purchases and use of video-calling, but the performance has weakened in the use of Internet to access news (17), use of social networks (21), electronic banking (18) and Internet shopping (16). Within this dimension of use of internet, entertaining is the area where Spain ranks

better; for example, the share of households with video on demand (7), use of Internet to play/download games, images, movies or music (11).

5.1 Digital Agendas

Table 19: Spanish Digital Agendas

Year published	Digital Agenda
1999	Plan Info XXI (1999-2003)
2003	España.es (2004-2005)
2005	Plan Avanza (2006-2009)
2010	Plan Avanza 2 (2011-2015)
2013	Digital Agenda for Spain (2013-2015)
In progress (not approved yet)	Digital Strategy for an Intelligent Spain

5.2 Policies/bills related to digital transformation

Table 20: Policies and bills related to digital transformation in Spain

Year	Policy	Description/Implication
2002	Legislation (eCommerce) Law 34/2002 on Information Society Services and Electronic Commerce	*This implements the EU Directive on certain legal aspects of Information Society services, in particular electronic commerce, in the Internal Market (Directive 2000/31/EC on 'electronic commerce').*
2003	Legislation (Telecommunication) General Telecommunications Law 32/2003	*The purpose of this Law was to implement EU regulatory framework for electronic communications.*
2007	Legislation (eCommerce) Modification of Law 34/2002 (Law 56/2007)	*It modifies the Law 34/2002 by establishing an eAccesibility obligation.*
2007	Legislation (eProcurement) Law 30/2007 on Public Sector Contracts	*It was intended to incorporate the EU Directive 2004/18/EC on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts into Spanish law.*
2007	Legislation Re-use of public sector information (PSI) Law 37/2007	*The law implements the EU Directive 2003/98/EC on the re-use of Public Sector Information into Spanish law.*
2013	Legislation (eInvoicing) Law 25/2013	*The law mandates the use of the electronic invoices as well as an accounting record of invoices in the public sector. It also obliges all public entities to receive all invoices through one common point of entry regardless of their different units and departments.*
2013	Legislation	*The law has a triple purpose: 1) to increase and strengthen the transparency of public activity; 2) to recognise and*

Year	Policy	Description/Implication
	Law 19/2013 on transparency, public access to information and good governance	*guarantee access to information regulated as a right with an ample subjective and objective scope, and 3) to establish the obligations of good governance that those holding public posts must comply.*
2015	Legislation Law 39/2015 on Common Administrative Procedure of Public Administrations and Law 40/2015 on the Legal Regime of the Public Sector	*This new legislation to reform the functioning of the government implements a fully electronic, interconnected, transparent and with a clear and simple administrative structure.*
2017	Legislation (eProcurement) Law 9/2017 on Public Sector Contracts	*The law transposes the European Parliament and Council Directives 2014/23/EU and 2014/24/EU into Spanish law.*
2018	Act on Data Protection (RDL 5/2018)	*Data Protection Act that develops the EU Regulation 2016/679 ("GDPR").*

5.3 Press releases

Table 21: Press releases 2017-2018

Year	Policy	Description/Implication
2017	https://www.mfom.es/MFOM/LANG_CASTELLANO/GABINETE_COMUNICACION/NOTICIAS1/2017/MAYO/170515-01.htm	*In an official trip to China, Minister De la Serna emphasized the multiple efforts and achievements made to boost digital transformation in Spain, which has leveraged e-Administration, telephony infrastructure or smart cities development, amongst other fields (Ministry of Development, 2017).*
2017	http://www.mincotur.gob.es/es-ES/GabinetePrensa/NotasPrensa/2017/Paginas/grupo-derechos-digitales20170328.aspx	*The Working Group on Citizen´s Digital Rights was set up (Ministry of Industry, 2017a)*
2017	http://www.mincotur.gob.es/es-ES/GabinetePrensa/NotasPrensa/2017/Paginas/comite-turismo-ocde.aspx	*Minister Nadal advocates a sustainable and fully digitised tourist sector during a high-level OECD meeting (Ministry of Industry, 2017b)*
2018	http://www.lamoncloa.gob.es/consejodeministros/resumenes/Paginas/2018/160218cmin.aspx	*The Council of Ministries agreed on creating a Working Group to boost digital transformation in the Spanish economy (Government of Spain, 2018a).*
2018	https://www.mapama.gob.es/es/prensa/180531eorellanajornadadigitalizacionyterritoriosrurales_tcm30-451066.pdf	*Digitisation and innovation are priorities to face rural environment challenges, according to Director-General of Rural Development and Forestry Policy (Ministry of Agriculture, 2018b).*
2018	https://www.mapama.gob.es/es/prensa/180404cabanasinauguracionjornadaleadercuenca_tcm30-445529.pdf	*Digital transformation as a key tool to face rural depopulation, according to Secretary-General of Agriculture and Food (Ministry of Agriculture, 2018a).*

Year	Policy	Description/Implication
2018	https://www.mscbs.gob.es/gabinete/notasPrensa.do?id=4282	Ministry of Health, Social Services and Equality is committed to improve digital transformation in health (Ministry of Health, 2017).
2018	http://www.mineco.gob.es/stfls/mineco/prensa/ficheros/noticias/2014/180710_np_ComparecenciaMInistraCongreso.pdf	Digitisation as one of the levers to set up a robust, sustainable and fair growth, according to new Minister of Economics and Business, Mrs. Nadia Calviño (Ministry of Economics and Business, 2018).
2018	http://www.mincotur.gob.es/es-es/gabineteprensa/notasprensa/2018/documents/180321%20np%20plan%20300x100.pdf	The Government has launched Plan 300x100 to deliver optical fiber to all population (Ministry of Energy, 2018).
2018	http://www.mincotur.gob.es/es-es/gabineteprensa/notasprensa/2018/Paginas/transformaci%C3%B3n-digital20180216.aspx	A new Inter ministerial Working Group to boost digital transformation in the Spanish economy has been created (T. a. T. Ministry of Industry, 2018a)
2018	http://www.mincotur.gob.es/es-ES/GabinetePrensa/NotasPrensa/2018/Paginas/espa%C3%B1a-desi-desarrollo-digital.aspx	Spain jumps to 10th place according to DESI index (T. a. T. Ministry of Industry, 2018b)
2018	http://www.red.es/redes/es/actualidad/sala-prensa/notas-prensa/redes-ejecutar%C3%A1-1305-millones-en-proyectos-de-transformaci%C3%B3n	Digital transformation as a key objective in Red.es current activity, which is spurred by generous investments (Red.es, 2018b).
2018	http://www.red.es/redes/es/actualidad/sala-prensa/notas-prensa/el-ministerio-de-energ%C3%ADa-turismo-y-agenda-digital-organiza-el	The Ministry of Energy, Tourism and Digital Agenda organised a summit to discuss impacts and implications of Artificial Intelligence (Red.es, 2018a)

5.4 Situational mechanisms

5.4.1 How does political decision-making influence the implementation of digital transformation?

5.4.1.1 Political structure

Spain is a hereditary constitutional monarchy where the legislative power is held by a bicameral Parliament (*Cortes Generales*) made up by a Lower House (Congress of Deputies) and an Upper House (Senate). According to the 1978 Constitution, Spain adopted a highly decentralised system with 17 autonomous regions (Autonomous Communities, ACs hereinafter) enjoying self-government rights about local affairs, in addition to two 'Autonomous Cities' (Ceuta and Melilla, in continental Africa). In fact, Spain is a quasi-federation with ACs hosting a large autonomy, including the exclusive ability to decide how the municipalities and provinces are organised within the regional territory. At regional level, decentralisation is asymmetric, with two distinct regimes: the common regime (15 ACs) and the

"foral" regime (Basque Country and Navarre), which is characterised by an almost complete spending and revenue autonomy. In addition, municipal and provincial organisation differs from one region to another.

Thus, Spain is now one of the most decentralised countries of the OECD in terms of public spending, and public expenditure (especially in key sectors like healthcare and education) managed by ACs is huge and experienced a great lap over the period 2005-2014 (OECD, 2016).

The panorama described here reflects the relative complexity of the Spanish state and the effects on the different policies implemented, being the administrative modernisation projects a case in point. This great political-administrative "labyrinth" may give rise to problems rooted in the decision-making processes or political workings of some administrations as opposed to others—problems that can be hampered when the administrations are governed by rivaling political parties.

Digital Agenda competences are currently steered by the Ministry of Economics and Business, more specifically by the State Secretariat for Digital Advance. Formerly, before the current government came to power in June 2018, the secretariat, which run under some other different names (i.e, State Secretariat for Telecommunications and Information Society between 2000-2016, and State Secretariat for Information Society and Digital Agenda, between 2016-2018), worked under the aegis of other ministries (Ministry of Science and Technology, Ministry of Industry, Tourism and Trade, Ministry of Industry, Energy and Tourism). Notwithstanding this, issues related to the development of e-government and open government are steered by the Ministry of Finance, more specifically by the State Secretariat for Public Function.

On the other hand, individual government ministries and agencies are responsible for the implementation of the departmental Digital Agenda/eGovernment projects falling within their respective fields of competence. Such is the case of Red.es, a public entity attached to the State Secretariat for Digital Advance or SEGITTUR, which is responsible for promoting innovation in the Spanish tourism industry and is accordingly attached to the Ministry of Industry, Energy and Tourism.

5.4.2   Demographic structure

With respect to the demographic structure, population density in Spain accounts for 91.4 inhabitants per square kilometer, which is lower than most Western countries and is also rather unevenly distributed. While inland population is scarce and scattered with some exceptions (notably Madrid and the metropolitan area and some other cities like Valladolid or Saragossa), most population is clustered around coastal areas. Depopulation is severe in vast inland areas; in fact, more than half of Spain's towns and villages carry a very high to moderate risk of being completely depopulated in the medium and long term (INE, 2016) Complex orography (i.e, Spain ranks the second most mountainous European country after Switzerland) is undoubtedly one of the factors explaining such uneven distribution. This may also explain why the deployment of fibre networks (FTTP), which constitutes an important asset of the Spanish digital society (i.e, it is available to 71.4% of the population), falls to 20.9% in more sparsely populated rural areas.

On the other hand, Spain holds the highest life expectancy rate in Europe and second in the world that is estimated at 83.5 years in 2016 (it is estimated at 81 in the EU28, (EUROSTAT, 2018a). This, combined with a very low fertility rate (around 1.33 children per woman), explains the progressive ageing of Spanish population and the prospect decrease of total population (between 10 - 12% in 2050).

Table 22: Spanish population

Spanish population (2018)* (from INE)	
Total population	46,659,302
• Population aged under 15 years	15% of total population
• Population aged 15-64	65.8%
• 65 and over	19.2%
• Foreign-born population	10.1%

(*) Population at 1st January 2018

With respect to labour market statistics, Spain has traditionally experienced difficulties to fight against unemployment, and the country has usually "championed" European unemployment rankings. Hence, during the past crisis it had to endure unbearable unemployment rates (over 26% in 2013, let alone the youth-unemployment rate, which stood at more than 50%). Fortunately, the picture has somewhat changed and the unemployment rate has decreased at around 16% nowadays (EUROSTAT, 2018b)

The population statistics make clear that these trends (decreasing births, ageing population derived from high life expectancy rates, huge youth unemployment rates) poses great challenges as for both the design and effective implementation of digital policies.

5.5   Action formation & transformation mechanisms: press releases (2017-2018)

Press releases from the Central Government mirror the concerns and priorities associated to digital policies and are somewhat related to the very characteristics of the Spanish economy and some other aspects described in the preceding section (e.g., the importance of the changes taking place in the demography. As such, one of the basic ingredients of press releases is the depopulation taking hold in some vast Spanish regions and the challenges faced by the rural world. In this scenario, digitisation is acknowledged to be a lever to successfully deal with these challenges, as it is stressed in Ministry of Energy, Tourism and Digital Rural Agenda, 2018, or the Ministry of Agriculture, Fisheries and Food, 2018 a & b.

The importance of digital transformation in different types of services is also emphasised, as for example in the case of health (Ministry of Health, 2017) or in the highly-relevant and strategic Spanish tourist sector (Ministry of Industry, 2017b).

Some other press releases emphasise how building up new robust, innovation-based and highly sustainable economy model in Spain needs to be anchored on digital transformation processes. This is something that has been explicitly recognized by the just-arrived Minister of Economics and Business, Mrs. Nadia Calviño (Ministry of Economics and Business, 2018) and has been operationalised by, for example, mobilising working groups to discuss about how to effectively tackle such challenging endeavour or by investing in projects of different nature (Red.es, 2018b). This is indeed an explicit

recognition of the role to be played by digital transformation in promoting new ways of growth, which seems to be in contrast with the past, especially during the crisis, where the role of "digital" policies played a minor role. In fact, building up an innovative and high-value added economic model has been traditionally envisioned in Spain, as economic growth has been mostly rooted on low-value added activities.

A final aspect tackled in press releases has to do with the importance of a good positioning in pioneering technologies, such as Artificial Intelligence (AI), which are likely to play a disruptive role in the incoming years (Red.es, 2018a).

5.6   Action formation & transformation mechanisms: resulting digital transformation agenda

5.6.1   Plan Info XXI (1999-2003)

Plan Info XXI was an ambitious programme to foster new technologies and broadly speaking, Information Society in Spain. Despite the pompous presentation, it became clear quite soon that it was quite mismatched from truly citizen´s and country´s needs, as many of the 300 actions making up the Plan didn´t work. Accordingly, a profound revision of the Plan was considered emphasising the importance of technological infrastructure provision (rather obsolete at those days) and leveraging consensus, especially amongst the private sector. Nevertheless, the Plan´s impact was rather humble, as Spain was still a laggard in many Information Society indicators and thus a radical change of gear was needed. In fact, in evaluating the Plan a Special Commission (popularly known as the "Soto Commission" after the name of the person presiding it) was set up and several obstacles hampering the development of Information Society in Spain were highlighted, such as: insufficient leadership and management, lack of coordination or lack of citizens´ awareness on the benefits brought about by information society.

5.6.2   España.es (2004-2005)

The recommendations acknowledged in the *Soto Commission* gave rise to a new strategy called *España.es.* This new strategy rested around two different pillars: a vertical one comprising measures on e-administration, education, and small/medium-sized businesses and a horizontal one (accessibility and formation, digital contents, and communication).

5.6.3   Plan Avanza (2006-2009) and Plan Avanza 2 (2011-2015)

Nevertheless, *España.es* was not properly implemented as the arrival of a new government (i.e, the Socialist Party in 2004), implied the design of an overarching R&D+I strategy (called Ingenio 2010) that was composed of three different programmes: CENIT, aimed at promoting PPPs in R&D+I, CONSOLIDER, intended to enhance research excellence, and AVANZA, strictly committed to the development of the information society.

Thus, Plan Avanza was Spain's umbrella strategy for the advancement of the Information Society from 2006 to 2009, even though it was effectively extended to 2015 thanks to a revamped strategy (2011-2015) operationalised under Plan Avanza 2.

The Plan operated under the direct authority of the Ministry of Industry, Tourism and Trade (MITT), specifically under the State Secretariat of Telecommunications and the Information Society (SSTIS). Implementation responsibilities were shared by the SSTIS and Red.es, a public enterprise also charged with managing two key departments which directly contribute to the Plan's objectives: CENATIC (the National Centre for the Application of ICTs based in Open Source) and INTECO (the National Communications Technology Institute). The implementation was based on a cooperative model under which each of the 17 Autonomous Communities had a separate action plan and budgetary contribution. This was articulated around bilateral agreements signed between the government and each Autonomous Community.

One of the Plan's prime objectives was to leverage information and communication technologies to change Spain's economic model. It was considered that by promoting a wider use of ICTs competitiveness and productivity will increase, and by favouring equal opportunities across the country, a sustainable model of economic growth would arise.

The strategy was organised under four main pillars:

- Digital Citizenship: Policies under this strategic pillar were designed to increase ICT adoption by citizens, improve ICT skills (or "eSkills") in the general population, and promote the utilisation of digital services. This action area also provided citizens with opportunities to acquire ICT equipment and Internet access for their homes and included communication initiatives to raise awareness of the benefits and applications of ICTs for social and economic gain.

- Digital Economy: This pillar aimed to promote the incorporation of ICTs in firms' operations and business models across the whole Spanish economy. For instance, it encompassed programmes designed to increase the use of Enterprise Resource Planning (ERP), Customer Relationship Management (CRM) applications and e-invoicing, among other tools. Additionally, the Plan worked to encourage firms to create websites and promote e-commerce. In the ICT sector, policies aim to promote growth and foster innovation by providing support for the development of new ICT products/services and support internationalisation of Spanish ICT firms. Lastly, initiatives under the digital economy pillar were implemented to spur the availability of specialised human capital available to firms of the ICT sector.

- Digital Public Services: Plan Avanza did support the integration of ICTs in the production and delivery of public services across several areas of government (health, justice, education, etc.) as well as in all administrative layers (i.e., central, regional and local). The goal was to contribute to national strategies for the modernisation of the public administration, as well as assist government organisations to increase digital interaction with citizens, thereby improving the responsiveness of services and raising back-office effectiveness and efficiency.

- Digital Context: This pillar was the broadest in scope. In order to meet the goal of universal accessibility to key ICT infrastructures, Plan Avanza implemented large-scale projects to increase

coverage of mobile telephony networks, broadband Internet and digital terrestrial television. Additionally, this area of activity was intended to improve the quality, speed and accessibility of these key ICT infrastructures. Developing quality digital contents throughout the public and private sector was a third challenge for this pillar. Finally, initiatives belonging to this fourth pillar also worked to increase users' security and confidence online.

Plan Avanza 2 (2011-2015) was designed to ensure continuity with the original plan's course of action. The second stage sought to make Spain a leader in the development and use of advanced ICT products and services, but two major events took place in Spain resulting in a radical change of gear preventing the plan from being fully deployed. The first was the crisis, which hit hard in Spain implying a thorough rethinking of priorities. The second was the change of government in December 2011, which explained that a new further strategy was put in place in 2013,

5.6.4   Digital Agenda for Spain (2013-2015)

The Digital Agenda for Spain was approved in 2013 and was the new government's strategy to develop the digital economy and society during 2013-2015. This strategy, which as in the case of plan Avanza was thought as the umbrella of all the government's actions in terms of Information Society and Digital Agenda, was led by the Ministry of Energy, Tourism and the Digital Agenda and the Ministry of Finance and Public Function, and set the ICT and e-Administration roadmap to achieve the goals of the Digital Agenda for Europe in 2015 and 2020.

The objectives, lines of action and plans established in this Digital Agenda were intended to encourage the creation of employment opportunities and economic growth through the smart adoption of digital technologies, thus contributing to the collective effort of promoting the economic recovery of the country. The Agenda adopted 32 key indicators comprising both the Digital Agenda goals for Europe and additional specific goals for Spain.

The Digital Agenda for Spain was designed following the priorities of the Digital Agenda for Europe through an open, transparent and participatory process involving experts, companies, associations, citizens, parliamentary groups, ministerial departments and other territorial administration bodies. It contained lines of action structured around the following objectives:

- Foster the roll-out of networks and services to guarantee digital connectivity

- Develop the digital economy for the growth, competitiveness and internationalisation of Spanish companies

- Improve e-administration and adopt digital solutions for an efficient rendering of public services

- Reinforce confidence in the digital ecosystem

- Boost R&D&i system in Information and Communications Technologies

- Promote digital inclusion and literacy and the training of new ICT professionals

As it may be seen, objective 3 of the Digital Agenda for Spain was improving e-government and to adopt digital solutions for efficient delivery of public services, which put in place a set of specific lines of action. The challenge was to increase productivity and services to citizens, simultaneously achieving a reduction in public spending. This overall goal was broken down into second-level objectives, each with their lines of action: a) moving towards an integrated society with quality public services to citizens and businesses centered administration; b) increase the use of online public services by citizens and businesses; c) streamline and optimise the use of ICT in public administration; d) promote cooperation and collaboration with organisations, businesses and social actors in eGovernment; e) use technology to eliminate the digital divide.

5.6.5   Digital Strategy for an Intelligent Spain (in progress)

From July to September 2017, the Ministry of Energy, Tourism and the Digital Agenda launched a public consultation to involve business, social organisations and citizens in the development of a new *Digital Strategy for Spain*. This was in fact an updated version of the Digital Agenda with more ambitious targets and policy areas (in line with the Digital Single Market Strategy proposals and 2025 targets) and giving priority to good connectivity and investing in human capital.

This new strategy, the *"Digital Strategy for an Intelligent Spain" (EDEI),* is structured around five areas:

- Data economy;
- Ecosystems 4.0;
- Smart regulations;
- Technological infrastructure;
- Citizenship and digital employment.

The public consultation enabled the truly involvement of the different stakeholders (i.e, social organisations, companies in different sectors, consumers and users, public administrations and individuals), in the design of the digital roadmap in which all stakeholders can be positioned and gather together the proposals and relevant information that want to provide stakeholders in the development of the Digital strategy for an intelligent Spain. Indeed, the public consultation created a space of permanent dialogue with the widest representatives of society (employers and Unions were the first) to make sure that the digital transformation is effective, productive, inclusive and in solidarity.

The result of the process was that there were 109 inputs from different stakeholders[10]. In general, from what was said in the input received, the structure under the five pillars was accepted, although it was suggested altering some pillars and challenges (Government of Spain, 2018b)

One of the major concerns acknowledged in the consultation process was the need to increase the number of ICT specialists, as the promotion of the education system in the advancement of digital skills is a challenge faced by the country. Other key challenges identified were: digital inclusion, re-training of the workforce for a digital environment, digital skills training and digital entrepreneurship. Given

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[10] 38% of total were companies, 25% partnerships, 17% belongs to public institutions, 13% were individuals (private citizens) and Universities and others hosted 7% of queries.

their relevance, digital education and the digital transformation of employment might be specially considered in a joint "Citizenship, Education and Digital Employment" pillar in the new digital strategy.

The new strategy stalled. Just when it proceeded to be approved in the Cabinet, the motion of censure led by Mr. Pedro Sánchez (Socialist Party) was raised and the Mr. Mariano Rajoy Government (Popular Party) was ousted from office. This episode took place in June whereby the Agenda is currently involved in an indefinite hiatus.

5.6.6   Spanish Digital Agendas

5.6.6.1   OECD Good Governance for Digital Policies: How to Get the Most Out of ICT The Case of Spain's Plan Avanza

When looking at country reports, a major highlight was the OECD publication *"Good Governance for Digital Policies: How to Get the Most Out of ICT The Case of Spain's Plan Avanza"*, in 2010 (OECD, 2010c) At the request of the Government of Spain, specifically from the State Secretariat of Telecommunications and the Information Society (the SSTIS), the OECD conducted a peer review of the country's Plan Avanza strategy for the advancement of the Information Society.

The report acknowledged the efforts devoted by Spain to the advancement of its information society, and the role of Plan Avanza in contributing to the positive results. According to the OECD, Plan Avanza offered examples of good governance practices. In fact, even though the leadership was centralised by SSTIS, strategic alignment of Plan Avanza with other key government policies such as the national e-government agenda was put in place and this created opportunities for complementary initiatives and mutual support during implementation.

The analysis also stressed that progress in ICT diffusion and access was felt indeed, as since the launch of Plan Avanza in 2006, coverage of broadband, mobile network communications and digital terrestrial television were amplified, ICT take-up amongst citizens and firms rose. The availability of online services rapidly increased and the ICT. Notwithstanding this, some challenges were emphasised, namely to fully connect technologies with their intended purposes - productivity gains, facilitating innovation, increasing growth and public-sector efficiency, and enhancing benefits for citizens. According to the peer review, in doing so policy makers could have considered (i) strengthening the contribution of ICTs to economic recovery and long-term objectives for green growth and innovation; (ii) supporting a demand-driven, user-centred strategic approach to public service delivery; (iii) maximising impact of initiatives while making optimal use of resources invested. All in all, Plan Avanza was relevant in increasing "e-readiness" (e.g. increasing the availability of critical ICT infrastructure on which the continued development of ICT goods and digital services depends), and the remaining challenge was to transition from e-readiness to e-intensity.

5.6.6.2   OECD Reaping the Benefits of ICTs in Spain strategic study on communication infrastructures and paperless administration

Likewise, a strategic review on communication infrastructures and paperless administration in Spain (*"Reaping the benefits of ICTs in Spain strategic study on communication infrastructures and paperless*

administration") was conducted by the OECD in 2013 (OECD, 2013b), that is, in a moment where Spain was facing a hard and severe crisis. These were selected topics from Plan Avanza, whereby it cannot be considered as a comprehensive review of the programme. The document stressed some challenges to be faced, namely:

- The importance of aligning the strategies at all levels of government to ensure coherence and synergies.
- Ensure a sound allocation of resources according to the most urging priorities, especially in a scenario of economic turmoil.
- Increase user uptake, thus shifting focus from the supply to the demand of ICTs in order to benefit from the returns on previous investments. This is something that was already stressed in the previous Avanza *peer review*.

5.6.7 Summary

Spain has approved five major digital agendas since 2000 and currently there´s a new one on the pipeline. The design and implementation of different digital strategies is very much related to changes in Central Government power. In fact, this may be considered as a distorting factor likely to hamper sustainable results in the long term. In fact, Plan Avanza, which effectively run for more than eight years is considered to be a successful example of digital strategy. Even though it didn´t fulfill all the objectives proposed and there was further margin for improvement in some areas, the positive results of Plan Avanza have been praised, for example, by the OECD in two different reports (see the preceding section), especially in terms of the capacity to build up e-readiness and set up sound governing mechanisms.

More recent digital strategies have witnessed positive changes as far as the effective involvement of citizens is concerned. One of the major drawbacks hampering the success of early digital agendas (e.g. Plan Info XXI) has to do with the fact that they didn't meet the real needs of different stakeholders, especially citizens. In this sense, participation and involvement of stakeholders in setting up priorities has been increasingly considered as a basic factor of success. The ultimate expression of the full involvement of citizens is the Digital Strategy for an Intelligent Spain (under construction and halted due to the recent change of government), which opened up a public consultation process as a space of permanent dialogue with the widest representatives of society.

An additional difference between earlier and more recent strategies implies that, whereas earlier strategies were aimed at paving the way for the development of information society, and thus they were focused on increasing the availability of infrastructure, more recent strategies are very much adhering EU guidelines. This is the case of Spanish Digital Agenda 2013-2015 that closely followed EU Digital Agenda 2015-2020 guidelines, or the Digital Strategy for an Intelligent Spain, which is aligned with the EU Digital Single Market Strategy proposals and 2025 targets.

5.7 Traceable results of digital transformation approaches

5.7.1 Outcomes of digital transformation articulated in official country reports

This section summarises the outcomes of digital transformation in Spain's public administration 2000-2017 described in the EU's JoinUp Reports (European Commission, 2014c, 2015c, 2016d, 2017e, 2018g).

5.7.1.1   2000-2003

1999
In 1999, the "Info XXI initiative for the development of the Information Society" is approved, aimed at promoting the development of new ICTs and their adoption.

2001
In September 2001, the citizen portal *Administracion.es* is launched, providing an online gateway to public information and services.

2002
The Electronic National Identity Document project is initiated.

5.7.1.2   2003-2005

2003

A new Information Society action programme called *España.es* was approved.

The General Telecommunications Law 32/2003 is passed and implemented in Spanish law the EU regulatory framework for electronic communications.

The Parliament also approved a new law on electronic signature, establishing a legal framework for the future development of a national eID card. The Government also launched a secure electronic notification service designed to enable Public Administrations to send notifications to citizens and businesses electronically. These services, along with some others were developed in an Action Plan for the Impulse of eAdministration approved by the Ministry of Science & Technology and the Ministry of Public Administration. The Plan focused on 19 measures along with some other organizational and normative issues.

2004
New electronic ID cards containing biometric identifiers were created and delivered with the aim of providing secure identification and authentication, allowing citizens to securely access transactional eServices. Most services were effectively thanks to the development of the "Public Administration Technological Modernisation Plan 2004-2007", also known as Plan Conecta, which was organised under 5 big projects comprising 43 projects covering issues related to eAdministration, redesign of processes, inter administrative coordination, public services multi-channel delivery or capacity building. The Plan had its own identity but was somehow aligned with Plan Avanza priorities (see 2005).

2005

The Government adopted the *Avanza* Plan for the development of the Information Society, and the convergence with Europe and among the Autonomous Regions.

The Moderniza Plan (2006-2008), a plan of measures aimed at improving, modernising and simplifying the Administration with a view to better accommodate the needs of citizens was approved. The Plan

had its own identity but was aligned with Plan Avanza priorities. Its objective was to render the Administration more flexible and effective while enhancing the quality of public services – a definite step towards the implementation of eServices and means of eGovernment.

The Higher Council for eGovernment adopted recommendations providing guidelines for Open Source adoption within Public Agencies.

2006

The '060 Network' was launched as an instrument to enable Spanish citizens to interact with or receive information from any of the three levels of Government (central, autonomic and local administrations) through three different channels: local offices, a web page ('www.060.es') and the phone helpline '060'.

The new electronic identity card (DNIe) is officially launched in Spain together with a new eID website and a free phone helpline for citizens.

The SARA (Sistema de Aplicaciones y Redes para las Administraciones) network is presented. SARA is a system of applications and networks for public authorities, for exchanging data and sharing software.

5.7.1.3   2007-2014

2007

The Law on Citizens' Electronic Access to Public Services is adopted recognising the right of citizens to communicate electronically with Public Administrations; this right was set to become effective from 31 December 2009 onwards.

2008

The Spanish Minister for Industry, Tourism and Trade and the Minister for Public Administrations launched the 'Telecentres training and revitalisation plan', a new training programme on the use of eGovernment services by the citizens of rural areas.

The Aporta open data project is initiated. The Aporta open data project aims to promote a culture for reusing public information, raising awareness regarding its importance and value, endeavoring likewise that Public Administrations and Agencies make available the information they hold, thus stimulating its market potential.

The Plan for the reduction of Administrative Burden and Improvement of Regulation (2008-2012) is approved with a view to enhance the competitiveness of Spanish business.

2009

Plan Avanza2 is presented as the new, second phase of the Plan for the development of the Information Society, the which aims to foster the demand for ICT.

2010

The Plan Avanza 2 strategy (2011-2015) is launched operationalizing the goals and ambitions contained in the Plan.

The eGovernment portal PAe (Portal de Administración Electrónica, *Portal of Electronic Administration*) is launched unifying and centralising all information about eGovernment. The goal was to provide a full range of initiatives, reports, indicators and news.

2011

The National Action Plans for Open Government are endorsed. Spain has endorsed three Action Plans since 2011, as a result of the participation of Spain in the Open Government Partnership (OGP). This partnership seeks to make governments more transparent, accountable, as well as improve the responsiveness to its citizens, thus improving the quality of governance and of the services provided. The First Plan (2012_2014) was signed in 2011 and focused on the improvement of public services through various commitments (e.g. improvement of the interoperability) setting up the legislative base: in this sense, the Law on Transparency, Access to Information and Good Governance was passed to foster public transparency, or the Organic Law on Budgetary Stability was approved to optimize the management of public resources.

The Royal Decree 1495/2011, which implements Law 37/2007 of 16 November, on re-use of public sector information for the public sector of the State is passed. The objective was to establish within the National Government detailed rules developing the provisions of the Law and to promote and facilitate the availability of PSI for its re-use.

2012

The CORA Report. The Public Administration Reform Committee (CORA in Spanish) was created in 2012 to assess a thorough study of the situation of public administrations in Spain and to propose necessary reforms to the government in terms of size, efficiency and flexibility demanded by citizens and the country´s economy. In doing so, the so-called 'Office for the implementation of the reform of the administration' (OPERA) was created with the aim of ensuring the implementation of the measures contained in the report.

The General Telecommunications Law is amended by Royal Decree Law 13/2012, to incorporate the 2009 telecom package of directives on electronic communications.

2013

The Digital Agenda for Spain is approved. This was the Government's strategy to develop the digital economy and society in Spain during 2013-2015. The objectives, lines of action and plans established in this Digital Agenda were intended to encourage the creation of employment opportunities and economic growth through the smart adoption of digital technologies, thus contributing to the collective effort of promoting Spain's economic recovery.

The Law for Transparency, Access to Public Information and Good Governance (Law 19/2013) is passed. This law defines the establishment of a transparency portal where all the information concerning the central administration has to be published.

The National Cyber Security Strategy is adopted as the strategic document that provides the Spanish Government with a basis for developing the provisions of the National Security Strategy on the protection of cyberspace.

5.7.1.4   2014-2017

2014

The Second National Action Plan for Open Government (2014-2016) is implemented. It included the opening of the transparency portal and improved access of citizens to information and services (e.g. Spanish archives, micro-data of the national healthcare system). The implementation of the second National Action Plan can be considered satisfactory, and as far as possible it took into account both general and individual recommendations on each commitment proposed by the Independent Reporting Mechanism (IRM) when assessing the Plan.

A new General Telecommunications Law (Law 9/2014) is passed by the Spanish Parliament. This new law intends to foster the deployment of new generation networks, both fixed and mobile, mainly through simplification of all administrative procedures and developing infrastructure

2015

Digital Transformation Plan for the General Administration and Public Agencies (ICT Strategy 2015-2020) is adopted. The Government adopted "The Digital Transformation Plan for the General Administration (GA) and the Public Agencies belonging to it (PAs) (ICT Strategy 2015-2020)" in 2015. This ICT Strategy sets out the global strategic framework to make progress in the transformation of the Administration, put forward the guiding principles, goals and actions. In fact, this was the basis used by various ministries to draft sectoral action plans for the digital transformation.

2017

Finally, the Third Plan (2017-2019) is focused on building up bridges, that is "structure", whereby it is organized under three goals, namely: 1) the promotion of mechanisms of participation and dialogue with civil society; 2) ensure inter-administrative cooperation between different levels of Administration, thus capturing the reality (and complexity) of the Spanish State; and 3) strengthen the foundation of the Open Government and set up actions beyond this third plan.

The National Security Strategy 2017 is adopted being the first one developed in accordance with Law 36/2015 on National Security.

5.8   A timetable of policies and policy changes and digital agendas in Spain

Summary of the results and a timetable of the identified policies, processes, activities and events extracted from the policy and process tracing approach.

Table 23: Timetable of policies, policy changes, digital agendas

Year	Policy/Process/Activity/Event	Description/Implication
1999	Plan Info XXI (1999-2003)	*Organised around 300 actions, the Plan failed at achieving robust results, as the so-called "Soto Commission" did stress. Link not available*
2003	Legislation (Telecommunication) General Telecommunications Law	*The Law implemented the EU Directive and aimed at deepening the liberalization process of the telecom sector* *www.boe.es/buscar/act.php?id=BOE-A-2003-20253*

Year	Policy/Process/Activity/Event	Description/Implication
2003	España.es	*Structured around two pillars: vertical (e-administration, education SMEs) and horizontal (accessibility, digital contents and communication)* *Link not available*
2003	Action Plan for the Impulse of eAdministration in Spain	*It focused on 19 services, 15 of which were 15 services likely to positively impact citizen´s quality of life and also involved organizational and regulatory arrangements.* *https://administracionelectronica.gob.es/pae_Home/dam/.../2003-Plan-de-choque.pdf*
2004	Plan Conecta	*It was aimed at revamping Public Administration through eAdministration and focused on project re-design, administrative cooperation, public services multi-channel delivery and capacity building. It gave birth to strategic projects: eDni, 060 citizens`portal, etc.* *https://administracionelectronica.gob.es/pae.../2005-Plan-Conecta-MAP-DGMA.pdf*
2005	Plan Avanza	*With the aim of leveraging ICTs to change Spanish economic model, the strategy was organised under four main pillars: Digital Citizenship, Digital Economy, Digital Public Services and Digital Context* *http://www.agendadigital.gob.es/agenda-digital/planes-anteriores/Paginas/plan-avanza.aspx*
2005	Moderniza Plan	*The Plan was aimed at improving, modernising and simplifying the Administration with a view to better accommodate the needs of citizens. It consisted of 15 different measures* *http://www.socinfo.info/seminarios/cooperacion3/map.pdf*
2007	Law on the re-use of public sector information (PSI)	*The law implements the EU Directive on the re-use of Public Sector Information into Spanish law.* *https://www.boe.es/diario_boe/txt.php?id=BOE-A-2007-19814*
2008	Aporta Project	*The Aporta Project is an open data project aims to promote a culture for reusing public information, raising awareness regarding its importance and value.* *https://joinup.ec.europa.eu/document/aporta-aporta*
2010	Portal of Electronic Administration (PAe)	*PAe is launched unifying and centralising all information about eGovernment. The goal was to provide a full range of initiatives, reports, indicators and news.* *https://administracionelectronica.gob.es/pae_Home/?idioma=en#.W4pD15MzYWo*
2010	Plan Avanza 2	*The second stage sought to foster the development and use of advanced ICT products and services* Plan: *http://www.agendadigital.gob.es/agenda-digital/planes-anteriores/Paginas/plan-avanza.aspx* Strategy*:* *http://www.agendadigital.gob.es/agenda-digital/planes-anteriores/Paginas/plan-avanza2-estrategia.aspx*

Year	Policy/Process/Activity/Event	Description/Implication
2011	First National Action Plan for Open Government	*This first Plan and focused on the improvement of public services through various commitments (e.g. improvement of the interoperability) setting up the legislative base. http://transparencia.gob.es/transparencia/transparencia_Home/index/Gobierno-abierto/cIPlanAccion.html*
2013	Digital Strategy for Spain	*The Strategy set the ICT and e-Administration roadmap to achieve the goals of the Digital Agenda for Europe in 2015 and 2020 and was intended to encourage the creation of employment opportunities and economic growth through the smart adoption of digital technologies http://www.agendadigital.gob.es/digital-agenda/Paginas/digital-agenda-spain.aspx*
2013	Law for Transparency, Access to Public Information and Good Governance	*This law defines the establishment of a transparency portal where all the information concerning the Central Administration has to be published. https://www.boe.es/buscar/doc.php?id=BOE-A-2013-12887*
2014	Second National Action Plan for Open Government (2014-2016)	This Second Plan involved opening of the transparency portal and improved access of citizens to information and services (e.g. Spanish archives, micro-data of the national healthcare system *http://transparencia.gob.es/transparencia/transparencia_Home/index/Gobierno-abierto/bIIPlanAccion.html*
2014	Legislation (Telecommunication) General Telecommunications Law	*This new law intends to foster the deployment of new generation networks, both fixed and mobile, mainly through simplification of all administrative procedures and developing infrastructure https://www.boe.es/buscar/act.php?id=BOE-A-2014-4950*
2015	Digital Transformation Plan for the General Administration and Public Agencies	*It sets out the global strategic framework to make progress in the transformation of the Administration, put forward the guiding principles, goals and actions https://administracionelectronica.gob.es/pae_Home/dam/jcr:0d4cfaad-3df4-46a1-8b87-aa3dc602e90b/Plan_de_trans_Estrategia-TIC_ingles.pdf*
2017	Third National Action Plan for Open Government (2014-2016)	*The third plan is focused on building up bridges, that is "structure", http://transparencia.gob.es/transparencia/transparencia_Home/index/Gobierno-abierto/aIIIPlanAccion.html*
N/A	Digital Strategy for an Intelligent Spain	*In progress, but subject to an indefinite halt due to the change of Government https://goo.gl/Bvd6Fg (Google Shortener used. Original link too long)*

6   Case 4: France

For France, the comparison between the Europe's Digital Progress Report (EDPR) in 2017 (European Commission, 2017f) and the Digital Economy and Society Index Reports in 2018 (European Commission,

2018c) reveals two information. The first one is that France ranks 18th out of the 28 EU Member States. So France belongs to the medium-performing cluster of countries, such as Germany, Spain and Portugal. The second information is that, considering the changes in the choice of indicators between DESI 2017 and DESI 2018, France score changes from 48.8 in 2017 (EU, 50.8) to 51.5 in 2018 (EU, 54). Despite some slight improvements of the French score, the difference between France score and the UE average is higher. In fact, with the former set of indicators, France ranked 16th.

Figure 6: DESI 2018 Performance of France comparing to EU
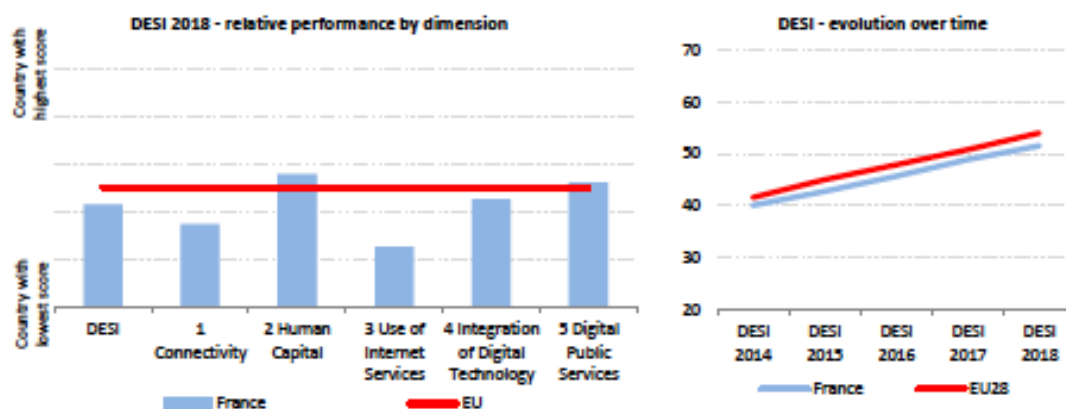
Source: European Commission (2018c) Digital Economy and Society Index 2018 Country Report France.

The DESI (Digital Agenda Scoreboard key indicators) shows (see Table 23) that 81% of the French households use the internet at least once a week in 2017 and that 97.2% of businesses have a broadband connection. However, the rank of France comparing to other EU countries, except for businesses with broadband connection, is not so good.

Table 24:Broadband and connectivity in France

Broadband and connectivity in France	Year: 2017*	France rank among EU28 countries
Households with internet access	87 %	11
Businesses with internet access	66.5%	25
% of individuals using the internet at least 1/week (including every day)	81 %	11
% of individuals who never use the internet	13 %	18
Households with broadband connection	85 %	18
Businesses with broadband connection	97.2 %	6

* Last year available on DESI, Digital Agenda Scoreboard key indicators, Country ranking table, France, https://digital-agenda-data.eu/charts/country-ranking-table-on-a-thematic-group-of-indicators#chart={"indicator-group":"internet-usage","ref-area":"FR","time-period":"2017"}

But as we can see in the table 24, it is not so easy to compare the progress of the countries, an even of France from one year to another because the indicators of the DESI change regularly to adapt the analysis to the progress of the information and communication technologies and also to the politic interest for the use of Internet by the users, then users as citizens. Perhaps it is the reason why France seems to drop sharply under the EU average for some indictors in the recent years, such as for "households with a broadband connection" or "households with Internet access". Is this what is at the origin of some French policies to cover France with fiber optic by 2022?

Table 25: DESI and the change of indicators

DESI	France Rank	France Score	EU Average
DESI 2015	14	0.51	0.5
DESI 2016	16	0.51	0.52
DESI 2016* (re-calculated in 2017)	16	0.48	0.49
DESI17	16	0.51	0.52
DESI 2017* (re-calculated in 2018)	18	48.8	50.8
DESI 2018	18	51.5	54.0

* The Digital Economy and Society Index (DESI) is a composite index developed by the European Commission that aggregates a set of indicators. When the DESI is re-calculated, country scores and rankings may change from the previous publication.
Sources : European Commission (2016a). Digital Economy and Society Index 2016 Country Profile France/European Commission (2017b). Digital Economy and Society Index 2017 France/European Commission. European Commission (2018c). Digital Economy and Society Index 2018 Country Report France.

The indicators of the DESI are composed of 5 dimensions: connectivity, human capital, use of Internet, integration of digital technology and digital public services. In the DESI 2016, France ranks in the cluster of falling-behind countries, with Bulgaria, Greece, Poland and Slovakia. In DESI 2018, France ranks 23rd out of 28 in terms of connectivity (low degree of coverage for 4G mobile band and fast broadband, lower than in EU); 11th in human capital (but not enough ICT specialist skills for enterprises) and 13th on digital public services, unchanged since DESI 2016. But if 48% of Internet citizens send filled-in forms, they are less likely to use prefilled forms.

Table 26: DESI Dimensions in 2016 and 2017

	DESI 2016			DESI 2017		
	France Rank	France Score	EU Average	France Rank	France Score	EU Average
Connectivity	20	0.53	0.59	20	0.55	0.63
Human capital	10	0.57	0.53	9	0.59	0.55
Use of Internet	25	0.37	0.45	25	0.40	0.48
Integration of Digital Technology	18	0.32	0.35	16	0.35	0.37
Digital Public Services	9	0.60	0.51	9	0.65	0.55

Source : European Commission (2017b) Digital Economy and Society Index 2017 France

But is it easy to develop user's communities for the creation of new public online services if French people prefer to use online media (video on demand- 1st rank for France in DESI 2016) or to shop online than to engage into social activities online or to consult news on Internet? How to foster a digital data-driven economy if the French businesses have a bad rank in adoption of radio-frequency identification or cloud computing? Considering the Digital Public Services, France ranks 13th (DESI 2018, unchanged since 2016) but two ranks down from the previous year in DESI 2016. If 48% of Internet citizens send filled-in forms, some weakness seem to provide from the use of prefilled forms. Recent policies, as we are going to see in other parts of that report, are launched to improve the France e-government scores.

6.1   Digital Agendas

Table 27: French Digital Agendas

Year published	Digital Agenda
2002	Plan 'For a digital Republic in the Information Society', Re/SO 2007
2004	ADELE action and strategic plan for eGovernment (2004-2007) - The first French eGovernment strategy
2008	Digital France 2012 (2008-2012) : Development plan for the Digital Economy
2010	High-Speed Internet National Programme (PNTHD 2010-2022)
2013	France High-Speed Broadband Plan (High Speed Broadband Mission) (2013-2020)
2013	Government Roadmap for the Digital Economy
2014	"Government as a Platform" strategy
2015	Open Government National Action Plan 2015 - 2017 For a transparent and collaborative government
2016	Digital Republic bill
2017	Public Action 2022 Programme (partly for digital transformation)
2017	Concerted Development of the Territorial Digital Transformation (DCANT 2018-2020)
2018	2018-2020 Action Plan for Open Government

6.2   Policies/Bilss related to digital transformation

Table 28: Policies and bills related to digital transformation in France

Year	Policy	Description/Implication
1986 September	Law on the freedom of communication	*Law proposed by the Minister of Culture in favor of deregulation of audiovisual communications, privatization of some TV channels, liberalization of the sector of cable networks and mobile telephony.*

Year	Policy	Description/Implication
1996	Telecommunications regulation law	The law authorizes a competitive telecommunications market.and create the Telecommunications Regulatory Authority (ART)
2000 March	Law on electronic signature	The law implements the EU Directive 1999/93/EC on a Community framework for electronic signatures.
1999 June	Law of orientation for the planning and sustainable development of the territory (LOADDT)	Article L. 1511-6. of the law states that local authorities or public institutions of local cooperation, if the supply of services or broadband telecommunications networks is not provided by market players, may create telecommunications network infrastructures. Communities and institutions can not operate as operators and must make these networks available to private operators.
2001	Interdepartmental Conference for territorial Planning (CIADT) to reduce the digital divide	The CIADT (government) recognizes the legislative obstacles to the extension of the Internet network and launches a national experiment to use electricity transmission network for the development of broadband with the help of the local authorities.
2004 January	Law on 'Informatics and Liberty'	Legal framework for Data protection and Privacy. About the use of identifiers in databases and the processing of personal data by public and private sector organisations. Creation of a National Commission for Informatics and Liberty (CNIL). The law was amended in august 2004 to implement the EU Data Protection Directive (95/46/EC).
2004 June	Law for trust in digital economy	Adopted on 21 June 2004, the Law for trust in digital economy implements the EU Directive on electronic commerce (2000/31/EC) and sets the legal framework for the development of eCommerce services in France. The law was amended in 2007, 2008, 2011, 2014, 2015, 2016.
2004 July	Law on electronic communications and audiovisual communication services	The law implements the EU regulatory framework for electronic communications: Directive 2002/21/EC (Framework Directive); 2002/20/EC (Authorisation Directive); 2002/19/EC (Access Directive); 2002/22/EC (Universal Service Directive); and 2002/58/EC (Directive on privacy and electronic communications). The law was amended in 2007 and 2008.
2005	Teleservices ordinance Ordinance on electronic interactions between public services users and public authorities and among public authorities	On the basis of the Legal Simplification Law of 9 December 2004, the Teleservice Ordinance create a legal framework for electronic administration, for simple and secure interactions between citizens and public authorities. Security of exchanges and interoperability of information systems.

Year	Policy	Description/Implication
2006 August	Public procurement code	*The code transposes the EU Directives on public procurement (2004/17/EC and 2004/18/EC), including their eProcurement provisions relating to eAuctions and Dynamic Purchasing System.* *It states that as from 1 January 2010, the French contracting authorities have the right to require the transmission of applications and tenders in electronic format only. The second part of the code transposes specific provisions of Directive 2004/17/EC that are applicable to network operators.*
2007 March	Law on Modernization of Audiovisual Broadcasting and Television of the Future	*The law frames the transition to digital: the end of analogue television is scheduled for November 2011.*
2008 August	Law for the Modernization of the Economy (LME)	*The LME provides a legal framework for the deployment of very high speed Internet (optical fiber). Private operators operators can access residential buildings and local authorities must pool networks to reduce costs.*
2009 December	Law against the digital divide	*The Law on the fight against the digital divide launches the Territorial Digital Master Plans (SDTAN) and creates a Digital Territorial Development Fund.*
2011 June	Law for trust in digital economy	*Adopted on 21 June 2004, the Law for trust in digital economy implements the **EU Directive on electronic commerce** (2000/31/EC) and sets the legal framework for the development of eCommerce services in France. The law was amended on 19 May 2011.*
2013 February	France Broadband Plan (PFTHD)	*The France Broadband Plan confirms the responsibility of local authorities for ultra-broadband equipment over more than 80% of the territory in 2022, with the support of the State. The France High Speed Broadband Mission is created.*
2013 July	Orientation and programming law for the refoundation of the School of the Republic	*A section of the law creates a public service of digital education and distance education.*
2014 June	e-Invoicing Legislation	*Ordinance on the development of electronic invoicing. Economic operators involved in public procurement should submit eInvoices, which have to be accepted by all public administrations.* *The enforcement of the law varies gradually from 2017 until 2020 according to the company size.*
2014 November	Ordinance on the right of users to communicate with administrative via electronic means	*40 measures in order to simplify the lives of citizens when they communicate electronically with the different administrations.* *The ordinance is aligned with an ordinance adopted in 2013 (simplification of the relation between the administration and users).*

Year	Policy	Description/Implication
2015	Law relative to the modalities of the reuse of information of the public sector	*Law for a free access and reuse of public data, known as 'open data'. Applied to the state and local authorities. Exceptions to the principle of free access is applied to the public authorities that required to release their resources and to the digitisation of cultural funds.*
2015 August	Law for Growth, Activity and Equal Economic Opportunities (Macron Law)	*Some articles aim to facilitate the installation of fiber optics in housing and improve by 2017 the mobile phone coverage and mobile Internet in rural uncovered municipalities ("white zone").*
2015 August	Law on the new territorial organization of the Republic (NOTRe Law)	*The NOTRe law, which entrusts new powers to the regions and redefines the competences attributed to each local authority, maintains the competence of local authorities in digital development and consolidates their financial participation in projects.*
2016 1st january	Code of relations between the users and the administration	*The code gathers in one single code the new mesures introduced by former ordinances, laws and decrees (for example about eprocedures, e-forms, «tell us once» rule, access to administrative documents, re-use of public information...) and even the new measures of the Digital Republic Law of october 2016.*
2016 october	Digital Republic bill	*The law promote innovation, the digital economy, an open digital society for the digital transition. Ensure access for all in all territories. Examples of rights : Net neutrality, Data portability, right to maintain the connection, confidentiality of private correspondance, right to be forgotten for minors, openness of public data, accessibiity, digital death.*
2018 June	Law on the protection of personal data	*The Law implemented the EU Regulation 2016/679: General Data Protection Regulation*

6.3   Press releases[11]

Table 29: Press releases France 2017-2018

Year	Policy	Description/Implication
2015 June	http://www.modernisation.gouv.fr/ecole-de-la-modernisation-de-letat	*Supported by the SGMAP, the **School of State Modernization** is an interministerial school created in 2011 to support the senior executives of the public service in charge of modernization projects. Through the sharing of experiences, the School of State Modernization identifies the best managerial practices, methods and the most appropriate tools to ensure the success of reforms.*

[11] In 2017 and 2018, except for one article in June 2015, which shows the starting point of the "managerial revolution" of a high French administration very formatted by the National School of Administration (ENA).

Year	Policy	Description/Implication
2017 January	https://www.diplomatie.gouv.fr/fr/politique-etrangere-de-la-france/diplomatie-numerique/actualites/article/diplomatie-numerique-le-quai-d-orsay-lance-son-incubateur-de-start-up-26-01-17	*In the first **Hackathon** organized by the Ministry of Foreign Affairs in January 2017, Jean-Marc Ayrault, Minister of Foreign Affairs and International Development, announced the creation of a "**State incubator**" within the Ministry to accelerate the digital transition, which will host **start-ups** to create solutions to the operational needs of the ministry. A Chief data officer is appointed to coordinate the opening of departmental data to the public and their operation for the benefit of all.*
2017 February	https://agencedunumerique.gouv.fr/wp-content/uploads/2016/10/20170209_CP-Lancement-dune-concertation-en-ligne_Numérique-2.pdf	*Pursuant to Article 69 of the **Law for a Digital Republic**, the Digital Agency (Digital Society program) developes a methodological and operational kit on the strategy of local authorities in terms of digital uses and services to promote the balance of the offer on the territory and the setting up of shared resources. In a **co-construction approach**, the Digital Agency is launching an online consultation hosted on the **DemocracyOS platform**, developed in Argentina then enriched by a large international community. This **open source tool** was made available to administrations and local authorities by **Etalab**, following the "**Summit for Open Government**" that France hosted in December 2016, an international initiative aimed at enhancing the transparency of public action and the participation of citizens.*
2017 March	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp-lancement-prix-soyons-clairs-2017.pdf	*The second edition of the "Let's be clear" public services **award** is launched under the patronage of the State Secretary in charge of State Reform and Simplification. **Clarity of language** is an essential lever to facilitate the process of public service users and to provide citizens with effective access to rights. The Prize, initiated in 2016, aims to stimulate initiatives to improve the quality of administrative information writing in public services (State, social organizations, communities ...), whatever the media (web, mobile, teleprocedures, mails or e-mails, SMS, guides ...)*

Year	Policy	Description/Implication
2017 September	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp-eig2.pdf	*The administration recruits **digital talents** (developers, data scientists, designers, geomaticians ...) to solve challenges of general interest. Launched in January 2017, the **Entrepreneur Program of General Interest** (EIG) consists of recruiting for 10 months external innovators to the administration, to meet challenges related to the use of **data** in the public sector and the digital transformation of the state. These include: fighting financial fraud, helping firefighters, improving the health of the French, saving lives at sea, improving academic success. This program is funded by the "Digital Transition of the State and Modernization of Public Action" fund of the Investments for the Future Program. It is carried by the Etalab mission within the SGMAP, in connection with the General Commissariat for Investment and the Caisse des Dépôts et Consignations.*
2017 October	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/dp_ap_2022.pdf	*"**Public Action 2022**" aims to make public action readable by collectively questioning what we can expect from public services. The floor will be given to qualified individuals, citizens and public officials in the framework of the "**Forum of Public Action**". Three targets: the user (simplification and digitization of administrative procedures), the public official (modernized work environment), the taxpayer (control of public expenditure).*
2017 October	https://www.diplomatie.gouv.fr/fr/politique-etrangere-de-la-france/diplomatie-numerique/la-france-et-la-cybersecurite/	*The **National Strategy for Digital Security** is based on two key texts: 2013 National Security and Defense, 2015 National Digital Security Strategy. France's Cybersecurity Strategy Targets IT Security for Trust fostering state stability, economic development and the protection of citizens.*
2017 November	http://www.modernisation.gouv.fr/salle-de-presse/communiques-de-presse/participez-a-un-evenement-pres-de-chez-vous-lors-de-la-semaine-de-linnovation-publique	*Do you want to test new formats of public service in your area? Participate in the **Public Innovation Week** from November 20 to 26, 2017 which, for its 4th edition, lists more than 230 events throughout France: hackathon, creative session, escape game, conferences.*
2017 November	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_organisation_transformation_ditp_dinsic.pdf	*The new organization for the public and digital transformation of the State explained in **Decree** No. 2017-1584 of November 20, 2017. The General Secretariat for the Modernization of Public Action (**SGMAP**) is **replaced**, from November 22, 2017 , **by the DITP** (interministerial direction of the public transformation) **and the DINSIC** (interministerial direction of the digital and the system of information and communication of the State)*

Year	Policy	Description/Implication
2017 November	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_commentfaire_sip.pdf	*Launch of the site comment-faire.modernisation.gouv.fr for **experimentation in public policies**. This open access portal, created for and by public actors, provides public officials and their partners with all the resources to conduct their public utility projects in an innovative and participative way. These tools available in open and customizable format are based on the principles of public design (observation of user practices, participatory design) and project management in start-up mode.*
2017 November	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/dp_forum_ap2022_versionfinale.pdf	*Launch of the **Forum of Public Action**. The Government launched Friday, November 24 the Forum of Public Action. The goal: to allow everyone - agent, user, citizen, elected, association, trade union organization ... - to express themselves.*
2017 November	http://www.justice.gouv.fr/le-ministere-de-la-justice-10017/chantiers-justice-transformation-numerique-donnez-votre-avis-31008.html	*The Ministry of Justice engages in a vast plan of **digital transformation** to provide magistrates and justice staff with effective tools, facilitate exchanges with legal professionals, give litigants the opportunity to seize justice and to follow his file online. For a total dematerialization of procedures and an evolution of the information systems of the **prison administration and the judicial protection of the youth**. Citizens, litigants or legal professionals can also submit innovative projects, which will be presented at the Digital Justice Day in February 2018.*
2017 December	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp-laureats_dvlpt_servicespublics_innovants.pdf	*The winners of the call for projects "**Development of innovative public services** for start-ups of the **French Tech**"*
2017 December	https://agencedunumerique.gouv.fr/wp-content/uploads/2016/10/DP-Numerique-inclusif.pdf	*"Together for an **inclusive digital**". Press kit of the Digital Agency (Digital Society Mission). The ambition is to make France a powerful and humane digital society, which allows all citizens to access their rights, to appropriate digital uses and to develop a sense of citizenship. The urgency is to support 13 million citizens struggling with digital technologies. The national strategy for inclusive digital is also about territorial equality and a virtuous economic strategy.*

Year	Policy	Description/Implication
2017 December	https://www.diplomatie.gouv.fr/fr/politique-etrangere-de-la-france/diplomatie-numerique/strategie-internationale-de-la-france-pour-le-numerique/	*Jean-Yves Le Drian, Minister of Europe and Foreign Affairs, presented on December 15, 2017* **France's international strategy for digital**. *The new diplomatic roadmap is structured around three main axes: governance, economy, security. For an open digital world, a European Internet based on the balance between freedom, growth and security. To strengthen the influence and attractiveness of France in the digital world. This strategy has been the subject of public consultation with citizens, private actors and research. France promotes a world that combines freedom and respect for standards. Only the European Union will be able to bring this vision to the international level.*
2017 december	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/dcant_dossier_de_presse.pdf	*DCANT 2018-2020 Program: The State and local authorities transform the public service together. The State and associations of elected officials publish their program of* **concerted development of digital territorial administration** *(DCANT) for the period 2018-2020*
2018 February	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/dp_citp_01022018_0.pdf	*Three months after the launch of the* **Public Action Program 2022**, *a first Interministerial Committee for Public Transformation is devoted to measures resulting from* **interministerial projects** *on the renovation of the human resources framework, on the simplification and quality of services and on digital transformation.*
2018 February	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_lancement_consultation_handicap_def.pdf	*Launch of an unprecedented* **online consultation** *with the disabled and their close relatives to simplify their relationship with the administration.*
2018 February	https://www.interieur.gouv.fr/Le-ministre/Interventions-du-ministre/Lancement-de-la-Brigade-numerique	*Launch of the* **"digital brigade"**: *creation of a 24/7 digital access to the police («gendarmerie» = police by military). Citizens can ask their question on the National Gendarmerie website, on Facebook or on Twitter. One of the 20 "digital gendarmes" and reservists, trained in this profession and present on the Rennes platform, will be able to inform them.*
2018 March	http://m.enseignementsup-recherche.gouv.fr/cid128577/rapport-de-cedric-villani-donner-un-sens-a-l-intelligence-artificielle-ia.html	*Ideas to position* **France at the forefront of AI** *(artificial intelligence). Mathematician and MP Cédric Villani, winner of the 2010 Fields Medal, gave a detailed report on artificial intelligence. Among the suggested paths: to create a network of interdisciplinary Institutes of Artificial Intelligence, to set up a supercomputer designed specifically for AI applications, or to make the careers in public research more attractive in order to avoid the brain drain towards the American giants.*

Year	Policy	Description/Implication
2018 April	https://www.interieur.gouv.fr/Actualites/L-actu-du-Ministere/Lancement-des-Assises-de-l-identite-numerique	*In collaboration with the Ministries of the Interior and Justice and the State Secretariat in charge of Digital, the Assises are launching work for an interministerial program "**digital identity**". In 2019, every citizen will be able to prove his identity online, in a simple, secure and guaranteed way by the State. For administrative procedures on the Internet, to make purchases online or use collaborative platforms. The challenge is to increase the use of the Internet, thanks to a very simple service for everyone, and secure to strengthen the trust of users.*
2018 April	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_plans-action_gouvernement-et-parlement-ouverts_2018-2020.pdf	***Open data for Government and Parliament**: France renews its commitment to transparent and collaborative public action.*
2018 April	http://www.vie-publique.fr/actualite/alaune/presentation-du-plan-action-2018-2020-pour-gouvernement-ouvert.html	*The **National Action Plan for Open Government** is published every 2 years, in line with its commitments in the **Open Government Partnership,** and for a digital transformation of public action. The five axes of the 2018-2020 action plan aim at the transparency of public action, its co-construction with civil society and democratic innovation (Open State Forum, Artificial Intelligence).*
2018 April	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_rapport_agd_2018-04-10.pdf	*The (national) Chief Data Officer delivers his 2nd report: "**Data** as essential infrastructure".*
2018 June	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_ami_ia_ditp_dinsic_0.pdf	*Government launches experimentation of **artificial intelligence** in the administration.*
2018 June	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/ftap_dp_annonce_laureats_20180619_def.pdf	*Winners of the first **call for projects** of the **Fund for the Transformation of Public Action**. An investment for the implementation of ambitious structural reforms.*
2018 June	https://www.diplomatie.gouv.fr/fr/politique-etrangere-de-la-france/diplomatie-numerique/actualites/article/seminaire-ia-lab-odd-numerique-et-developpement-18-06-2018	***Artificial intelligence** can accelerate the achievement of the Sustainable Development Goals as part of enhanced international cooperation. To weigh on the future uses of artificial intelligence in the world, the Ministry of Europe and Foreign Affairs organized a seminar in collaboration with Simplon.co (a company of the social and solidarity economy for e- inclusion), June 18, 2018 at Liberty Living Lab.*
2018 July	http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/cp_nosdemarches_02_07_2018.pdf	*Launch of the website NosDemarches.gouv.fr to evaluate the steps online* *A new stage in the **dematerialization** of administrative procedures.*

Year	Policy	Description/Implication
2018 July	https://www.numerique.gouv.fr/node/122371	*Launch of the **5G roadmap** for France. Mounir Mahjoubi, Secretary of State for Digital Strategy, and the President of Arcep (Regulatory Authority for Electronic Communications and Posts), have launched four priority projects. 5G is a strategic issue for French industry, competitiveness, innovation and renovated public services. This priority is consistent with the actions launched by the European Union. An agreement reached in January between the Government, Arcep and the mobile operators will in the short term to generalize in France a quality coverage in 5G.*

6.4 Situational mechanisms

How does political decision-making influence the implementation of digital transformation?

6.4.1 Political structure

France is a centralised state even if different reforms tended to decentralise a part of the powers or to reorganize the spatial division of the territory. The political system of the Fifth French Republic, adopted by referendum in 1958, combines the characteristics of a parliamentary democracy with a strong executive power. Legislative power is divided between the National Assembly and the Senate. The deputies of the National Assembly are elected for five years by direct universal suffrage, with a two-round majority voting system organised to prevent the Republic from political instability. The senators are elected by local councillors (indirect universal suffrage) for a period of nine years, one-third of which is renewed every three years. The Senate is considered to be the voice of the local territories when the National Assembly is considered to be the voice of the People.

The parliamentary democracy is limited by the executive power. The President of the Republic is the Head of State, elected by direct universal suffrage for seven since since 1962 (amendment to the Constitution in 1962). Since the reduction of the presidential mandate from seven to five years in 2000, the French political system is often defined as a semi-presidential system. According to the Fifth French Republic Constitution, the President undertakes important responsibilities in the fields of foreign and defence policies, as well as in domestic policy. The Council of Ministers is chaired by the President of the Republic. The Government is headed by the Prime Minister, appointed by the President of the Republic and the ministers are appointed also (or dismissed) by the Head of State, on the Prime Minister's proposal.

The Government has to get a majority in Parliament. In case of a divide between the political line of the President and parliamentary majorities, the President of the Republic lets the domestic policy to the Prime Minister: it is a period of «political cohabitation». During «cohabitations», the french political system works more like a parliamentary democracy. When the President and the Prime Minister are on the same political line, the executive power works as a semi-presidential system. The constitution of the Fifth French Republic is considered as a guarantee for political stability, even if the People and some politicians denounce the weakness of popular representation in parliament.

The centralisation is reinforced by the spatial organisation of the territory (543,956 km^2). The division of the French regions dates from 1972 even if the missions of the local authorities were redefined by the Defferre laws of 1983 (decentralisation laws). From 1972 to 2015, some powers are devolved to the 27 regions (22 in Metropolitan France and 5 mono-departmental regions of French overseas territories), 96 counties ("départements") and more than 36 500 municipalities. But the State retains control through public policy funding, even in the framework of EU policies. In order to modernise the political system, to reduce public expenditure and to increase the competitivity, the President François Hollande engaged some reforms of the territorial organisation in 2014 and 2015: the law for the modernisation of territorial public action and the affirmation of metropolis, in January 2014 (MAPTAM law); the law on the delimitation of regions in January 2015, that reduced the number of regions from 22 in Metropolitan France to 13 regions; the law on the new territorial organisation of the Republic (NOTRe Law). The NOTRe Law entrusts new competences to the regions and clearly redefines the competences attributed to each territorial collectivity, to reduce the complexity of public action[12].

The main developments of the e-government history in France (European Commission, 2014b, 2015b, 2016c, 2017d, 2018f) are conditioned by this political and territorial context. The first condition for a digital agenda is the equipment of the country in appropriate technologies: optical fiber, high-speed broadband, antennas for mobile telephony, for example. Traditionaly, the Minister of Posts and Telecommunications, or sometimes the Minister of Research and Technology, was in charge of this policy. In 1995 (to 1997 only) was created a Minister of Information Technology and Posts responsible for the development of Information Society and the modernisation of technologies, media and networks. From 1997 to 2008, the question to the ICT is under the aegis of either the Ministers of Telecommunication, either the Ministers of Research jointly with other Ministers interested in the diffusion of New Information and Communication Technologies. In 2008, under the Presidency of Nicolas Sarkozy, was created a Secretary of State responsible for the development of the digital economy (and, also, prospective and evaluation of public policies) under the aegis of the Primer Minister. From the end of 2010 to may 2017, the Secretary of State in charge of the digital economy is under the aegis of the Minister of Economy, Finance (and sometimes Industry). Under the Presidency of François Hollande, Fleur Pellerin (2012-2014), born in South Corea, launched the French Tech Programme (innovation ecosystem for digital startups) and Axelle Lemaire (2014-2017), born in Canada, was responsible for the Digital Republic Bill (2016), at the service of economic development but also of social inclusion and the development of local territories. Axelle Lemaire created also the «Grande école du numérique» (Digital High school) launched in 2015, in order to facilitate the digital transition of the economy by offering training to all people, without academic, economic or social distinction. Under the Presidency of Emmanuel Macron (may 2017), the Secretary of State for digital is under the aegis of the Primer Minister[13]. It is Mounir Madjoubi, an entrepreneur and the former President of the «Conseil National du numérique» (National Digital Council for digital transformation of SMEs and universities, and digital inclusion).

The National Digital Council, created by the President Nicolas Sarkozy in 2011, is an advisory council to inform and advise the government on the digital policies. In October 2014, the National Digital Council

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[12] https://www.gouvernement.fr/action/la-reforme-territoriale

[13] On the occasion of a cabinet reshuffle, on October 16, 2018, Mounir Madjoubi was appointed Secretary of State to the Minister of the Economy and the Minister of Public Action. He remains in charge of digital but is no longer attached to the Primer Minister.

was responsible for organising a national consultation on the Digital Agenda that culminated in the drafting of the Digital Republic Law in 2016.

The National Digital Agency, created in February 2015 under the Presidency François Hollande, is a service placed under the responsibility of the Ministry of Economy and Finance (General Directorate of Enterprises). The Digital Agency is the task force for the digital agenda and pilots three public policies: the 2013-2022 French High-Speed Broadband Plan, the French Tech Initiative (for international startups) and the Digital Society Programme. The role of the Digital Agency is to deploy the digital transformation policy and to support territorial ecosystem initiatives involving public and private players.

Even if the digital policy is defined by the government, the implementation of the digital agendas is also discussed at a sub-natio nal level, with the regions, the departments or the municipalities. Different tools are used, such as the "Interdepartmental Committee on Regional Planning for Territorial (Digital) Development" (CIADT) at a governmental level to establish a strategy between the ministries, or such as government calls for proposals dedicated to local or regional territories. Some legal tools were created in order to organise the relations between the State and the regional or local authorities to implement the national digital policy. So, the «regional coherence strategy for digital development» (SCoRAN) sets out the main orientations desired by the regional actors, in order to guarantee that each territory is covered by a territorial master plan for digital development. The "Territorial Digital Planning Master Plan" (SDTAN), defined by the law of 17 December 2009 to fight against the digital divide, is a report that identifies existing electronic communications infrastructures and networks, and aims to promote the coherence of public initiatives with private investment. It is considered as a cornerstone for local planning and must be regularly updated by the local authorities. In 2015, this scheme of digital spatial planning was introduced in the "Regional Plan for Urban Development, Sustainable Development and Equality of Territories" (SRADDET) created by the NOTRe law. If the territorial digital network schemes are approved by the "Regulatory Authority for Electronic Communications and Posts" (ARCEP) at a national level according to the "National Plan for the High-Speed Internet National Programme" (PNTHD 2010-2022), the "Regional Plan for Urban Development, Sustainable Development and Equality of Territories" (SRADDET) allows Regions (since the NOTRe Law in 2015) to set guidelines for a Regional coherence strategy for digital development concerning "fixed infrastructures", "mobile infrastructures" and "uses and digital services". In February 2017, the Regional Digital Strategy Commissions (CRSN) replace the Regional Consultative Commissions for Digital Spatial Planning. Thus, they are in charge of e-administration, e-health, public data, heritage digitisation, cloud computing, smart territories, and so on. Placed under the authority of the Regional Prefect, representing the State, the CRSN must promote dialogue between private operators and the local authorities that carry the SDTAN.

In December 2017, Mounir Madjoubi, the Secretariat of State for the Digital transformation, announces the creation of departmental plans for digital inclusion by the summer of 2018[14]. It follows the result of an online concertation organised in February and March 2017, before the presidential election, on national orientations for the development of digital uses and services in the local territories. This online consultation prepared the work of the Digital Agency, which is responsible for drafting the framework document entitled «National Guidelines for the Development of Digital Uses and Services in the

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[14] http://www.lagazettedescommunes.com/539614/mounir-mahjoubi-annonce-des-schemas-departementaux-pour-linclusion-numerique/

Territories». These guidelines will support local authorities that wish to implement a strategy for digital uses and services in accordance with the article 69 of the Digital Republic Bill (2016)[15].

So, the e-government strategy is not only a prerogative of the state, even in a semi-presidential regime. The State must take into account the opinions of local territories on different scales, territories that also express themselves through bodies like the Association of French Regions, the Assembly of French Counties, the Association of French Mayors, or through institutions more specific to the digital issues, such as the Internet Cities Association, the Association of Cities and Communities for Electronic Communications and Audiovisual (AVICCA), created as a result of the Cable Plan launched in 1982 by the State[16], or Les Interconnectés (The Interconnected), the national association for the diffusion of digital uses for French communities.

6.4.2 Demographic structure

According to the French Statistics Office (INSEE, 2018), France has a total population of 67,186,638 inhabitants in 2018, for an area of 543,956 km^2. The French region with the highest population density is the region Ile-de-France (1,019 inhabitants/km^2) with Paris in the core, and the region with the lowest population density is Corsica (39 inhabitants/km^2). But in the mountains and the rural spaces far from the metropolitan areas, the population density is weak, often under 30 inhabitants/km^2, and the local economy is often in difficulty. That is the reason why the different governments, from the Cable Plan in 1982 to the High-Speed Broadband Internet National Programme (2010-2022), try to find technical and financial solutions, in order to reduce the spatial digital divide between these rural areas and the urban ones. But a recent report of the Digital Barometer[17] reveals that «only 60% of French residents in rural communes and 65% in medium-sized cities claim to be competent to use a computer, compared to 76% in the Paris area. 74% of the residents of the Paris metropolitan area made administrative procedures on the Internet, compared to 61% of the inhabitants of medium-sized towns; 43% of French people living in rural areas are worried about having to go online more and more». The road to digital transformation of the French population is still long, and even more so is the reduction of the digital divide in the territories.

With respect to the demographic structure of France, it currently looks as follows:

Table 30: French population

French population (2018) from INSEE (2018)	
Total population	67,186,638
Population aged under 15 years	18.2% of total population
Population aged 15-64	62.2%
65 and over	19.6%
Foreign-born population*	11.6% (2014 on 65,8 millions inhabitants)

* Last statistics available.

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[15] Source: https://agencedunumerique.gouv.fr/wp-content/uploads/2016/10/Synthèse_Article69.pdf
[16] Source: http://www.avicca.org/content/objectifs-et-moyens
[17] Source: Baromètre du numérique, 2017 (study realized by the Credoc), available on:
https://laboratoire.agencedunumerique.gouv.fr/2016/11/10/barometre-du-numerique/, and resumed in: https://agencedunumerique.gouv.fr/wp-content/uploads/2016/10/DP-Numerique-inclusif.pdf

As in previous years, the population has increased in 2017 (0.3% this year), mainly due to the natural balance, even if for 3 years, the birth rate has dropped. The total fertility rate is also down for the third year and stands at 1.88 children per woman in 2017 (against 1.92 in 2016) but remains the highest in Europe[18]. So, the demographic structure of France is more or less stable, which slows down the progressive aging of the population comparing other European countries.

With respect to labour market statistics, France has traditionally experienced difficulties to fight against unemployment. The unemployment rate is 9.4% in 2017, but 9.1% in the second quarter of 2018. It was 6.8% in January 2008, in decrease after a long phase of increase. So the question of unemployment is a key element of debate during the presidential elections. The unemployment rate for under-25s remains high (around 21%) when it remains around 8.5% for people aged from 25 to 49, and around 6.5% for the seniors[19]. The unemployment rate of young people is surprising in an economy that need more and more (young) talents for the digital transformation. The Digital Barometer of the Digital Agency reveals that 13% of the population over the age of 18 never connect to the Internet in 2017 and that 39% of French people are worried about having to do online administrative formalities. But while 90% of graduates or people in the 25-39 age group use e-government, only 59% of low-income people and 30% of non-graduates use e-government. 15% of adults do not even feel able to take online administrative steps. Policies to promote equal access to online administrative procedures are a major issue given these social and educational divides[20].

To fight this digital divide, the government launched in 2015 the «Grandes écoles du numérique» (Digital High School)[21]. It created a network of more than 400 certified courses and trained more than 11,000 people since 2016. The target groups are: young people far from employment (neither employed nor in training: 65%, level below Bac and Bac: 55%), women (24%) and people from the Priority Neighborhoods in the National Policy for High Poverty Neighborhoods (17%). The Digital High School network helps the less qualified people to seize the opportunities that digital economy offers. It promotes digital and social inclusion and it meets the needs of recruiters in digital skills.

Nevertheless, the digital divide is not the only problem to solve. A report of the Employment Advisory Council (Conseil d'orientation pour l'emploi, 2017a, 2017b), about the technological revolution's impact on employment showed «that 10% of current jobs are subject to cumulative vulnerabilities liable to threaten their existence due to automation and digitalisation and that 50% should experience significant changes in their content over the next fifteen or so years: the issue is therefore not so much a "jobless future" but rather a massive, fundamental and rapid transformation of job content»[22]. 80 000 jobs could be unfilled due to lack of suitable profiles in the new information and electronics technologies due to the digital transformation of the economy and the process of automation, including the effects of technologies related to artificial intelligence. The challenge for the government(s) will be to create new solutions to fill the gap between the skills and the need for new talents, in a period of transition that will change the structure of employement.

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[18] Source: https://www.insee.fr/fr/statistiques/3305173
[19] Source: https://www.journaldunet.com/management/conjoncture/1038148-taux-de-chomage-et-nombre-de-chomeurs-en-france/
[20] Source: https://agencedunumerique.gouv.fr/wp-content/uploads/2016/10/DP-Numerique-inclusif.pdf
[21] Grande école du numérique, accélérateur de talents numériques. Chiffres clés 2017. Retrieved from: https://www.grandeecolenumerique.fr/wp-content/uploads/2018/06/ChiffresCles2017_GEN_WEBVF.pdf
[22] Automation, digitisation, and employment, Volume 3:The impact on work, Retrieved from: http://www.coe.gouv.fr/Detail-Publication1012.html?id_article=1424

6.4.3 Summary

France is a centralised state even if different reforms tended to decentralise a part of the powers or to reorganise the spatial division of the territory. From 1972 to 2015, some powers are devolved to the 27 regions, 96 counties («départements») and more than 36,500 municipalities. To modernise the political system and reduce public expenditure, President François Hollande engaged some reforms of the territorial organisation. New laws in 2014 or 2015 gave more power of decision to the metropoles (MAPTAM law) or reduced the number of regions, from 22 in Metropolitan France to 13. The law on the New Territorial Organisation of the Republic (NOTRe Law) entrusts new competences to these new regions, to reduce the complexity of public action.

The digital policy in France is conditioned by this political and territorial context. The first condition for a digital agenda is the equipment of the country in appropriate technologies (optical fiber, antennas for mobile phone...). From the Cable Plan in 1982 to the High-Speed Broadband Internet National Programme (2010-2022), the political debates between local authorities and the state are about the way to reduce the spatial digital divide between the rural areas and the metropolitan areas. With the NOTRe Law in 2015, regions have to set guidelines for a coherent regional strategy for digital development concerning "fixed infrastructures", "mobile infrastructures" and "uses and digital services". They are in charge of e-administration, e-health, public data, heritage digitisation, cloud computing, smart territories, and so on, but with the help of the Regional Prefect, representing the state.

To conduct the digital policies at a state level, the attributions have changed since 30 years. Traditionally, the question to ICTs was under the aegis of either the Ministers of Telecommunication, or the Ministers of Research. In 2008, under the Presidency of Nicolas Sarkozy, was created a Secretary of State responsible for the development of the digital economy under the aegis of the Primer Minister. From the end of 2010 to may 2017, the Secretary of State in charge of the digital economy is under the aegis of the Minister of Economy, Finance (and sometimes Industry). Under the Presidency of Emmanuel Macron (May 2017), the Secretary of State for digital comes back to the aegis of the Primer Minister. However, the e-government strategy is not only a prerogative of the state, even in a semi-presidential regime. The state must take into account the opinions of local territories on different scales and some institutions, more specific to the digital issues, also intervene in the debate to co-create policies with the government, such as the Internet Cities Association, Les Interconnectés (the national association for the diffusion of digital uses for French communities) or the «Conseil National du numérique» (National Digital Council), an advisory council created by the President Nicolas Sarkozy in 2011 to advise the government on the digital transformation and e-inclusion. Internet consultations with citizens or stakeholders are also increasingly used to co-create action plans or new laws.

The National Digital Agency, founded in 2015 under the Presidency of François Hollande, is the task force for the digital agenda and pilots three public policies: the 2013-2022 French High-Speed Broadband Plan, the French Tech Initiative (for international startups) and the Digital Society Programme. The role of the Digital Agency is to deploy the digital transformation policy and to support territorial ecosystem initiatives involving public and private players. Even if the Digital Agency is a service placed under the responsibility of the Ministry of Economy and Finance, the institution has to support local authorities that wish to implement a strategy for all types of digital uses and services in accordance with the Digital Republic Bill (2016). In 2018, for example, was launched a national strategy

for e-inclusion, a strategy driven by the Digital Agency to help the territories to try the challenge of the digital revolution in a populated country with social and territorial divide.

Indeed, France has a total population of 67,186,638 inhabitants in 2018. The demographic structure is more or less stable and does not suffer from aging of the population but (so?) France has difficulties to fight against unemployment. The social digital divide could also be a problem for the future of e-government or digital competitiveness: 90% of graduates or people in the 25-39 age group use e-government, against only 59% of low-income people and 30% of non-graduates. So the situation of the job market is worrying because the digital transition has an impact on skills and employment. On one side, future jobs could experience significant changes in their content. On the other side, 80,000 jobs could be unfilled due to automation, including the effects of technologies related to big data and artificial intelligence. The challenge for the government(s) will be to fill the gap between the skills and the need for new talents, in a period of transition that will change the structure of employment. Policies to promote equal access to online administrative procedures is also a major issue given these social and educational divides.

6.5   Action formation & transformation mechanisms

6.5.1   How are policy changes articulated in government press releases 2017-2018?

The French Government press releases in 2017 and 2018 reveal that the question of digitisation is essentially linked to the modernisation of the state, since the Presidency of Nicolas Sarkozy, pursued under the Presidency of François Hollande then Emmanuel Macron. As a consequence, the website «modernisation.gouv.fr» is the main source available for the press releases about digitisation of public policies. A search on the websites of other ministries (Education, Agriculture, Foreign affairs, Defense, Interior…) was not of a great interest except some papers indicated in the table. The National Digital Agency, created in 2015, is the flagship of the digital policies, for infrastructures (High Speed Broadband), digital economy (French Tech) and e-inclusion (Digital Society). But, on the website (agencedunumerique.gouv.fr), the page dedicated to the press communication is not rich in informations.

A second conclusion, comparing with the German Press releases for example, is that the government communication is very centered on France, without many press releases about the role of France in Europe or at an international level. In some press releases about the digital transformation of public services or policies, allusions are made to the international level, such as about the role of the «Summit for Open Government» to enhance the transparency of public action and the participation of citizens (2017 February) and the «Open data agreement for Government and Parliament», or the «National Action Plan for Open Government», according to the «Open Government Partnership» (2018 April). The place of France in a globalised world is indirectly quoted when speaking about the policies for artificial intelligence, such as «France at the forefront of AI» (2018 March) or the seminar organised in a Living Lab by the Ministry of Europe and Foreign Affairs about Artificial intelligence, the Sustainable Development Goals and international cooperation (2018 June). Indirectly too, the «5G roadmap for France» launched by Mounir Mahjoubi, Secretary of State for Digital Strategy, and the President of ARCEP (Regulatory Authority for Electronic Communications and Posts), deals with the strategic issue of French competitiveness and innovation capacity in the world. Moreover, a link is made with the actions launched by the European Union in the domain of renovated public services (2018 July). Only one press release is specifically addressed to an international audience, when Jean-Yves Le Drian,

Minister of Europe and Foreign Affairs, presented on December 15, 2017 the new diplomatic roadmap to strengthen the influence and attractiveness of France in the digital world: the «France's international strategy for digital» for an open digital world, a European Internet based on the balance between freedom, growth and security (2017 December).

At a national level, the French government press releases in 2017 and 2018 deal with some specific topics: the management of the state digital modernisation; the national strategies or tools for the digital transformation; the co-construction approach for democratic innovations.
Concerning the management of the state digital modernisation, as indicated in a paper of June 2015, the SGMAP (General Secretariat for the Modernisation of Public Action), under the responsability of the Primer Minister, was created in 2011 to support a managerial revolution in a high administration traditionally shaped by the National School of Administration (ENA). Different tools are invented to change the pratices of civil servants, especially through the «Etalab mission». Following the presidential elections in 2017 and the greater place of the digital tools for the modernisation/transformation of public action, the SGMAP is replaced by (divided into) the DITP - interministerial direction of the public transformation - and the DINSIC - interministerial direction of the digital and the system of information and communication of the State (2017 November). The press releases also refer to some of the new strategies to enhance the digital modernisation of the administrations or public services, at a national or local level. For example, a «School of State Modernisation» was created to change the cultural mindset of senior executives of the public services by sharing experiences and best managerial practices (2015 June). The Ministry of Justice engaged in a plan for the dematerialisation of procedures thanks to a new information system between magistrates, justice staff or prison administration (2017 November). The Ministry of the Interior created a «digital brigade» for a 24/7 digital access to the police (2018 February).

The digital transformation of public action is not only a question of dematerialisation or new organisation in administration but also deals with trust, inclusion and cooperation. Some policies are presented in the press releases as conditions for the success of the digital transformation for all citizens or/and territories, such as the «National Strategy for Digital Security» (cybersecurity) to foster trust for the economic development and the protection of citizens (2017 October), the **«**National strategy for inclusive digital» (2017 December), the «Concerted development of digital territorial administration» (DCANT) for the period 2018-2020 (2017 December), the «Public Action Programme 2022» for the simplification and quality of services (2018 February), the «digital identity Programme» (2018 April), the «5G roadmap for France» (2018 July). Some of those policies or strategies are imagined in collaboration between different ministries (interministerial programmes) or with some other institutions in charge with the digital topics, such as the National Digital Agency or the ARCEP (Regulatory Authority for Electronic Communications and Posts). In order to help civil servants to change their practices and to launch experimentation in public policies (2017 November), the government created with public actors an open access portal (comment-faire.modernisation.gouv.fr: how to do modernization gouv fr). With the goal of 100% of the administrative procedures available online on January 1, 2022 (Public Action 2022 programme), the DINSIC launched the site «NosDemarches.gouv.fr» (our request gouv fr). Dedicated to users, the website is an open and contributory dashboard of administrative procedures available online. It aims to measure the satisfaction of users and to identify paperless approaches to dematerialise as a priority (2018 July).

According to the «National Action Plans for Open Government», renewed every two years, the philosophy for a digital transformation of public action and services is based on co-construction with civil society and on democratic innovation (2018 April). Different tools and methodologies are experimented, such as public design (observation of user practices, participatory design) and project management in start-up mode (2017 November).

The co-creation of websites, open access portals, online requests, administrative forms or even policies mobilises citizens, enterprises, public officials, elected, associations, trade union organisation or other partners of public action. The co-construction approach aims to allow everyone to express themselves through open source platforms for online consultations, a tool used by the National Digital Agency (2017 February), the Ministry of Justice (2017 November), the Ministry of Europe and Foreign Affairs (2017 December) or the Secretary of State for disabled people, with the National Assembly (2018 February). Another tool for a large three-month consultation is the «Forum of Public Action» (2017 November).

These tools of co-construction are not only launched for people to express their needs and opinions but also for them to propose innovative actions and policies, to re-invent the public services in a user-centric approach (2017 November). Democratic innovations are tested during national or local events throughout France such as the «Public Innovation Week», Hackathon, creative session (2017 November) or in the administrations, where the government launched experimentations in artificial intelligence (2018, April, June). Nevertheless, more innovative processes are tested in start-up mode to foster the co-creation of new softwares or policies between public actors and private actors. The least innovative way is the calls for projects, such as with the starts-ups of the French Tech (2017 December) or by the « Fund for the Transformation of Public Action» (2018 June). Prizes are also traditional tool to stimulate initiatives (2017 March). The more disruptive way, for France, was the creation of "state incubators" within some ministries, that host start-ups to create solutions to the operational needs of these ministries (2017 January). The great need of new digital talents (developers, data scientists, designers, geomaticians ...) to solve challenges of general interest explain the launch of the «Entrepreneur Programme of General Interest» (2017 September) which aims to attract external innovators in order to take up the challenge of the use of (big) data in the public sector for the digital transformation of the State (2018 June).

6.5.2 Summary

The French Government press releases in 2017 and 2018 reveal that the question of digitisation is linked to the modernisation of the State. The government communication is very centered on France, without many press releases about the role of France in Europe or at an international level, except some allusions to events linked to the Open Government Partnership, or to the place of France in the world according to the Artificial Intelligence and the 5G roadmap for competitiveness. Only one press release is specifically addressed to an international audience, in December 2017, about the new diplomatic roadmap to strengthen the influence of France in the digital world.

At a national level, the French Government press releases deal with the transformation of public action. It explains the role of the SGMAP (General Secretariat for the Modernisation of Public Action), the "Etalab mission" then the reorganisation of that State administration after the presidential elections in 2017. The press releases promote the new tools to change the cultural mindset in administrations, such

as the School of State Modernisation, the dematerialisation of procedures in the justice system, or the creation of a digital brigade for a 24/7 digital access to the police.

The government press release also deals with trust, inclusion or cooperation and the role of new policies such as the National Strategy for Digital Security, the National strategy for inclusive digital, the Concerted development of digital territorial administration (DCANT 2018-2020), the Public Action Programme 2022 for the simplification and quality of services, and the Digital Identity Programme. The digital transformation will not happen without the citizens and the territories, but also without the collaboration between the ministries or other institutions. So, to help civil servants to change their practices and to launch experimentation in public policies, the government created with public actors an open access portal (comment-faire.modernisation.gouv.fr[23]). To help the citizens to be ready in 2022 fo the goal of 100% of the administrative procedures available online (Public Action 2022 programme), the press release promote the website "NosDemarches.gouv.fr"[24], to measure the satisfaction of users and to identify the priorities in the paperless approach.

According to the National Action Plan for Open Government, the digital transformation of public action, policies and services is based on a user-centric approach and on co-construction with civil society, private firms and public officials. Different tools and methodologies are experimented, such as online consultations, public design, project management in start-up mode or a Forum of Public Action. People can express their needs and propose innovative policies or public services. To stimulate initiatives, new services are tested during national or local events throughout France, such as the Public Innovation Week or Hackathons. Prizes or a Fund for the Transformation of Public Action are promoted in the press releases, such as experimentations launched in administrations. The more disruptive way of public innovation is "state incubators" within some ministries, that host startups to create solutions to the operational needs. To take up the challenge of the Big Data and AI, the Entrepreneur Programme of General Interest aims to attract innovators for the digital transformation of the state.

6.6   Action formation & transformation mechanisms: Resulting digital transformation agenda

6.6.1   The Prehistory of the Internet: The Cable Plan
As early as the 1980s, the French government focused on equipping the territory with cable networks to serve businesses and the economy of local territories. This was already the ambition of the 1982 Cable Plan, even though the cost of fiber optics at the time was prohibitive. The coverage of the territory was therefore a net with very large meshes, serving high density urban areas. Some rural areas, however, have opted for fiber optics to revive a failing local economy. The role of some local politicians has been pioneering and determining (Bonnet, 2000; Despin, 2000).

6.6.2   The emergence of Internet: from Information highways to the information society[25]
The use of the Internet began in the 1990s and the public authorities put in place a proactive policy to accelerate the dissemination of new information and communication technologies (NICT). In 1994, a report to the Prime Minister on "The information highways" (Thery G., 1994) announces an economic

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[23] How to do modernization gouv fr.
[24] Our request gouv fr.
[25] From 1990 to 2012, information from: Vie publique.fr (2012).

and societal revolution. An interministerial committee sets as a national objective the gradual coverage of the territory by 2015 with a high-speed network for the transport of multimedia data. In 1996, a circular of the government imposes on the State services the use of the common root "gouv.fr" for any project disseminated on the Internet. In 1998, a first Interministerial Committee for the Information Society (CISI) launched the Government Action Plan for the Information Society (PAGSI). Every year, the CISI sets the major reforms in favour of an Information Society for all and how to adapt the legislative frameworks. In 2001, Prime Minister Lionel Jospin installed the Strategic Information Technology Council (CSTI), which associates private players to public authorities to accelerate the development of the Internet.

6.6.3   From the Information Society to the Digital Spatial Planning

From 2001, the priority of the government through the PAGSI is to reduce the territorial divide by deploying the networks in the least developed or least populated areas. This policy of digital development of the territory is accompanied, in 2002, by a policy of development of the uses of the Internet. Prime Minister Jean-Pierre Raffarin presents a plan for a Digital Republic in the Information Society. By 2007, the objectives are: a computer for every home with children, the Internet connection of all companies, the use of information technology in the administrations and the National Education. But in 2007, a report of the Council for Economic Analysis highlights the bad ranking of France compared to the United States and Northern Europe, because of the high cost of the computers and local communications. In 2007, under the President Nicolas Sarkozy, a State Secretariat for the development of the digital economy is created, responsible for coordinating the diverse public policies in the digital domain. In May 2008, it organises the «Assises du numérique», a consultation that will serve as a basis for the 2008-2012 Digital Action Plan.

6.6.4   Digital France 2012: a Development Plan for the Digital Economy (2008-2012)

The Development Plan for the Digital Economy is launched in October 2008 by the Secretary of State to the Prime Minister, in charge of Forward Planning, the Assessment of Public Policies and the Development of the Digital Economy (Besson, 2008). In terms of digital economy, the Secretary of State proposes measures for the development of networks and equipment, as well as Internet services (access, uses, digital content). On behalf of the Prime Minister, he can chair the Digital Strategy Committee[26]. The focus on the economy in that digital plan is in accordance with the political strategy of President Nicolas Sarkozy, elected in 2007. The France Digital Plan 2012 proposes 154 actions around 4 priorities: access for all citizens; digital content (transition to digital TV, for example); digital services for companies, public administrations and citizens; a new governance of the Digital Economy.

In order to achieve this scheme, a plan is proposed to target 100 % access to fixed broadband Internet in the French territory, and to deploy «high-speed» broadband infrastructures (512 kbit/s). The digital trust is provided by the deployment of an electronic identity card (eID), based on a highly-secured e-signature standard. The eID card might facilitate online consultation of citizens to improve the public decision-making process. The transition to digital television, achieved in 2011, is a major «revolution», offering new and better quality TV channels. Thanks to the frequencies released by the cessation of the terrestrial television, France is one of the first countries in the world, with Sweden, Germany and the United States to launch, in 2011, the very mobile broadband (4G), which will allow the development of

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[26] Decree n°2008-313 of April 4, 2008, published in the Official Journal (JO) of April, 6 2008.

innovative services. In November 2011, a report about Digital France 2012 considered that 95% of the measurements have been carried out or were being implemented.

The France Digital Plan 2012 aimed to put France back among the leading digital nations, supporting the development of the digital industry and creating jobs related to the digital revolution. The President of the Republic and the Prime Minister have also decided to reorganise the institutions, as in the other major developed countries. Considering the challenge for the Digital Economy and the necessity to have a global strategy, an inter-ministerial delegation was created to bring together the human and financial means that were dispersed in ten ministries. The Ministry for the Budget, Public Accounts and Civil Service is responsible for the e-government policy, but a Secretary of State is in charge of the development of the Digital Economy. In 2011, President Nicolas Sarkozy has set up the National Digital Council, which provides public authorities with advice on draft regulations for the digital sector and participate in the public debate to enlighten the Government. The governance of the State's information systems was also recast in 2011. The new Interministerial Directorate of Information and Communication Systems of the State (DISIC), under the authority of the Prime Minister, directs and coordinates the actions of State administrations to improve the quality and efficiency of information and communication systems. The aim is to simplify relations with users and to promote innovative uses.

On an international geopolitical level, France hosted in May 2011, in Deauville, the G8, Summit of Heads of State and Government of the eight largest economic powers. She took advantage of her presidency to initiate the topic of Internet governance. The e-G8 Forum brought together over 1,500 leaders and experts from around the world in Paris for two days to discuss information technologies and the Internet.

From the government's point of view and according to the reports[27], the results of the France Digital Plan 2012 have been a success. Nevertheless, the issues of digital social and spatial divide are far from being solved, especially as technological and usage innovations require more efficient equipments and higher-speed broadband.

6.6.5 From France Very High Speed Plan to the Digital Republic Bill

In February 2013, following a large public consultation to establish the needs of territories and citizens, President François Hollande presented the France Very Broadband Plan 2022, with the objective of replacing copper networks (Internet with ADSL) by fiber optics (Fiber to the Home). The aim is also the equipment of the areas not benefiting from a good broadband (8 Mbits/s) by the end of 2020, and 30Mbits/s by 2022. 20 billion euros are planned over ten years, including 3 billion euros in state subsidies to support local authority projects («Public initiative networks»). The effort must be shared between local authorities, the state and private operators. Presented as «unique in Europe»[28], this plan aimed to reinforce the competitiveness of the French economy, the modernisation of public services and the access to Internet uses for all citizens.

The second step of the digital agenda during the Presidency of François Holland was the Digital Republic Bill, published in October 2016, after an online public consultation. According to Open Government principles, the law was built with a model of co-creation with citizens: 21,330 contributors took part in

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[27] Ministère de l'industrie de l'énergie et de l'économie numérique (2012); (Centre d'analyse stratégique, 2009, 2011).
[28] Source:https://www.francethd.fr/le-plan-france-tres-haut-debit/qu-est-ce-que-le-plan-france-tres-haut-debit.html

the consultation, for 150,000 votes and more than 8,500 discussions and amendments (European Commission, 2016e). This is the first French law resulting from a co-design process. The Digital Republic Bill aims to foster the French data-driven economy, base on Open Data and the free re-use of public sector information. So the second aim is the creation of data-oriented public services and the modernisation of e-government («tell us once» principle, accessibility rules for online services, for example). Prior to the EU GDPR's entry into force in 2018, the Digital Republic Bill also establishes some principles for privacy, such as net neutrality, data portability, right to maintain the connection, right to be forgotten for minors or digital death.

This strategy is in line with France's membership in 2014 at the Open Government Partnership (OGP). France has published its first Open Government National Action Plan 2015 - 2017 for open, transparent and collaborative public action. France's election to the Steering Committee for the Open Government Partnership between October 2016 to October 2017 is for the government a symbol of the digital transformation of the state.

The digital transformation of the State is also linked to the action of the Secretariat General for the Modernisation of Public Administration (SGMAP), which regroups the departments responsible for the modernisation policy: the inter-ministerial directorate for the Government Modernisation, the inter-ministerial directorate of Information and Communication Systems (DISIC) and Etalab, a State Lab for opening public data. In 2014, the DISIC published the «Government as a Platform strategy» to change the way digital public services are designed[29]. During the same year, the function of Chief Data Officer (Administrateur Général des Données) is created under the authority of the Prime Minister within the SGMAP. «This is the first time in Europe that such a function is created at national level» (European Commission, 2016e). Finally, in 2015 was created the National Digital Agency (Agence du numérique), responsible for managing three missions: France's high speed Internet plans, the French Tech initiative and measures to increase citizens' digital competences.

6.6.6 The "Action Publique 2022" and the DCANT 2018-2020 programmes

Launched in October 2017 under the Presidency of Emmanuel Macron, the Public Action 2022 programme follows three objectives: the quality of services for users, a modernised work environment for public officials, the reduction in public spending for taxpayers. To take into account the experience of previous reforms, the priority is given to the digital transformation of administrations, through the involvement of public officials and public service users and with the mobilisation of «unprecedented means for public transformation», that is to say a dedicated fund of 700 million euros over the 5 years of the presidency. The aim is to achieve the goal set by the President of the Republic of 100% dematerialised public services by 2022.

The Public Action 2022 programme will be implemented into two phases. A first phase from October 2017 to March 2018 is an open and shared diagnosis between the ministers, an independent Committee (Public Action Committee 2022 or CAP22) and then a Forum of Public Action involving users.

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[29] See: www.etatplateforme.modernisation.gouv.fr

After arbitration by the President of the Republic and the Prime Minister, a second phase of operational implementation of transformation plans will start from March 2018 (European Commission, 2017f).
In addition, the Minister of State for the Digital Sector launched the Concerted Development of the Territorial Digital Transformation program (DCANT 2018-2020), in order to improve the performance and flexibility of (regional) digital public services. To accelerate the digital transformation of the administration, the ambition is to guarantee shared governance between State level and the local authorities, to contribute to a global approach to data in the service of public policies, and to facilitate the scaling up of digital administration. These actions are to be updated every six months.

At the end of 2017 is set up a new organisation for public and digital transformation of the state. The DISIC becomes the Inter-ministerial Directorate for Digital Affairs and State Information and Communication System (DINSIC) which hosts especially a small independent team with an «unprecedented construction approach» (European Commission, 2018f): a digital public service "state startup" strategy. The beta.gouv.fr website is a digital public services incubator: new websites are created according to citizens' needs. In line with the State Plateform framework (www.etatplateforme.modernisation.gouv.fr), the delivery of new digital public services is based on the sharing of information between public administrations and a community of users. For example, the portal «démarches simplifiées» (simplified procedures) launched in March 2018 allows public administrations to create their own online forms to dematerialise all public services. The priority is therefore given in the Public Action 2022 programme to the digital transformation of administrations, with the aim of 100% dematerialised public services by 2022. It requires the involvement of public officials and users but also a strong political involvement by the President of the Republic and the Prime Minister[30].

6.6.7 Summary

The prehistory of the Internet in France deals with the Cable Plan in 1982 and the French invention of the Minitel in 1984, imagined to serve businesses and the economy of local territories. The coverage of the territory with new and efficient communication systems will be, from the 1980s to nowadays, a recurrent debate between the state and the local authorities, because of the digital divide between the rural areas and the metropolitan areas, a gap to fill in at each new technology wave. The use of the Internet began in the 1990s, when the government became aware of the development gap between France (and the Minitel) and the United States (with the Internet and the Information Highways). The public authorities put in place a proactive policy to accelerate the NICTs. In 1998, a first inter-ministerial Committee for the Information Society launched the Government Action Plan for the Information Society (PAGSI). Every year, major reforms are necessary to adapt the legislative frameworks or to accelerate the development of the Internet with the help of private players. From 2001, the priority was to reduce the territorial divide and to increase the uses of the ICTs by all children, all businesses and all administrations, thanks to a plan for a Digital Republic in the Information Society. But in 2007, a report of the Council for Economic Analysis highlights the bad ranking of France compared to the United States and Northern Europe, because of the high cost of the computers and local communications.

Under the Presidency of Nicolas Sarkozy (2017-2012), the priority was to fill this gap with the help of a new organisation and a new strategy. Considering the challenge of the Digital Economy and the necessity to have a global strategy to put France back among the leading digital nations, a State Secretariat for the development of the digital economy, under the aegis of the Prime Minister, is

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[30] https://www.gouvernement.fr/action/action-publique-2022-pour-une-transformation-du-service-public

created to coordinate the diverse public policies in the digital domain. In October 2008 is launched Digital France 2012, a development plan of 154 actions to foster the digital economy, new digital contents and services, Internet access for all citizens and the modernisation of public administrations. The plan proposed to target 100 % access to fixed broadband Internet in the French territory, to deploy the electronic identity card (eID) to reinforce the digital trust and facilitate online consultation. The transition to digital television is achieved in 2011. Thanks to the frequencies released by the cessation of the terrestrial television, France is one of the first countries in the world to launch, in 2011, the very mobile broadband (4G), which allows the development of innovative services. In November 2011, a report about Digital France 2012 considered that 95% of the measurements have been implemented. To advise the government about the rapid changes in ICTs and the new digital challenges, President Nicolas Sarkozy has set up in 2011 the National Digital Council. On an international geopolitical level, the G8 Summit of Heads of State and Government hosted in France in 2011 was the occasion for France to initiate the e-G8 Forum, where 1,500 leaders and experts discussed about the Internet governance. Despite the efforts of the State to support the digital revolution industry and new jobs related to the Internet technologies, the issues of digital social and spatial divide are far from being solved, especially as technological and usage innovations require more efficient equipments and higher-speed broadband.

Under the Presidency of François Hollande (2012-2017), the priorities were the Very Broadband Plan 2022 (Fiber to the Home), launched in 2013, and the Digital Republic Bill, published in October 2016. The Very Broadband Plan 2022 is presented as «unique in Europe», even if the aims are similar to the former presidency: the competitiveness of the French economy, the modernisation of public services and the access to internet uses for all citizens. To achieve this plan, the investments must be shared between the state, the local authorities but also private operators. The Digital Republic Bill was co-created with citizens, according to Open Government principles, thanks to a large online public consultation, and the possibility for citizens to propose amendments. The Digital Republic Bill aims to foster the data-driven economy (Open Data and free reuse of public information), to create data-oriented public services and to modernise the e-government ("tell us once" principle, accessibility rules for online services). Prior to the EU GDPR's entry into force in 2018, the bill also established some principles for privacy, such as net neutrality, data portability, right to maintain the connection, right to be forgotten for minors or digital death. In line with France's membership at the Open Government Partnership (OGP) in 2014, France published an Open Government National Action Plan (2015-2017). To pilot the digital transformation of the State, the Secretariat General for the Modernisation of Public Administration (SGMAP) regroups the departments responsible for the modernisation policy. Etalab, a State Lab for opening public data, is created as a disruptive tool to implement the «Government as a Platform strategy», to change the way digital public services are designed. A Chief Data Officer is created under the authority of the Prime Minister within the SGMAP, promoted as «the first time in Europe that such a function is created at national level». In 2015 was created the National Digital Agency, responsible for managing three missions: France's high speed Internet plans, the French Tech initiative and measures to increase citizens' digital competences.

Under the Presidency of Emmanuel Macron (since May 2017), the priorities are the "Action Publique 2022" and the DCANT 2018-2020 programmes. Launched in October 2017, the Public Action 2022 programme follows three objectives: the quality of services for users, a modernised work environment for public officials, the reduction in public spending for taxpayers. To take into account the experience of previous reforms, the priority is given to the digital transformation of administrations, in collaboration with civil servants and the users (Public Action Committee 2022 or CAP22, Forum of Public

Action). "Unprecedented means" are dedicated to the plan during the 5 years of the Presidency to achieve the goal of 100% dematerialised public services by 2022. In addition, the Concerted Development of the Territorial Digital Transformation program (DCANT 2018-2020) aims to improve the (regional) digital public services in a shared governance between State and the local authorities, to facilitate the scaling up of digital administration. At the end of 2017 is set up a new organisation for public and digital transformation of the State, to reinforce the "State startup" strategy. The beta.gouv.fr website is a digital public services incubator, to answer the citizens' needs by sharing information between public administrations and a community of users. In line with the State Plateform framework, the portal "démarches simplifies" (simplified procedures) launched in March 2018 allows public administrations to create their own online forms to dematerialise all public services. The objective of 100% dematerialised public services by 2022 requires the involvement of public officials and users but also a strong political involvement by the President of the Republic and the Prime Minister.

6.7   Tracable results of digital transformation process

6.7.1   Outcomes of digital transformation articulated in official country reports

In France, the first attempt to create a dematerialised link between citizens, companies and the administration were the Minitel terminal, a device invented in 1984 and diffused nationwide by the Post and Telecommunication Administration (PTT). The Minitel was in concurrence with the American Internet System, but was not able, finally, to resist to the "free" business model and technical efficiency of Internet worldwide network. Following a European directive about telecommunication deregulation and opening of a market, the PTT became France Telecom in 1988 and a private law institution, with a financial independence, in 1990, then a limited company in 1996. The French delay in the adoption of the Internet in the late 1990s is partly explained by this political attempt to offer to the world the French innovation that was the Minitel.

The debate on the role of ICTs in the development of territories, especially rural areas, arose in 1993, during the national debate on regional planning, then in a study of the DATAR (1998) about teleworking and teleactivity as tools for territorial development. ICTs became a political priority in 1998 with the launch of the PAGSI, a strategy and action plan to prepare France to enter the Information Society. Then, the French ICT policies will be in line with the eEurope 2002 and eEurope 2005 action plans, endorsed by European Councils on the proposal of the European Commission (1999): «eEurope. An information society for all». The table below summarizes the outcomes of digital transformation in France's public administration as described in the EU's JoinUp Reports (European Commission, 2014b, 2015b, 2016c, 2017d, 2018f).

**Table 31: Outcomes of digital transformation articulated
in France EU'sJoinUp reports**

Year	Tools and websites for egovernment	Link
1984	**Minitel terminals** enable users to access an electronic telephone and address directory for free, as well as other **Videotex-based** public and commercial services over a closed network	
1998	**Admifrance**, the first Internet portal of the French administration: access to administrative forms and websites of public services.	No link anymore

Year	Tools and websites for egovernment	Link
2000	Inauguration of an eGovernment portal aimed at providing a single access point to public services online.	www.service-public.fr
2003	Creation of a section for businesses on www.service-public.fr	www.service-public.fr
2003	AGORA: the Government launches an open source content management system for managing Internet, intranet or extranet sites at reduced cost	
2004	The electronic version of the French Official Journal gains the same legal value as that of the paper version	
2005	Government-wide eProcurement platform	
2006	Online and free on charge system for birth certificates, tax declaration, baccalaureate results	
2006	The Ministry for Education and Research launches a Internet service for higher education students	www.etudiant.gouv.fr
2007	A new eGovernment website Administration 24h/24 : a one-stop shop for citizens and businesses, for eAccess to administrative forms, eFilling in and online return of forms 24 hours a day, 7 days a week	Administration 24h/24
2007	upgraded version of www.geoportail.fr for one-stop shop to geographical online services	www.geoportail.fr
2007	A website for a copy of marriage or death certificates, free of charge	www.acte-etat-civil.fr
2008	Administration 24h/24 merges with Service-Public.fr	www.service-public.fr
2008	Mon.Service-Public.fr : a unified, personalised and secure access to online Government services. Users have a personal data space for entering their personal data once and for all, and for storing the eDocuments exchanged with the public authorities (eCertificates, tax declaration, reimbursement files, birth certificate extracts, etc).	Mon.Service-Public.fr
2009	www.circulaires.gouv.fr : a one-stop shop access to **departmental circulars** (how to implement a new legal text)	www.circulaires.gouv.fr
2009	The National Union for Families Associations creates s website to help citizens manage their family budget	http://www.monbudget.famille.gouv.fr/
2009	The Directorate-General for the State Modernisation launches the «Ensemble Simplifions» website, to obtain suggestions on how to simplify the administrative procedures in France. Based on the users' experience and the users' needs.	Ensemble Simplifions
2009	The State Secretary for Housing and Town Planning presents the prevention-incendie.gouv.fr portal to help citizens anticipate domestic fire risks	prevention-incendie.gouv.fr

Year	Tools and websites for egovernment	Link
2010	ADEME (Agency for Environment and Energy Management) launches a web site on territorial climate and energy information, in the frame of 'The Environment Round Table (La Grenelle Environnement) which invites all communities with more than 50 000 inhabitants to establish a Territorial Climate-Energy Plan (PCET).	www.pcet-ademe.fr
2010	The French Nuclear Safety Authority launches a portal to measure the radioactivity level in the environment	www.mesure-radioactivite.fr
2010	The National Agency for Water and Aquatic Environments launches a portal providing information on wetlands	www.zones-humides.eaufrance.fr
2010	The State Secretary for the development of the Digital Economy presents 'IDéNum', a single electronic identity certificate for a high degree of security on the services online	IDéNum
2010	User complaints of citizens managed with eComplaint service accessible via Mon.Service-Public.fr	Mon.Service-Public.fr
2010	Proxima Mobile, the first web portal in Europe dedicated to services of general interest made accessible for free via mobile phones	www.proximamobile.fr
2010	www.proximamobile.eu for businesses of the European Union in order to achieve pan European services	www.proximamobile.eu
2010	Created by the National Agency of the Civil Service for Local Governments, www.emploi-territorial.fr is an online job board connecting local governments, civil servants and job seekers	www.emploi-territorial.fr
2011	Open data portal allows public services to publish their own data	https://www.data.gouv.fr/fr/
2013	A new version of the data.gouv.fr to add a social and collaborative dimension by opening up to citizens contributions. Civil society organizations can co-produce information of general interest	https://www.data.gouv.fr/fr/
2016	France Connect system enables users to access online digital services on websites whether they are provided by the central state, social organisations or at the territorial authority level thanks to the only-once principle	
2016	The first FrenchApplication Programming Interface (API) portal, and comprises APIs offered to governmentagencies but also to private enterprises to embed government services.	api.gouv.fr

Year	Tools and websites for egovernment	Link
2017	The platform https://mes-aides.gouv.fr/ allows French citizens to evaluate online whether they can benefit from 24 different social services at both national and local levels	https://mes-aides.gouv.fr/
2018	The portal "démarches simplifiées" aims to dematerialise all public services, by allowing public administrations to create their own online forms	
2018	beta.gouv.fr is a digital services incubator, considered as a **"state start-up "**, where new websites are created for to citizens' needs. It is a mission of the DINSIC	https://beta.gouv.fr/
2018 (online service)	economie.gouv.fr, The portal of Economy, Finance, Action and Public Accounts	https://www.economie.gouv.fr/
2018 (online service)	Etalab's blog, Prime Minister's Office, within the DINSIC,responsible for opening public data and open government	https://www.etalab.gouv.fr/ Tweets @etalab
2018 (online service)	French government modernisation portal	http://www.modernisation.gouv.fr/en/about-the-sgmap/our-organisation

6.7.2   Outcomes of French digital transformation articulated in OECD reports

On the OECD webpage dedicated to Country reports on digital government, there is no report about France entitled "e-government", "digital government" or "Open government"[31], contrary to numerous other countries. In fact, a search on OECD website about France and digital reveals a number of diverse and interesting documents. This point summarizes the debate about France and the digital challenge through these documents.

In a report about the digital divide, the OECD (2001) analyzed the policies elaborated in the European Community and in some countries. There is not many information about France, except the French strategy about the Internet broadband infrastructures for all the regions and the debate about the cost of "universal service". The French "Action program for the Information Society" was launched by the government, which consider the fundamental role of public action for the adoption of Internet technologies by French citizens. The policy is in line with the eEurope initiative (An Information Society for all) proposed by the European Community in December 1999 (connections, e-economy, digital skills, social inclusion, confidence for consumers, regional development)[32]. But the OECD (2001) report consider that, in France, the results are not sufficient, except some discourses in the media and some regulatory measures in favor of competition between firms.

As an answer to the critics of the OECD (2001) report, a document called «Fiche France» (but undated)[33] wants to provide "a synthetic view of the main actions to develop the information technology offer", "for five years" (1998-2003?), "in response to an OECD questionnaire", with the exception of regulatory

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[31] See: http://www.oecd.org/fr/gov/gouvernement-numerique/digital-government-publications.htm
[32] Source: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=LEGISSUM:l24221&from=FR
[33] Retrieved from: http://www.oecd.org/fr/internet/ieconomie/1952649.pdf

actions for the liberalization of telecommunications or the regulation of the Internet, for which the document refers to government websites. Specific policies have been defined in the "Government Program of Action for the Entry of France into the Information Society" (PAGSI)[34] at an inter-ministerial committee in 1998. One of the priority axes is the research & development in the field of ICT (softwares, telecommunications, nanotechnologies, multimedia), in collaboration with european research programs (Eurêka, Information Society Technologies, Safer Internet, Internet Action Plan, E-CONTENT, TEN Telecom). The Law on Innovation and Research in 1999 facilitates investment in venture capital for innovations in ICTs. Various programs also target SMEs/SMIs, for the dissemination of ICTs, e-learning and to introduce micro-electronics into products.

In July 2000, the Government decided to expand the training and ICTs diffusion program to households to reduce the digital divide. In three years, will be created 2500 "Digital Public Spaces" - EPN in french - (free access to computer equipment, introduction to the Internet and multimedia) and other public Internet access points (4800 before 2003) in post offices, local employment agencies and public libraries. To strengthen ICT skills, schools were connected to the Internet with the help of the State and local authorities, with very significant progress between 1998 and 2000. In the same period, a teacher training plan for ICTs was launched.

In 2001, to avoid the digital spatial divide between the regions, a national strategy is defined to improve the coverage in mobile telephony (GSM) by 2004 and the deployment of broadband Internet by 2005, especially in less developed or less populated areas, in agreement with local authorities and operators in telecommunication.

The PAGSI also plans the development of eGovernment, and the state must be the driving force. As early as 1997, essential public data are put online for free. The first step was to equip the administrations with IT tools and then to provide new online services for citizens and businesses (3500 public sites opened in 4 years, administrative forms and launch of «www.service-public.fr» in 2001). The second phase of e-government (2001-2005) is intended to provide better training for public service employees (computer and Internet passport, digital campuses for e-learning) and to allow each user to manage online all of its relations with the administration through "mon.service-public.fr" (my.service-public.fr).

As this summary of a six-pages document shows, the government gives a lot of detail on all the policies deployed since 1997, although "the purpose of this fact sheet is not to trace all the measures taken by the Government for 5 years". It seems that the government of Lionel Jospin, Prime Minister on the Left under the Presidency of Jacques Chirac (Right) - a government of political cohabitation between June 1997 and May 2002 - is eager to show that France is a "good student" of the European policy for the Information Society.

In 2010, in one of the reports untitled "Better regulation in Europe" realized in partnership with the European Commission, the OECD analyses the case of France (OECD, 2010a). Since a previous OECD report in 2004, France has undertaken a simplification policy, an overhaul of public consultation processes and an effort for the transposition of EU legislation into national law. Since 2003, "France has moved away from a model based largely on corporatism" and recognized the need to reform public consultation, taking into account the stakeholders in drawing public policies but also open consultations over the Internet. So, **French policy is strongly linked to reforms to modernise the state** (RGPP[35] for administrative simplification and budgetary savings initiated in 2007; constitutional reform in 2008) and E-Government is a tool for that goal. A first plan for the implementation of e-Government was named Adèle (2004-2007). In October 2008 was launched a development plan for the digital economy: France

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[34] Programme d'action gouvernementale pour l'entrée de la France dans la société de l'information (PAGSI).
[35] Révision Générale des Politiques Publiques (General Review of Public Policies).

numérique 2012 (Digital France 2012). As a part of the RGPP, this plan of 150 actions was monitored by the Council for the Modernization of Public Policies (SGMAP): it promoted, for example, VDSL for all, diversification of digital contents and services, modernization of digital economy governance, promotion of electronic identity cards.

"E-Government is regarded as an essential mechanism in simplifying administration for users (who here include private individuals, businesses and associations), as well as improving the accessibility and quality of public services. The full dematerialization of administrative procedures applicable to businesses has been a goal pursued in close co-operation with the business formality centres, particularly in transposing the so-called "services" directive" (OECD, 2010a, p.43). Since 2000, a single government portal (www.service-public.fr) was run by the Documentation française (the French national office for documentary resources). "In January2008, two-thirds of administrative procedures could be undertaken on line" and, at the beginning of 2009, citizens could open a personal account for online procedures at mon.service-public.fr.

E-Government is also regarded as way to modernize the processes for drafting and publicising the law. In 2007, an online system for regulatory operations (SOLON[36]) was introduced to dematerialize the "Laws and Decrees edition" of the Journal officiel de la République française (Official Gazette of the French Republic) and to provide a track of the successive draft versions of documents among ministries (but not with the parliament or independent regulatory authorities) prior to their final publication. Access to the law for the citizens is facilitated by a specific website (www.legifrance.gouv.fr/). Access to the law was anyway a topic highlighted by France during its EU presidency in the second half of 2008. To publicise simplification initiatives, a strategy of communication is implemented by the governments through different websites such as www.modernisation.gouv.fr or www.ensemble-simplifions.fr (together simplify).

In 2014, France presented to the OECD a note on the Very High Speed Broadband plan, launched in February 2013 (OECD, 2014). An investment of 20 billion euros in ten years aims at full coverage of the French territory in very high speed in 2022, by making priority use of fiber optics. In densely populated areas, deployment takes place in the framework of agreements signed between the operators, the State and the local authorities. In low-density areas, which represent 43% of the population, local authorities take the initiative to deploy "public initiative networks". This public funding has been authorized by the European Commission to check the risks of distortion of competition in terms of calls for tenders. The note also explains that the French broadband plan is based on the legislative framework set by the law LME (Law No. 2008-776 of August 4, 2008 on the modernization of the economy) and on regulatory measures by ARCEP. This regulatory authority for communication networks forced the incumbent Orange (ex-France Télécom) to provide access to its civil engineering ducts used for the copper network in order to allow all operators to deploy optical fiber. This note presented in an OECD working group on competition outlines the economic, territorial and social challenge for France to deploy the broadband Internet. It also presents this plan as a component of the European Digital Agenda (a very high speed broadband connection in each European households in 2020) in the framework of the European 2020 strategy launched to achieve a smart, sustainable and inclusive economy.

In addition to the reports, two Secretaries of State of the French Government presented a discourse at the occasion of OECD events. The intervention of Thierry Mandon, the French Secretary of State for

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[36] Système d'Organisation en ligne des Opérations Normatives.

State Reform and Simplification[37], at the OECD headquarters on September 30, 2014, dealt with Open Government and transparency[38] (Mandon, 2014) Following the President François Hollande's speech in New York to the Heads of State of the Open Government Partnership, on September 24, 2014, Thierry Mandon promotes the new French policy for «a more useful, more efficient, more innovative and more democratic State». The State experiments the agile methods through the "State Startups" (Startups d'Etat) to test new strategies with the stackeholders. Citizens can also improve or produce public data and share it with the government on data.gouv.fr (14,000 datasets; 4,000 users at the end of 2014)[39]. For Thierry Mandon, "Open government, for France, is a little the Declaration of Human Rights in the age of the Internet. Our strategy takes place in a coherent approach of modernization of the State and digital transformation of the State"[40].

At the OECD Forum 2016, the intervention of Axelle Lemaire, the French Secretary of State for Digital[41], dealt with an "inclusive digital revolution" (Lemaire, 2016). For Axelle Lemaire, the digital transformation is a new "industrial revolution", an opportunity for innovation and economic development but also a way to increase the empowerment of citizens. New relations between public authorities, individuals and other stackeholders are the basis for new democratic movements, the share of resources or datas, and for a new governance with the citizens. To prepare that new deal, France is preparing a law for a "Digital Republic" (Very high speed internet everywhere, open data, open knowledge, open government, e-inclusion, reuse of data by startups, help to the innovation ecosystem of the French Tech, development of e-commerce, etc.). The French State must be a catalyst for digital transformations and it is necessary to rethink the Republic. The internet connection must become a right for all citizens in the worldwide digital transition. France needs also to rethink training to create the jobs of tomorrow. The French State is trying to set an example and hopes that this ambition will be amplified at European level[42].

The importance of training and skills in the digital transition in France is an important challenge. Some OECD reports deal with the competencies of adults (OECD, 2013a), inclusion by the education system (OECD, 2015) or strategies for getting the "right skills" (OECD, 2017b). International assessments show that the level of French adults aged 16 to 65 in literacy and numeracy skills are among the lowest of the 24 countries participating in the evaluation, which is a serious problem, especially in the context of the digital transformation of the economy and society. Even if, in 40 years, the educational level of the French population has increased considerably, the inequalities have widened for 10 years. The differences in skills are more marked than in the average of the 24 countries studied, according to the criteria of the training of individuals, their social origin or their country of birth. The insertion of the least qualified young people, especially young people whose parents are of foreign origin, is difficult. The education system does not meet these challenges and the offer of training for adults, especially the less qualified, is also to rethink. The question of skills, and in particular digital skills, is fundamental for the competitiveness of the French economy and for the inclusion of all citizens in the near objective

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[37] Thierry Mandon is Secretary of State to the Prime Minister from June 3, 2014 to June 17, 2015.

[38] France joined the Open Government Partnership in April 2014. The French national action plan for Open Government was published in July 2015. France chaired the OGP between September 2016 and October 2017. It hosted the 4th OGP World Summit in Paris from 7 to 9 December 2016.

[39] In New York OGP Meeting, on September 2014, an Open Government Award, which recognizes the best global initiatives in citizen engagement, has been awarded to Data.gouv.fr. Source: ETALAB. Retrieved from: https://www.etalab.gouv.fr/allocution-du-president-de-la-republique-devant-lopen-government-partnership

[40] French original version: «le gouvernement ouvert, pour la France, c'est un peu la Déclaration des droits de l'homme à l'heure d'Internet. Notre stratégie prend place dans une démarche cohérente de modernisation de l'Etat et de transformation numérique de l'Etat».

[41] From April 2014 to February 2017.

[42] In a report for the National Assembly in 2013 on the Digital Agenda of the European Union, Hervé Gaymard and Axelle Lemaire (Gaymard H., 2013) regret that the European digital policy is too focused on infrastructure and lacks international ambition.

of a dematerialized administration in 2022. The assessments made by the OECD since 2012 show the permanence of the French problem in terms of qualifications. That is why France Stratégie[43] organized with the OECD, in January 2018 in Paris, a working seminar to discuss strategies to be invented to tackle skills imbalances in France[44].

6.7.3 Summary

In the 1990s, France could seem as a pioneer in online administration thanks to the Minitel, an ICT device invented by French electronic researchers. But France was not prepared to use the Internet, an American competitor of the Minitel. So, at the end of the 1990s, it seemed urgent to the government and other political institutions to take up the challenge and catch up with digital divide in spatial planning. In 1998, was launched Admifrance, the first Internet portal for French administration, as well as the PAGSI, a national programme to adapt the country to the Information Society. Since then, regularly, specific commissions write reports about the challenges of ICTs for request of the National Assembly, the Senate, a ministry or the Primer Minister. From 1998 to 2018, these reports regularly conclude about the risks of the digital divide, either for equipments or for cultural mindset and qualifications, linked to the challenge for the economic competitivity of France in the world (to quote only some of these numerous reports: Centre d'analyse stratégique (2009), Centre d'analyse stratégique (2011), Ministère de l'industrie de l'énergie et de l'économie numérique (2012). The topic of the spatial digital divide between urban areas and rural areas is a permanent preoccupation of the local elected representatives, therefore of the state: the subject is put back in debate with each new technological wave related to the Internet and mobile phones. More recently, there has been growing concern about generational and social digital divide, related to urban districts in great economic and social difficulty, or in connection with the dematerialisation of administrative procedures from 2022 onwards (for example, the report: Mission Société numérique (2018)). The strengths and limitations of Big Data and Artificial Intelligence technologies are at the heart of current concerns, reflected in the latest national reports (Aschieri G., 2017; Levy-Waitz P., 2018; Villani C., 2018).

The country reports are often written to analyse the advantages and limits of the new digital technology, followed by a list of intentions and numerous actions to plan. Sometimes, an evaluation of the previous strategy is proposed, to conclude about the absolute necessity of a new strategy. As said by the geographer Bruno Moriset (2010): "Governments accuse their predecessors in turn of making France 'a digital desert'"[45]. In comparison, the EU's JoinUp Reports about France give the outcomes of digital transformation in France's public administration as a list of concrete realisations, such as the websites created, the new laws and decrees, the technical and normative tools to implement in order to manage, step by step, the digital transition, from a "model based largely on corporatism" (OECD, 2010a) to an Open Government taking into account the citizens and the stakeholders in drawing public policies through open consultations over the Internet.

The interest of an analysis of OECD documents is to go beyond either national debates - often colored by political intentions - or the technical or even apologetic side of the reports made for the European Union. Some OECD reports allow us to compare France to other countries. Sometimes they signal that

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[43] General Commissariat for Strategy and Foresight, attached to the Prime Minister.
[44] Source: http://www.strategie.gouv.fr/debats/obtenir-bonnes-competences-presentation-rapport-france-de-locde. Posted Monday, January 29, 2018.
[45] French original version: «Les gouvernements accusent tour à tour leurs prédécesseurs d'avoir fait de la France "un désert numérique"» (Moriset, 2010).

results are not enough (OECD, 2001) or, on the contrary, they recognise progress in e-administration or e-government through simplification policy. Or they support the effort made in the "transposition of EU legislation into national law" (OECD, 2010a). The reports give precise informations about concrete actions - to evaluate the steps of the digital transformation - or they give detailed opinions on the actual level of steps that are still to be taken. In addition to the reports made by OECD, some other documents - such as the discourses of some ministers in response to critical reports from the OECD - allow to understand the place that France wants to take on the European or international scene in e-government, Open Governement or digital innovations to increase the empowerment of citizens.

Another source of outcomes could be also the website of Légifrance, which lists the laws, decrees and orders allowing the transposition into French law of European directives on the impact of ICT and the Internet on the economy, society and political governance. The following appendix (table 32) is a summary of the research done on Légifrance. This inventory shows two attitudes of France: on the one hand, as reported by a report of the OECD, the discrepancy between the date of the directive and the date of the transposition, sometimes well after the official deadline recommended by the EU; on the other hand, the opposite attitude which lists all the legal texts that strive to apply the European Union's recommendations to the letter - sometimes even before the directive.

6.8   Timetable of policies and policy changes and digital agendas in France

Summary of the results and a timetable of the identified policies, processes, activities and events extracted from the policy and process tracing approach.

Table 32: Timetable of policies, policy change, digital agendas

Year	Policy/Process/Activity/Event	Description/Implication
1978 January	Loi Informatique et liberté	Law on Informatics and Liberty. Create the CNIL: National Commission for Informatics and liberty. Advisory role in the planning of administrative data systems.
1978 July 17	Loi CADA	Commission of access to administrative documents (CADA) Law n° 78-753 to improve relations between the administration and the public France is a pioneer in 1978 thanks to the law on access of citizens to public data produced by the administration and public bodies
1982	Plan Cable	Cable Plan : Optical fiber in the regions
1994	Inter-Ministerial Committee for Information Highways and Services	
1998	PAGSI by Inter-Ministerial Committee for the Information Society	«Governmental Action Programme for the Information Society» at an interministerial committee. 1st Phase of eGovernment: equipement of the administrations with IT tools/new online services for citizens and businesses/administrative forms on www.service-public.fr in 2001
1998	Creation of Légifrance	A Data base about the Bills, Acts, Decrees www.legifrance.gouv.fr/
1999 July 12	Law n° 99-587 on Innovation and Research	Law to facilitate investment in venture capital for innovations in ICT, for e-learning and micro-electronics into products
2000	www.service-public.fr	eGovernment portal to provide single access point to public services online
2001 November	Inter-Ministerial Committee for State Reform	2nd phase of e-government: training for public service employees (computer and Internet passport, digital campuses for e-learning)/online secure relation between citizen and administration through «mon.service-public.fr»
2002 November	For a digital Republic in the Information Society, Re/SO 2007	Plan launched by the Primer Minister to complete eEnablign of administrative procedures
2004 February	ADELE 2004-2007	1st plan for the implementation of e-Government: strategic plan for electronic administration 140 measures, 300 new services https://www.senat.fr/rap/r03-402/r03-4022.html
2004 August 6	Loi Informatique et liberté Amendement	Law on Informatics and Liberty amended by law no. 2004-801 implementing of the EU Data Protection Directive (95/46/EC)

Year	Policy/Process/Activity/Event	Description/Implication
2007 July	RGPP	General Review of Public Policies for administrative simplification. E-Government is a tool for budgetary savings until 2012. And adapt Public administration and services to users'needs. More than 300 reforms from 2007 to 2013. www.modernisation.gouv.fr www.ensemble-simplifions.fr
2007	SOLON	Online system for regulatory operations to dematerialize the «Journal officiel de la République française» (Official Gazette of the French Republic) and to provide a track of the successive draft versions of documents among ministries
2008	EU presidency of France	EU presidency of France in the second half of 2008 France promote online access to the law on the model of www.legifrance.gouv.fr
2008 August	Loi LME	Law No. 2008-776 on the modernization of the economy
2008 October	France numérique 2012	Launch of Digital France 2012 As a part of the RGPP, a plan of 150 actions monitored by the SGMAP: VDSL for all/diversification of digital contents and services/ modernization of digital economy governance/promotion of electronic identity cards/100% access to fixed broadband internet/ Transition to digital TV
2009	Ensemble Simplifions website	Web 2.0 site allowing all citizens to voice opinion and suggestions on how to simplify the administrative procedures in France. 'Ensemble Simplifions' aims to give top priority to the users' experience
2011	Etalab	Creation of the government agency under the authority of the Primer Minister to design data.gouv.fr and to coordinate the reuse of public data by private sector parties
2011 December	Open data portal data.gouv.fr	data.gouv.fr allow public services to publish their own data
2013	Roadmap for the digital economy	3 pillars: opportunities for youth (rethink education, digital accessibility in university, ICT related jobs), reinforce competitiveness, promote values in society (e-inclusion, trustful environment for citizens, modernize public policy, health, cyberspace).
2013 February	France Très Haut Débit	Strategy to cover the entire territory with broadband by 2020

Year	Policy/Process/Activity/Event	Description/Implication
2014 April	Paris Conference for Open Data and Open Government	France becomes the 64th country to join the Open Government Partnership (OGP) movement, created in 2011. The objective is to develop good practices in terms of openness of public data. https://www.usine-digitale.fr/article/en-direct-la-france-rejoint-le-club-des-pays-partisans-de-l-open-data.N257734
2014 April	Paris Conference for Open Data and Open Government	The first ministerial open data platform was launched by **Geneviève Fioraso**, Secretary of State for Higher Education and Research, on the occasion of the Paris Conference for Open Data and Open Government. The open data platform for Higher Education and Research is in connection with the Etalab platform. https://www.usine-digitale.fr/article/une-plate-forme-d-open-data-pour-l-enseignement-et-la-recherche.N257731
2014 September 24	President François Hollande at the Open Government Partnership in New York	President François Hollande's speech in New York to the Heads of State of the Open Government Partnership, for a more useful, more efficient, more innovative and more democratic State
2014 September	Open Government Award for Data.gouv.fr	In New York OGP Meeting, an Open Government Award recognizes the best global initiatives in citizen engagement 14,000 datasets and 4,000 users at the end of 2014 https://www.etalab.gouv.fr/allocution-du-president-de-la-republique-devant-lopen-government-partnership
2014 September	E-government: 100% online services in 2015	France is ranked 4th in the world in e-government by the UN. Secretary of State for State Reform and Simplification, Thierry Mandon, presents his digital transformation strategy at a Council of Ministers. https://www.usine-digitale.fr/article/mon-role-est-de-m-assurer-que-les-decisions-sont-fondees-sur-des-donnees-explique-henri-verdier.N285370
2014 November	Government as a Platform Strategy	The DISIC (inter-ministerial directorate for information and communication system)publishes the Government as a Platforma Strategy to change the way digital public services are designed
2015 February	Agence du numérique	Creation of the Digital Agency responsible for managing and implementing High Speed Internet plans, French Tech and dissemination of digital tools for citizens
2015 July	Open Government National Action Plan 2015-2017	French national action plan for Open Government that symbolizes France's involvement in OGP. France chaired the OGP between September 2016 and October 2017. It hosted the 4th OGP World Summit in Paris from 7 to 9 December 2016
2015 December	Re-use of public sector information	Transposition of EU Directive 2013/37/EU in French Law.

Year	Policy/Process/Activity/Event	Description/Implication
2016 January	Report "Work, employment, digital The new trajectories", submitted by the National Council of Digital to the Minister of Labor Myriam El Kohmri	Report of the National Digital Council on the future of work in the digital age. Twenty proposals classified in six chapters aim to bring out controversies, to promote the pathways between wage labor and self-employment. https://cnnumerique.fr/files/2017-10/Dossier-de-presse-rapport-travail-emploi-CNNum-VF.pdf
2016 February	Third CNNum appointed on February 2 by President François Hollande	Appointment of the 30 new members of the third National Council of Digital, chaired by Mounir Mahjoubi.
2016 June	Launch of France Connect	A Single Sign-On solution recognized by all digital public services available in France. To implement the European directive eIDAS (Electronic Identification and Signature), which requires the interoperability with identification systems to access online services
2016 October 7	Loi pour une République numérique	The Digital Bill, a law for a Digital Republic: for the digital transition, digital innovations and new rights for people : - Net neutrality/Data portability/Right to maintain the connection/ better inform consumers/openness of public data/improved accessibility - Control of personal data/right to be forgotten for minors/opportunity to exercise one's rights electronically/personal digital death - Tell us once principle/data-oriented public services
2016 September	France chaired the OGP from September 2016 to October 2017	It hosted the 4th OGP World Summit in Paris from 7 to 9 December 2016.
2016 December	Paris Declaration on Open Government	4th OGP World Summit in Paris Open government through civic consultation and participation, fight against corruption, technologies to foster democracy, promote innovation and progress
2017	Etat Start up	Digital public service «state startup» strategy. Digital public services incubator, in line with State platform strategy. The State experiments the agile methods through the «State Startups» (Startups d'Etat) to test new strategies with the stackeholders. Citizens can also improve or produce public data and share it with the government on data.gouv.fr www.etatplateforme.modernisation.gouv.fr
2017 October	Action publique 2022	Public Action 2022 program: Priority given to the digital transformation of administrations: 100% dematerialized public services by 2022. - Used to improve the quality of public services - a modernized work environment for Public officials - Reduction in public spending

Year	Policy/Process/Activity/Event	Description/Implication
2017 October	Conference of ARCEP as a Platform	Platform for users to alert about the malfunctions of fixed or mobile telephone and Internet networks. To encourage operators to improve their services. https://www.etalab.gouv.fr/event/lancement-de-la-plateforme-dalerte-de-larcep-demonstration-et-debats
2017 November	Stratégie nationale pour un numérique inclusif 2017 November-2018 May	Dialogue with citizens led by the Digital Society Mission of the National Digital Agency on the National Strategy for Inclusive Digital Resource platform and methodological kit for the territories https://inclusion.societenumerique.gouv.fr/boite-outils/orientation.html
2017 december	DCANT 2018-2020 Développement concerté pour une administration numérique territoriale	Concerted development of digital territorial administration (DCANT) for the period 2018-2020 Roadmap for regional digital transformation. - shared digital frameworks to accelerate digital transformation - shared governance between State and local authorities - global approach to data in the servie of public policies - facilitate the scaling up of digital administration http://www.modernisation.gouv.fr/sites/default/files/fichiers-attaches/dcant_dossier_de_presse.pdf
2018 January	Working seminar France Strategy /OECD in Paris	France Stratégie organized with the OECD, in Paris, a working seminar to discuss strategies to be invented to tackle skills imbalances
2018 July	Launch of the 5G roadmap for France.	5G is a strategic issue for French industry, competitiveness, innovation and renovated public services. An agreement reached in January between the Government, Arcep and the mobile operators will in the short term to generalize in France a quality coverage in 5G. https://www.numerique.gouv.fr/node/122371
2018 September	NEC Numérique en commun(s)-Nantes	National event organized by the National Digital Agency, to «Write together the digital society of the future» http://www.nantesdigitalweek.com/evenement-2018/rencontres-nationales-de-mediation-numerique/
2018 October	MOOC «Créer des services publics innovants»	Launch, by Beta.gouv.fr and the Territorial Civil Servants Training Center (CNFPT) of the MOOC "Creating innovative public services" on the platform FUN Launched as part of the Concerted Development Program for Digital Territorial Administration (DCANT) https://blog.beta.gouv.fr/docs/CP_Lancement_MOOC_services_publics_innovants.pdf

6.9 Appendix

6.9.1 Transposition of European Directives in the French Legislative System

Retrieved from: https://www.legifrance.gouv.fr/rechExpTransposition.do?reprise=true&page=1 (Interrogated on 06-08-2018 about the keywords: internet, numérique)

Τable 33: Transposition of European Directives in the French Legislative System

	EU Directives and Regulations	Deadline for transposition	Implementation of the EU Directives or Regulations in France	Topic
1968 May 9	Directive 68/151/CEE Protection of the interests of partners in commercial companies	-	December 1969 Decree and ordinance amending the Law on Commercial Companies and the Commercial Register	Market regulation
1973 February 19	Directive n°73-23 Legislative reconciliation between European State relating to electrical equipment to be used in certain voltage limits	-	Numerous decrees for transposition in all relevant fields	Electrical equipment
1983 March 28	Directive 83/189/CEE Information in the field of technical standards and regulations	-	Numerous decrees for transposition in all relevant fields	Technical standards and regulations
1986 July 24	Directive n°86-361 1st stage of the mutual recognition of terminal equipment approvals	-	From May 1989 to February 1992 Decrees and orders to adapt Postal and Telecommunication Administration, to adapt norms, to approve telecommunications terminal equipment, their connection conditions and the admission of installers	Communications systems
1987	Directive 87/372/CEE Frequency bands for pan-European digital cellular public land mobile communications	-	Orders in April 27,1987 and August 4, 2010 For modifications of the national table of distribution of the frequency bands	Communications systems
1989 May 3	Directive n°89-336 Legislative reconciliation between European State relating to Electromagnetic compatibility	01-01 1996	Numerous decrees for transposition in all relevant fields	Electromagnetic compatibility
1989 October 3	Directive 89/552/CEE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000523149&categorieLien=id Coordination of certain laws, regulations and administrative provisions of the Member States relating to television broadcasting activities	-	Law n° 92-61 (january 1992) and Law n° 2000-719 (august 2000) Modify the law n° 86-1067 (September 1986- freedom of communication) Numerous decrees for transposition in all relevant fields	Standards and regulations

1990 June 28	Directive n°90-387 (June 1990) https://www.legifrance.gouv.fr/affichTexte.do;jsessionid=A784F33430817E88D9A0988505FF3FEA.tplgfr31s_2?cidTexte=JORFTEXT000000705098&categorieLien=id Establishment of Internal Market for Telecommunication Services by foundation of an Open Telecommunication Network	01-01 1991	Law n° 96-659 (July 1996) Telecommunications regulation law Ordinance or Decree in 2001 (adaptation of the code of intellectual property or the post and telecommunications code)	Communications systems
1990 June 28	Directive 90/388/CEE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000334008&categorieLien=id Competition in Telecommunication Services Markets	30-06 1992	Law n° 96-659 (July 1996) Telecommunications regulation Decree in 1992 and Ordinance in 2001 (adaptation of the code of intellectual property or the post and telecommunications code)	Telecommunications services
1991 April 29	Directive n°91-263 (April 1991) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000334823&categorieLien=id Legislative reconciliation between European State relating to Telecommunications Terminal equipment, and mutual recognition of their compliance	06-11 1992	Numerous decrees for transposition in all relevant fields	Communications systems
1991 June 3	Directive n°91-287 https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000521141&categorieLien=id Frequency band for the coordinated introduction of wireless digital telecommunications	31-12 1991	Order (June 1995) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000369101&categorieLien=id Conditions for establishment and use of private European wireless telecommunications equipment (DECT) for use in the frequency band 1 880 MHz to 1 900 MHzz	Communications systems

1992 June 5	Directive 92/44/CEE (Juin 1992) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000706159&categorieLien=id Provision of an open network to leased lines	05-06 1993	Ordinance n° 2001-670 https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000215343&categorieLien=id Adaptation of the code of intellectual property or the post and telecommunications code Numerous decrees for transposition in all relevant fields	Communications systems
1993 July 22	Directive n°93-68 Modify Directives 87/404/CEE (Simple pressure containers),88/378/CEE (Safety of toys),89/106/CEE (Construction products),89/336/CEE (Electromagnetic compatibility),89/392/CEE (Machines),89/686/CEE (Personal protective equipment),90/384/CEE (Non-automatic weighting instruments),90/263/CEE (90/385/CEE (Active implantable medical devices),90/396/CEE (Gas appliances),91/263/CEE (Telecommunications terminal equipment),92/42/CEE (New hot water boilers supplied with liquid or gaseous fuels), 73/23/CEE (Electrical equipment for use within certain voltage limits)	30-06 1994	Law n° 95-96 (february 1995) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000187054&categorieLien=id On unfair terms and the presentation of contracts and governing various economic and commercial activities Numerous decrees for transposition in all relevant fields	Electromagnetic compatibility
1993 October 29	Directive n°93-97 (october 1993) Complete the directive 91263 CEE Equipement of terrestrial stations of satellite communications	01-05 1995	Decree no 95-511 (April 1995) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000553191&categorieLien=id Modify the post and telecommunications code and use of the orbital resource	Communications systems

1994 October 13	Directive n°94-46 (October 1994) Modify directives 88301 CEE, 90388 CEE Satellite communications	08-11 1994	Law n° 91-1323 (december 1991) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000355987&categorieLien=id Finance rectification and 2 decrees	Communications systems
1995 October 24	Directive 95/46/CE (october 1995) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000697074&categorieLien=id Protection of individuals with regard to the processing of personal data and to the free circulation of these data	24-10 1998	Law n° 2004-801 https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000441676&categorieLien=id Protection of individuals with regard to the processing of personal data https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000441676&categorieLien=id Modify the law n° 78-17 (january 1978) on computers, files and freedoms Numerous decrees for transposition in all relevant fields	Data protection (General Data Protection Regulation)
1995 October 24	Directive n°95-47(october 1995) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000888982&categorieLien=id Using standards for transmitting television signals	23-08 1996	3 orders	Technical standards and regulations
1995 October 18	Directive n°95-51 (october 1995) Modify the directive 90388 CEE on abolition of restrictions on the use of television cables for provision of telecommunications services already liberalized	-	-	Market regulation

1995 December 13	Directive n°95-62 (December 1995) Application of open network provision (ONP) to voice telephony	13-12 1996	Law n° 96-659 (july 1996) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000733177&categorieLien=id Telecommunications regulation Decree in 1996 fixing the extent of obstacle protection zones and easements applicable in the vicinity of a station and on the route of the Artigues-Floirac-E.D.F radio-relay system crossing the Gironde department	Communications systems
1996 January 16	Directive 96/2/CE (January 1996), modify the directive 90/388/CEE on mobile and personal communications	-	-	-
1996 March 13	Directive 96/19/CE (March 1996), modify directive 90/388/CEE Achieving full competition in the telecommunications market	11-01 1997	Law n° 90-1170 (December 1990), n° 96-659 (July1996) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000533747&categorieLien=id Telecommunications regulation Numerous decrees for transposition in all relevant fields	Market regulation
1997 May 20	Directive 97/7/CE (may 1997) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000339057&categorieLien=id Consumer protection in distance contracts	-	Law n° 2001-1062 Daily security Ordinance n° 2001-741 Transposition of Community directives and adaptation to Community law on consumer law	Consumer protection

1997 April 10	Directive 97/13/CE (April 1997) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000521227&categorieLien=id Common framework for general authorizations and individual licenses in the telecommunications services sector	31-12 1997	Law of finance n° 86-1317 (December 1986) and n° 99-1172 (December 1999) Law n° 96-659 (July 1996) Telecommunications regulation Numerous decrees in 1993, 1996, 1997, 2000, 2001 for transposition in all relevant fields (including universal service funding) Decree for application of article 21 of the law n ° 2000-321 relating to the rights of the citizens in their relations with the administrations	Communications systems
1997 June 30	Directive 97/33/CE (June 1997) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000521233&categorieLien=id Interconnection in the telecommunications sector to ensure universal service and interoperability through the application of open network provision (ONP) principles	31-12 1997	Law n° 96-659 (July 1996) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000733177&categorieLien=id Telecommunications regulation Ordinance on the adaptation of the Code of Intellectual Property and the Post and Telecommunications Code Numerous decrees for transposition in all relevant fields	Communications systems
1997 June 30	Directive n°97-36 (June1997) Modify the directive 89552 CEE Coordination of Legislative, regulatory and administrative provisions of member states relating to the exercise of television broadcasting activities	30-12 1998	Numerous decrees for transposition in all relevant fields	Market regulation

1997 October 6	Directive 97/51/CE (October 1997) Modify the directives 90/387/CEE, 92/44/CEE to adapt them to a competitive environment in the telecommunications sectors	31-12 1997	Law n° 90-1170 (December 1990), n° 96-659 (July 1996) Telecommunications regulation Ordinance in 2001 (on Intellectual Property and the Post and Telecommunications Code) Numerous decrees in 1993, 1996, 2001, 2002 , orders in 2001 for transposition in all relevant fields	Communications systems
1997 December 15	Directive 97/66/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000704475&categorieLien=id Processing of personal data and protection of privacy in the telecommunications sector Modify the directive 95/46/CE	24-10 1998 Derogation for Article 5 by 24-10 2000	Ordonnance n° 2001-670 for code of intellectual property and post and telecommunications code Decrees in 2002, 2003 Law n° 96-659, 91-646	Data protection
1998 February 26	Directive 98/10/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000889270&categorieLien=id Application of the provision of an open network to voice telephony and establishment of a universal telecommunications service in a competitive environment	30-06 1998	Ordonnance n° 2001-670 for code of intellectual property and post and telecommunications code Law n° 96-659 on telecommunications regulation Numerous decrees for transposition in all relevant fields	Communications systems

1998 February 12	Directive n°98-13 Terminal telecommunications equipment and the equipment of land-based satellite communications stations, including the mutual recognition of their compliance	-	Numerous decisions in 1998 for transposition in the fields of : · national technical regulations · compliance of telephone devices · call processing and telephonometry of telephone sets · CE marking of telecommunications terminal equipment · approved quality system of production and complete quality assurance system	Communications systems and policy
1998 September 24	Directive 98/61/CE Modify the 97/33/CE Portability of the number and the preselection of the operator	31-12 1998	Law n° 96-659 on telecommunications regulation Ordonnance n° 2001-670 for code of intellectual property and post and telecommunications code Decrees and orders for transposition in all relevant fields	Market regulation
1998 November 20	Directive n°98-84 Legal protection of conditional access and conditional access services	28-05 2000	-	Data protection

1999 March 9	Directive 1999/5/CE Radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity	08-04 2000 Repeal of the Directive as from 13-06 2016	Ordonnance n° 2001-670 for code of intellectual property and post and telecommunications code 2 orders and a decree in 2003 on: Consumer information on radio terminal equipment - post and telecommunications code Technical specifications for radio terminal equipment Conformity assessment of telecommunications terminal equipment and radio equipment and their use conditions and amending the postal and telecommunications code	Communications systems
1999 June 23	Directive 1999/64/CE Modify the directive 90/388/CEE To ensure that telecommunications networks and cable television networks belonging to a single operator are separate legal entities	01-03 2000	Ordonnance n° 2001-670 for code of intellectual property and post and telecommunications code	Market regulation
2002 March 7	Directive 2002/19/CE Access to and interconnection of electronic communications networks and associated resources	24-07 2003	Law n° 2004-669 Electronic communications and audiovisual communication services Decrees in 2004, 2005 for transposition in: -Price control of the universal electronic communications service - Conditions for the establishment and operation of networks and the provision of electronic communications services - Operators exerting significant influence in a market of the electronic communications sector (postal and electronic communications code)	Telecommunications services (access)

2002 March 7	Directive 2002/20/CE Authorization of networks and electronic communications services	24-07 2003	Law n° 2004-669 Electronic communications and audiovisual communication services Decrees in 2005, 2007, 2010: -Deadlines for granting authorizations for the use of frequencies and notification of the conditions for their renewal and the obligations incumbent on the holders to allow control of their conditions of use - Conditions for the establishment and operation of networks and the provision of electronic communications services - Radio Frequency Usage Charges Due from Frequency Authorization Holders Issued by the Electronic Communications Regulatory Authority and Posts	Telecommunications services (autorisation)
2002 March 7	Directive 2002/21/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000515677&categorieLien=id Common regulatory framework for electronic communications networks and services	24-07 2003	Law n° 2004-669 Electronic communications and audiovisual communication services Decrees in 2004, 2005, 2007: post and telecommunications code Directories and information services Operators exerting significant influence in a market of the electronic communications sector (postal and electronic communications code) Radio Frequency Usage Charges Due from Frequency Authorization Holders Issued by the Electronic Communications Regulatory Authority and Posts	Standards and regulations

| 2002 March 7 | Directive 2002/22/CE Universal service and rights of users of electronic communications networks and services | 24-07 2003 | Law n° 2003-1365 Public service obligations for telecommunications and France Telecom

Law n° 2004-669 Electronic communications and audiovisual communication services

Decrees and 2 orders in 2004, 2005: Directories and information services Conditions for the establishment and operation of networks and the provision of electronic communications services Operators exerting significant influence in a market of the electronic communications sector (postal and electronic communications code) Public service obligations and financing of the universal service of electronic communications Control of universal electronic communications tariffs Designation of the operator responsible for providing the universal service component | Universal Service Directive |
| 2002 May 7 | Directive 2002/38/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000515681&categorieLien=id Amending, in part on a temporary basis, the directive 77/388/CEE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000515681&categorieLien=id Value Added Tax Regime for Broadcasting and Certain Services Provided Electronically | 01-07 2003 | 2 decrees, 1 order in 2003: Simplified VAT deduction system for Internet and digital TV companies outside EU General tax code, relating to services provided by electronic means | Taxes |

2002 July 12	Directive 2002/58/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000337468&categorieLien=id Processing of personal data and protection of privacy in the telecommunications sector	31-10 2003	Law n° 2004-575 For confidence in the digital economy Law n° 2004-669 Electronic communications and audiovisual communication services Law n° 2004-801 Protection of individuals with regard to the processing of personal data https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000441676&categorieLien=id Modifying Law No. 78-17 of January 1978 relating to data, files and freedoms Repeal of the Directive 97/66/CE Processing of personal data and the protection of privacy in the telecommunications sector	Data protection Privacy and electronic communications directive
2002 September 23	Directive 2002/65/CE Distance marketing of consumer financial services Modify directives 90/619/CEE, 97/7/CE and 98/27/CE	09-10 2004	Decrees in 2005 Distance marketing of consumer financial services	Distance marketing of financial services
2002 September 16	Directive 2002/77/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000888199&categorieLien=id Competition in the markets for electronic communications networks and services Repealing the directive 90/388/CEE Prohibition of operating monopolies	24 juillet 2003	-	Market regulation

2003 January 27	Directive 2002/95/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000331354&categorieLien=id Limitation of the use of certain hazardous substances in electrical and electronic equipment	13 août 2004	A decree and order in 2005: • Composition of electrical and electronic equipment and disposal of waste from such equipment • Conditions for use in electrical and electronic equipment of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ether	Technical standards and regulations
2003 July 15	Directive 2003/58/CE Modify the directive 68/151/CEE Advertising obligations of certain types of companies	31-12 2006	Law n° 2003-721 Law for the economic initiative Decrees in 2005, 2007 amending the Trade and Companies Register and the 1958 Commercial Agents Decree	Market regulation
2003 November 17	Directive 2003/98/CE Reuse of public sector information	01-07 2005	Decree and order in 2005 related to Freedom of access to administrative documents and the reuse of public information / law enforcement No. 78-753	Access
2004 April 29	Directive 2004/48/CE Intellectual property rights	29-04 2006	Law n° 2007-1544 Fight against counterfeiting Decree in 2008 Modification of the intellectual property code	Intellectual property rights
2004 December 15	Directive 2004/108/CE Legislative reconciliation between European State relating to Electromagnetic compatibility Repealing the directive 89/336/CEE	20-01 2007	Decree in 2006 relating to Electromagnetic compatibility	Technical standards and regulations

2005 May 11	Directive 2005/29/CE Unfair business practices of businesses vis-à-vis consumers in the internal market Modify the directives 84/450/CEE, 97/7/CE, 98/27/CE and 2002/65/CE and setlement (CE)2006/2004	12-06 2007	Law n° 2008-3 Developing competition for consumers	Market regulation
2006 March 15	Directive 2006/24/CE Preservation of data generated or processed in connection with the provision of publicly available electronic communications services or public communications networks https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000019143006&categorieLien=id Modify the directive 2002/58/CE	15-09 2007	Decree in 2006 on the preservation of electronic communications data	Data protection
2006 June 27	Directive 2006-58 https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000882007&categorieLien=id Modify the directive 2002/38/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000882007&categorieLien=id Value Added Tax Regime for Broadcasting and Certain Services Provided Electronically	01-07 2006	-	Taxes

2007 November 13	Directive 2007/64/CE Payment services in the internal market https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000017962068&categorieLien=id Modify directives 97/7/CE, 2002/65/CE, 2005/60/CE, 2006/48/CE Repealing the directive 97/5/CE	01-11 2009	Law n° 2008-776 Law of Modernization of the Economy Ordinance, order, 2 decrees in 2009: - Conditions governing the provision of payment services and the establishment of payment institutions -Prudential regulation of payment institutions - Relations between payment service providers and their customers with regard to payment service user information requirements and the main stipulations to be included in deposit account agreements and payment service framework agreements	Market regulation
2007 December 11	Directive 2007/65/CE Modify directive 89/552/CEE Coordination of the laws, regulations and administrative provisions of the Member States relating to the pursuit of television broadcasting activities	19-12 2009	Law in March 2009 Audiovisual communication and new public television service Decrees in 2008, 2009, 2010, 2011 - Modify the regime applicable to television advertising, televised sponsorship and teleshopping. - About audiovisual production of television service publishers broadcast by terrestrial hertzian way in analogue mode - About on-demand audiovisual media services and conisdering the European Convention on Transfrontier Television of 5 May 1989	Standards and regulations

2009 Septembe r 16	Directive 2009/110/CE Electronic money institutions and prudential supervision of these institutions https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000023092709&categorieLien=id Modify directives 2005/60/CE and 2006/48/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000023092709&categorieLien=id Repealing the directive 2000/46/CE	30-04 2011	Law in october 2010 on banking and financial regulation Law in june 2013 Adaptation of the legislation to European Union law on economic and financial matters Order and decrees in 2013	Market regulation
2009	Directive 2009/114/CE Modify directive 87/372/CEE Frequency bands for pan-European digital cellular public land mobile communications	-	December 20, 2010 For modifications of the national table of distribution of the frequency bands	Technical standards and regulations
2009 November 25	Directive 2009/136/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000021492156&categorieLien=id Modify directive 2002/22/CE (universal service and rights of users of electronic communications networks and services), directive 2002/58/CE (personal data and protection of privacy), settlement (CE) n° 2006/2004 (cooperation on consumer protection)	25-05 2011	Laws in March and July 2011 Adaptation of legislation to European Union law on health, work and electronic communications Improve the functioning of the departmental houses of the disabled Disability Policy Provisions Ordinance in 2011 Decrees in 2009, 2012 - creation of the National Agency for the Security of Information Systems - Transposition of the new European regulatory framework for electronic communications - Modify the obligations of electronic communications operators	Data protection

2009 November 25	Directive 2009/140/CE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000021492661&categorieLien=id Modify the directives 2002/21/CE (electronic communications networks and services) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000021492661&categorieLien=id 2002/19/CE (Access to and interconnection of electronic communications networks and associated resources) https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000021492661&categorieLien=id 2002/20/CE (Authorization of networks and electronic communications services)	25-05 2011 pour la 2002/20	Law n° 2011-302 Adaptation of legislation to European Union law on health, work and electronic communications Ordinance in 2011 on electronic communications Decrees in 2009, 2010, 2012: - amending the obligations of electronic communications operators - creation of the National Agency for the Security of Information Systems - Transposition of the new European regulatory framework for electronic communications - Radio Frequency Charges Due from Frequency Authorization Holders Issued by the Regulatory Authority for Electronic Communications and Posts	EU regulatory framework on electronic communications
2010 March 10	Directive 2010/13/UE Coordination of certain laws, regulations and administrative provisions of the Member States relating to the provision of audiovisual media services	-	-	Audiovisual Media Services Directive
2011 June 8	Directive 2011/65/UE https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000024316242&categorieLien=id Limitation of the use of certain hazardous substances in electrical and electronic equipment	02-01 2013	Decree in 2013	Technical standards and regulations
2011 December 13	Directive 2011/93/UE Fight against sexual abuse and sexual exploitation of children, as well as child pornography Repealing the Framework Decision 2004/68/JAI	18-12 2013	Law n° 2013-711 Adaptation in the field of justice in application of European Union law and France's international commitments	Data protection

2012 October 25	Directive 2012/28/UE Permitted uses of orphan works	29-10 2014	-	Intellectual property rights
2013 June 26	Directive 2013/37/UE Modify the directive 2003/98/CE related to the reuse of public sector information	18-07 2015	Law n° 2015 https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000031701525&categorieLien=id Modalities for the free reuse of public sector information	Access
2014	Directive 2014/8/UE Modify the directive 2011/65/related to the exemption for lead in seals used to mount cadmium telluride or cadmium telluride digital detectors on printed circuit boards	31-07 2014	Decree in 2013 Limitation of the use of certain hazardous substances in electrical and electronic equipment	Technical standards and regulations
2014 February 26	Directive 2014/30/UE Harmonization of the laws of the Member States concerning electromagnetic compatibility	19-04 2016	Decree in 2015 Electromagnetic compatibility of electrical and electronic equipment	Electromagnetic compatibility
2014 April 16	Directive 2014/53/UE Harmonization of the laws of the Member States concerning the market of radio equipment Repealing the directive 1999/5/CE	12-06 2016	Law n° 2015-990 Law for growth, activity and equal economic opportunity Ordinance in 2016 Market of radio equipment Decrees in 2008, 2017: - Accreditation and Conformity Assessment under Law No. 2008-776 on the Modernization of the Economy - Market of radio equipment	Technical standards and regulations

2015 November 25	Directive 2015/2366 Payment services in the internal market Modify directives 2002/65/CE, 2009/110/CE, 2013/36/UE and settlement (UE) n° 1093/2010 Repealing the directive 2007/64/CE	13-01 2018	Law n° 2008-776 Law of Modernization of the Economy Law of 2016 for a digital republic Law of 2016 on transparency, the fight against corruption and the modernization of economic life Ordinance and decree in 2009 (payment services and establishment of payment institutions) Numerous Orders and decrees in 2017 for transposition in all relevant fields	Market regulation
2014 July 23	Regulation (EU) No 910/2014 Electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC			
2016 July 6	Directive 2016/1148 Security of networks and information systems	09-05 2018	-	Networks Security
2016 October 26	Directive 2016/2102 Accessibility of websites and mobile applications of public sector organizations	23-09 2018	(waiting for transposition)	
2016 April 27	Regulation 2016/679 Protection of individuals with regard to the processing of personal data Repealing the directive 95/46/CE	25-05 2018	Law n° 2018-493 Protection of personal data	General Data Protection Regulation

7   Case 5: Denmark

According to the Digital Economy and Society Index (DESI) report 2018, Denmark ranks first out of the 28 EU Member States and as Fig.7 shows it has done so for the last years (European Commission, 2018d). The DESI Index tracks the progress of a country's digitisation according to connectivity, human capital, use of internet services, integration of digital technology and digital public services. Denmark belongs to the high-performing cluster of countries and is a leader in digitation in the world. Denmark together with Sweden, Finland, and the Netherlands have the most advanced digital economies, followed by Luxembourg, Ireland, the UK, Belgium and Estonia. In 2018, Denmark made progress in most DESI dimensions, with the exception of Integration of Digital Technology.

Figure 7: DESI evolution over time
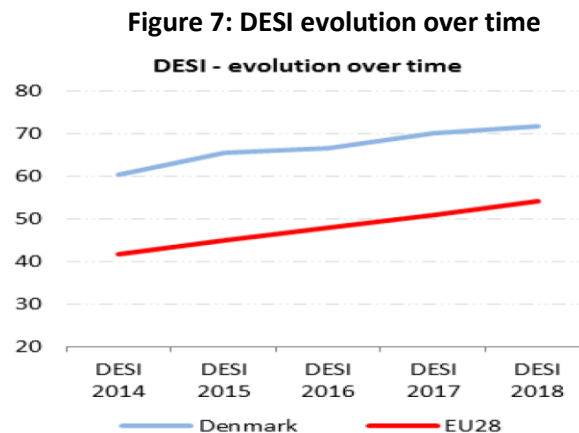
Source: European Commission (2018d)

According to DESI report 2018 Denmark performed very well in the connectivity dimension, also due to the widest 4G coverage in Europe, and the increase in coverage and take-up of fast and ultrafast fixed broadband connections in Denmark. In Denmark, broadband goals have been strongly linked to digitalisation initiatives and are supported by a number of political initiatives both at central government, regional and municipality level aiming at nation-wide fixed and mobile broadband coverage. For example, according to the European Commission (European Commission, 2017h) Denmark has the objective of making 100 Mbps download and 30 Mbps upload speeds available for all households and businesses by 2020.

Concerning the "Human capital" dimensions, a high percentage of Danes have at least basic digital skills as well as the percentage of ICT specialists is slowly increasing in the country. Denmark is performing very well and making progress in particular in its percentage of STEM – science, technology, engineering and math-graduates. As it can be seen in Fig. 7 "DESI Evolution Over Time", Denmark has performed above the average of the EU countries over the last 4 years (European Commission, 2018d).

Regarding "Use of Internet", almost all Danes are online (95%) and are good users of a variety of online services, particularly for banking, shopping and accessing online entertainment. They are also heavy users of online video calls (62 %) and social networks (78 %). Denmark is leading the EU and the world rankings in the use of digital technologies by enterprises and in the delivery of online public services. For example, Denmark scores the highest (100 points) in availability of domestic and cross-border online public services for businesses and 86 % of internet users that must submit forms use online services to do so.

In addition, Denmark leads the Integration of Digital Technology in the business dimension with 28 % of SMEs selling online and a majority of Danish enterprises having embraced digital technologies well above EU average. About 10 % of Danish SMEs sold cross-border in 2017 with a high percentage of their revenues coming from e-commerce (14.5 %). A large number of Danish enterprises embraced digital technologies, such as cloud (38 %) and social media (29 %) and are highly using electronic information sharing technologies (40 %). Please refer to Fig 8 below for an overview of integration of digital technologies by companies.

Figure 8: Use of ICT by Danish companies

| | Denmark | | | | EU |
| | DESI 2018 | | DESI 2017 | | DESI 2018 |
	value	rank	value	rank	value
4a1 Electronic Information Sharing	40% ↓	6	47%	2	34%
% enterprises	2017		2015		2017
4a2 RFID	2.0% ↓	26	3.2%	17	4.2%
% enterprises	2017		2014		2017
4a3 Social Media	29% ↑	5	27%	6	21%
% enterprises	2017		2016		2017
4a4 eInvoices	NA		64.0%	2	NA
% enterprises	2017		2016		2017
4a5 Cloud	37.7% ↑	3	29.6%	3	NA
% enterprises	2017		2016		2017
4b1 SMEs Selling Online	27.8% ↑	3	27.0%	2	17.2%
% SMEs	2017		2016		2017
4b2 E-commerce Turnover	14.5% ↓	5	18.0%	4	10.3%
% SME turnover	2017		2016		2017
4b3 Selling Online Cross-border	9.2% ↓	11	9.8%	8	8.4%
% SMEs	2017		2015		2017

Source: European Commission (2018d)

However, some indicators show that there is still room for improvements. For example, more than a quarter of the Danish population still lacks basic digital skills. Furthermore, Denmark needs to create a better match between the digital skills required by companies and the supply of graduates with these skills. According to the latest EDPR report (European Commission, 2017h), Denmark, in fact, still lacks an overall strategy for digital skills as digital skills initiatives have mainly been associated to individual policies. Addressing the availability of ICT specialists is important for supporting the digital and innovative transformation of the Danish economy.

7.1 Digital agendas

Table 34 provides an overview of the main digital agendas/strategies that are in more detail analysed in the following paragraphs.

Table 34: Danish Digital Agendas

Year published	Digital Agenda
2002	På Vej mod Den Digitale Forvaltning Vision og Strategi for den Offentlige Sektor (Towards Digital Management Vision and Strategy for the Public Sector (own translation))

Year published	Digital Agenda
2004	Den Offentlige Sektors Strategi for Digital Forvaltning 2004-06 - Realisering af Potentialet (Public sector strategy for digital management 2004-2006 - realization of potential- own translation)
2007	Towards Better Digital Service, Increased Efficiency and Stronger Collaboration (2007-2010)
2011	The Digital Path to Future Welfare (egovernment strategy 2011-2015)
2013	The Strategy for Digital Welfare (2013-2020)
2016	A Stronger and More Secure Digital Denmark-Digital Strategy (2016-2020)
2018	Strategy for Denmark's Digital Growth (2018-2025)
2018	Danish Cyber and Information Security Strategy (2018-2021)

7.2   Policy/Bills Related to digital transformation

Table 35: Main Policies/Bills Related to Digital Transformation in Denmark (2000-present)

Year	Policy	Description/Implication
2000	Act on Electronic Signature	*This Act implements the EU Directive on **a Community Framework for Electronic Signatures** (1999/93/EC). The Danish Government has set up an official digital signature scheme (NemID), whereby all citizens are due to receiving a free software-based digital signature (OCES - Public Certificate for Electronic Services) providing sufficient security for most public and private sector transactions. (The European Parliament and The Council of the European Union, 2000a)*
2000	Act on Processing of Personal Data	*This act implement Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data, allowing individuals to access their records held by public and private bodies. The Act was amended in 2007 and is enforced by the Datatilsynet (Data Protection Agency).(The European Parliament and The Council of the European Union, 1995)*
2002	Act on Information Society Services and Electronic Commerce (eCommerce Act No. 227)	*This Act implements Directive 2000/31/EC of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the Internal Market.(European Consumer Centres Network, 2002; The European Parliament and The Council of the European Union, 2000b)*
2004	Governmental order (no. 936) concerning procurement procedures of entities operating in the water, energy, transport and telecommunications sectors	*This Government order (no. 936) incorporates in its annex EU Directive 2004/17/EC coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (known as 'Utilities Directive'). (Økonomi- og Erhvervsministeriet, 2004; The European Parliament and The Council of the European Union, 2004)*
2011	Act on Electronic Communications Networks and Services	*This Act replaces the former Act on Competitive Conditions and Consumer Interests in the Telecommunications Market from 2000/2003. It transposes the bulk of the EU regulatory framework for electronic communications: Directive 2002/21/EC ('Framework' Directive); 2002/20/EC ('Authorization' Directive); 2002/19/EC (Access and interconnection Directive); 2002/22/EC ('Universal service and user's rights Directive); and 2002/58/EC*

Year	Policy	Description/Implication
		('ePrivacy' Directive). The EU regulatory framework for electronic communications was amended in November 2009; cf. Directive 2009/140/EC, Directive 2009/136/EC.(The European Parliament and The Council of the European Union, 2002)
2011	Government order No. 712 concerning the procedures for the award public works contracts, public supply contracts and public works contracts	The Order, dealing with e-procurement, amends the Governmental order (no. 937) concerning the procedures for the award of public works contracts, public supply contracts and public service contracts, adopted on 16 September 2004. The government order incorporates in its annex the exact text of EU Directive 2004/18/EC(The European Parliament and the Council, 2004)
2012	Legislation on digital self-service	The first piece of legislation on digital self-service, which made mandatory the first set of digital self-service solutions. (Agency for Digitisation, 2012)
2012	'Act on Public Digital Post'	The act states that citizens and businesses must have a digital letterbox for receiving digital messages, letters, documents, etc. The act also states that digital messages transmitted through the Digital Post solution have equal status and effect as paper-based letters, messages, documents, etc. The act covers all citizens over the age of 15 years and all businesses. The act came into force for citizens on 1 November 2014, while for businesses it was put into effect on 1 November 2013. (Agency for Digitisation, 2012)
2013	Act on Marketing Practices	The Marketing Practices Act was adopted to implement the Directive on **'privacy and electronic communications'** 2002/58/EC. This transposition entailed a change to Denmark's legal data protection framework on spam. According to the Directive, people who have already given their address to businesses can be spammed with advertisements for 'similar services' ('soft opt-in'), which the Danish legislation Act had not allowed until then. (The European Parliament and The Council of the European Union, 2002)
2014	Act on Electronic Communications Networks and Services	The Act requires that providers of electronic networks and services notify the competent body for eGovernment in cases of data breaches that have significant consequences on the provision of services or concern person-identifiable information. This legal requirement implements in part Directives 2009/140/EC and 2009/136/EC. The Act has been amended several times and amendments have been consolidated in the Amendment Act of 2014. (Erhvervsstyrelsen, 2014)
2014	Act on the re-use of public sector information (2014)	The Act on Public Sector Information implements Directive 37/2013/EU of 26 June 2013, which amends Directive 2003/98/EC on the re-use of public sector information. Denmark has notified full transposition of the PSI directive 37/2013/EU.(Finansministeriet, 2014)
2018	Act on supplementary provisions to the regulation on the protection of natural persons with regard to the processing of personal data and on the free	This Act supplements and implements Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (the General Data Protection Regulation) (The Danish Parliament, 2018)

Year	Policy	Description/Implication
	movement of such data (the Data Protection Act)	
2014	Directive 2014/55/EU	*Denmark is in the process of transposing EU legislation on electronic invoicing into law. Nevertheless, electronic invoicing based on the 'NemHandel' (open) standards has been mandatory for suppliers of goods and services to any public authorities and institutions since February 2005. (The European Parliament and The Council of the European Union, 2014)*

7.3   Situational mechanisms

7.3.1 How does political decision-making influence the implementation of digital transformation?

7.3.1.1   Political structure

Denmark's political structure described below is based on the e-government report provided by the European Commission (2018e), and EU description of each member country (European Union, 2018).

Denmark is a constitutional parliamentary monarchy with legislative power held by a unicameral parliament (Folketing). The Danish Constitution dates back to 1849, with the latest and most comprehensive amendments dating to 1953. Denmark became a member of the European Union on 1st January 1973.

The Danish Parliament has 179 members, elected for a four-year term. 135 seats are allocated on a constituency basis in the 17 multi-member constituencies; the remaining seats are divided nationally and reallocated to constituencies. Greenland and the Faeroe Islands, belonging to the Danish realm, have two Members of Parliament each. Parliamentary elections should be held every four years. However, they are often held before the completion of the four-year terms, either because of 'vote of no confidence' to the government, or because the Prime Minister calls for an election to improve the ruling coalition's parliamentary position.

Since January 1972, the Head of the Danish State is Queen Margrethe II, while the actual Head of Government is Prime Minister Lars Løkke Rasmussen (since June 2015). The Government, headed by the Prime Minister holds the executive power, while the Monarch, Queen Margrethe II, appoints the Prime Minister based on recommendations from the leaders of the political parties.

On 1 January 2007, Denmark has undertaken an important structural reform of the local government, by decreasing the number of regions to 5 and the number of municipalities to 98. The reform has resulted both in further decentralisation of tasks from the regional level to the municipal level as well as re-centralisation of certain tasks to the state level. The 98 new municipalities are responsible for handling most tasks related to citizen service delivery. The five new regions are responsible for hospital care and health insurance, some elements of social affairs, regional development and coordination with business, tourism, transport and environment.

7.3.2 Demographic structure

Figure 9: Danish Population (Statistics Denmark, 2018)

Danish population	Unit	1980	1990	2000	2018
Population on 1 January	million	5.12	5.14	5.33	5.78
0-19 years	per cent	28.7	24.3	23.7	22.6
20-59 years	-	51.9	55.3	56.6	52.2
60 years +	-	19.3	20.4	19.7	25.2
Immigrants and descendants	-	3.0	4.2	7.1	13.3
EU28	-	1.5	1.5	1.8	4.0
Europe outside EU28	-	0.8	1.2	2.2	2.9
Africa	-	0.1	0.2	0.7	1.2
North America	-	0.1	0.1	0.2	0.2
South and Central America	-	0.1	0.1	0.1	0.3
Asia	-	0.4	1.1	2.2	4.7
Of which: Turkey	-	0.0	0.0	0.3	1.1
Poland	-	0.0	0.0	0.3	0.8
Syria	-	0.0	0.2	0.4	0.7
Germany	-	0.2	0.2	0.3	0.6
Iraq	-	0.0	0.2	0.2	0.6

According to the Danish Statistics Office (Statistics Denmark, 2018), Denmark has a population of 5.8 million inhabitants of which 1.6 million – or almost 30 per cent – live alone. The official EU language is Danish and the Currency is Danish Crown (DKK). The capital city is Copenhagen. The average life expectancy is 79.0 years for men, and 82.9 years for women. The Danish population has grown in recent years due to immigrants outnumbering emigrants, and births outnumbering deaths.

The share of persons aged 25 to 64 years with long-cycle education has grown from 6 per cent in 2000 to 12 per cent in 2018. In the same period, the share of the population with basic school as their highest level of completed education has dropped from 30 per cent to 19 per cent. The unemployment rate was 6.0 per cent for women and 5.7 per cent for men in 2017. The unemployment was lowest among the 45-64-year-olds (3.7 per cent) and highest among the 15-24-year-olds (12.0 per cent).

Denmark had a significant surplus on the balance of payments of 7.3 per cent of GDP in 2016 due to exports exceeding imports. Denmark has a GDP per inhabitant in PPS (Purchasing Power Standard EU 28 = 100) equal to 124 (2016). In addition, according to Danish Statistics Office (Statistics Denmark, 2018), Denmark has a large return on net foreign assets, GDP growth rate of 2.2% (2017) and an Inflation rate of 1.1% (2017). General government gross debt (Percentage of GDP) was 36.4, while the General government deficit/surplus (Percentage of GDP) was 1.0% in 2017. The biggest trading partner is Germany followed by Sweden. Concerning digitalisation level, according to Eurostat (2018) about 93% of all Danish households and 100% of all enterprises have access to Internet in Denmark. Percentage of individuals using the internet for interacting with and obtaining electronic information from public authorities in Denmark is about 90%, while 92% of all individuals access Internet more than once a week.

7.3.3 Summary

Denmark is number one in the 2018 DESI index and is and has historically been one of the leading country in the world concerning digitization. Broadband and digitalisation plans have gone hand in hand. Denmark is a relatively small country with about 5, 8 million inhabitants and is a constitutional monarchy.

The Danish political structure is presently formed by the state government, 5 regions and 98 municipalities. Most of the responsibilities are at either state level or municipality level, while the five new regions are responsible for hospital care and health insurance, some elements of social affairs, regional development. The Danish population is on average highly educated with the share of the population with basic school as

their highest level of completed education about 19 per cent in 2018. In addition, Denmark is a rich country with a GDP per inhabitant in PPS (Purchasing Power Standard EU 28 = 100) equal to 124 (2016), well above the EU average, had a significant surplus on the balance of payments of 7.3 per cent of GDP in 2016 and exports exceeded imports in 2016. According to Eurostat (2018), about 93% of all Danish households and 100% of all enterprises have access to Internet in Denmark.

7.4   Action formation & transformation mechanisms

7.4.1   Resulting Digital Transformation Agendas/Strategies from 2000 onwards

Denmark has a long tradition of using IT in public administration and many initiatives go back to the 1990s and even to the 70s (OECD, 2006). In order to make an analysis of the Danish Government strategies evolution in the last 2 decades, we focus here on the visions, the main pillars that they are based on and a few key projects (Table 2). Please refer to the original strategies for a very detailed description of all the initiatives set forth by each strategy.

The Danish e-government strategy, 'Towards eGovernment: Vision and Strategy for the Public Sector in Denmark' (Den Digitale Taskforce, 2002), is published in January 2002. It sets out a vision to systematically use digital technologies to introduce new ways of thinking and to transform communication and collaboration. This is still the basic concept behind the Danish approach to e-government. It is considered as the beginning of joint digitisation co-operation between the municipal, regional and state levels of the administration. This strategy was revised and a new e-government strategy for the period 2004-2006, "Den offentlige sektors strategi for digital forvaltning 2004-06 - realisering af potentialet "(Den Digitale Taskforce, 2004) was launched as a result in 2004. The e-government strategy for 2004-06 further strengthened the focus on the development of the internal public-sector digitisation and efficient payments.

The e-government strategy for 2007-2010 (Den Digitale Taskforce, 2007) focused instead on common infrastructure and established new standards for the development of citizens' services and cohesion across the public sector. The main idea of the strategy is that the public sector should deliver better, more cohesive and efficient digital services to citizens and businesses.

The strategy developed in 2011-2015 (The Danish Government, 2014) puts again focus on increased digital communication and cross-agency cooperation on public sector's digital infrastructure and shared use of data, as well as the promotion and development of shared solutions.

In 2013, the Danish Government, Local Government Denmark and Danish regions launch again a new strategy "Common Public Sector Strategy for Digital Welfare" (Danish Government, 2013). The strategy has the main goal of improving the welfare of the Danish society through digital solutions. Digitalisation should provide the citizens with better opportunities to contribute to welfare as well as public authorities should exploit digital solutions to increase efficiency, cooperation, and knowledge sharing.

In 2016, the Danish government launches the strategy "A stronger and more secure digital Denmark-Digital Strategy 2016-2020" which sets focus on user friendliness and high quality, growth and security (The Government, 2016).

In January 2018, the Danish government launches again two new digital strategies. The first, "Strategy for Denmark's Digital Growth", consists of 38 initiatives, structured under seven main pillars. The strategy aims at bringing Denmark to the forefront of the digital development, to create the best foundation for Danish companies and exploit new sources of digital growth (Ministry of Industry Business and Financial Affairs, 2018g). The second strategy, "Danish Cyber and Information Security Strategy 2018-2021", focuses on improving Internet security and will involve 13 ministries (Ministry of Finance, 2018). This strategy will secure better protection of critical government IT systems, it will improve citizens, businesses' and authorities' knowledge and skills on how to protect themselves and it will strengthen national coordination and cooperation on information security (Ministry of Finance, 2018).

The overall digital agendas formulated at state level have given rise through the years to spin off strategies focusing and addressing specific elements of the overall digital agenda.

Table 36: Summary of strategies, visions/goals and key projects

Strategy	Date of Publication	Vision/Goals	Pillars	Major Focus/Initiatives/Key Priority projects
'Towards e-government: Vision and Strategy for the Public Sector in Denmark'	January 2002	The vision for digital management is that digital technologies are systematic used to innovate and change organizations and work processes to increase service quality and efficiency.	P1: Digital management must rust citizens and businesses to the network community P2: The public sector must work and communicate digitally P3: Public sector services must be coherent with citizens and businesses in the center P4: The tasks in the public sector must be performed where they are handled best	Digital Collaboration: Digital Signatures
eGovernment Strategy for the period 2004-2006: Den offentlige sektors strategi for digital forvaltning 2004-06 - realisering af potentialet (Public sector strategy for digital management	February 2004	Digitization must help to create an efficient and coherent public sector with high service quality, where citizens and businesses are at the center.	P1: The public sector must provide coherent services with citizens and companies in the center P2: Digital management should create increased service quality and release resources P3: The public sector must work and communicate digitally P4: Digital management must be	Efficient Payments and Internal Digitization: Nemkonto, Virk.dk

Strategy	Date of Publication	Vision/Goals	Pillars	Major Focus/Initiatives/Key Priority projects
2004-06 - realization of potential- Own Translation)			based on a coherent and flexible IT infrastructure P 5: Public leaders must go first and ensure that their organization can realize the vision	
Towards Better Digital Service, Increased Efficiency and Stronger Collaboration	June 2007	The public sector must provide a better, more coherent and efficient digital service for citizens and businesses.	1. Better Digital Services 2. Digitization should make it easier to increase efficiency 3. Stronger collaboration should generate digital connection	Common Infrastructure: NemID, Digital Post
The digital path to future welfare (egovernment strategy 2011-2015)	August 2011	Accelerate the adoption of digital solutions in the public sector to capitalize on Denmark leading position and take the next steps on the way to future welfare services.	1.No more printed forms or letters 2.New digital welfare 3.Digital solutions for closer public sector collaboration	Digital Communication: Digital Post, Online Sef-service, The Basic data Program
Common Public Sector Strategy for Digital Welfare	September 2013	To accelerate the transformation already under way, so that core services in the healthcare sector, in the social area, and in education are underpinned digitally	1.The public as more active partners 2. More efficient and cohesive welfare	Dissemination of Telemedicine, Digital learning and Education, Digital collaboration in Health and Education, Welfare technology in Nursing and Care
A stronger and more secure digital Denmark- Digital Strategy 2016-2020	May 2016	Public sector digitization creates value and growth, it provides efficiency improvements and it secures the confidence of Danish people in the digital society.	1.Digital solutions must be easy-to-use, quick and ensure high quality 2. Public sector digitization must provide good conditions for growth 3. Security and confidence must be in focus at all times	Clear legal framework for eGovernment, Better data about disabled and marginalised adults, Digital tendering procedures and procurement, Common data on topography, climate and water Digital skills for children and young people
Strategy for ICT management	November 2017	Mandatory compliance to central government's ICT system management	P1. Efficient and responsible	Data sharing between central government authorities

Strategy	Date of Publication	Vision/Goals	Pillars	Major Focus/Initiatives/Key Priority projects
in central government		model and periodic reviews by the National ICT Council of each ministry's ICT system management	management of ICT systems 2. Targeted and value creation management of IT projects 3. Coherent Central Government ICT 4. The right skills 5.Financial Management	Partnerships for ICT development A common central government digital academy
Strategy for Denmark's Digital Growth	2018	1.Trade and industry must tap into the potential for growth inherent in digitalisation 2. The best conditions for digital transformation of business 3. Everyone should be equipped to operate in the digital transformation	1. Digital hub for stronger digital growth 2.Digital enhancement of SMEs 3. Digital skills for all 4. Data as a driver of growth in trade and industry 5. Agile regulation of trade and industry 6. Strengthened cyber security in companies	Technology Pact
Danish Cyber and Information Security Strategy 2018-2021	May 2018	Citizens, businesses and authorities must be familiar with and be able to manage digital risks, such that Denmark can continue to use digital solutions to support the development of the society. https://en.digst.dk/policy-and-strategy/danish-cyber-and-information-	P1: Everyday Safety P2:Better Competencies P3: Joint Efforts	Creating a national cyber situation centre Information portal

7.4.2 Broadband Policies

Since the very beginning of the digitalisation plan in Denmark, broadband goals and policies have been linked to digitalisation initiatives and have been supported by a number of political initiatives both at central government, regional and municipality level aiming at nation-wide fixed and mobile broadband coverage. For example, according to the European Commission (European Commission, 2017g) Denmark has the goal of making 100 Mbps download and 30 Mbps upload speeds available for all households and businesses by 2020. The broadband strategy contains initiatives concerning framework conditions for operators, municipalities and regions as well as consumer-related issues.

Already in 2010, the Danish Government announced its ambition that every household and business should have access to at least 100 Mbps download. In 2013 an action plan, "Better broadband and mobile coverage in Denmark" (Regeringen, 2013) was introduced, adding an upload target of 30 Mbps by 2020.

7.4.3 Stakeholder involvement from 2000 at national/local government

The Danish public sector is characterised by a high level of decentralisation. The public administration is divided into three levels, state, regions and municipalities, which collaborate closely through the tasks and obligations laid down in the legislation adopted by the Danish Parliament (OECD, 2010b). Traditionally, the three levels of government, Danish Government, Local Government Denmark and Danish Regions have collaborated since the beginning in developing and implementing the e-government policies and strategies. Their work has been then accomplished, supported and coordinated through governmental agencies under the umbrella of different ministries. Task forces lasting several years and spanning several strategic agendas as well as a number of more temporary commissions have also been established. Such commissions and task forces have changed according to the plans and needs of the moment. Recent examples include the digital growth panel and the Danish government's disruption committee.

Some actors such as the Ministry of Finance and Ministry of Industry, Business, and Financial Affairs have always been involved from the beginning together with Ministry of Energy, Utilities, and Climate, which is responsible for broadband coverage. A few actors have changed name over time by keeping the same tasks or have merged with other actors.

Finally, the administrative and political structure of Denmark has been also changed over the years to adapt to e-government developments and make its implementation possible. An important example is the structural reform of the local government in 2007, which by reducing the number of regions and municipalities has simplified the political structure by simultaneously increasing the size of each single unit, thus also increasing the budgets that each municipality or regions have to implement e-government. Please look at the table below for a detailed description of the state government, regional government and municipalities in development, implementation, coordination and support of e-government.

Table 37: E-Government stakeholders-level, name and roles (Based on JoinUp Report (European Commission, 2018e))

Government Level	Role	Stakeholder	Description
National e-Government	Policy/Strategy	Ministry of Finance	The Ministry is the main initiator of strategies and policies related to eGovernment in Denmark. The strategies are based on the idea that the public sector must constantly develop and improve work procedures and methods to deliver the best possible service provision. The Ministry of Finance develops initiatives concerning administration, public leadership and digitalization to improve the efficiency of the public administration.
		Agency for Digitization, Ministry of Finance	The Agency for Digitization is rooted in the Ministry of Finance and was established in November 2011 to substitute the National IT and Telecom Agency. The Agency's main responsibility is to contribute to the accomplishment of the political vision, the strategy and the understanding and development of relevant technology.

Government Level	Role	Stakeholder	Description
		Ministry of Industry, Business, and Financial Affairs	The Ministry of Industry, Business, and Financial Affairs is responsible for digital aspects of policies related to the general business environment, including business regulation, intellectual property rights, competition and consumer policy, the financial sector and shipping. The Ministry acts to promote digitization within the business environment and in relation to public services for businesses.
		The National Business Authority	This agency is responsible for the Danish business portal. Public sector digitization towards businesses takes place in coordination with the Ministry of Finance.
		Ministry of Energy, Utilities, and Climate	The Ministry of Energy, Utilities, and Climate is also responsible for the telecommunication policy, including roaming, competition regulation, and mobile and broadband penetration
	Coordination	Agency for Digitization, Ministry of Finance	The Agency has strategic, professional and technical competences facilitating one of its main roles, which is to assume the responsibility to implement and run eGovernment strategy and policies from concept to output. Therefore, the Agency coordinates efforts and relevant actors to ensure the benefits of realization of the eGovernment strategy. The Agency coordinates the national eGovernment Strategy and the Steering Committee for the eGovernment Strategy, which consists of stakeholders from all levels of government.
		Agency for Governmental IT Services, Ministry of Finance	The Agency for Governmental IT Services (*Statens IT*) was established on 1 January 2010 as a shared service centre for central government providing basic ICT services by merging eight ministries' operational ICT organizations. In the period 2010-2014, a number of projects harmonized and standardized different ICT platforms into one common operational platform to gain higher quality and lower costs through economy of scale
	Implementation	Agency for Digitization, Ministry of Finance	The Ministry of Finance - besides its role in setting the overall eGovernment strategy - develops and implements initiatives concerning administration, public leadership and digitalization to improve the efficiency of the public administration. The Agency is responsible for the implementation of the strategy.
		Government Departments and Agencies	Individual Government Departments and Agencies implement eGovernment projects falling within their respective areas of competence, as well as individual action plans decided at cross-governmental and departmental levels.
	Support	Agency for Governmental IT Services, Ministry of Finance	Government IT has the responsibility of running an efficient IT support and ensuring high and consistent IT services across Denmark. Its main tasks include the support, development and harmonization of IT throughout the territory.

Government Level	Role	Stakeholder	Description
		Ministries' Project Office, Ministry of Finance	The Ministries' Project Office, which resides within the Agency for Digitization, Ministry of Finance, offers advice and coaching to public institutions that implement large IT projects. Its task is to develop and maintain the common IT project model for the state.
	Audit/Assurance	National Audit Office of Denmark	The National Audit Office of Denmark is a public institution that audit the State accounts and examine whether State funds are administered in accordance with the decisions of the Parliament. The Office carries out both financial audit and performance audits.
	Data Protection	Danish Data Protection Agency	The Danish Data Protection Agency controls the processing of data according to the Act on Processing of Personal Data. The Agency mainly deals with inquiries from public authorities or private individuals, but can also take up cases on its own.
Regional & Local eGovernment	Policy/Strategy	The government's Economic Committee	The government's Economic Committee is the overarching committee responsible for economic co-ordination of public sector digitization and serviced by the Ministry of Finance.
		Local Government Denmark (LGDK)	Local Government Denmark is the National Association of Local Authorities (communes). It is represented in the Steering Committee for joint-government cooperation (STS) on behalf of the local authorities in order to report relevant information from the central government to the local authorities.
		Danish Regions	Danish Regions is the National Association of County Councils. The Danish regions are represented within the Steering Committee for joint-government cooperation (STS) alongside Local Government Denmark (LGDK).
	Coordination	Municipalities and regions, Ministry of Finance	Municipalities and regions play a central role in the public sector. The Ministry of Finance, with the involvement of several other ministries, is responsible for coordinating the budget annual negotiations between the government and, respectively, Denmark and Danish Regions and follow up on agreements concerning eGovernment and related projects.
	Implementation	Municipalities and regions	The 98 municipalities are responsible for handling most tasks related to citizen service delivery, including: social services; child care; elderly care; health care; employment; culture; environment and planning. The five regions are mainly responsible for the health sector *e.g.* hospitals. Municipal and regional bodies implement the individual action plans previously articulated at cross-governmental and departmental levels and by domain area, in compliance with the overall national eGovernment strategy.

Government Level	Role	Stakeholder	Description
	Support	Local Government Denmark (LGDK)	Local Government Denmark's mission is to safeguard the common interests of the local authorities, assist the municipalities with consultancy services and ensure that local authorities are provided with relevant up-to-date information.
	Danish Regions		Like the Danish municipalities, Danish Regions represents the five regions at negotiations with central government and ensure that regional authorities are provided with relevant up-to-date information.

7.4.4 Funding and Budgets for e-government

The e-government funding scheme in Denmark is complex as all authorities and government levels are responsible for their own digitisation as part of continuous business maintenance and development. The main idea is that the state government makes available seed money that has to be supplemented by economic resources invested by all parties involved. The joint public efforts (e.g. joint-solutions) need separate funding. This is illustrated here briefly with the financing of the strategies 2018-2025, 2007-2010 and broadband roll-out.

In February 2018, the Danish government has allocated almost DKK 1 billion until 2025 for the implementation of the initiatives in the strategy "Denmark Digital Growth 2018-2025"(Ministry of Industry Business and Financial Affairs, 2018g). DKK 75 million has been allocated in 2018, DKK 125 million annually from 2019 to 2025, and DKK 75 million permanently thereafter. The funds have been allocated until 2021, where an evaluation of the major initiatives will be carried and future actions decided upon based on the evaluation. Some initiatives including the Technology Pact and Digital Hub Denmark are long-term financing. According to the strategy, (Ministry of Industry Business and Financial Affairs, 2018g) the allocated funds are "seed capital" to help to set up a range of initiatives that are of a test nature or public-private partnerships. Private operators are expected to help to scale up the initiatives, while some initiatives are covered by the individual ministries. In addition, the new national strategy for cyber and information security has allocated an extra DKK 100 million to strengthen Denmark's ability to fight computer crime and attacks.

For the implementation of the digital strategy 2007-2010, according to the OECD e-Government report (2010), the state, the regions and the municipalities financed equally the appropriations of DKK 268 million to implement the 35 initiatives of the joint e-government strategy 2007-2010; DKK 20 million per year 2008-2010 for the general activities of the Digital Taskforce (OECD, 2010b). Similarly to the financing model of the strategy "Denmark Digital Growth 2018-2025", the DKK 268 million were used to finance only the most central initiatives. Some initiatives were financed by the specific parties as for example the Ministry of Finance (initiative on public registers), the Ministry of Economics and Business (initiative on the business portal), and Local Government Denmark and Danish Regions (on digital leadership). Other initiatives have additional joint cross government appropriations in the yearly political negotiations concerning the budgets of the municipalities and the regions. An example is the appropriation of a new ICT security infrastructure (PKI infrastructure) supporting digital signatures worth DKK 205 million for the period 2009-2014 (OECD, 2010b).

Concerning broadband, the bone structure for digitalisation, Denmark's primary goal has been to base the roll-out of high-speed network infrastructure on private investments (OECD, 2010b). Municipalities have the role of coordinating and promoting the process in cooperation with telecommunication operators. Public funding should help finance broadband in areas with poor broadband coverage. For example, a tax deduction for private households upgrading or establishing broadband access was approved in 2016. The deduction can amount to a maximum of DKK12 000 (EUR 1 600) per household.

7.4.5 Key Projects and Summary

As it can be seen from Table 36 and 37 there is very much continuity in the Danish digital agendas over the last two decades. Each agenda/strategy builds on and further develops the goals and the objectives of the previous ones. In addition, the funding scheme is based on the same main idea that while some seed money that varies from strategy to strategy is established by the state government through different appropriation mechanisms, all the involved authorities have to contribute to each individual project with their own resources.

The first digital agenda of 2002 builds on the digitalization initiatives of the 1990s' by starting with laying the foundation for digital collaboration within the public administration and between the public administration and the citizens. Citizens can send e-mails to public authorities. Then the agenda was revised in 2004 and extended to include a mandatory defaults citizens account for payments from the authorities (NemKonto); e-invoicing (eInvoicing project); a digital portal for public services to be used by businesses (Virk.dk) and a platform for personal access to all health data (Sundhed.dk).

The strategy formulated in 2007 further builds on these previous key projects by developing common infrastructure with three key initiatives. The first included NemID, a digital ID solution; NemLog which is a federated user management and log in to online public services, and a platform for digital reporting of income (eIndkomst). The second strengthened the online communication from the public authorities to the citizens through several key projects. The "Digital Post" project allowed for messages and communication from authorities to the citizens; NemSMS allowed messages reminders from authorities to the citizens and Borger.dk was a web portal for public services for citizens. In addition, the strategy also set guidelines for the Authorities to use a common IT infrastructure and avoid IT "silos".

The 2011 strategy again further strengthens the collaboration between public authorities, citizens, and businesses by making online solutions such as digital post and online self-service solutions mandatory for both business and individuals. The strategy also starts disseminating digital welfare services and develops the "Basic Data Program".

After having laid a good solid foundation for the digitation of the public sector with several important digital agendas/strategies, the most recent agendas shift attention to cyber security and welfare service such as health services and education as well as ICT management within the public administration. In addition, the two most recent strategy also shift focus to trade and businesses including SMEs and maritime sector.

7.4.6 How are policy changes articulated in government press releases 2017-2018?

The official press releases for this report (Appendix 1), spanning the period 2017 until august 2018, have been retrieved from the web sites of the Ministry of Finance, the Agency for Digitization rooted at the

Ministry of Finance and the Ministry of Industry, Business, and Financial Affairs. This selection has been made based on the fact that these are the key state government actors behind the e-government policy development and implementation. The official web site of the parliament (Folketinget) has also been looked at, but there were no relevant press releases concerning the subject.

As it can be seen from the list, the majority of press releases in 2017-2018 is made by the Agency for Digitization. The press releases provided by the ministry of finance mainly deal with financial issues and budgets. This shows clear delegation of the digitation task to the Agency for Digitization and the Ministry of Industry, Business, and Financial Affairs, which has made about 15 press releases on digitalization issues since beginning of 2017. As it can be seen in Appendix 1 the only press release by the ministry of Finance concerning digitalization is about the launching of the new cyber and information security strategy by joint efforts from the Ministry for Public Sector Innovation, the Ministry for Defence and the Ministry for Industry, Business and Financial Affairs. In addition, an analysis of the press releases shows that the ones made by the Ministry of Industry, Business, and Financial Affairs deal mainly with high level strategic issues while the ones made by the Agency for Digitization also deal with implementation issues. Thus the press releases reflect the actors' different goals and missions.

The press releases from the Ministry of Industry, Business, and Financial Affairs deal with four main issues:
1) The launch of Digital Hub Denmark, an official public-private partnership between the government, the Confederation of Danish Industry, the Danish Chamber of Commerce and Finance Denmark to make Denmark one of the main European tech-hubs within artificial intelligence, internet of things and big data.
2) The allocation of 14,7 billion DKK to strengthen Danish businesses through a range of initiatives that will increase investments and strengthen the focus on digitalization and life science.
3) The recommendations to the Danish government by the Maritime Strategy Team on maintaining and strengthening the industry's international competitiveness and making Denmark a global maritime power hub. Digitalization has a key role in this.
4) The announcement of "Strategy for Denmark's Digital Growth (2018)

As it can be seen from Appendix 1, the press releases on the website of the Agency for Digitization deal with strategic issues such as the launch of digital strategies, implementation plans as well as user and satisfaction surveys of key e-government portals such as borger.dk. Other press releases deal also with the tendering process concerning the new version of previous e-government services such as NemId.
Still some press releases answer to digitalization debates taking place on national media such as daily newspapers and TV programs or announce changes in important posts such as the director of the Digitalization Agency.

The press releases evidence that present policies and goals focus on securing citizens and businesses from cyber attacks as well as generate growth and wealth. Simultaneously the focus is very much on user engagements and monitoring satisfaction and use of the e-government services by the citizens. It emerges a picture of multi-actor and public-private collaboration through for example tendering mechanisms as well as bottom up and top down policy formation. The main logic in these announcements lies in the fact that Denmark has to keep on being the frontrunner of digitalization in the world. This can be achieved by shifting focus from simply improving e-government services and infrastructure to how digitalization can support growth in other sectors then just the public sector as for example the maritime sector.

7.5   Traceable Results of Digital Transformation Approaches from 2000 Onwards

There have been several country reports that have been published about e-government in Denmark. The two OECD e-Government reports (OECD, 2006, 2010b)make an analysis and an evaluation of e-government landscape in Denmark because of the implementation of the strategy 2002-2004 and 2007-2010 respectively. The reports are written on the base of desk research, internal government documents and interviews with key e-government stakeholders. They identify many strengths, but also weaknesses of the Danish digital strategies and come up with recommendations to the Danish government. Other important reports are the ones published by Joinup, a collaborative platform set up by the European Commission to support the modernization of the Public Administrations in Europe (European Commission, 2014a, 2015a, 2016b, 2017c, 2018e). These reports go back to 2014 and are mainly based on news published on governmental websites, main daily newspapers and other official sources. Please refer to the web sites of these publications for further insights into these documents.

7.6   History/timetable of digital transformation since 2000

Table 38: History/timetable of digital transformation since 2000

Year	Policy	Description/Implication
2000	Act on Electronic Signature	*This Act implements the EU Directive on a Community Framework for Electronic Signatures (1999/93/EC). The Danish Government has set up an official digital signature scheme (NemID), whereby all citizens are due to receiving a free software-based digital signature (OCES - Public Certificate for Electronic Services) providing sufficient security for most public and private sector transactions.*
2000	Act on Processing of Personal Data	*This act implement Directive 95/46/EC on the protection of individuals with regard to the processing of personal data and on the free movement of such data, allowing individuals to access their records held by public and private bodies. The Act was amended in 2007 and is enforced by the Datatilsynet (Data Protection Agency).*
2002	Digital Agenda	*På vej mod den digitale forvaltning* *– vision og strategi for den offentlige sektor* *Towards Digital Management* *- vision and strategy for the public sector (own Translation)*
2002	Act on Information Society Services and Electronic Commerce (eCommerce Act No. 227)	*This Act implements Directive 2000/31/EC of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the Internal Market.(European Consumer Centres Network, 2002; The European Parliament and The Council of the European Union, 2000b)*
2004	Digital Agenda	*Den offentlige sektors strategi for digital forvaltning 2004-06 - realisering af potentialet (Public sector strategy for digital management 2004-06 - realization of potential- Own Translation)*
2004	Governmental order (no. 936) concerning procurement procedures of entities operating in the water, energy, transport and telecommunications sectors	*This Government order (no. 936) incorporates in its annex EU Directive 2004/17/EC coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (known as 'Utilities Directive').*

Year	Policy	Description/Implication
2007	Digital Agenda	*Towards Better Digital Service, Increased Efficiency and Stronger Collaboration*
2011	Strategy	*The digital path to future welfare (egovernment strategy 2011-2015)*
2011	Act on Electronic Communications Networks and Services	*This Act replaces the former Act on Competitive Conditions and Consumer Interests in the Telecommunications Market from 2000/2003. It transposes the bulk of the EU regulatory framework for electronic communications: Directive 2002/21/EC ('Framework' Directive); 2002/20/EC ('Authorization' Directive); 2002/19/EC (Access and interconnection Directive); 2002/22/EC ('Universal service and user's rights Directive); and 2002/58/EC ('ePrivacy' Directive). The EU regulatory framework for electronic communications was amended in November 2009; cf. Directive 2009/140/EC, Directive 2009/136/EC.*
2011	Government order No. 712 concerning the procedures for the award public works contracts, public supply contracts and public works contracts	*The Order, dealing with e-procurement, amends the Governmental order (no. 937) concerning the procedures for the award of public works contracts, public supply contracts and public service contracts, adopted on 16 September 2004. The government order incorporates in its annex the exact text of EU Directive 2004/18/EC*
2012	Legislation on digital self-service	*The first piece of legislation on digital self-service, which made mandatory the first set of digital self-service solutions.*
2012	'Act on Public Digital Post'	*The act states that citizens and businesses must have a digital letter box for receiving digital messages, letters, documents, etc. The act also states that digital messages transmitted through the Digital Post solution have equal status and effect as paper-based letters, messages, documents, etc. The act covers all citizens over the age of 15 years and all businesses. The act came into force for citizens on 1 November 2014, while for businesses it was put into effect on 1 November 2013.*
2013	Strategy for Digital Welfare (2013 - 2020)	*The aim of the strategy, launched by Danish government, Local Government Denmark and Danish Regions, is to accelerate through concrete initiatives the use of ICT and welfare technology in frontline public service delivery, specifically within healthcare, care for the elderly, social services, and education. Overall, the strategy aims to maintain or increase the quality of public welfare services while at the same time reducing public expenditure. The Strategy is now an integrated part of the common public sector Digital Strategy for period 2016-2020.*
2013	Act on Marketing Practices	*The Marketing Practices Act was adopted to implement the Directive on* **'privacy and electronic communications'** *2002/58/EC. This transposition entailed a change to Denmark's legal data protection framework on spam. According to the Directive, people who have already given their address to businesses can be spammed with advertisements for 'similar services' ('soft opt-in'), which the Danish legislation Act had not allowed until then.*

Year	Policy	Description/Implication
2014	Act on Electronic Communications Networks and Services	*The Act requires that providers of electronic networks and services notify the competent body for eGovernment in cases of data breaches that have significant consequences on the provision of services or concern person-identifiable information. This legal requirement implements in part Directives 2009/140/EC and 2009/136/EC. The Act has been amended several times and amendments have been consolidated in the Amendment Act of 2014.*
2014	Act on the re-use of public sector information (2014)	*The Act on Public Sector Information implements Directive 37/2013/EU of 26 June 2013, which amends Directive 2003/98/EC on the re-use of public sector information. Denmark has notified full transposition of the PSI directive 37/2013/EU.*
2014	Directive 2014/55/EU	*Denmark is in the process of transposing EU legislation on electronic invoicing into law. Nevertheless, electronic invoicing based on the 'NemHandel' (open) standards has been mandatory for suppliers of goods and services to any public authorities and institutions since February 2005.*
2016	Strategy	*A stronger and more secure digital Denmark-Digital Strategy 2016-2020.* *The strategy has the three main goals 1) To create more cohesive and efficient public services with digital, high-quality welfare solutions; 2)To make it easier and more attractive to start and run a business in Denmark; 3) To ensure that all developments related to the Strategy take into account data security of the citizens and business to make sure that Danes continue having high confidence and trust in digital solutions.*
2016	Common Municipal Digitisation Strategy 2016 – 2020 'Local and Digital – a Coherent Denmark'	*This strategy builds on a vision that a successfully decentralized public sector can be achieved through joint municipal efforts of coherent digitization. The strategy sets a direction for municipalities' joint work on public sector digitalization until 2020. Together with the Strategy, an Action Plan was launched, which sets the direction for inter-municipal collaboration in the sphere of digitization including initiatives such as waste management and increased use of welfare*
2017	Open Government Partnership (2017 – 2019)	*The purpose of the Open Government Partnership (OGP) is to promote good governance, to strengthen democracy, and to utilise digital technology to improve society. Participating countries commit themselves to implement initiatives for increased transparency, citizen participation and dialogue with civil society, anti-corruption and accountability, and technology and innovation. As part of participating in the international collaboration 'Open Government Partnership', the Danish Government has drafted a second national action plan for the period 2017-2019.*
2017	New Strategy for ICT management in central government	*This strategy for ICT management in central government aims to improve operational management of ICT systems. 13 concrete initiatives address issues such as mandatory compliance to central government's ICT system management model and periodic reviews by the National ICT Council of each ministry's ICT system management.*

Year	Policy	Description/Implication
2018	Danish Cyber and Information Security Strategy 2018-2021	*This strategy will secure better protection of critical government IT systems, it will improve citizens, businesses' and authorities' knowledge and skills on to protect themselves and it will strengthen national coordination and cooperation on information security.*
2018	Act on supplementary provisions to the regulation on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (the Data Protection Act)	*This Act supplements and implements Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (the General Data Protection Regulation)(The Danish Parliament, 2018).*

7.7 Appendix

7.7.1 Outcomes of digital transformation articulated in official country reports

This section summarises the outcomes of digital transformation in Denmark's public administration 2000-2017 described in the EU's JoinUp Reports (Horizon 2020 Support Facility, 2018).

Before 2000

- In 1968, a nationwide Civil Registration System is established based on individual and unique ID numbers allocated to each citizen.

- In 1970, a Central Income Tax System is introduced which organises the collection of income tax directly from the employer.

- In 1972, the Danish Municipalities establish their own provider of IT services, KommuneData – KMD – to share IT services support.

- In 1983, the Danish Government introduces a 'modernisation programme', an important element of which is the introduction of IT-based office systems in all Government organisations.

- In 1994 the report Info-Society 2000 was published. This report results in the establishment of the Ministry of Science, Technology and Innovation, as well as the National IT and Telecom Agency.

- In 1999, the Digital Denmark Committee publishes the report 'Digital-Denmark - Conversion to the Network Society' outlining a number of recommendations for initiatives in this area.

- In 2000, a Committee for Digital Administration under the authority of the Ministry of Finance is established. The committee ensures the implementation of XML as the communication standard in the public sector and develops the use of digital signatures.

2000-2003

2001

- Introduction of the e-Boks (eBox or Digital Post and Archive) service in 2001; the aim is to replace the 'window envelopes' – such as bank statements from Public Administrations with digital documents sent to and stored in a secure electronic mailbox.
- In October 2001, the Danish XML Project is launched and an XML committee is established; the objective is to define standards for the description of all relevant data in the public sector, so as to enable data exchange and information systems' interoperability across the public sector.
- In June 2001, the central Government and the regional and municipal authorities launch a joint eGovernment Project and establish a Joint Board for the digitisation of the public sector. The board is served by both an ad-hoc public digitisation unit (the Digital Task Force) and the Ministry of Science, Technology and Innovation.
- In May 2001, the Committee for Digital Administration publish the 'Digital Administration' report, stressing the need for cross-level effort and coordination to improve eGovernment in the country.

2002
- The Danish Board of Technology publishes the report Open Source Software in eGovernment in October 2002. The report shows that the use of the Open Source Software by public authorities would generate major potential savings.
- The public sector modernisation programme of the Danish Government 'Citizens at the Wheel' is published in May 2002.
- The Danish eGovernment strategy, 'Towards eGovernment: Vision and Strategy for the Public Sector in Denmark', is published in January 2002. It sets out a vision to systematically use digital technologies to introduce new ways of thinking and to transform organisations and work processes, so as to improve the quality of service and efficiency.

2003
- In October 2003, the Government publishes the first draft version of its eGovernment Interoperability Framework, the 'Reference Profile'.
- The first eDay takes place in September 2003. All Public Administrations are granted the right to send documents electronically to all other authorities and to demand that documents from other authorities be sent electronically (with the exception of sensitive data and documents).
- The White Paper on Enterprise Architecture is published in June 2003 proposing broader qualified work on enterprise architecture in the public sector in Denmark.
- In the same month, the Government adopts the 'Danish Software Strategy' which aims to increase competition in the software market and to raise the quality and coherence of software products deployed in the public sector.
- The Infostructurebase is launched in March 2003. It consists of a central repository of information on data interchange standards for the public and private sectors.
- In February 2003, the Government appoints the telecoms company TDC to deliver the basic technology for digital signatures to Government organisations and the general public.

2004-2006

2004
- In June 2004, the Danish National IT and Telecom Agency introduces a Definition of Open Standards which provides the relevant parameters to evaluate the openness of technical standards.

- In February 2004, the Danish Government launches a new eGovernment Strategy for the period 2004-2006. Its main goal is to achieve a highly effective, customer-focused public sector capable of delivering top quality services to citizens and businesses.
- In January 2004, Denmark becomes the first country to adopt the Universal Business Language (UBL) as a standard for public sector eProcurement, to enable the integration of eProcurement applications across Government systems and within the Government-wide eProcurement portal.

2005

- Since November 2005, all payments from public institutions (State benefits, pensions, etc) are only made by electronic transfer through the NemKonto Easy Account System.
- In October 2005, the Danish Digital Taskforce discloses the OECD Peer Review of eGovernment in Denmark. The report highlights several domains where improvements are needed.
- In August 2005, the Danish authorities launch a large-scale communication campaign to raise citizens' awareness of eGovernment services.
- Version 1.2 of the Danish Interoperability Framework is released in June 2005.
- In May 2005, Denmark, Finland and Sweden set up a cross-border tax portal: Nordisk eTax, making it easier for citizens to obtain answers to cross-border tax questions.
- Since 1 February 2005 (a date known as „eDay 2"), all citizens and businesses are granted the right to communicate electronically with public authorities and to receive electronic replies, if they request so. From that day onwards, all invoices sent to and by public sector bodies have to be in digital form when the public institution receives them.

2006

- Launch of the web service for pensioners in August 2006 automatically informing when a citizen is awarded an early public retirement pension scheme.
- In June 2006, the Danish Parliament adopts a resolution that requires the Government to ensure that the public sector's use of IT and software is based on open standards. In line with this resolution, the Government should adopt and maintain a set of open standards at the latest by 1 January 2008.
- In January 2006, the Digital Task Force becomes part of the Administrationspolitisk Center (APC), a division of the Ministry of Finance. Both entities have a joint website, modernisering.dk, which is a knowledge centre for the public sector in the areas of public management, eGovernment and other related areas.

2007-2010

2007

- In October 2007, the Danish Ministry of Science, Technology and Innovation launches a new national SOA infrastructure utilising state-of-the-art open standards to perform eBusiness transactions.

- In June 2007, the new eGovernment Strategy for 2007-2010 is published and is jointly adopted by the Danish Government, Local Government Denmark (LGDK) and the five Danish regions setting principles for a more binding cooperation among all levels of Government.

- In April 2007, Denmark tops the Networked Readiness Index of the Global Information Technology report 2006-2007.

- In February 2007, the Danish Ministry of Employment launches the workindemark.dk website aimed at helping foreign workers to find employment in Denmark.

- The 'borger.dk' portal is launched on 1 January 2007. „borger.dk" becomes the citizens" single Internet entry point to all Danish public authorities.

- The 'Local Government Reform' takes effect on the same day. As a result, local government is made up of 5 regions and 98 local authorities (against 14 regions and 275 authorities previously). The 98 new municipalities are responsible for handling most tasks related to citizen service delivery.

2008

- In December 2008, the Ministry of Science publishes 'Open Source Software and the Public Sector', outlining principles for the strategic use of open source software. The Danish public sector 'Software Exchange' website contains open source software developed for or by public authorities and institutions in Denmark, which can be freely reused and further developed by anyone interested.

- A new, updated version of Denmark"s citizen web portal „borger.dk" is launched on 20 October 2008.

- 'Digitalisér.dk' goes live in October 2008. Its homepage is a new common entrance to public IT architecture and open standards for all public authorities and suppliers.

- In the same month, the National IT Council publishes a set of guidelines for all Danish ministries to update their respective IT strategies in line with the national eGovernment strategy 2007-2010.

- In June 2008, an agreement is reached between the Danish Government, Local Government Denmark (LGDK), the Danish Regions and the private provider DanID for the development and implementation of the next generation of digital signature in Denmark.

- The Danish Government decides in April 2008 to create a shared service centre for IT which will perform a number of IT tasks for all Danish ministries. Its purpose is to cut costs and improve existing administrative services while developing new ones.

- In March 2008, a political agreement is reached on a new reform of the public sector, the 'Quality Reform'. 180 initiatives will be implemented in cooperation with Danish regions and municipalities.

- In March 2008 the Agency for Governmental Management launches an EU tender for the establishment and implementation of a cross-governmental digital communication and archive solution with the objective to allow a direct, digital and secure communication among the public sector, citizens and businesses.

- As of 1 January 2008 and in line with a national agreement reached in October 2007, which rendered the use of open standards mandatory in the public sector, all public authorities must use seven sets of open standards in all new IT solutions.

2009

- In October 2009, the Danish Ministry of Science recommends that open source be used where it adds value.

- All public authorities and institutions can receive eInvoices through 'NemHandel'.

- According to a press release of the Ministry of Science and Technology Innovation published in February 2009, the large majority of Danish public authorities allow citizens and businesses to download forms and to directly submit information online from their respective websites.

2010

- In December 2010, 10 000 businesses, more than one third of all active Danish businesses, sent electronic invoices to the public sector via the Danish national open eBusiness framework 'NemHandel' (Easy Trade). NemHandel is a Danish eBusiness technology, which makes electronic invoicing as easy as sending an email. Building on extensive hands-on experience gained through NemHandel, Denmark is an active participant in the European Commission's large-scale pilot project PEPPOL.

- During November and December 2010, Government IT (Statens It) introduces a new web Service Portal (Serviceportalen), where its users can find information about the current IT operational status, planned service windows, news about the Agency and consult several help guides.

- On 4 November 2010, Denmark's Central Government along with the Danish Regions and Local Government unveil the terms of their future joint digital government strategy for 2011-2015. The strategy is planned to be completed in the first half of 2011, giving additional impetus to the digitisation of the public sector. According to its terms, the strategy will pursue the further spread of digitisation in all areas where the public sector is in close contact with citizens and businesses, in particular in the fields of education, social affairs and employment.

- On 1 November 2010, the known as eDag 3 (eDay 3) marks the start of a collaboration initiative between the State, the regions and the municipalities, aiming towards an 'easy online access to the government'. From 1 March 2011 onwards, the authorities will no longer issue password codes. From 1 August 2011 onwards, citizens will only be able to access the public eServices through NemID.

- On 1 July 2010, 'NemID', the new digital signature, which gives Danes a single access to public and private digital self-service solutions was launched. NemID thus provides people with easy and safe access to a wide range of self-service solutions on the web, both public and private, including eBanking, real estate, insurance and pension funds services.

- In May 2010, the Minister for Culture, Mr Per Stig Møller and the Minister for Science, Technology and Innovation, Ms Charlotte Sahl-Madsen decide to jointly mobilise DKK 21 million (approx. € 1.6 million) for the digitisation of the national cultural heritage for 2010-2012. The budget is allocated to four different projects, carried out by the Danish Film Institute, the State and University Library, the Royal Library and the National Museum of Natural History.

- A new solution, developed by the Ministry of Science, Technology and Innovation, the Commerce and Companies Agency and the private provider behind 'NemID', makes it easier for the owners of sole proprietorship companies to start using digital solutions and eGovernment services for businesses. Thus it becomes easier and faster to use the business portal Virk.dk.

- The Danish State, regions and municipalities agree on 12 January 2010 on a roadmap for the transition from the various usernames/password codes to the new, secure digital signature 'NemID' when accessing the public eServices requiring secure identification.

2011-2014

2011
- On 1 December 2011, 'NemHandel' became mandatory to use when invoicing the public sector.
- Following the closing of the National IT and Telecom Agency in October 2011 and the subsequent transfer of its responsibilities to several ministries, the Ministry of Finance was reorganised. The former Agency for Governmental Management, under the Ministry of Finance, which was responsible for certain public sector digitisation activities, was dissolved and a new agency, namely the Agency for Digitisation, was established. The Agency for Digitisation combines the expertise of the previous National IT and Telecom Agency (IT- og Telestyrelsen) and that of the former Agency for Governmental Management (Økonomistyrelsen) in order to strengthen the digitisation of the public sector. This Agency will be in charge of ensuring that digitisation strategies are implemented to the benefit of citizens and that new digital opportunities are fully exploited.

- Another agency, the Agency for Modernisation was also established, merging the Finance Board and the Personnel Board, and covering responsibility for the finances, agreements and management of public administration. It will serve as a solid platform for freeing up resources through the modernisation of the public sector, improving the management of public funds and providing for a better leadership.

- Denmark's National IT and Telecom Agency was dissolved and its functions are transferred to four ministries, according to a decision of the new government:
  - Ministry of Finance: responsible for IT policy and public sector digitisation, including matters concerning digital communication with citizens and businesses
  - Ministry of Business and Growth: responsible for telecom and Internet regulation, and frequency management
  - Ministry of Defence: responsible for matters related to the protection of critical IT infrastructure and the Governmental Computer Emergency Response Team (GovCERT)
  - Ministry of Economic Affairs and the Interior: responsible for certain tasks for IT modernisation and digitisation-related issues.

- The Danish Government published its new Digitisation Strategy for 2011-2015 in August 2011. The central aim of the strategy is that by 2015 digital self-service solutions will be established as the normal way for citizens to interact with the public sector. The new strategy, called 'The digital path to future welfare', aims to phase out paper-based forms and postage. Citizens will use the Internet for all applications and notifications to the public sector, namely, a moving notification; the enrolment of a child in a nursery; or when issuing a new passport. In addition, all citizens and businesses will automatically be given a free digital mailbox to which all communications from the public sector will be sent. The transition will take place gradually, as user-friendly eGovernment solutions are introduced in increasingly more areas. Help will be available for citizens who find it hard to use the new solutions. By 2015, the Government expects to be able to send 80 % of all correspondence to citizens in digital form. It is also expected that 80 % of all applications and correspondence from citizens will be in digital form.

- On 8 June 2011, it is announced that 15 students have the opportunity to be paid during their summer vacations to enhance open source software for the Danish public sector by the Ministry of Science, Technology and Innovation (Ministeriet for Videnskab, Teknologi og Udvikling). The results will be made available to all public authorities through Softwareboersen (Software Exchange), a government website where public organisations share open source software.

- Following a meeting between the Danish Minister of Science Technology and Innovation Ms Charlotte Sahl-Madsen and the Danish Parliament's spokesperson for IT on 30 March 2011, it has been decided that the Danish public authorities will remain committed to receiving documents from citizens and businesses in all common formats (including Open Document Format - ODF and Open Office XML - OOXML). Likewise, it will still be mandatory for the public authorities to send non-editable documents to citizens and businesses in the open PDF/A-1 format.

- With the decision not to make it mandatory to send editable documents in the open document formats OOXML and ODF, the Minister followed the recommendations of an Expert Committee on Open Standards which argued that these standards are not mature enough to be applied for the time being. The Expert Committee on Open Standards will be discontinued, and the National IT and Telecom Agency will, on a regular basis, continue to monitor the maturity of the standards involving relevant experts.

- In January 2011, eLearning films on the most important aspects of NemID, Denmark's digital signature providing Danes with a single access to public and private digital self-service solutions, are made available in sign language. The sign language videos tell the viewers about the security features of NemID, how to order the card and how to enable its functionalities.

2012

- The Danish Parliament has passed legislation as part of its policy to make mandatory digital self-service in several government service areas. Thus, as part of the implementation of the joint eGovernment Strategy 2011-15 (central government, regional government and local government), the Danish Parliament adopted in June 2012 an amendment which makes the first of four planned "sets" of digital self-service solutions mandatory for citizens to use as from December 2012. This first set of services include, among others, change of address, payment for obtaining hunting licence, repayment of state education loan, and applications for a national health care card, an EU health care card, admission to day care, admission to elementary school, and admission to after-school care.

- In October 2012, the Danish government and Local Government Denmark (association of municipalities) signed an agreement aiming to improve and link public registers of basic data and make them available for public re-use free of charge. Later Danish Regions joined the agreement. The agreement is an element of the Basic Data Programme which aims to clean up data and consolidate core data registers, such as digital maps, cadastral information, company registration information, and official addresses, and put an end to costly parallel registers. This is expected to save the public sector DKK 260 million (approx. €34 million) annually by 2020.

- In October 2012, the new authority responsible for operation of payments of public benefits, Udbetaling Danmark (translates "Payments Denmark"), was established. The establishing of Udbetaling Danmark involved close cooperation between the new authority and the municipalities, getting IT systems and data from 98 municipalities in place and migrating around 1,000 employees. Responsible for payment of pensions and housing benefit among other things, Udbetaling Danmark is expected to pay out approx. DKK 200 billion to approx. 3 million beneficiaries in 2014. The new authority should realise economic savings of almost 300 million DKK per year by 2015 and an analysis has been initiated of the possibility of centralising more tasks under Udbetaling Danmark, including sickness benefits and economic scholarships.

- In April 2012, Denmark joined the Open Government Partnership (OGP), an international initiative whose purpose is to promote good governance and strengthen democracy in the participating countries. The Danish Agency for Digitisation is responsible for the overall coordination of Denmark‟s OGP participation.

- Approximately 2 000 patients across five patient groups participate in the largest-ever telemedicine project in Denmark. The project is an initial step towards establishing a common national infrastructure for telemedicine in the country. The project started at the beginning of 2012 and will run for two years. Four hospitals in the Capital Region (Region Hovedstaden, in Danish) and the Central Denmark Region (Region Midtjylland, in Danish) participated in the project together with ten municipalities and a number of practitioners across the country. The project will produce a database that records information on patients while they remain at home. Health professionals in all sectors will have access to patient data from their own computer and can quickly decide whether there is a need to adjust the patient's medication. The patients represent five different groups: COPD (emphysema), diabetes, inflammatory bowel diseases and pregnant women with and without complications. The project constitutes Denmark's largest investment in telemedicine, with the government providing almost 66 million DKK (€9 million approximately). Of this, 33.4 million DKK (€4.5 million approximately) comes from the Foundation for Welfare Technology (Fonden for Velfærdsteknologi, in Danish) while the Capital Region, Central Denmark Region and some smaller partners finance the rest. The aim of telemedicine is to free up resources in health care, ensure a more intensive treatment and monitoring, and enable patients to avoid strenuous routine visits and hospitalisations. Several hospitals have already had good experiences with telemedicine. The project provides the opportunity to scale up these local experiences to the national level.

2013

- The second of four planned "sets" of digital self-service solutions became mandatory for citizens to use in December 2013. This set of services include, among others, choosing a physician, application for free admission to day care and after-school care, reporting of rat infestation, application for a passport, and declaration of fatherhood.

- As part of the implementation of the joint eGovernment Strategy 2011-15 (central government, regional government and local government), the Danish Parliament adopted the Act on Public Digital Post in June 2012. The act states that citizens and businesses must have a digital letter box for receiving digital letters from the public authorities.

- On 12 November 2013 in Copenhagen approximately 170 citizens, businesses, civil society organisations, and public authorities and institutions spent a day working together across traditional boundaries and divides. The aim was to foster debate and to find new ways to improve Denmark's welfare system, democracy, and innovative power.

- Open Gov Camp was hosted by the Agency for Digitisation, responsible for the overall coordination of Open Government activities in Denmark. All workshops and activities at the camp were organised and facilitated by the participating public authorities, civil society organisations, citizens, and businesses. The camp was one of the commitments in the new Danish action plan for Open Government.

- As part of Denmark's participation in the international initiative Open Government Partnership (OGP), a second national action plan for open government was published in late 2013. The action plan comprises four themes, all rooted in the 2011 government platform: Local Democracy and Participation; Full Digital Communication - and Inclusion; New Forms of Collaboration and Involvement; and Open Data - Innovation, Transparency, and Efficiency.

- In September 2013, The Danish government, Local Government Denmark and Danish Regions have jointly launched a common public sector "Strategy for Digital Welfare 2013-2020".

- In august 2013 the IT Project Model for central government contributes to better, more uniform planning, management and implementation of central government IT projects. The model is embedded in the Ministry of Finance budget guidelines ('Budgetvejledning') and must be applied to all IT projects in central government. The IT project model is a tool to be used by the project manager. It is meant to support day-to-day management of the project as well as contribute to ensuring that the IT project is successfully implemented. The model is generic and must be adjusted to the size and context of the individual project.

- The Central Government Business Case Model is an integral part of both the Central Government IT Project Model and the Central Government Programme Model (which has been launched subsequently). The objective of the business case is to clarify and calculate costs and gains as well as to estimate the financial consequences of potential risks. On this basis, a solid foundation can be established for assessing the justification of the project or the programme.

- On 6 January 2013 the updated version of the NemLog-in solution was launched. The new NemLog-in is an updated version of the previous one which handled more than 31 million login requests from citizens in 2012. This corresponds to an average of one login every second of every day which is almost 40 % more logins than in 2011. This increase was due to the increasing number of government services being available through the NemLog-in solution. By the end of 2012, about 130 citizen-oriented public services was using the NemLog-in solution.

2014

- The Danish 'Joint Government eGovernment Strategy 2011-2015' includes a gradual transition to mandatory digital self-service and communication. The third "wave" of mandatory digital self-service started on 1st December 2014.

- On Saturday, 1 November, Denmark took a historic step as the first country in the world to make it compulsory to receive digitally letters, notices and messages from public authorities, e.g. vehicle-inspection notifications, pension notifications, hospital appointments, letters from the municipality, etc.

- In May 2014 the contract on the development and operation of the Data Hub for 'Basic Data' was awarded to KMD . The purpose of the Data Hub is to provide access for public authorities and private companies to updated basic data on companies, properties, persons, addresses and maps. The Data Hub will replace a number of local public distribution solutions and ensure that authorities and companies have easy and safe access to basic data in a single system instead of many different systems and interfaces.

- In July 2014 a mobile version of NemID (national eID and digital signature) was launched providing new opportunities for citizens to use public digital services from their smartphones and tablets, thus making public digital solutions more and more mobile-friendly. On the citizen portal alone there are up to 200 different self-service solutions which will be adjusted, where relevant, to ensure a good experience on mobile devices.

- In early 2014, the Agency for Digitisation took the initial steps to develop the next generation of the public eID and digital signature (NemID)

- In January 2014 the Danish Agency for Digitisation developed a programme model and process framework which is mandatory for programmes with IT costs exceeding DKK 60 million where the IT share at the same time constitutes a significant element of the programme. The programme model sets out to 1) make available a common programme management and programme leadership model for governmental programmes based on best practice, 2) professionalise governmental programme leadership and management through mandatory programme model requirements, including obligations with respect to the application of phases and the development of programme leadership documents, 3) ensure concept clarification including guidelines for choosing between a project, a programme or a portfolio, and 4) make available experience and good practice from Danish and foreign programmes for the government sector – both to disseminate experience in an immature area and to avoid any parallel development of methods in various government institutions.

2015-2016

2015

- In May 2015 a visualisation application is published online at http://kommune.politiken.dk/ by Politiken, the third largest newspaper in Denmark. The web application allows the users to visualise the income and expenditures of selected cities, as well as it allows to compare the way two municipalities used their budgets and shared their resources.

- On 27th April a conference was held by the Agency for Digitisation and DI ITEK (the IT branch of Confederation of Danish Industry) in cooperation with a number of ministries, Local Government Denmark, and Danish Regions to collect input for further work on the next Government Digital Strategy which must be finalised by the end of 2015. More than 250 highly engaged participants from business, NGOs, government agencies, research institutions, etc. discussed smarter e-government and digital welfare. The Agency for Digitisation and DI ITEK compile and process the many inputs from the workshops and the compilation of inputs will be presented to the Steering Committee for the Government Digital Strategy to help shape the development of the next strategy.

- In March 2015, Denmark has updated its Open Government Partnership (OGP) National Action Plan and extended its duration to 1st July 2016. Open data has been included in the updated version of the plan, as well as promotion of Open Government.

- In January 2015, a development of an emergency-warning system for smartphones, tablet computers and PCs for students, teachers and school personnel was launched. The public tender for development and delivery of the early warning system to ensure that a crisis can be handled in the

best way was won by Magenta – an ICT firm that will also share its own contributions as an open source.

2016

- A new self-evaluation tool on ICT security for SMEs was launched on 10 November 2016. The tool was developed through collaboration between the Danish Business Authority and the Council for Digital Security, an independent Danish NGO.

- On 27 October 2016, the National Council for IT Projects, DI Digital (a trade organization within the Confederation of Danish Industry), the Danish IT Industry Association (ITB), Dansk IT (an association for IT professionals), selected IT suppliers and selected government authorities, joined forces to launch a new Code of Conduct for customer-supplier collaboration. The new Code of Conduct contains 7 principles, which will help to ensure good relations between customers and suppliers of IT projects

- As of 1 July 2016, companies operating in Denmark are mandated by law to register any changes to their status in regard their creation, changes or abolishment.

- On 12 April 2016, the transfer of all operational information on common public sector components and systems was successfully transferred to the communication platform www.digitaliser.dk. The platform is aimed at ICT professionals and stakeholders working with public sector digitalisation. The information transferred includes information on 'Easy ID' (the Danish digital signature solution – *NemID*), Digital Post, borger.dk (the Danish citizen's portal), 'Easy Login' (the Danish single-login solution – *NemLogin*), *NemHandel* (the Danish eCommerce infrastructure) amongst others. Surveys reveal that users are highly satisfied with quality of components and solutions.

- The new Business Council for ICT Security was officially created on 16 March 2016. The goal of the Council is to develop recommendations for private sector entities on how to improve their ICT security and corresponding data management.

- On 9 March 2016, the national dissemination of telemedicine for chronic obstructive pulmonary disease (COPD) patients was launched nationwide. Telemedicine allows COPD patients to individually manage the measuring of blood pressure, weight and oxygenation in their own home. At the same time, it allows for health professionals to monitor the measurements of their patients and take action when necessary. Under the above circumstances, unnecessary admissions to hospitals will be significantly reduced.

- In February 2016, the Danish Business Authority and the Agency for Digitisation became a partner of the Danish Centre for Big Data Analytics driven Innovation (DABAI). DABAI is a newly created community partnership that aims to give Denmark a leading role in utilising and unlocking the potential of Big Data. DABAI is working on getting as many agencies involved as possible to develop efficient and useful methods and tools to analyse data.

2017-2018

- In 2017 the new strategy for ICT management, addressing issues such as mandatory compliance to central government's ICT system management model and periodic reviews by the National ICT Council of each ministry's ICT system management is launched.

- As the Open Government Partnership for the period 2013-2016 came to an end, the government launched a new national action plan for the period 2017-2019.

- In 2017, a common public sector White Paper on a common public sector digital architecture was approved by all parties in the public sector, supporting the European interoperability and standardisation of public sector digitisation and the implementation of the goals of the Digital Single Market.

- The national cyber and information security strategy is launched in 2018 and involves 13 ministries. One of the goals is to address the increased ongoing threats to the critical digital infrastructure by renewing its cyber and information security strategy from December 2014.

7.7.1.1   Summary

The historical overview of e-government initiatives summarized above show a strong collaboration between Danish Government, Local Government Denmark (LGDK) and the five Danish regions in the implementation of e-government. The main idea is to decrease costs, improve communication among public administrations as well as between the public administrations and public authorities and the citizens and businesses. Improved efficiency has also been a key important focus. In addition, the overview highlights at first a centralization of the initiatives in few authorities, agencies and ministries. Lately many ministries (up to 13) and other types of organizations such as Danish Industry or NGOs get involved in the formulation of strategies and visions.

7.7.2   Press releases 2017-2018

Table 39: Press releases 2017-2018

Year	Press Release	Topic
2017 10-01-2017	https://en.digst.dk/news/news-archive/2017/januar/digitisation-and-public-innovation-go-hand-in-hand/	*Digitisation and public innovation go hand in hand (Agency for Digitisation, 2017r)*
2017 10-01-2017	https://en.digst.dk/news/news-archive/2017/januar/new-strategic-management-framework-enables-flexibility/	*New strategic management framework enables flexibility (Agency for Digitisation, 2017ae)*
2017 10-01-2017	https://en.digst.dk/news/news-archive/2017/januar/the-digital-strategy-2016-2020-off-to-a-good-start/	*The Digital Strategy 2016-2020 off to a good start (Agency for Digitisation, 2017p)*
2017 10-01-2017	https://en.digst.dk/news/news-archive/2017/januar/the-public-sector-must-build-on-user-friendliness/	*The public sector must build on user-friendliness (Agency for Digitisation, 2017aj)*
2017 10-01-2017	https://en.digst.dk/news/news-archive/2017/januar/analysis-of-the-fourth-wave-of-mandatory-online-self-service/	*Analysis of the fourth wave of mandatory online self-service (Agency for Digitisation, 2017b)*
2017 30-01-2017	https://en.digst.dk/news/news-archive/2017/januar/solid-foundation-for-borgerdk-the-national-citizen-portal-	*Solid foundation for borger.dk - the national citizen portal - in the ongoing work with personalised content (Agency for Digitisation, 2017al)*

Year	Press Release	Topic
	in-the-ongoing-work-with-personalised-content-1/	
2017 30-01-2017	https://en.digst.dk/news/news-archive/2017/januar/danes-know-about-borgerdk-the-national-citizen-portal-and-there-is-a-high-level-of-satisfaction-with-the-site/	*Danes know about borger.dk - the national citizen portal - and there is a high level of satisfaction with the site (Agency for Digitisation, 2017i)*
2017 30-01-2017	https://en.digst.dk/news/news-archive/2017/januar/borgerdk-the-national-citizen-portal-leads-the-way-regarding-language-in-public-sector-communication/	*Borger.dk - the national citizen portal - leads the way regarding language in public sector communication (Agency for Digitisation, 2017e)*
2017 30-01-2017	https://en.digst.dk/news/news-archive/2017/januar/danish-digital-solutions-were-a-hit-in-2016/	*Danish digital solutions were a hit in 2016 (Agency for Digitisation, 2017k)*
2017 28-03-2017	https://en.digst.dk/news/news-archive/2017/march/data-models-map-knowledge/	*Data models map knowledge (Agency for Digitisation, 2017m)*
2017 28-03-2017	https://en.digst.dk/news/news-archive/2017/marts/digital-literacy-for-the-youngest-children/	*Digital literacy for the youngest children (Agency for Digitisation, 2017o)*
2017 28-03-2017	https://en.digst.dk/news/news-archive/2017/marts/minister-begins-clean-up-of-government-it-systems/	*Minister begins clean-up of government IT systems (Agency for Digitisation, 2017x)*
2017 28-03-2017	https://en.digst.dk/news/news-archive/2017/marts/the-white-paper-on-architecture-for-digitisation/	*The White Paper on Architecture for Digitisation (Agency for Digitisation, 2017ar)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/maj/we-are-better-than-our-reputation-the-ict-strategy-will-make-us-even-better/	*We are better than our reputation – the ICT strategy will make us even better! (Agency for Digitisation, 2017ap)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/maj/professor-focus-on-upgrading-in-the-ict-strategy/	*Professor: Focus on upgrading in the ICT Strategy (Agency for Digitisation, 2017ag)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/maj/director-di-digital-focus-on-more-invitations-to-tender-for-public-contracts-in-the-ict-strategy/	*Director, DI: Digital Focus on more invitations to tender for public contracts in the ICT strategy (Agency for Digitisation, 2017s)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/may/flood-risks-mapped-by-improved-basic-data/	*Flood risks mapped by improved basic data (Agency for Digitisation, 2017u)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/maj/nemid-reaches-four-billion-transactions/	*NemID reaches four billion transactions (Agency for Digitisation, 2017z)*
2017 30-05-2017	https://en.digst.dk/news/news-archive/2017/maj/the-citizens-of-denmark-feel-safe-but-60-pct-of-them-are-vulnerable-to-cyberattack/	*The citizens of Denmark feel safe - but 60 pct. of them are vulnerable to cyberattack (Agency for Digitisation, 2017g)*
2017 31-05-2017	https://en.digst.dk/news/news-archive/2017/maj/2016-status-report-on-the-common-public-sector-digital-strategy-2016-2020/	*2016 Status Report on the Common Public Sector Digital Strategy 2016-2020 (Agency for Digitisation, 2017a)*
2017 16-06-2017	https://en.digst.dk/news/news-archive/2017/juni/a-digital-version-of-the-early-warning-method-reduces-hospitalisations-and-strengthens-professional-skills-in-elderly-care/	*A digital version of the early warning method reduces hospitalisations and strengthens professional skills in elderly care (Agency for Digitisation, 2017q)*
2017 26-06-2017	https://en.digst.dk/news/news-archive/2017/june/lars-frelle-petersen-	*Lars Frelle-Petersen is resigning as Director-General for the Danish Agency for Digitisation (Agency for Digitisation, 2018h)*

Year	Press Release	Topic
	is-resigning-as-director-general-for-the-danish-agency-for-digitisation/	
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/better-distribution-of-digital-post-through-smarter-use-of-data/	*Better distribution of Digital Post through smarter use of data (Agency for Digitisation, 2017d)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/extensive-testing-to-ensure-reliable-access-to-basic-data/	*Extensive testing to ensure reliable access to basic data (Agency for Digitisation, 2017t)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/public-authorities-to-get-free-of-charge-access-to-basic-data-on-persons/	*Public authorities to get free-of-charge access to basic data on persons (Agency for Digitisation, 2017ah)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/sign-language-support-at-the-danish-citizens-portal-borgerdk/	*Sign language support at the Danish citizens - portal borger.dk (Agency for Digitisation, 2017ak)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/the-danish-citizens-portal-borgerdk-in-brussels-for-your-europe/	*The Danish citizens portal - borger.dk - in Brussels for Your Europe (Agency for Digitisation, 2017j)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/data-will-create-a-more-digitally-coherent-public-sector/	*Data will create a more digitally coherent public sector (Agency for Digitisation, 2017n)*
2017 03-07-2017	https://en.digst.dk/news-news-archive/2017/juli/the-white-paper-on-architecture-for-digitisation-highlights-coherency/	*The White Paper on Architecture for Digitisation highlights coherency (Agency for Digitisation, 2017as)*
2017 13-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/cohesion-improves-user-journeys-for-citizens-moving/	*Cohesion improves user journeys for citizens moving (Agency for Digitisation, 2017h)*
2017 13-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/the-danish-government-steps-up-efforts-against-cyber-threats/	*The Danish government steps up efforts against cyber threats (Agency for Digitisation, 2017l)*
2017 13-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/welfare-technology-offers-citizens-security-and-improved-quality-of-life/	*Welfare technology offers citizens security and improved quality of life (Agency for Digitisation, 2017aq)*
2017 13-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/women-affected-by-complications-during-pregnancy-can-now-look-forward-to-a-higher-degree-of-security-and-fewer-ambulatory-controls/	*Women affected by complications during pregnancy can now look forward to a higher degree of security and fewer ambulatory controls (Agency for Digitisation, 2017at)*
2017 13-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/a-new-captain-on-the-bridge-charting-the-same-course/	*A new captain on the bridge – charting the same course (Agency for Digitisation, 2017aa)*
2017 16-10-2017	https://en.digst.dk/news-news-archive/2017/oktober/two-upcoming-tenders-for-mitid-and-nemlog-in/	*Two upcoming tenders for MitID and NemLog-in (Agency for Digitisation, 2017ao)*
2017 20-11-2017	https://en.digst.dk/news-news-archive/2017/november/new-progress-report-on-major-government-it-projects/	*New progress report on major government IT projects (Agency for Digitisation, 2017ad)*
2017 29-11-2017	https://en.digst.dk/news-news-archive/2017/november/new-national-action-plan-for-open-government/	*New national action plan for open government (Agency for Digitisation, 2017ac)*

Year	Press Release	Topic
2017 20-12-2017	https://en.digst.dk/news/news-archive/2017/december/mitid-sent-out-to-tender/	*MitID sent out to tender (Agency for Digitisation, 2017y)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/successful-market-dialogue-on-next-generation-digital-post/	*Successful market dialogue on Next generation Digital Post (Agency for Digitisation, 2017an)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/the-public-is-still-satisfied-with-digital-post/	*The public is still satisfied with Digital Post (Agency for Digitisation, 2017ai)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/improving-the-user-experience-of-citizens-and-businesses/	*Improving the user experience of citizens and businesses through an integrated case and benefits overview (Agency for Digitisation, 2017w)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/new-deputy-director-general-in-the-danish-agency-for-digitisation/	*New Deputy Director-General in the Danish Agency for Digitisation (Agency for Digitisation, 2017ab)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/new-strategy-for-ict-management/	*New strategy for ICT management in central government to raise quality of national ICT management (Agency for Digitisation, 2017af)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/animation-about-digital-communication-in-six-languages/	*Animation about digital communication in six languages (Agency for Digitisation, 2017c)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/call-for-tender-for-central-ict-infrastructure/	*Call for tender for central ICT infrastructure (Agency for Digitisation, 2017f)*
2017 21-12-2017	https://en.digst.dk/news/news-archive/2017/december/follow-the-operating-status-of-the-major-ict-services-live/	*Follow the operating status of the major ICT services live (Agency for Digitisation, 2017v)*
2017 22-12-2017	https://en.digst.dk/news/news-archive/2017/december/a-solid-ict-foundation/	*A solid ICT foundation (Agency for Digitisation, 2017am)*
2018 05-02-2018	https://en.digst.dk/news/news-archive/2018/february/four-suppliers-are-now-competing-for-mitid/	*Four suppliers are now competing for MitID (Agency for Digitisation, 2018g)*
2018 12-02-2018	https://en.digst.dk/news/news-archive/2018/february/nemlog-in-sent-out-to-tender/	*NemLog-in sent out to tender (Agency for Digitisation, 2018i)*
2018 26-03-2018	https://en.digst.dk/news/news-archive/2018/march/danish-citizens-are-becoming-ever-more-digital/	*Danish citizens are becoming ever more digital (Agency for Digitisation, 2018e)*
2018 26-03-2018	https://en.digst.dk/news/news-archive/2018/march/status-survey-for-iso27001/	*Status survey for ISO27001 (Agency for Digitisation, 2018q)*
2018 26-03-2018	https://en.digst.dk/news/news-archive/2018/march/new-timetable-for-the-basic-data-programme-approved-by-the-finance-committee-of-the-danish-parliament/	*New timetable for the Basic Data Programme approved by the Finance Committee of the Danish Parliament (Agency for Digitisation, 2018n)*
2018 26-03-2018	https://en.digst.dk/news/news-archive/2018/march/new-agreement-will-make-legislation-ready-for-digitisation/	*New agreement will make legislation ready for digitisation (Agency for Digitisation, 2018j)*
2018 26-03-2018	https://en.digst.dk/news/news-archive/2018/march/citizens-are-pleased-with-the-national-citizen-portal-borgerdk/	*Citizens are pleased with the national citizen portal borger.dk (Agency for Digitisation, 2018c)*

Year	Press Release	Topic
2018 30-05-2018	https://en.digst.dk/news/news-archive/2018/may/the-contract-with-the-operation-supplier-for-nemlog-in-has-been-signed/	*The contract with the operation supplier for NemLog-in as been signed (Agency for Digitisation, 2018d)*
2018 19-06-2018	https://en.digst.dk/news/news-archive/2018/june/progress-in-2017-with-digital-strategy-2016-2020	*Progress in 2017 with Digital Strategy 2016-2020 (Agency for Digitisation, 2018o)*
2018 19-06-2018	https://en.digst.dk/news/news-archive/2018/june/new-national-strategy-to-strengthen-cyber-security-in-denmark/	*New national strategy to strengthen cyber security in Denmark (Agency for Digitisation, 2018m)*
2018 19-06-2018	https://en.digst.dk/news/news-archive/2018/june/new-app-for-nemid/	*New app for NemID (Agency for Digitisation, 2018k)*
2018 19-06-2018	https://en.digst.dk/news/news-archive/2018/june/another-basic-data-register-is-now-available-on-the-data-distributor/	*Another basic data register is now available on the Data Distributor (Agency for Digitisation, 2018b)*

Year	Press Release	Topic
2017 21-04-2017	https://em.dk/english/news/2017/04-21-maritime-power-hub	*The Danish Minister of Industry, Business and Financial Affairs receives recommendations on making Denmark a global maritime power hub (Ministry of Industry Business and Financial Affairs, 2017b)*
2017 04-07-2017	https://em.dk/english/news/2017/07-04-banking-union	*The Danish government launches review on Danish participation in EU Banking Union (Ministry of Industry Business and Financial Affairs, 2017a)*
2017 13-11-2018	https://em.dk/english/news/2017/11-13-agreement-will-strengthen-danish-businesses	*New political agreement will strengthen Danish businesses (Ministry of Industry Business and Financial Affairs, 2017c)*
2018 22-01-2018	https://em.dk/english/news/2018/01-22-blue-denmark	*New Plan for Growth in the Danish Maritime Sector (Ministry of Industry Business and Financial Affairs, 2018e)*
2018 30-01-2018	https://em.dk/english/news/2018/01-30-new-strategy-to-make-denmark-the-new-digital-frontrunner	*New Strategy to make Denmark the New Digital Frontrunner (Ministry of Industry Business and Financial Affairs, 2018f)*
2018 06-03-2018	https://em.dk/english/news/2018/03-06-life-science	*New growth plan to pave the way for world-class Danish life science (Ministry of Industry Business and Financial Affairs, 2018d)*
2018 12-03-2018	https://em.dk/english/news/2018/03-12-new-expert-group-on-data-ethics	*The Danish Government appoints new expert group on data ethics (Ministry of Industry Business and Financial Affairs, 2018a)*
2018 23-04-2018	https://em.dk/english/publications/2018/strategy-for-denmarks-digital-growth	*Strategy for Denmark's digital growth (Ministry of Industry Business and Financial Affairs, 2018g)*
2018 24-04-2018	https://em.dk/english/news/2018/04-24-the-danish-government-launches-the-technology-pact	*The Danish government launches the Technology Pact (Agency for Digitisation, 2018f)*
2018 09-05-2018	https://em.dk/english/news/2018/05-09-digital-hub-denmark-is-now-launched	*Digital Hub Denmark is now launched (B. a. F. A. Ministry of Industry, 2018)*
2018 28-05-2018	https://em.dk/english/news/2018/05-28-free-trade	*Making trade work for all – The Danish case (Ministry of Industry Business and Financial Affairs, 2018c)*
2018 01-06-2018	https://em.dk/english/news/2018/06-01-skibsregistre	*Historic growth in Danish shipping registries continues (Ministry of Industry Business and Financial Affairs, 2018b)*

| Year	Press Release	Topic
2018 15-05-2018	https://uk.fm.dk/news/press-releases/2018/05/dk-reinforces-defences-against-digital-threats	*The Danish Government: Denmark reinforces defences against digital threats (Finance, 2018)*

8   Case 6: Belgium

According to Europe's Digital Progress Report 2018 for Belgium, (European Commission, 2018h) the country belongs to the high-performing cluster of countries in the Digital Economy and Society Index (DESI) 2018 (together with Denmark, Sweden, Finland, the Netherlands, Luxembourg, Ireland, the United Kingdom and Estonia).

Belgium currently ranks in the eighth position, which is a slight slip from its sixth position in 2017. The retreat seems however due to the good performance of other countries, as the overall Belgium's score nevertheless increased from 58,6 in 2017 to 60,7 in 2018.

Figure 10: DESI Index – highlighting Beligum
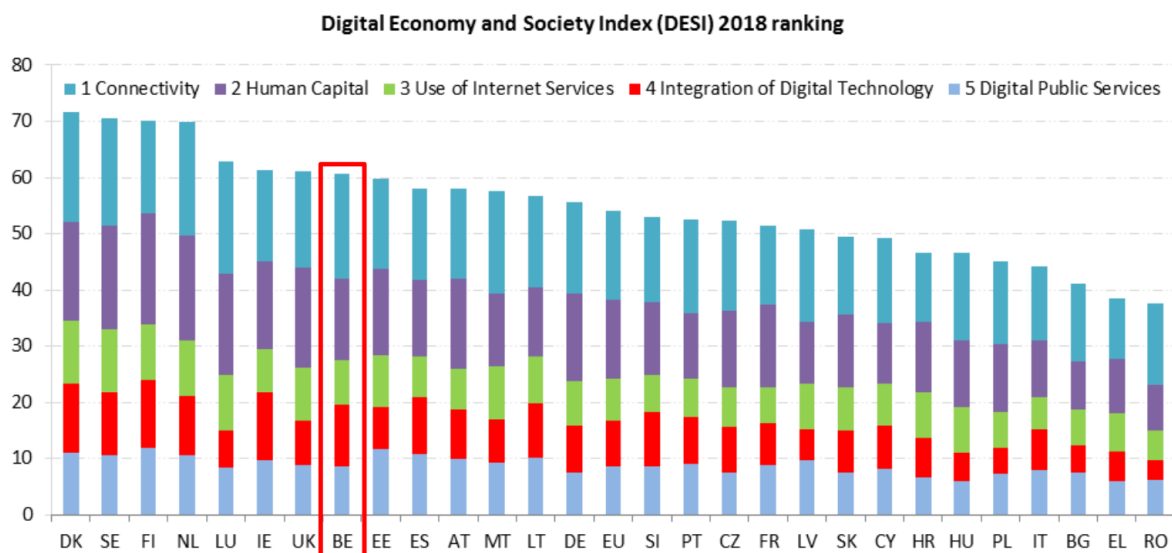
Source: European Commission (2018h) Europe's Digital Progress Report 2018 – Belgium

In the long-term though, one can look at Belgium's position in DESI as a constant fall: it ranked 5th in 2014, 2015 and 2016 and it's in 2017 that Belgium dropped to place seven to finally reach position eight in 2018.

Belgium lost competitiveness relatively to the other member states in terms of connectivity (from 1st position in 2014 to 5th in 2018) in the use of Internet (from 6th position in 2015 to 12th in 2016) and in digital public services (from 8th in 2014 to 15th in 2018).

The key turning point seems to be around 2015, when the country lost many places in the human capital and the use of Internet components, and in the digital public services one.

Looking at the specific dimensions of the index, the unfolding profile shows that:

   o   With regards to connectivity, Belgium has almost a universal coverage for fixed broadband, but is lagging behind in terms of mobile broadband take up (ranks 24);

- o In the human capital area, digital skills of Belgians are good, but not improving. In particular, there is a clear need for more STEM graduates (ranks 23);
- o Looking at the use of Internet, Belgians use internet services, such as social networks, banking apps, they download videos and games, listen to music and read online news, but just averagely (ranks 13);
- o For the integration of digital technology: Belgium is doing well for the integration of electronic information sharing, e-Invoices, SMEs selling online (ranks 5) but does not progress on e-Commerce turnover and SMEs selling online cross-border;
- o Finally, regarding digital public services, we see a mixed picture overall (ranks 15): Belgium's federal structure poses specific challenges in establishing coherent and nationwide e-Government services, but the start of Bosa – the digital transformation office which centralises the work – is a good step in the right direction.

8.1   Digital Agendas

Table 40: Belgian Digital Agendas

Administrative Level	Digital Agenda
FEDERAL	
	Un Agenda Numérique pour la Belgique (2013-2015)
	Digital Belgium (2015-2020)
WALLONIA	
	Simplification Administrative, e-Government et Lisibilité (2005-2009)
	Ensemble Simplifions (2010-2014)
	Ensemble Simplifions (2016-2020)
	Digital Wallonia (2015-2020)
FLANDERS	
	Beter Bestuurlijk Beleid (2000-2006)
	Flemish e-Government Strategy (2009-2014)
	Vlaanderen Radicaal Digitaal (2015-2020)
BRUSSELS CAPITAL	
	Plan Bruxellois de Simplification Administrative (2009-2014)
	Plan Bruxellois de Simplification Administrative (2015-2020)
	digital.brussels

As it will be described below in more details, the Kingdom of Belgium is a federal state, where the separation of power between the federal state and the federated entities has only but increased since the first reform of the state in 1970. The six successive reforms gave away more and more powers from the federal state, which has digital matters and administrative simplification in its portfolio of responsibility, but so have the federated entities. This is why the present case study analyses the digital agendas at the various administrative levels (federal and regions).

8.2   Policies/bills related to digital transformation

Table 41: Policies and bills related to digital transformation in Belgium

Year	Policy	Description/Implication
1995	**MOBILE NETWORK** Royal Decree on the establishment and operation of GSM mobile telephony networks	*The authorisation granted on the basis of these specifications covers the implementation and operation in Belgium of a GSM mobile telephony network operating on the basis of the European GSM digital public radiocommunication standard in the 900 MHz band.* *http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=1995030743&table_name=loi*
2000	**E-SIGNATURE** Law on the use of Electronic Signature in Judicial and Extra-Judicial Proceedings	*This law of 20 October 2000 introduced the use of the electronic signature within judicial and extra-judicial proceedings. It has been the first law to address the eSignature issue in Belgium. The law was lastly amended in September 2006.* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl?language=fr&caller=list&cn=2000102040&la=f&fromtab=loi&sql=dt=%27loi%27&tri=dd+as+rank&rech=1&numero=1*
2001	**E-SIGNATURE** e-Signature Act	*It gives legal value to electronic signatures and electronically signed documents while setting up a legal framework for certification services.* *http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&table_name=loi&cn=2001070943*
2003	**E-ID** Royal Decree introducing transitional measures relating to the electronic identity card	*A royal order setting the legal basis for the generalisation of the electronic ID card* *http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=2003032532&table_name=loi*
2005	**JUSTICE** Law establishing the Phenix information system	*It establishes a clear legal framework for courts, other judiciary institutions and actors to communicate and exchange official documents by electronic means.* *http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=2005081057&table_name=loi*
2005	**E-GOV** Decree of the Flemish Government establishing the internal autonomous agency	*This decree lays the ground for the "Better Administrative Policy" strategy (BBB) of the Flemish Government*

Year	Policy	Description/Implication
	["Agentschap Binnenlands Bestuur"]	*http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=nl&la=N&cn=2005102838&table_name=wet*
2008	**E-GOV** Decree of 18 July 2008 concerning electronic administrative data traffic	*New eGovernment decree which commits the Flemish authorities to never request particular information from citizens or businesses that is already available in Government databases, in order to reduce the administrative burden on citizens and businesses.* *http://www.etaamb.be/fr/decret-du-18-juillet-2008_n2008036273.html*
2007	**SPECTRUM** Order of the Flemish Government laying down the digital frequency plan for broadcasting and broadcasting network providers	*Digital Frequency Plan RRC06 in the III, IV and V Frequency Bands for the Full Digitised Future of Radio and Television Broadcasting Applications* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl*
2009	**COPYRIGHT** Royal Decree amending the Royal Decree of 28 March 1996 on the right to remuneration for private copying of authors, performers and producers of phonograms and audiovisual works	*To remunerate the artists when a user makes a private copy of their work, via a non-connected device or via a connected device.* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a1.pl?sql=(text%20contains%20(%27%27))&language=fr&rech=1&tri=dd%20AS%20RANK&value=&table_name=loi&F=&cn=2009121702&caller=image_a1&fromtab=loi&la=F*
2010	**SECURITY** Royal Decree determining the terms of the obligation of legal collaboration in the case of requests concerning electronic communications by the intelligence and security services	*How the Internet suppliers must send personal data to the General Intelligence and Security Services in case of security concerns.* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl*
2010	**MOBILE NETWORKS** Royal Decree amending the Royal Decree of 7 March 1995 on the establishment and operation of GSM mobile telephony networks, the Royal Decree of 24 October 1997 on the establishment and operation of DCS mobile telephony networks -1800 and the Royal Decree of 18 January 2001 laying down the specifications and the	*Adapts the mobile network legislation to the 3G technology* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl*

Year	Policy	Description/Implication
	procedure for granting authorizations for third generation mobile telecommunications systems	
2013	**E-COMMERCE** Law on the insertion of Book XII, "Law of the Electronic Economy" in the Code of Economic Law, introducing the definitions of Book XII and the provisions of the law specific to Book XII, in Books I and XV of the Code of Economic Law	*The law modifies the economic law code to insert a chapter on e-commerce, in accordance with several European directives on e-commerce (2000/31/CE), users' rights in electronic communications (2009/136/CE), personal data protection (2002/58/CE) and consumer protection (Regulation (CE) n° 2006/2004)* http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=2013121551&table_name=loi
2014	**E-GOV** 'Only Once'	*05 May 2014 Law forces federal public services to reuse already available data which are stored in "authentic sources" instead of asking again the citizens and businesses. For citizens, the key to record and ask for data is the National Registry Number. For businesses, it's the enterprise number.* *The service integrator is the agency in charge of organising the data flow between the public services (in accordance with the GDPR rules). Bosa (formerly Fedict) is the service integrator for the federal level. Others include la Banque Carrefour de la Sécurité Sociale (BCSS), le Vlaamse Dienstenintegrator (VDI), e-Wallonie-Bruxelles Simplification (eWBS) and le Centre d'Informatique pour la Région Bruxelloise (CIRB).* https://dt.bosa.be/fr/a_propos_de_fedict/actualite/only_once *The programme was initiated in 2014 by the Agency for Administrative Simplification (ASA), in collaboration with Fedict (now Bosa – or DG Digital Transformation) and the BCSS.* http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&table_name=loi&cn=2014050506
2015	**HEALTH** Joint Declaration on the implementation of Action Item 17 of the eHealth Action Plan 2013-2018 with regard to the creation of a single digital portal and the further	*A single digital portal for health actors is created.* *The one-stop shop, which is accessible via the e-Health platform that manages user access, is the gateway to existing or developing government portals that offer different services to healthcare providers.* *The single portal allows the professional or*

Year	Policy	Description/Implication
	development of a "CoBrHA" databank "for care institutions and health care professions	*institution:* *- to add, visualise and / or modify certain information concerning the professional / institution held by the different administrations;* *- to initiate and / or manage all the administrative processes managed by the partner administrations in order, for example, to obtain the authorisation of a title or a visa or to request the approval of an institution / service.* *http://www.ejustice.just.fgov.be/cgi_loi/loi_a.pl*
2015	**TAX** Royal Decree amending AR / CIR 92 regarding the investment deduction for digital investments	*The tax deduction for investments covered by this draft Royal Decree targets digital investments and aims to support increased investment by SMEs in the areas of digitalisation of commercial transactions and cybersecurity, in order to achieve the strategic objectives of a broader economic policy plan. Indeed, according to the data published by the FPS Economy in June 2015 in its barometer of the information society, Belgium fulfills 7 of the 9 objectives of the Digital Agenda For Europe (DAE) 2015. The two objectives of the DAE that are not fulfilled concern the online purchases and sales by SMEs. Belgian SMEs make only 2.4% of their turnover online, while the European average is 6%. In some countries, small businesses make more than a quarter of their turnover online. It is therefore essential to put in place tax tools encouraging the SMEs to invest in their online presence.* *http://www.etaamb.be/fr/arrete-royal-du-02-decembre-2015_n2015003406.html*
2016	**E-ID** Digital Act	*The Digital Act is the range of provisions set out in the law of 21 July 2016, which* *govern the use and legal consequences of electronic trust services. It* *is essentially:* *• the electronic signature for citizens;* *• an electronic seal for companies and other legal entities;* *• electronic time stamping;* *• the registered electronic mail;* *• electronic archiving.* *http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&table_name=loi&cn=2016072140*
2016	**E-GOV**	*04 May 2016 Law on the Reuse of Public Sector Information (public sector information reuse)*

Year	Policy	Description/Implication
	Public Sector Information Reuse	For administrative documents to which this Act applies, reuse for commercial or non-commercial purposes is permitted. http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=fr&la=F&cn=2016050417&table_name=loi
2018	**OPEN DATA** Order of the Government of the Brussels-Capital Region of 01 February 2018 implementing the order of 27 October 2016 to establish an open data policy and transposing Directive 2013/37 / EU of the European Parliament and of the Council of 26 June 2013 amending Directive 2003/98 / EC of the European Parliament and of the Council of 17 November 2003 on the re-use of public sector information	A single regional portal is created and provides access to all administrative documents made available by public authorities, in an open, machine-readable, electronic format for reuse. The administrative documents available for reuse, the possible conditions provided for in the standardised licenses as well as the possible fees are listed and published, in particular on the regional open data portal. http://www.etaamb.be/fr/arrete-du-gouvernement-de-la-region-de-bruxellescapit_n2018010589.html
2018	**SPECTRUM** Order of the Flemish Government setting out the digital frequency packets to be released during the second comparative investigation with a view to obtaining a license for the provision of a radio broadcasting network and the associated broadcasting licenses, the offer of broadcasting programs to receive freely	The frequencies will be released during the second benchmarking study for a license for the supply of a radio broadcasting network and the associated broadcasting licenses, intended the supply of freely available broadcasting programmes, in accordance with the procedure laid down in the Flemish Government Decree of 18 July 2008 on the conditions and procedure for obtaining a license for the supply of a radio and television network and the corresponding broadcasting authorisations. All the frequencies must be used for the provision of broadcasting applications with national coverage and using the 'Digital Audio Broadcasting + technology', or DAB +, a European standard for digital broadcasting. http://www.etaamb.be/fr/arrete-du-gouvernement-flamand-du-01-juin-2018_n2018012507.html
2017	**E-ID** Law on electronic identification	It completes the eIDAS Regulation. In the context of the new law, the following procedures apply: • Each Belgian public-sector body determines the required assurance level for access to its services and informs the Directorate-General Digital Transformation (DTO) about this;

Year	Policy	Description/Implication
		• DTO determines the assurance level of Belgian electronic identification means to be notified to the European Commission and notifies the Belgian electronic identification providers; • DTO is designated as Belgian hub for IT cross-border exchange and passes a minimum set of person identification data to the node of another Member State when a user wants access to an online service in that second Member State. http://www.ejustice.just.fgov.be/cgi_loi/loi_a1.pl?sql=(text%20contains%20(%27%27))&language=fr&rech=1&tri=dd%20AS%20RANK&value=&table_name=loi&F=&cn=2017071809&caller=image_a1&fromtab=loi&la=F

8.3   Press releases

Table 42: Press releases 2015-2018

Year	Policy	Description/Implication
2013	http://www.presscenter.org/fr/pressrelease/20131120/les-federations-professionnelles-s-engagent-dans-la-facturation-electronique	The Minister of Administrative Simplification Olivier Chastel believes that the use of electronic invoicing significantly reduces the administrative burden of businesses. That's why he received 20 federations which want their members to actively use this new instrument. This desire has been formalised through the signing of protocols. As a reminder, at the European level, the ambition is to reach 50% of electronic invoicing by 2020. At the Belgian level, the Government has decided to anticipate this objective by setting an ambitious target of 25% by the end of the term. This press release is taken from the previous term as the one analysed (2015-2018) but it shows the importance that was given early on to e-invoicing. E-invoicing indeed has the potential to reduce costs and rationalise spending, one of the main objectives to be reached through administrative simplification.
2015	http://www.presscenter.org/fr/pressrelease/20150206/invitation-alexander-de-croo-lance-le-digital-minds-for-belgium-le-mardi-10-fe See also	Tuesday, February 10, Deputy Prime Minister and Minister of the Digital Agenda Alexander De Croo will launch the initiative 'Digital Minds for Belgium', a collective of about twenty personalities with extensive experience firmly rooted in the digital world, all of whom share the same passion: creating an ecosystem in

Year	Policy	Description/Implication
	https://www.decroo.belgium.be/fr/alexander-de-croo-lance-%C2%ABdigital-minds-belgium%C2%BB	*Belgium digital technology, as a source of economic progress, job creation and innovation.*
2015	http://www.presscenter.org/fr/pressrelease/20150713/la-belgique-bonne-eleve-en-matiere-de-tic-selon-le-barometre-de-la-societe-de-	*The 2015 edition of the Annual Information Society Barometer is now available. The results for Belgium are generally positive. Minister of the Digital Agenda and Telecommunications Alexander De Croo welcomes these results and will travel to Belgium this autumn with Digital Belgium to better inform SMEs about the growth potential of digital.*
2015	http://www.presscenter.org/fr/pressrelease/20150724/strategie-federale-open-data	*On the proposal of Minister for the Digital Agenda and Telecoms Alexander De Croo, Secretary of State for Administrative Simplification Theo Francken and Secretary of State for the Protection of Privacy Bart Tommelein, the Council of Ministers has given green light for an ambitious federal open data strategy. Open public data is now the rule. The adoption of the open data strategy is an important step in strengthening the digital ecosystem in our country and moving towards a lean, efficient and modern administration.*
2015	http://www.presscenter.org/fr/pressrelease/20150923/en-octobre-14-operateurs-telecoms-prendront-part-a-une-campagne-de-promotion-d	*14 telecom operators take part in Surfmobile, the mobile internet promotion campaign in Belgium launched at the initiative of Deputy Prime Minister and Minister for the Digital Agenda and Telecoms, Alexander De Croo, of BIPT (Belgian Institute for postal services and telecommunications) and the FPS Economy. From October 1st, they will propose various advantageous actions, such as an additional volume of data, for people who have never before or very little used mobile internet. An overview of the participating operators is available on www.surfmobile.be/initiative.*
2015	http://www.presscenter.org/fr/pressrelease/20151211/statut-intermediaire-du-programme-only-once	*Interim status of the Only Once programme.* *A total of 52 federal public services were contacted and invited to participate in this programme. On the basis of the information recorded during the analysis phase, it appears in particular just under 2/3 of scheduled tasks will be completed by the deadline and that services will be able to offer Only Once service.The Council of Ministers calls on all members of the government to urge public services under their jurisdiction to comply as soon as possible with the Only Once principles.*
2016	http://www.presscenter.org/fr/pressrelease/20160704/barometre-de-la-societe-de-l-	*The FPS Economy today publishes the 2016 edition of its Barometer of the Information Society. In a series of indicators related to the information society, Belgium is*

Year	Policy	Description/Implication
	information-2016-la-belgique-renforce-son-ancrage	*still making progress this year and is anchoring a little more in the digital world. Deputy Prime Minister and Minister for the Digital Agenda Alexander De Croo welcomes this progress: "With Digital Belgium, we are reinforcing this trend. Our country must become one of the countries at the forefront of digital in Europe."*
2016	http://www.presscenter.org/fr/pressrelease/20160720/statut-intermediaire-du-programme-only-once	*Interim status of the Only Once programme.* *The various participating public services were invited to send an update of their action plan to the Administrative Simplification Agency. In light of the information gathered during this exercise, it can be concluded that the majority of participating public services have not made enough progress in implementing the Only Once Act. The Council of Ministers calls on all members of the government to urge public services that fall within their purview to accelerate the implementation of Only Once.*
2016	http://www.presscenter.org/fr/pressrelease/20161012/la-belgique-prend-part-au-plus-grand-cyberexercice-europeen	*As the international point of contact for cybersecurity, the Center for Cybersecurity Belgium (CCB) organises and coordinates Belgium's participation in a European cyber-exercise run every two years by ENISA. The aim of the exercise is to promote European cooperation and to protect the single European digital market against cyberattacks.*
2017	http://www.presscenter.org/fr/pressrelease/20170223/le-spf-strategie-et-appui-nouveau-partenaire-des-organisations-federales	*On 01 March 2017, a new Federal Public Service will be created: the FPS Strategy and Support (BOSA). This new organisation integrates the missions and services of the FPS Personnel and Organisation (including Selor, IFA, FED + and PersoPoint), the FPS Budget and Management Control, Fedict and Empreva. The creation of the BOSA is in the context of the federal government's 'redesign' initiated by the government in its agreement of 09 October 2014.*
2017	http://www.presscenter.org/fr/pressrelease/20170714/agrement-des-services-didentification-electronique-pour-applications-publiques	*On the proposal of Digital Agenda Minister Alexander De Croo, the Council of Ministers approved a draft Royal Decree laying down the conditions, procedure and consequences of the approval of electronic identification services for digital public applications.* *The project foresees an accreditation for private identification services, in order to control the costs and stimulate innovation.*
2017	http://www.presscenter.org/fr/pressrelease/20170425/la-belgique-passe-a-la-vitesse-superieure-dans-la-lutte-contre-les-ransomwares	*Belgium takes the next step in the fight against ransomware* *The police and the Center for Cybersecurity Belgium collaborate with an international player, Kaspersky Lab, to counter ransomware.*

Year	Policy	Description/Implication
2017	http://www.presscenter.org/fr/pressrelease/20170614/la-belgique-verrouille-les-portes-numeriques-devant-les-cybercriminels	Last year, the US security company Rapid7 was still ringing the alarm. The company had analysed the vulnerabilities of computer systems in 180 countries and discovered that Belgium had an alarming number of open Internet ports. In other words, Belgium housed proportionately more unencrypted Internet ports than encrypted Internet ports, which made our country particularly vulnerable to the threat of hackers. The Center for Cybersecurity Belgium (CCB) took these negative results very seriously and drew up an action plan to close, as far as possible, the Internet ports, with the help of CERT.be which brought it the necessary technical support. Rapid7 has published today a new report which states that Belgium is doing much better. In this new classification, Belgium is among the most secure countries on the Internet.
2017	http://www.presscenter.org/fr/pressrelease/20170727/barometre-de-la-societe-de-l-information-2017-une-belgique-ultra-connectee-mai	The FPS Economy today publishes the 2017 edition of its annual Barometer of the Information Society. Belgium maintains its connectivity excellence and continues to grow in a series of indicators such as e-commerce and 4G coverage. However, our country must remain vigilant because the progress recorded is not always enough to catch up, as for example in the rate of penetration of mobile broadband internet.
2017	http://www.presscenter.org/fr/pressrelease/20170720/implementation-d-un-modele-de-cooperation-coordonne-de-facon-centralisee-pour-	On the proposal of Minister of the Civil Service Steven Vandeput, the Council of Ministers approved a draft Royal Decree on centralised federal procurement as part of the federal procurement policy. This project is part of the "administration redesign plan". The aim is to implement an effective model of cooperation between public services on the basis of a consensus model. With better procurement planning, smart support and a strong digital platform, joint purchasing will become the norm.
2017	http://www.presscenter.org/fr/pressrelease/20170915/accord-de-cooperation-relatif-au-developpement-dun-systeme-digital-de-comptabi	On the proposal of the Minister of Security and Interior Jan Jambon, the Council of Ministers has approved a draft cooperation agreement between the Federal State, the Walloon Region and the Flemish Authority on the development of a system to help with the digital counting of paper ballots.
2017	http://www.presscenter.org/fr/pressrelease/20170919/la-ministre-marghem-a-signe-aujourd-hui-la-declaration-europeenne-de-l-e-energ	As part of the Tallin Digital Summit, Minister of Energy Marie Christine Marghem today signed the European declaration of E-energy together with the European Energy Ministers. The purpose of this statement is to bring the private and public sectors together to accelerate the digitisation of the sector. The measures

Year	Policy	Description/Implication
		proposed in the agreement could lead in the future to the development of a European energy strategy.
2017	http://www.presscenter.org/fr/pressrelease/20171027/colloque-trust-in-the-digital-transition	*On 29 November 2017, an international colloquium will bring together various specialists in digital transition in Brussels. The conference will close with an intervention by the Deputy Prime Minister and Minister of the Digital Agenda.* *The experts will discuss how the legal framework (e-IDAS, Digital Act), standards, and certification mechanisms can ensure trust and lead to a harmonious development of electronic archiving?*
2018	http://www.presscenter.org/fr/pressrelease/20180330/accessibilite-des-sites-internet-et-des-applications-mobiles-des-organismes-du	*On the proposal of Minister for the Digital Agenda Alexander De Croo, the Council of Ministers approved a draft law on the accessibility of websites and mobile applications of public sector bodies. The aim is to force public authorities to take the necessary measures to make their websites and mobile applications accessible by making them visible, operable, understandable and efficient.*
2018	http://www.presscenter.org/fr/pressrelease/20180330/cadre-pour-la-securite-des-reseaux-et-des-systemes-dinformation-pour-la-securi	*On the proposal of Prime Minister Charles Michel and Minister of Security and Interior Jan Jambon, the Council of Ministers approved a draft law that aims to establish a framework for the security of networks and information systems of general interest for public security (NIS directive transposition).*
2018	http://www.presscenter.org/fr/pressrelease/20180615/rapport-d-avancement-et-etat-de-la-situation-du-programme-only-once	*Interim status of the Only Once programme* *The Council of Ministers calls on all members of the government to urge public services that fall within their purview to accelerate the implementation of the Only Once Act by the end of the legislature.*
2018	http://www.presscenter.org/fr/pressrelease/20180831/reutilisation-des-informations-du-secteur-public-et-simplification-administrat	*Reuse of public sector information and administrative simplification* *On the proposal of the Minister for the Digital Agenda and Telecommunications Alexander De Croo and the State Secretary for Administrative Simplification Theo Francken, the Council of Ministers approved a draft law laying down various provisions for the re-use of information from the public sector and administrative simplification.* *The draft also aims to alleviate the administrative obligations of citizens and legal persons by guaranteeing that the data already available (in an authentic source or otherwise in some particular cases), will no longer have to be communicated again to a federal public service and tends to completely assimilate electronic forms and paper forms.*

8.4   Situational mechanisms

8.4.1   How does political decision-making influence the implementation of digital transformation?

8.4.1.1   Political structure

Belgium is a federal state (Belgian Senate), composed of three regions (Flanders, Wallonia and Brussels-Capital), three linguistic communities (Flemish, French and German), 10 provinces, 589 communes and four linguistic regions (the Flemish speaking region, the French speaking region, the bilingual region, the German speaking region).

Belgium is also a constitutional and parliamentarian monarchy. The King essentially has limited powers (all his acts must be counter-signed by the Prime Minister or by the minister in charge) except when a government falls or after the legislative elections, the King will appoint an *informant* who will be in charge of forming the new government.

The executive power lies in the hands of the Prime Minister ([www.premier.belgium.be)](www.premier.belgium.be), who is nominated by the King, and must obtain the confidence of the lower chamber, *la Chambre des Représentants* ([www.lachambre.be)](www.lachambre.be). The Prime Minister leads the Government.

The legislative power is divided between *la Chambre des Représentants* and the Senate ([www.senate.be)](www.senate.be) which lost powers with the various state reforms and can now only legislate in equal terms with the chamber on constitutional matters or laws reforming the organisation of the federal state or the federated entities.

The Constitutional Court ([www.const-court.be)](www.const-court.be) is composed of 12 judges (six French speaking and six Flemish speaking), appointed for life by the King, based on a list proposed by the two chambers.

When it comes to the digital transformation of the country, the responsibilities are split between the various administrations levels, which can be a cause of confusion – and inefficiency. At the federal level, the vice-prime minister is also the minister in charge of the digital agenda, telecommunications and postal services. But at the regional level, ministers also hold the digital transformation portfolio. Ministers in Wallonia, Flanders and Brussels-Capital therefore developed digital strategies, with sometimes similar objectives than those set at the federal level. Strengthening digital skills, for instance – an objective where Belgium is lagging behind in DESI, is a priority that can be found in the federal but also the regional digital agendas, so is the focus on enabling new startups to flourish and develop. It's then difficult for the stakeholders to find the correct interlocutor: should they turn to the federal fund set up to encourage new forms of education or to the regional ones? Should the entrepreneurs seek support from the federal state or from regional programmes?

8.4.2   Demographic structure

Table 43: Belgian population

Belgian population (2017)	
Total population (2018)	11.376.070

• Population aged under 15 years	17,09% of total population
• Population aged 15-64	64,33%
• 65 and over	18,57%
• International migrant stock (in 2015)	12,28%

Source: World Bank DataBank

On 01 January 2018, Belgium counted 11.376.070 inhabitants. (Statbel, 2018b) The population grew by 0,50% (+53.982 inhabitants). This increase is due to a positive natural balance (more births than deaths) for 17,5% and to a positive net migration (82,5% of the growth).

Among the regions, Flanders grew by 0,60%; Wallonia by 0,30% and Brussels-Capital by 0,60%.

As of today, on average, four individuals aged from 18 to 66 support one 67-year-old pensioned individual. According to the Federal Bureau for the Plan's report on the demographic perspective for 2017-2070, (Bureau Fédéral du Plan, 2018) this ratio will increase rapidly until 2040 to then stabilise (thanks to the disappearance of the baby-boomers) at one retired person supported by 2,6 active ones. As in many European countries, the Belgian population is therefore set to getting older in the upcoming decades.

With regards to the labour market, as of July 2018, the employment rate of the 20-64-year olds was at 69,3% (Statbel, 2018a) with a greater increase of the employment rate for women than men (even if the employment rate is higher for men than women, with 73,8% for men vs. 64,8% for women).

Also, the unemployment rate is now lower than before the economic and financial crisis began, at 6,2% (against 7,5% in 2007 (Eurostat, 2018c)). Also, it's worth noting that the decrease in the unemployment rate is important for all age cohorts, but especially for the youth and the elderly workers (+ 50 years old). For the first 2018 trimester, the youth unemployment rate was 16,8%. Again, this is lower than before the crisis, when 18,8% of the youth was unemployed.

Similarly, to other western European countries, Belgium faces a slow but constant increase of its population, which is getting older and therefore puts more pressure on the pension system. Finally, its workforce is starting to recover from the decade-long crisis.

8.5 Action formation & transformation mechanisms: press releases (2015-2018).

Analysing the Belgian federal government press releases between 2015 and 2018 (the current federal term), which include the word 'digital', one can see that the Digital Belgium strategy of Deputy Prime Minister and Digital Agenda Minister Alexander de Croo really is the flagship agenda when it comes to digital transformation. It is the umbrella under which many current initiatives are taken.

As already highlighted in a press release from 2013, where Belgian ambitious objectives in e-invoicing are already identifiable, the digital transformation reforms are frequently understood as a way of simplifying and rationalising. The administrative redesign plan aims for instance to rationalise common purchasing by the administration to make them more efficient (and to ensure more SMEs have access to it). The creation of BOSA, the single point of entry, which integrates the missions and services of the former Federal Public Service (FPS) Personnel and Organisation, the FPS Budget and Management Control, Fedict and Empreva,

i.e. all the organisations that were dealing with public sector transformation at the federal level, goes also under this logic of rationalisation.

The federal government is keen on promoting the role of Belgium as "good pupil" through the SPF Information Society Index, which, in the three press releases found, always praises the achievements of the country – which is a bit at odds with the decline of Belgium in DESI starting from 2015.

A point of concern of this term though seems to be the implementation of the Only Once Act, which, in accordance with the Tallinn Declaration principles, prevents public administrations from asking citizens and businesses for information, which was already submitted to the administration via an authentic source. The three interim reports on the implementation of the act are not encouraging and summon all services to accelerate the implementation in order to reach the objectives at the end of the term. The latest draft law on the reuse of public sector information from 2018 also reminds this obligation of the administration.

Finally, one can notice a relatively important number of press releases dedicated to cybersecurity. This may be related to the specific context of the terror attacks that Belgium underwent, but it can also show an interest in keeping ahead with these kinds of digital threats, which are not always in the public's mind but very much on the radar screen of the government.

8.6   Action formation & transformation mechanisms: resulting digital transformation agenda

8.6.1   At the Federal Level

8.6.1.1   Un Agenda Numérique pour la Belgique (2013-2015); i.e. A Digital Agenda for Belgium

As part of the European Digital Agenda, Belgium adopted on 06 November 2013 a digital action plan entitled "Un Agenda Numérique pour la Belgique" or "A Digital Agenda for Belgium".

This plan was the result of a fruitful collaboration between many Belgian institutional actors, such as the FPS Economy, the Belgian Institute for Postal Services and Telecommunications, the Consultative Committee for Telecommunications (CCT), Fedict – the federal department in charge of e-government – but also the federated entities (the Walloon and Flemish regions, as well as the three communities), and representatives of the Secretary of State for Asylum and Migration, Social Integration and the Fight Against Poverty, and the Secretary of State for the Civil Service and the Modernisation of Public Services.

Amazingly, it's not possible to find information about this plan online, except for a half pager on the FPS Economy website (FPS Economy).

It is also very difficult to access any information about previous digital agendas in Belgium. The *OECD e-Government Studies Belgium : Assessment and Proposals for Action* (OECD, 2008) from 2008 mentions the Inter-Governmental Cooperation Agreements on Administrative Simplification and e-Government from 2001 and 2005, suggesting that the digital agenda dossier was first and foremost understood as a technical matter related especially to the public administration organisation.

8.6.1.2 Digital Belgium (2015-2020)

"Digital Belgium" is the action plan, which outlines the digital long-term vision for the country and translates this into clear ambitions. Based on five specific priorities, the plan has the ambition to put Belgium more firmly on the digital map. Specifically, the top priorities of the strategy are that the country:

- ranks in the digital top three in DESI, the European Digital Economy and Society Index;
- creates 1.000 new start-ups;
- create 50.000 new jobs across a range of sectors.

To reach this objective, five objectives have been defined:

- With regards to digital infrastructure – the basis upon which any digital innovation can thrive – the strategy aims to state-of-the-art network infrastructure, which is ready to fully exploit the "internet of things" and "big data". This includes stimulus for ultra-fast Internet; a dynamic postal and communications market; and shaping Belgium as a digital hub for businesses.
- For everyone to use Internet, they need to trust the system. The second pillar is about digital confidence and digital security. This means tackling illegal content and practices; safe and privacy-friendly online environement; and a strong cyber security enforcement.
- Digital government is the third pillar. It includes a single digital portal, where citizens and businesses can report all their « life events » to their government in a digital way; better conditions for startups – notably to procure more easily with the government; the creation of a single open data portal and operational efficiency as an objective for the government.
- The fourth pillar supports an approach, which boosts the digital economy and expands the prospect of jobs and growth. It includes a focus on startups (through a startup plan that promises a tax shelter for start-ups and fiscal incentives for crowdfunding); a digital-friendly legislation; the setting-up of an e-commerce platform; the obligation to use e-invoicing, e-signature and e-archiving; and the ambitious target to shape a digital health valley.
- Finally, the strategy focuses on digital skills and jobs, via the DigitalChampions.be network (to ensure that anyone who wants to can be 'digitally immersed'); a focus on digital inclusion and the increase of mobile internet penetration to reach everybody.

This is an ambitious strategy, in full deployment, (Larosse, 2017) with the implementation of Digital Champions, the Digital Skills Fair, the opening of Be.Central (the 2000m² digital campus), tax incentives (tax shelter for crowdfunding for startups). However, it is quite surprising to notice that the latest available press release on the website of the strategy, www.digitalbelgium.be, dates back to September 2017.[46]

8.6.1.3 Evaluation of the Progress Made

Against the backdrop of the European Semester, yearly, the European Commission proposes recommendations to the member states to help them reach their Europe 2020 objectives. These recommendations are based on an evaluation of the policies implemented at the national levels.

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[46] Website checked in September 2018.

According to the European Commission 2016 analysis for Belgium (European Commission, 2016f), the administrative complexity of the country was still deemed problematic, questioning the efficiency of the digital transformation strategies put in place so far. Delays and costs of transmission of property for businesses were especially a point of concern. The Commission noted that steps have been taken at different levels to reduce the administrative burden, in particular by introducing digital solutions. However, the efficiency of the system was overall considered as problematic.

In the 2017 Belgium country report (European Commission, 2017a), the European Commission mentions that "The potential of e-commerce is considerable and could be further exploited" as Belgium SMEs are more digitalised than the average but Belgian consumers could buy more online. The OECD, in its Economic Survey of Belgium 2017 (OECD, 2017a), also acknowledges that the federal government has implemented measures within its "SME Plan" to reduce administrative costs on small firms, but also that the burden is still heavy on startups and recommends to further implement measures to reduce it. In a nutshell, efforts are being taken to ease administrative obligations of the small businesses towards the government, but it's no time to rest on ones' laurels.

In its 2018 country report (European Commission, 2018a), the European Commission considered Belgium as an average performer in digital public services. The main issue was that "Belgium's federal structure poses specific challenges in establishing coherent and nationwide e-government services. Diverse and not necessarily interoperable systems create friction losses." However, the creation of BOSA, the "G-Cloud strategy" which integrates the ICT applications of several ministries, and the regional strategies such as "Flanders Radically Digital" and the "Walloon Open Data Strategy" are deemed as going in the right direction. The other big stumbling block is the digitalisation of the justice system, which is really lagging behind. Again, the report seems to point out to the fact that Belgium is still not successful in reforming its very complex administrative structure, despite a decade of plans aimed exactly at this.

8.6.2 In Wallonia

8.6.2.1 Simplification administrative, e-Gouvernement et Lisibilité 2005-2009, or Administrative Simplification, e-Government and Readability 2005-2009

This plan was put together to keep up with the good work done in administrative simplification in Wallonia so far. It consists of:

- Transversal actions carried out by the Commissariat EASI-WAL, under the responsibility of the Minister-President, including eight pillars:
    - communication / sensitization / formation
    - regulation
    - proceedings
    - administrative documents
    - interoperability and transactional online services
    - e-government tools and infrastructures
    - access for all and citizenship
    - thematic Groups (support and generic actions)
- Thematic actions, under the responsibility of each portfolio minister.

8.6.2.2 Plan de Simplification Administrative et d'e-Gouvernement, also known as Plan, Ensemble Simplifions 2010-2014, or the Together, let's simplify Plan 2010-2014

In February 2010, the Walloon and French Community Governments initiated a large-scale joint plan "Ensemble Simplifions 2010-2014". The plan was broken down into six objectives that correspond to the chain of simplification:

- simplify and improve regulation;
- simplify and harmonise processes;
- dematerialise processes;
- electronically manage administrative documents;
- simplify and dematerialise the collection and sharing of data;
- improve information and communication to users.

Already in this version of the plan, the various target audiences were defined, i.e. the citizens, businesses, local authorities, the non-commercial sector and the civil servants themselves.

The flagship projects included the harmonisation and simplification of housing and energy premiums for citizens; the simplification of the environmental permits delivered to the businesses; or the implementation of a local e-government and administrative simplification policy for the local authorities.

8.6.2.3 Ensemble Simplifions 2016-2020 (Ensemble Simplifications), or Together, let's simplify 2016-2020

The "Ensemble Simplifions 2016-2020" strategy first proposes to reverse the outlook and turn the administration towards its users while taking into account the specificity of the target audiences (the citizens, businesses, local authorities, non-commercial sector and the civil servants) to transform the administrative culture into a culture of "services", integrated and out of silos. The goal is to improve the experience of users in their multiple interactions with the administration. Secondly, this plan proposes, in the continuity of the Marshall Plan 4.0 and the digital strategy, to strongly develop digital services (administration 4.0), or digital by default.

This new plan no longer follows an autonomous planning logic as was the case previously, but is an emanation of the administration contract of the Walloon public service and of the management contracts of the main organisations of public interest, in which the simplification dimension has been integrated from the design stage. This administrative simplification plan is therefore totally alligned with the priorities of the administrations.

The "Ensemble Simplifions 2016-2020" strategy is coordinated by the secretary-general of the Walloon Public Service (SPW), via its administrative simplification team and by the Electronic Administration, e-Wallonia-Brussels Simplification (eWBS). eWBS is a joint structure of Wallonia and the Wallonia-Brussels Federation. In this capacity, it ensures the complementarity of administrative simplification and electronic administration in these two levels of power, adopting the user's point of view.

In order to monitor the implementation of the strategy, the Walloon Public Service has developed a lighter and easy-to-use version of the European Standard Cost Model, called SCM Light. This system gives an

estimation of the administrative burden of a simplification project both at the quantitative level (gains in euros per year) and at the qualitative level. The system is currently undergoing an academic review to estimate its methodology. But this shows the importance given to the results and the impact by the authorities.

8.6.2.4   Digital Wallonia (2015-2020)

Digital Wallonia ambitions to be a strategy that sets the framework and priorities for the digital transformation of Wallonia; a platform for the services and the promotion of businesses and digital players; and **a brand** that embodies the digital ambition of Wallonia and federates initiatives. Digital Wallonia sets the framework for all of the Walloon Government's actions in terms of Wallonia's digital transformation. Over 500 million euros have been set aside over four years for its implementation.

The strategy is structured around five major themes:

- In the digital sector, the strategy aims to nurture a strong sector and cutting-edge research environment to be put at the service of the economy.
- In the digital economy pillar, the goal is to enhance innovation for the benefit of the businesses and the industry, through the stimulation of Industry 4.0 for instance and the development of dynamic ecosystems.
- The skills themes ambitions to train every Wallonia's citizen so that they can use digital technologies in their studies, work, and leisure.
- The open public services pillar focuses on the shaping of a new generation of public service delivery, which should be digital, agile and open.
- Finally, the smart and agile territory theme focuses on the delivery of high-speed broadband and new technologies for new services to citizens and businesses to make Wallonia a "Giga" region.

As of September 2018, Digital Wallonia claims that 852 Walloon companies are active in e-commerce, 2157 Walloon companies and startups are active in the digital sector, and that Digital Wallonia already showcased the Belgian digital movers and shakers in 13 international missions, significantly contributing to the international visibility of the Walloon digital scene on an international level.

8.6.2.5   Evaluation of the Progress Made

In February 2014, the Auditor General (*Cour des Comptes*) published a tough evaluation of the administrative simplification strategy from 2005 to 2014 (La Cour des Comptes, 2014). It pointed out to an absence of global vision of the effectiveness and efficiency of the administrative simplification policy and to a lack of concrete benefits to the target audiences. Among its recommendations, the Court proposed to establish an integrated planning approach with clearly defined objectives; to simplify and optimise operational monitoring (through the computerisation and the integration of project management tools) and to strengthen the accountability of the actors responsible for the implementation of the administrative simplification policy.

These remarks seem to have been taken into account by the regional government, as the "Ensemble Simplifions 2016-2020" strategy strengthen the governance, declared aiming at adopting the users' point of view in its actions, and put in place a monitoring tool to evaluate the qualitative and quantitative gains in administrative burden reduction.

8.6.3   In Flanders

8.6.3.1   'Beter Bestuurlijk Beleid' (BBB), or 'Better Administrative Policy'

The abbreviation 'BBB' stands for 'Better Administrative Policy'. It represents the large-scale reorganisation whereby the Flemish government received a completely new organisational structure in 2006.

Since then, the Flemish government consists of thirteen homogeneous policy domains that together form the application area 'BBB'. Each policy domain has the same internal structure and consists of a department, various independent agencies and a strategic advisory board.

The Administrative Policy Framework Decree of 18 July 2003 deals with the guidelines and the principles of the renewed organisational structure. The organisation decision of 03 June 2005 established the various policy domains and contains an exhaustive list of the various entities per policy area.

In total, 83 government entities are part of the initiative (Areas of Application of Better Administrative Policy), such as the Agency for Local Government (ABB), the Agency for Facility Services (*Het Facilitair Bedrijf*), Flanders Information Agency or the Agency for Innovation and Entrepreneurship.

8.6.3.2   Flemish e-Government Strategy 2009-2014

The strategy aimed at developing integrated solutions, contributing to administrative simplification and increasing government efficiency. The main priorities were the creation of authentic data sources, e-participation, green ICT and the use of open data.

8.6.3.3   Vlaanderen Radicaal Digitaal, or Flanders Radically Digital

"A government that understands you better." That is the running theme of the digitisation of the Government of Flanders. The priority is to make it easy to find information or to use a service. Flanders Radically Digital is the collective name for everything the government undertakes with the aim of facilitating the digitisation of the Government of Flanders. The plan is not just about the digitalisation of the Flemish Government services, "the Government of Flanders wishes to think and act digitally in every respect." (Geets, 2017)

The strategy follows nine principles:
- digital interactions should be adapted to the citizens and businesses, thanks to a single unique portal;
- the government is creating new digital wellbeing;
- the service provision is thoroughly reviewed based on a relationship of trust between the government and its stakeholders;
- linking and using data to steer policy proactively and to allocate rights/subsidies automatically;

- don't ask what you already know, also known as the once only principle;
- the government lowers its operating costs;
- sufficient focus on those who have difficulty interacting digitally with the government;
- information immediately usable and integratable in the business operation of public and private organisations;
- digital processes transcending administrative levels.

The strategy could be summarised by the following leitmotiv: reducing the cost per transaction and administrative burden, while increasing trust and quality (Vanderbeken, 2015).

In 2015, 2016 and 2017, 10 million euros were allocated to projects within the Flanders Radically Digital programme for which a leverage function was expected. Three open calls have been organised in these three year, when the authorities decided to select a limited number of projects that were feasible within a short period via a target group approach with three tracks: a citizen track, a business track, and an organisation track, all with an aim to co-create with the local authorities.

8.6.3.4   Evaluation of the Progress Made

Beter Bestuurlijk Beleid which was in place from 2000 to 2006 has resulted in a fragmentation of the public sector in the Flemish Region, according to the OECD (OECD, 2008). "This fragmentation has made it considerably more difficult to achieve the goal of integrated e-government. However, in the last couple of years [of the programme], major steps forward were nevertheless made by CORVE, the Flemish e-government body towards this goal, such as the successful development of the MAGDA platform. The necessary capacity to support user-focused e-government development and implementation may still be lacking, especially due to the large number of public institutions at the regional, as well as the local, level."

With *Vlaanderen Radicaal Digitaal*, the Region tried to overcome this fragmentation and the attention put to the Once Only principle and its need for interoperability is probably the best proof of it.

By the way, according to the Social and Economic Council of Flanders (SERV) (SERV, 2017), the position of Flanders in a digitalising society is "not bad," as the region has "a strong socio-economic fabric, innovative companies, a skilled and motivated workforce, efficient social services, etc." However, they also acknowledge that digital transformation is happening very fast and that Flanders shouldn't rest on its laurels (i.e. Lately, even if this is mainly due to the relative better performance of other member states Belgium, is declining in DESI).

8.6.4   In Brussels Capital

8.6.4.1   Plan Bruxellois de Simplification Administrative 2009-2014 et 2015-2020 or Burssels Administrative Simplification Plan 2009-2014 and 2015-2020

In the Brussels Capital Region, an e-government cell was first created in 2005.

On 25 October 2008, the government of the Brussels-Capital Region recalls that the fight against administrative complexity is a permanent priority and each member of the government made the commitment to reduce the administrative burden as part of his own portfolio.

While analysing the two reports (easy.brussels, 2016, 2017) by easy.brussels, the administrative simplification agency of the Brussels-Capital Region, the two strategies of 2009-2014 and 2015-2020 have the same two general objectives, i.e. to strengthen the monitoring and coordination structures managing administrative simplification in the region and to reduce by 25% the administrative burden.

The 2015-2020 plan is however also structured around eight strategic objectives, which are to:
- make the Region of Brussels a proactive player in the works related to the European administrative simplification;
- make the Region of Brussels a clear block in the Belgian administrative simplification;
- develop an effective steering structure for the Brussels-Capital Region with regards to administrative simplification;
- develop an integrated vision of administrative simplification within the Brussels-Capital Region;
- develop ICTs for administrative simplification purposes;
- improve the administrative processes;
- involve local authorities in the process of administrative simplification; and
- involve companies in the process of administrative simplification.

These eight priorities are translated into 39 operational objectives and 125 actions.

8.6.4.2   Digital.Brussels

On 01 February 2017, the Brussels-Capital Government launched a unified digital strategy that aims to be ambitious and coordinated: Digital.Brussels. Against this backdrop, the competent government members, Bianca Debaets (Digitisation), Didier Gosuin (Economy, Employment and Vocational Training) and Fadila Laanan (Scientific Research), set up a coordination committee, whose aim is to position Brussels on the world map when it comes to the digital sector and to equalise Digital.Brussels with quality and innovation. All members of the government committed to placing their (future) initiatives related to digital development under the new Digital.Brussels label.

Digital.Brussels is organised around three pillars of action:

- facilitation,
- training, and
- promotion.

First, a greater collaboration between the various public and private actors from the digital sector will ensure quality support for each entrepreneur, in particular via the 1819.brussels one-stop-shop. Secondly, Digital.Brussels guarantees the awareness and training of certain specific target audiences (the youth and women) to the possibilities proposed by the IT sector. The objective is to create a pool of highly-skilled IT workers in Brussels and convert job seekers to new jobs in short supply in the sector. Finally, the strategy strengthens Brussels in its position among the most important ICT players in international markets and

unavoidable exhibitions (CEBIT, Mobile World Congress, CABSAT …) but also as a home for innovative companies and foreign investments.

8.6.4.3 Evaluation of the Progress Made

easy.brussels, the administrative simplification agency of the Brussels-Capital Region, whose mission was reframed in 2015 to manage the simplification initiatives of the region, concluded in its first report to the Brussels Government in 2016 (easy.brussels, 2016) that the Brussels simplification plan adopted in 2009 has transposed many of the European ambitions but, at the same time, that the lack of creation of a dedicated coordination and management body, as well as the absence of a budget for the plan, were cruelly missed for a good implementation of the strategy.

But easy.brussels seems to have not only stopped with making this assessment. It also re-organised itself to develop a very clear, structured and ambitious strategy, where the main objectives are translated into more than a hundred concrete actions that can be – and are – monitored by the agency. And indeed, a lot of measures have been taken to simplify administrative procedures, such as Irisbox, the one-stop-shop for administrative documents available 24/7. Another sign of the solid transformation towards a simplified administration is that government agencies start getting in touch to be accompanied in their journey towards a more simplified administrative process, such is the case with be.circular, the regional programme for the circular economy, where Brussels Environment, the agency in charge of environmental issues, reached out to easy.brussels to set up an identification platform and to remove the technico-administrative barriers to the circular economy.

8.6.5 Country reports on Digital Agendas

8.6.5.1 *OECD* e-Government Report Belgium – Assessment and Proposal for Action 2008

The Belgian governments asked the OECD to review its e-government policy and to make proposals for action on how the governments could specifically improve *user-centricity* and *co-ordination* issues (OECD, 2008).

The OECD concluded that, back in 2008, e-government has never really been seen as a priority in Belgium, and that, per opposition to healthcare or security, which were seen as highly political, e-government as always been treated as a "technical" issue, rather than a strategic matter with high impact on the transformation of government that can ensure the delivery of priority policy areas.

8.6.5.2 – Digital Transformation Monitor – Belgium: "Made Different", May 2017

The Digital Transformation Monitor aims to foster the knowledge base on the state of play and evolution of digital transformation in Europe[47].

In the report dated May 2017 on the Belgium programme "Made Different," an initiative aiming at transforming Belgian manufacturing companies into factories of the future, the European Commission claims that the programme can be considered as a success, in particular in Flanders, and also in Wallonia, although they are only starting the implementation phase in the French-speaking region.

The key results achieved at the date of the publication relate to the awareness-raising pillar of the strategy (good turnout at roadshows and conferences regularly organised across the country), the number of manufacturing companies supported (265, with 65% of them being SMEs) and 16 companies having received the Factories of the Future Award (14 in Flanders and 2 in Wallonia).

8.7   Traceable results of digital transformation approaches (major events)

8.7.1   Outcomes of digital transformation articulated in official country reports

This section summarises the outcomes of digital transformation in Belgium's public administration 2000-2018 described in the EU's JoinUp Reports.

8.7.1.1   2000-2002

2001

Fedict was established in 2001 and works for the Belgian federal government in the development and monitoring of e-government. To this end, Fedict assists other federal public services to improve the services they provide to citizens, businesses and civil servants by using new information and communication technologies (ICT).

2002

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[47] The site provides a monitoring mechanism to examine key trends in digital transformation. It offers a unique insight into statistics and initiatives to support digital transformation, as well as reports on key industrial and technological opportunities, challenges and policy initiatives related to digital transformation.

The Belgium Rotating Presidency of the European Union and the European Commission organise in Brussels the first high-level ministerial conference on e-government (29-30 November 2002), entitled 'From Policy to Practice'.

The Federal Portal www.belgium.be is launched in November 2002. This portal offers a new single entry point to public services for the citizens, businesses and the administration.

8.7.1.2 2003-2005

2003

In March 2003, the Belgian electronic ID card is officially launched in 11 municipalities for a three-month trial.

Tax-on-Web, the online tax filling application, is launched in April 2003.

2004

In November 2004, Belgium becomes the first country in the world to start issuing electronic identity cards that contain a facial image of the holder stored in a microchip.

2005

The Crossroads Bank of Legislation is launched in March 2005. It provides online access to Belgian legislation and case law.

In April 2005, the Flemish Government creates CORVE, the Flemish e-Government Coordination Cell.

In May 2005, the Belgian Government unveils its e-government interoperability framework BELGIF and publishes a first list of open standards to be used by the public authorities.

8.7.1.3 2006-2014

2006

At the beginning of 2006, the MAGDA platform is launched by the Flemish Government. 'MAGDA' ensures the digital exchange of data between administrations on the Flemish, federal and local levels. It connects 50 administrations and 200 municipalities which results in 25 million transactions per year.

Since 01 June 2006, a company can be created within 3 days (instead of 67 days originally) thanks to the electronic registration desk.

2007

In February 2007, the Belgium's federal platform for e-tendering is launched. It's an open, secure, interoperable and re-configurable e-procurement platform, based on open European standards and European Union directives. In May 2007, the first electronic opening of tenders relating to a federal procurement contract takes place on the platform.

2009

The portal 'My.belgium.be' is officially launched in September 2009. It provides registered users with a direct, easy, secure and round the clock online access to their personal files and to various Federal Government services. Registration has to be performed by means of the Belgian eID card, using an eID card reader. Users need only to register once in order to access their personal data.

2010

The 'Start2surf@home' is an initiative launched in February 2010, by the Federal Government aiming to reduce the digital divide by offering computers with full Internet access to 100.000 Belgians.

The digital signature platform of Flanders is launched on 20 September 2010 by the Flemish e-Government and ICT-Management Unit ('*Entiteit eGovernment en ICT-Beheer (e-IB)*'). Since then, all the public authorities of the regional Government of Flanders have been able to digitally and legally sign documents via the platform.

[*The Citadel Statement: Making The Malmö Vision Real*](by Identifying What Local e-Government Really Needs), was signed in Gent on 14 December 2010. The Flemish e-government authority was a key player. This text is considered as a strong beginning point for a European policy concerning local e-government.

2011

The federal government departments and institutions make open data available on 'Data.gov.be', the government's open data portal. The federal public service made a list of data sets accessible as open data on the portal, aimed at enabling developers to create useful applications for businesses or citizens by using the information provided. Specifically, the site mostly contains links to data supplied by authorities, public bodies and organisations targeting developers and open data researchers.

The European Union approved, in December 2011, the financing of 'Citadel on the Move', a project led by the Coordination Cell of the Flemish e-government (CORVE) with 15 partners in Europe and the cities of Athens, Manchester, Issy-les-Moulineaux and Gent as pilots.

2014

In April 2014, version 2.0 of the Flemish OSLO (Open Standards for Local Administrations) standard was completed. This project is the result of a public-private partnership initiated by V-ICT-OR, the Flemish Organisation for ICT in Local Government, and funded by Flemish ICT service providers (BCT, CEVI, Infront, Remmicom and Schaubroeck), CORVE and Digipolis. Started in February 2012, the OSLO project facilitates a working group with ICT experts from local, regional and federal public administrations and ICT service providers to build a consensus on standards for information exchange, with a guarantee to attain cross-border and cross-sector interoperability.

8.7.1.4 2015-2017

2015

Launch of the Digital Agenda for Belgium by Deputy Prime Minister Alexander de Croo, which aims at getting the country in the digital top three, and for the digital revolution to deliver 50.000 new jobs in a variety of sectors.

In March 2015, the Flemish Government launches the *Vlaanderen Radicaal Digitaal* (Flanders radically digital) programme, which aims to digitally transform regional (and local) government.

In August 2015, the new federal open data strategy was adopted by the Belgian Council of Ministers with a five-year long plan of actions aimed to strengthen the Belgian digital ecosystem and to evolve towards a leaner, more efficient and more modern government. The key part is to make open by default all government data except data with privacy or security information.

In December 2015, the government of Wallonia published a new Digital Strategy for Wallonia's region.

2016

In 2016, the Flemish government began using the federal e-invoicing platform to make it possible for Flemish government entities, at the regional and the local level, to receive e-invoices from Belgian and foreign enterprises. Furthermore, in 2016, the Flemish Government focused its efforts to make sure that e-invoicing is used by all service and product providers to the Flemish government (in particular SMEs).

The Walloon Government has validated the new 'Ensemble Simplifaction' Plan for the period 2016-2020. The Plan presents a strategy for Wallonia's administrative simplification. The Plan is structured around two main lines of action: user orientation and the development of digital services.

2017

The new Federal Public Service Policy and Support was established on 01 March 2017. The new organisation is taking over assignments and services previously provided by the Federal Public Service Personnel and Organisation, the FPS Budget and Management Control, Fedict and Empreva. The main goal is to offer centralised support services in the areas of IT, HR, organisational management and integrity policy, budget, accounting and public procurement contracts, to increase the quality delivered to citizens.

As from 01 January 2017, the Flemish government no longer accepts paper invoices for all new government contracts.

In order to learn more about the level of digitisation of Belgium's public services and their use, citizens and businesses can visit the Digital Dashboard webpage, which provides the digital barometer of the Belgian Federal Government.

8.7.2 Summary

In Belgium – as a federal state, but also in the three regions, i.e. Wallonia, Flanders and Brussels Capital – Digital Transformation is understood as a way to rationalise and save money, as identified in the press releases analysis of the current federal legislature, but also in other reports. For instance, the Administrative Simplification Agency dedicated a full report to the savings that could be made thanks to e-invoicing: it

calculated that 3,37 billion euros could be saved if Belgian companies would fully switch to e-invoicing, and according to the figures from 1993 to 2016, e-invoicing has already saved 1,006 billion euros. (Agence pour la Simplification Administrative, 2017).

In general, there is a sense that the rather mediocre country analysis and impact assessment on the administrative simplification made before 2014 have been taken into account,

- in Wallonia, where the Digital Wallonia programme seems to get good results in the digital transformation for the benefits of businesses (with the progression of e-commerce companies and SMEs active in the digital sector);
- in the Brussels-Capital Region, where easy.brussels takes seriously the dossier in charge and monitors the working progress rigorously to keep the transformation ongoing; and
- in Flanders, where the urgency to keep up with the good work is felt.

But unfortunately, the very complex nature of the Belgian state, with its layers of administrative authorities and competencies – inherited by the various reforms of the state – still ensures that the task of making the administration 'easy' to interact with, being a citizen or a business, is a very difficult one.

The digital transformation should be a mean to ease this difficult relationship, but digital transformation is successful when integrated, when systems communicate with each other (i.e. are interoperable) and this is a gigantic task for a country as Belgium, where three languages, and various cultures co-exist.

The emphasis on reducing cost isn't appealing enough in this very special context. Digital transformation should probably rather aim at better communication and more meaningful and more efficient interactions between the administrations, the citizens and the businesses to really achieve concrete results.

9   Summary of Findings

The following section includes a summary of each case's findings.

9.1   German case

The German digital agendas are prepared by the Federal Ministry for Economic Affairs and Energy, and during the period 2000-2016, four digital aAgendas were published (2003, 2006, 2014, and 2016). In 2003 and 2006, the digital agendas were published as "Information Society Action Programmes". In 2003, the focus was on German economic market in the context of an information society, in 2006 on making Germany a knowledge-based society, whilst in 2014, the focus moved to German society and values in the context of digital transformation. The digital agenda published in 2016 focuses on data and big data, the need to provide access to data for business and economic success. Although the focus and topics of the agendas varied over the years, some repeated issues are addressed in every digital agenda.

Every agenda considered the need to provide nationwide broadband especially in rural areas that are not economically viable for companies to provide for. Other issues addressed are the need for IT security, research, and development, but also developing the opportunities for exploiting innovative ideas and measures, and the role of digitisation. Digitalisation in the public sector and e-government strategies for public administration are repeatedly discussed, as well as the development of necessary policies to support the German digital agenda. In terms of the development of policies, the first digital agenda considers the policies at a national level and then the focus of the 2010 Digital Agenda addresses the development of ICT policies in cooperation with other - both at European and global level - policies that have an impact on Germany. In the last two digital agendas, the focus is moved to the inclusion of policymakers in developing policies for Germany, ensuring that these are based on German values. Especially in the 2016 digital agenda is urging the European Commission to update its own ICT policies, in particular, regarding broadband.

Over the years (and in particular in the digital agendas published in 2014 and 2016), the increasing collaboration between the different German government services, projects, levels, agencies, and other organisations is increasingly emphasised as well as the need to implement measures that impact the whole country in a coordinated and effective manner.

9.2   Italian case

Italy is not scoring well in all the dimensions that compose the DESI index. It has some structural disadvantages as the connectivity infrastructure and the level of literacy and human development related to IT. Overall, these items combined affect the positioning of individuals' use of internet in daily life.

Italy has a history of formal relevance of ICT in its regulation and institutions. Among the different mechanisms that have led to this situation, there has been a pluri-centric governance with a functional view rather than a truly coordinated steering group at a central level which has not necessary supported the necessary regulations and investments to steer the sophistication of demand for e-services by individuals as it happened in Estonia and Ireland. In addition, the role of digital transformation is still considered mainly a "technical" issue, rather than a source of competitive advantage of the country and its population.

The Italian Digital Team has brought in agile approaches to fill the existing gaps in some key areas of needed improvement (i.e. filling gaps of necessary conditions for use of ICT in government). However, the political priorities not focusing on digital transformation and the temporary role of the Team might not be enough to ensure a truly transformative approach to digital issues that affect Italy.

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9.3 Spanish case

Spain performs fine at DESI and is well placed above the EU average (10th out of 28 countries). Notwithstanding this, major differences exist amongst the various dimensions making up the index. In fact, Spanish strengths are found in digital integration (business digitisation and ecommerce) and digital public services, whereas the position in the use of Internet services and human capital is below the EU average and open for further improvement.

Spain's socio-economic context, as well as political vision, may help explain DESI results. Excellent performance in digital integration and, especially, in digital public services, is mirroring the strong and committed vision unleashed by some policy-based efforts, the Plan Avanza & Plan Avanza2. The plan did contribute to lay the foundations for information society advancement and was especially successful in building up national strategies for the modernisation of public administration. On the other side of the coin, the scarce use of the Internet and low human capital endowments are echoing both population ageing (as aged people are not so inclined to use digital technologies) and the high unemployment record in the country (as lack of digital skills may be one of the explaining factors).

Press releases are basically clustered around three different aspects: 1) the important efforts made to digitally transform public administration, especially when it comes to foster digital public services (e.g. health) and to leverage some crucial sectors (e.g tourism); 2) the key role of digitisation to tackle the challenges of depopulation in some vast areas in Spain; and 3) the need to consider digital transformation as a powerful tool to figure out new knowledge-led and innovation-based productive models in Spain. Thus, the three aspects are also encapsulating socio-economic concerns and policy action.

Finally, when it comes to studying transformational mechanisms through Spanish Digital Agendas, the main conclusion is that citizens (and the rest of stakeholders) have become active players not only as users but also as co-participants in shaping the final version of the Digital Agendas. Indeed, when summing up the results from the various programmes, participation and involvement of stakeholders in setting up priorities has been increasingly considered as a basic factor of success, whereas political instability is increasingly seen as a distorting factor (i.e, the new Digital Strategy - *Digital Strategy for an Intelligent Spain*), is stuck into an indefinite halt due to the motion of censure led by the Socialist Party last June).

9.4 French case

France ranks 18th out of 28 in (DESI 2018). Despite slight improvements, France drops under the EU average in Connectivity (fast broadband) and Use of Internet but the scores are better in human capital or digital public service. These scores reflect the geography of a country of 67 million inhabitants as well as the history of ICT policies. From 1982 to 2022, local authorities and the State debate about connectivity to reduce the digital divide between rural areas and metropolitan areas. From French Minitel (1984) to the 2018-2020 programme for the Territorial Digital Transformation, all the governments, whatever the political colour, have worked to modernize step by step the public services. For 30 years, macro-institutional beliefs about digital transformation deal with the (pioneering) place of France in the world (research, innovation, digital rights...) and with the principle of equality between the citizens and the local territories. But with 13% of individuals in 2018 who never use the Internet, the political challenge of 100% dematerialised public services by 2022 is e-inclusion, in particular in the poor urban districts. Even if all the governments since the 1990s work with the EU or OECD to learn from experience of other countries, some action-formation

mechanisms are different according to the personality of the President of the Republic or the Prime Minister: the shift from Minitel to Internet, and innovation model of the USA for Lionel Jospin (Left); the modernisation of administration and the startup economy for Nicolas Sarkozy (Right); the Digital Republic and new rights for citizens with François Hollande (Left); the State as a platform, agile methods and State Startups for Emmanuel Macron. But the role of users is more and more important in the transformational mechanisms, even if this objective has appeared in the bills for 30 years. Co-creation, service design, experimentations, online consultations are some of the current tools used to improve the policies or action plans, even if social and digital innovations are more and more the outcome of user communities' initiatives.

9.5 Danish case

According to the Digital Economy and Society Index (DESI) report 2018, Denmark ranks first out of the 28 EU Member States and it has done so for the last years (European Commission, 2018d). The DESI Index tracks the progress of a country's digitisation according to connectivity, human capital, use of internet services, integration of digital technology and digital public services. Denmark belongs to the high-performing cluster of countries and is a leader in digitisation in the world. Denmark together with Sweden, Finland, and the Netherlands have the most advanced digital economies, followed by Luxembourg, Ireland, the UK, Belgium, and Estonia. This is explained by a number of factors summarised below.

First of all, there are a number of situational mechanisms that are at the basis of the present digitalisation level. Denmark is a relatively small country with a population of 5.8 million inhabitants, it has a relatively low unemployment level and a well educated population as only 19 per cent of the population had basic school as their highest level of completed education in 2018. In addition, Denmark had a significant surplus on the balance of payments of 7.3 per cent of GDP in 2016 due to exports exceeding imports. From a political point of view, Denmark is a constitutional parliamentary monarchy with legislative power held by a unicameral parliament (Folketing). The Danish public sector is characterised by a high level of decentralisation. The public administration is divided into three levels, state, regions, and municipalities corresponding to the three levels of government: Danish Government, Local Government Denmark, and Danish Regions. The administrative and political structure of Denmark has been changed over the years to adapt to e-government developments and make its implementation possible. An important example is a structural reform of the local government in 2007, which by reducing the number of regions and municipalities, has simplified the political structure by simultaneously increasing the size of every single unit, thus also increasing the budgets that each municipality or regions have to implement e-government.

Secondly, there are a number of actions and transformational mechanisms that have led to Denmark being a world leader in digitalisation. The main actions are represented by the digital policies and laws that the Danish government has developed and launched since 2002. The three levels of government, Danish Government, Local Government Denmark and Danish Regions, have collaborated since the beginning in developing and implementing the e-government policies and strategies laid down in the legislation adopted by the Danish Parliament (OECD, 2010b). Their work has been accomplished, supported and coordinated through governmental agencies under the umbrella of different ministries. Task forces lasting several years and spanning several strategic agendas as well as a number of more temporary commissions have also been established. Such commissions and task forces have changed according to the plans and needs of the moment. Recent examples include the digital growth panel and the Danish Government's disruption committee. Some actors such as the Ministry of Finance and Ministry of Industry, Business, and Financial Affairs have always been involved from the beginning together with Ministry of Energy, Utilities, and

Climate, which is responsible for broadband coverage. A few actors have changed name over time by keeping the same tasks or have merged with other actors.

Since the very beginning of the digitalisation plan, broadband goals and policies have been important and linked to digitalisation initiatives and have been supported by a number of political initiatives at central government, regional and municipality level aiming at nation-wide fixed and mobile broadband coverage. Broadband strategies, for example, contain initiatives concerning framework conditions for operators, municipalities and regions as well as consumer-related issues.

The funding scheme of e-government in Denmark is complex as all authorities and government levels are responsible for their own digitisation as part of continuous business maintenance and development. The main idea is that the state government makes available seed money that has to be supplemented by economic resources invested by all parties involved. The joint public efforts (e.g. joint-solutions) get allocated separate funding.

A detailed overview of how such action formation and transformational mechanisms take place is provided in the report by analysing the official governmental press releases over the period 2017-2018. The analysis shows that the majority of official press releases concerning digitalisation are on the web sites of the Ministry of Finance, the Agency for Digitisation rooted at the Ministry of Finance and the Ministry of Industry, Business, and Financial Affairs, thus confirming their main roles, goals and missions in this process. In addition, the analysis shows that the ones made by the Ministry of Industry, Business, and Financial Affairs deal mainly with high-level strategic issues, while the ones made by the Agency for Digitisation also deal with implementation issues.

The press releases evidence that present policies and goals focus on securing citizens and businesses from cyber attacks as well as generate growth and wealth. Simultaneously the focus is very much on user engagements and monitoring satisfaction and use of the e-government services by the citizens. It emerges a picture of multi-actor and public-private collaboration through, for example, tendering mechanisms as well as bottom up and top down policy formation. The main logic in these announcements lies in the fact that Denmark has to keep on being the frontrunner of digitalisation in the world. This can be achieved by shifting focus from simply improving e-government services and infrastructure to how digitalisation can support growth in other sectors then just the public sector as for example the maritime sector.

9.6   Belgian case

Belgium belongs to the high-performing cluster of countries in the Digital Economy and Society Index (DESI) 2018. From a pure ranking perspective, the country is in continuous fall (from position five in 2014 to position eight in 2018) but this is mainly due to the good progress recorded by other member states – overall, the Belgian DESI score increased over the years.

Belgium is a federal state, composed of three regions (Flanders, Wallonia and Brussels-Capital), three linguistic communities (Flemish, French and German), 10 provinces, 589 communes and four linguistic regions (the Flemish speaking region, the French speaking region, the bilingual region, the German speaking region). The digital portfolio is spread over the different layers of administrations: at the federal level, the vice-prime minister is also the minister in charge of the digital agenda; but regional ministers in Brussels-Capital, Flanders and Wallonia also developed digital strategies, with sometimes overlapping priorities with the federal agenda.

Thus, since the beginning of the 2000s, Belgium has seen blooming an impressive number of digital strategies (12 found in total). In most cases, they focus on administrative simplification.

Various state agencies such as the *Cour des Comptes*, or international organisations such as the OECD and the European Union, questioned the achievements of the digital transformation strategies at all levels, lately around 2014-2015 (2015 also matches with the year when Belgium seemed to start losing competitiveness towards other member states in the DESI ranking).

It was a wakeup call for the three Regions, which appear to have heard the message and started a more robust and systematic monitoring of their strategies and their structures. However, the federal level still has room to improve, as the permanent failure of the implementation of the Only Once Act in the administration embodies – the creation of BOSA, the digital transformation unit, is a step in the right direction though. In an environment as culturally heterogeneous as Belgium, focusing a digital transformation strategy on the technical aspects of administrative simplification may not be appealing enough. Promoting a better communication and broader understanding between the various stakeholders could be more efficient.

9.7   Policy tracing cases

Overall, all countries worked heavily on providing the infrastructure for digital transformation projects during the first two to three legislative cycles – some are still working on expanding, for example, the implementation of broadband. As a result, countries like Germany, Belgium or Italy, are still struggling to provide the necessary bandwidth and lack a focus on digital service provisions. While others, such as Denmark are clearly far ahead of the development curve and have long implemented the necessary infrastructure as well as the support for public administrations to expand their digital service delivery activities. This shows that in some countries, such as Italy or Germany digital transformation was seen as an infrastructure or technology issue, and not necessary a cultural or managerial issue. Public administrations were not put in the positions to address these issues.

The French and the Spanish cases show a heavy focus on co-creation of public services together with citizens, while other are just starting to consider the involvement of citizens as a potential venue for future approaches.

The most advanced country in our case selection is by Denmark. Which has started early to set infrastructure, as well as managerial set-ups in place to expand the development of digital transformation opportunities for public administrations. An example, that other countries might consider as exemplary.

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