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## Guidebook

# Inclusion of best practices on suitable digital working environments

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*Let's protect our environment!*

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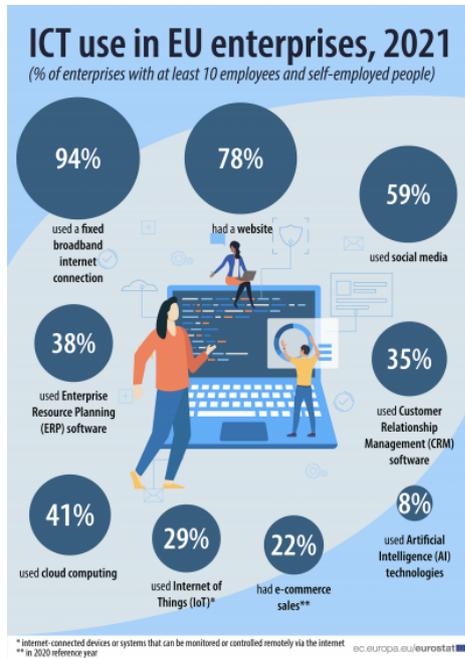
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## 1. Introduction.

*"Digital transformation is not a destination; it is a never-ending journey."*

Unknown origin.



**Figure 1. ICT use in EU enterprises, 2021.**

Digital transformation is happening in almost every sector of the economy. It is driving fundamental changes in how businesses operate and deliver value to their customers, especially how teams are managed remotely. In today's digital world, companies that cannot adapt and integrate digital technology into their operations are at risk of being left behind by competitors who can do so. Additionally, digital transformation presents opportunities for businesses to increase efficiency and productivity in dealing with management challenges and create new products and services that can differentiate them from their competitors.

Digital transformation is relevant from a broader perspective because it shapes how we live and work. Digital technology is becoming increasingly prevalent in our daily lives, and using it effectively is essential for individuals and businesses. As such, the digital transformation is relevant to businesses and society.

One of the key benefits of digital transformation in the context of work culture is the ability for workers to be more flexible and agile in their work. For example, using cloud-based tools and collaboration platforms can make it easier for employees to work from anywhere at any time. This can allow for greater work-life balance and the ability to respond more quickly to changing business needs.

Another potential benefit is the ability to automate certain tasks and processes, saving time and reducing the potential for human error. This can free workers to focus on more complex and creative tasks and lead to job creation in fields related to developing and maintaining digital technologies.

However, digital transformation can also present challenges for businesses and workers. One major challenge is the need for employees to adapt to new technologies and learn new skills. This can be difficult and time-consuming and can cause anxiety and uncertainty among workers. Additionally, there is the potential for job loss due to automation, as certain tasks and even entire job functions may become obsolete due to digital transformation.

It is important to address these challenges to make the most out of the opportunities that come with digitalisation. Companies, especially managers, must be equipped with the knowledge to lead partly or fully digital teams.

The report of the European Commission on “High-Tech Leadership Skills for Europe” (European Commission/empirica, 2017, p. 8) highlights that Europe is required “to generate around 50,000 additional high-tech leaders per year in the years up to 2025, or a total of around 450,000 until 2025, by providing them with relevant educational opportunities and exposing them to the necessary work and leadership experience”.

The E(U)-leaders project responds to the need for (further) training with the goal of building competencies in leadership in the context of remote work. It addresses the needs of the labour market. It supports the digital transformation of businesses by developing a complex and reliable set of digital tools and approaches for e-leadership skills assessment, development, evaluation, and certification.

This guidebook, addressed to leaders (entrepreneurs, employers, managers), shows good practices promoting strategies and e-tools that organisations adopt in their daily management. It introduces ways of working and gives helpful information on successful management standards and models for achieving operational and organisational success.

## 2. What is e-leadership?

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### 2.1 Introduction.

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Working from home has experienced rapid growth in the past few months owing to the pandemic and requires technology, social, and organizational support. The pandemic has generated a massive change in how companies operate. Employees started (forcely) to work remotely as a sound prevention method, and this trend will continue after the pandemic. In this new work environment with possible risks, opportunities, and flexible work arrangements, leaders must adapt their leadership practices to achieve organizational goals by engaging teleworkers who enjoy a productive virtual work environment and allow them to thrive in their work.

### 2.2 E-leadership and the Emerge of Covid-19.

---

Companies have evolved according to new work environment conditions, such as globalization, fierce competition, new demographic structures, and the increasing development of ICTs. Teleworking has been steadily growing globally in several sectors, including the service industry.

As early as 2020, in response to the rise of the Covid virus, the World Health Organization suggested teleworking as a preventive measure to contain the spread of coronavirus disease, and several millions of individuals have been confined to their homes. Taking into consideration that the teleworking condition has the potential to lead the employee to social or professional isolation, negatively affecting professional performance, the COVID-19 pandemic has presented a great challenge for team managers, especially to lead teams in a remote working context, motivate people to make to achieve a common goal and get good results from work.

As teleworking existed before the pandemic, adaptation was relatively easy for some organisations. In contrast, for other organisations not yet prepared with teleworking infrastructure or trained leaders, remote working may have disrupted how they work.

### 2.3 Opportunities for remote work.

---

Teleworking has potential advantages, such as improved job performance, job satisfaction, lesser work-family imbalance, reduced rates of stress, and lesser turnover intentions. However, the benefits are evident where the employees find managerial, peer, and technological support.

Teleworking can improve the reputation and corporate image of green companies, enhance the air quality in urban areas, and reduce pollution through flexible and better work-life balance. Moreover, teleworking allows employees to deal with family matters and harmonize their personal and work duties.

## 2.4 Risks of remote work.

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Teleworking can lead to social isolation from work teams, lower performance and gradual demotivation, and work-to-family and work-family conflict. Moreover, teleworking requires better organizational skills and is suitable for only self-organized people who successfully allocate time.

Teleworking can cause anxiety among employees about their career prospects, and its advantages come at the cost of intensified work. This is why managers are concerned about decreased job performance.

Telework raises ethical concerns for e-leaders, such as the exploitation of employees and an intrusion into their personal life. However, teleworking gives individuals greater autonomy regarding time and space and promotes greater self-regulation and work efforts from employees.

## 2.5 Management and Leadership.

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In teleworking, leadership and management roles appear more distinct than in traditional workplaces. Leaders must adapt traditional leadership practices to a technologically mediated environment.

Teleworking can be favoured by flatter and more decentralized structures, where employees create value for the companies and where information availability contributes to diminishing hierarchies and organizational boundaries. In a remote work environment, managers must manage performance, implement solutions when needed, and create a trusting working environment by establishing a vision, corporate values, and organizational goals into a trusting working environment. Moreover, leaders should be democratic with access to information and willing to keep open communication.

## 2.6 E-leadership as a concept.

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E-leadership is an extension of traditional leadership that requires leaders to change their practices and develop distinct abilities to improve organizational functioning in virtual work environments. However, many propositions used in generic leadership theories can be applied to e-leadership.

E-leadership is the effective use of electronic and traditional methods of communication, integrating distance and non-distance methods according to the purposes, building trust with each team member, establishing a virtual "presence" preventing distance from becoming a barrier, and promoting healthy teams through interactions.

In virtual or remote work environments, leaders should demonstrate a more inclusive leadership style, allow employees to present their ideas, and encourage autonomy, collaboration, and responsibility. This will promote a positive organizational environment.

It is suggested that e-communication is the ability to communicate appropriately through ICTs, avoiding errors or excesses that affect good performance. This process involves technical issues, such

as selecting the best communication method and deciding whether to use synchronous or asynchronous methods. The e-social environment, e-change, e-team, and e-technological skills of e-leadership are essential for creating a positive work atmosphere, increasing communication and collaboration through digital communication methods, and preventing isolation among team members.

E-leadership is about identifying the need for change and promoting innovation in the organization. However, e-leaders must be careful that continuous changes do not disrupt the company's focus and mission.

## **2.7 Aspects to consider when implementing e-Leadership.**

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Teleworking is a new form of work organisation that gained ground in most organizations worldwide due to the pandemic, increasing distance in interpersonal relations in the work environment.

To take advantage of teleworking, leaders must change their style. Computer technologies influence behaviours, emotions, thoughts, and performance. E-leaders can reduce the negative impact of physical and psychological distances in remote work settings by developing trust in their relationships, encouraging information flow, and generating creative solutions. Moreover, they boost employees' work engagement through the effective use of resources and their development, support, and nourishment attitude. The researchers focused on the importance of e-leaders in providing emotional and technological support to their employees, but some studies focused on the need to provide ergonomics support.

Effective leaders should communicate the vision passionately; shaping a culture based on organizational values and trust is crucial for building effective virtual teams.

Leading virtual teams effectively offers enormous competitive advantages for companies. Still, the geographical dispersion and cultural diversity between team members can be a barrier to building trust within the teams. A virtual team leader should develop intercultural competencies to communicate adequately with team members. Under effective e-leadership, team diversity can increase the members' innovative behaviour and influence the companies' innovation. Moreover, e-leaders must recruit, retain, reward, and motivate globally talented employees to maintain their competitive advantage.

Leading a virtual team requires leadership and management skills. The leaders should ensure that each team member is committed to the project and gives the best according to their expertise. They should be creative in establishing the organizational structures and processes that ensure that all members work for the shared objective.

Hierarchical leadership approaches in e-teams have limitations in terms of providing flexibility to group members during the collaboration process. Shared leadership promotes team members' identification within the group and initiates action flows for goal achievement. In virtual teams, e-leaders should communicate, work asynchronously, and be highly competent in verbal communication to motivate their employees. They should also avoid employees' feeling of isolation and promote team cohesion.

### 3. E-leadership in Europe.

*“For Europe to compete, grow and generate jobs, we must ensure that we have the people who can lead the digital innovation and transformation of our industries.”*

**Lowri Evans, Director General**

**DG Internal Market, Industry, Entrepreneurship and SMEs,  
European Commission.**

Since 2014, the European Commission has monitored Member States’ digital progress through the Digital Economy and Society Index (DESI) reports. DESI is composed of five principal policy areas which represent overall more than 30 indicators:

- Connectivity: how widespread, fast, and affordable broadband is.
- Human Capital/Digital Skills: the digital skills of the population and workforce.
- Use of the Internet: the use of online activities from news to banking or shopping.
- Integration of Digital Technology: how businesses integrate key digital technologies, such as e-invoices, cloud services, e-commerce, etc. and
- Digital Public Services: such as e-government and e-health.

Already 84% of people used the internet in 2019 regularly. Nevertheless, only 56% possess at least basic digital skills, and only about one-third of Europeans have above basic digital skills (31%).

Human Capital Indicators in Desi	EU	
	DESI 2019	DESI 2021
<b>At least basic digital skills</b> % Individuals	<b>55%</b> 2017	<b>56%</b> 2019
<b>Above basic digital skills</b> % Individuals	<b>29%</b> 2017	<b>31%</b> 2019
<b>At least basic software skills</b> % Individuals	<b>58%</b> 2017	<b>58%</b> 2019
<b>ICT specialists</b> % Individuals in employment aged 15 - 74	<b>3.8%</b> 2018	<b>4.3%</b> 2020
<b>Female ICT specialists</b> % ICT specialists	<b>17%</b> 2018	<b>19%</b> 2020
<b>Enterprises providing ICT training</b> % enterprises	<b>22%</b> 2018	<b>20%</b> 2020
<b>ICT graduates</b> % graduates	<b>NA</b> 2016	<b>3.8%</b> 2018

Source: DESI 2021, European Commission.

**Table 1. Human capital indicators in desi 2021.**



Source: Eurostat, European Union Labour Force Survey.

**Figure 2. ICT specialists (% of total employment 2015 – 2020).**

Looking at the workforce and its potential to work in and develop the digital economy, the key target for Europe is to reach 20 million employed ICT specialists in the EU by 2030. In 2020, 8.4 million persons worked as ICT specialists across the European Union, with a slowly progressing share of 4.3% of total employment in 2020.

In 2020, 19% of EU enterprises employed ICT specialists. But around 55% of enterprises reported difficulties in filling vacancies.

Enterprises are providing more and more training to their personnel to develop or upgrade their ICT skills. Overall, 20% of the EU enterprises provided ICT training for their personnel, with considerable differences between Europe (Finland 38%, Romania 6%). 68% of large enterprises actively offered the training, while only 18% of SMEs did so (European Commission, 2021).

## 3.1 Cyprus.

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### 3.1.1. Current status of digitalisation and the digital economy in Cyprus.

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The European Commission has monitored Member States' progress on digital and published annual Digital Economy and Society Index (DESI) reports since 2014. Each year, the reports include country profiles, which help Member States identify areas for priority action, and thematic chapters providing an EU-level analysis of the key digital policy areas. In 2021, the Commission adjusted DESI to reflect the two major policy initiatives that will impact digital transformation in the EU over the coming years: the Recovery and Resilience Facility and the Digital Decade Compass.

Cyprus ranks 21<sup>st</sup> among 27 EU Member States in the 2021 edition of the Digital Economy and Society Index (DESI). Cyprus has improved its performance in almost all DESI dimensions, although it still scores below the EU average in most cases. Most of its progress has been made in Connectivity. Cyprus ranks above the EU average on mobile broadband take-up, has improved its coverage of Very High-Capacity Networks (VHCN) and scores high (67%) in the 5G readiness indicator. This means that the biggest part of the 5G pioneer spectrum harmonised at the EU level has been assigned. However, the country is well below the EU average in the take-up of fast broadband, while almost one in two Cypriots lack basic digital skills. Despite growing demand in the labour market, the supply of ICT specialists is still below the EU average.

In Connectivity, Cyprus ranks 24th among 27 EU countries. It performs well in fast broadband (NGA) coverage (100%, ranked first, exceeding the EU average of 87%). Cyprus also ranks above the EU average in the overall fixed broadband take-up (92% against 77%). On the other hand, it still lags in the categories: at least 100 Mbps fixed broadband take-up, Very High-Capacity Network coverage and the broadband price index, where it ranks among the lowest in the EU. Concerning VHCN coverage, Cyprus showed a remarkable increase in 2020, from 10% to 26%. However, its VHCN coverage remains close to the bottom and well below the EU average (59%), and the take-up of at least 100 Mbps continues to stall at a very low level (3%).

Furthermore, Cyprus remains close to the bottom of the price ranking, being among the three most expensive countries in almost all baskets above 100 Mbps.

Commercial use of 5G started in January 2021 (not yet reflected in the DESI figures). Cyprus is making progress in deploying VHCN, and there is an increasing interest from the main operators to deploy fibre.

According to Cyprus's national regulatory authority (OCECPR), it is estimated that in total, 190,000 households and businesses will be connected to the fibre to the home (FTTH) network of the incumbent operator (CYTA) until 2023, and it will cover approximately 300,000 households and businesses. Epic has already deployed an FTTH network covering a very small area in Nicosia. It plans to expand its FTTH network further within the urban boundaries of all the cities. Cablenet is also undertaking new deployments of fibre networks, while Primetel announced its intention to deploy fibre infrastructure too.

Cyprus has already included a series of investments and reforms in the Recovery and Resilience Facility (RRF). It is also planning to submit proposals for CEF2 digital infrastructure funding in the

following programme period. An essential part of the new broadband plan is to expand the VHCN by using EU funding and focusing on digitally excluded rural and suburban areas.

At the same time, the socio-economic drivers, such as schools, hospitals, research and business centres, universities, ports, airports, stadiums, and other underserved areas with limited speed internet access located throughout the country, will be connected to symmetric gigabit speeds. Another major project is the deployment of submarine fibre cables connecting Cyprus to Greece and other non-EU countries. This project is expected to boost the capacity and resilience of the backhaul infrastructure in Cyprus and lead to reduced prices for high-speed broadband services, which will benefit end users through fixed and mobile networks.

### **3.1.2. Human capital dimension – with a focus on advanced skills and development.**

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The human capital dimension of the DESI has two sub-dimensions covering “**internet user skills**” and “**advanced skills and development**”. According to the latest data, Finland is leading in Human capital, followed by Sweden, the Netherlands and Denmark. Cyprus is among the lowest countries, with Italy, Romania, and Bulgaria ranking the lowest. In comparison to last year, the most significant increases in Human capital were observed in Finland (+2.6 percentage points), Estonia (+1.7 percentage points) and Greece (+1.6 percentage points).

Cyprus ranks 23rd in the EU on Human capital, below the EU average. According to data released by Eurostat, the EU's statistical service, one in two Cypriots had at least basic overall digital skills in 2021, just a little under the average in all European Union member states.

The basic digital skills of Cypriots remain below the EU average of 56%, with only 45% of people between 16 and 74 years having at least basic digital skills compared with 54 per cent of people in the European Union. 25% of the population have more than basic digital skills, and 46% have basic software skills, against EU averages of 31% and 58%, respectively. Although there has been some progress compared to 2019, the share of ICT specialists in the workforce is lower than the EU average (3.1% compared to 4.3%).

Cyprus almost reaches the EU average of 19% with 18% of total ICT specialists. However, the share of female ICT specialists in Cyprus has decreased since 2019. Furthermore, ICT graduates account for 2.9% of total graduates compared to the EU average of 3.9%.

Digital skills indicators are some of the key performance indicators in the context of the EU's policies on the digital transition. The EU goal in the Digital Compass is for 80 per cent of EU citizens aged 16-74 years old to have at least basic digital skills by 2030.

Eurostat defines digital skills as falling under five different categories: information and data literacy skills, communication and collaboration skills, digital content creation skills, safety skills and problem-solving skills.

### **3.1.3. Human capital dimension – with a focus on advanced skills and development.**

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#### **Cyprus Start-up Visa 2017-2021.**

The Start-up visa scheme operated on a pilot basis until February 2019, and then the programme was extended for an additional two years. In this timeframe, a maximum of 300 visas were issued. The project aimed at attracting talented entrepreneurs from the European Economic Area and outside the European Union. To this end, several typologies of facilitations were included to help them start a new business. The objective was to foster an ecosystem for creating new jobs through innovation and research. This programme was part of the Policy Statement on Strengthening the Entrepreneurial Ecosystem, which is trying to revitalise the ICT sector through internal development and attracting ICT giants.

#### **Funding Scheme for the Digital Transformation of Companies.**

This scheme aims to increase the integration of digital technology into Small and Medium-sized Enterprises. It concerns new and existing small and medium-sized enterprises from all economic sectors, excluding fisheries, aquaculture and activities related to the primary production or processing or marketing of agricultural products. The financial support consists of funding defined eligible costs for the implementation and exploitation of digital upgrading to existing or new small and medium-sized enterprises. The main objectives of the Scheme are to enhance the digital identity of businesses, increase the amount of small and medium-sized enterprises that use information and communication technologies, including the e-commerce sector and promote digital entrepreneurship.

**National Coalition for Digital Jobs Cyprus** launched a National Coalition for Digital Skills and Jobs in support of the European Commission's call for action within the Grand Coalition. The Coalition addresses the shortage in digital skills and the future anticipated mismatching of unfilled ICT-related vacancies across Europe. The Digital Champion undertook the initiative for Cyprus with the cooperation of the Department of Electronic Communications. The National Coalition is a partnership with public institutions, professional communities, private companies, and non-profit organisations.

### **3.1.4. What are the measures on e-Leadership within the national policy strategy?**

---

E-Leadership skills have so far not been an issue in the policy or stakeholder debate, except for efforts to boost Digital Entrepreneurship, one of the main pillars of six strategic objectives of the Digital Strategy for Cyprus adopted in 2009. The revised national strategy for the information society, the Digital Strategy for Cyprus, was adopted in February 2012. Among its six main objectives, three are of relevance for the present study:

- Objective 3: Inclusion of all (including vulnerable groups) into digital Cyprus.
- Objective 4: Education and Learning.
- Objective 5: Digital Entrepreneurship.

Regarding e-leadership training and education within the context of support programmes targeting SMEs and entrepreneurs, the main actors on this level are the Ministry of Communications and Works and the Ministry of Finance / Department of Information Technology Services. The Ministry of Commerce, Industry and Tourism (MCIT) and The Bank of Cyprus mainly focus on supporting general entrepreneurship domains. Existing support schemes concentrate on entrepreneurship and

SMEs include the following: Policy & Stakeholder Activity Summary Assessment e-Leadership education and training: Cyprus has a strong governmental role in supporting companies, but e-leadership has not yet entered the policy agenda. However, the e-Volve initiative of the Cyprus Productivity Centre has provided training to SMEs in e-business skills since 2009.

### **3.1.5. Strategies & programmes promoting digital skills/jobs at national & regional level.**

#### **Digital Strategy for Cyprus (2012-2020).**

The Digital Strategy for Cyprus (the national information society strategy) was approved by the established Deputy Ministry of Innovation, Research and Digital Policy in 2012. It is a comprehensive plan for 2012-2020 and adopts a holistic approach to developing the information society in Cyprus. Based on the Digital Agenda for Europe, the stated overall vision of the Digital Strategy is: "information and communication technologies to support the development and the competitiveness of the economy, and citizen participation in the social, cultural and political domains".

It is based on the following strategic targets:

1. Broaden coverage (infrastructure rollout), expand broadband, and establish a regulatory framework of networks.
2. Modernisation of public administration and provision of more applications and services to citizens and enterprises, namely, eGovernment and eHealth services, including everyone (including vulnerable groups) into digital Cyprus.
3. Increase penetration and participation of all citizens and businesses in the digital society.
4. Education and Learning - improvement of e-Skills and digital literacy, promotion of digital entrepreneurship.
5. ICT for the environment - promotion of green ICT.

In 2015, the Cypriot government published the guiding methodology for implementing the Digital Strategy of Cyprus.

The renewed National Digital Strategy 2020-2025 sets forth the aspirational vision for Cyprus to become a fit-for-the-future society and knowledge-based economy enabled by digital technologies.

Realising this vision relies on achieving four strategic objectives that call for technology that works for people; a vibrant, sustainable, and resilient digital economy; an open, democratic, and inclusive digital society; and a green, digital transition for Cyprus. Crucially, it also relies on embracing a principles-based approach to guide the government's thinking in the digital era - ensuring our digital transition is user-centred, digital by default, secure by design and innovative by principle.

Initiatives under this portfolio are aligned with Cyprus' Vision 2035, the new long-term economic strategy for the country, and also the country's Recovery and Resilience Action Plan. The Cypriot strategy aims to achieve the digital transformation of the public sector (e-government), promote the digital transformation of the private sector, facilitate high-speed network connectivity, promote an accessible and inclusive society that has the skills to embrace the national digital transformation and promote innovation in line with the country's level of digital maturity.

In May 2019, Cyprus adopted its new 'Cyprus Industrial Strategy Policy'. In January 2020, the government approved the national Artificial Intelligence (AI) strategy, while a cybersecurity strategy has been in place since 2012. The Digital Security Authority has proposed a new, revised cybersecurity strategy, which will be approved by the Ministry of Communication and the Council of Ministers (CoM) by the end of 2021. These strategies and the successful implementation of the digital transition actions set out in the Recovery and Resilience Plan (RRP) would provide an excellent basis to accelerate the digitalisation of businesses.

### **National Research and Innovation Strategy.**

The adoption of a national R&I strategy aims at Cyprus's technological, social and economic development based on research and innovative entrepreneurship. This addresses the need to shift the existing model of national economic growth to a sustainable, innovation-driven model and requires a significant increase in the national expenditure for research and development (R&D), an indicator relevant to the maturity and effectiveness of national R&I ecosystems. In January 2019, the first National Chief Scientist for R&I was appointed by the President of the Republic of Cyprus, with the political mission to lead and coordinate all efforts for Cyprus to become a dynamic and competitive economy driven by research, scientific excellence, innovation, technological development and entrepreneurship, and a regional hub in these fundamental areas.

## 3.2 Germany.

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### 3.2.1 Current status of digitalisation and the digital economy in Germany.

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#### Digitalisation

Germany's use of digital administrative services remains at a medium level: 52% of online users used such services within the last twelve months.

The satisfaction of citizens in Germany with the currently available online services of their city or municipality has dropped to 47% this year (year of survey = 2021).

However, many citizens are open to well-functioning digital interaction with public authorities and new technologies such as the identity card on the smartphone or the electronic patient file.

To summarise, even though digitalisation gained momentum during the pandemic, the Covid19-pandemic forced the state to improvise and introduce new digital solutions practically overnight; the digitalisation process in Germany is taking its time. Germany is way behind other European countries of similar economic power. The reasons are plentiful, such as problems with the infrastructure, slow implementation of e-governance and the fear of new technologies among the German public. While it is essential to highlight the deficits, it is worth stating that the critical mass needed to accelerate change has been exceeded, and the current government set digitalisation as one of the main challenges the country needs to tackle.

#### Digital Economy

Germany ranks 16th in the EU in integrating digital technology into business activities. Germany's performance for most indicators in this dimension is close to the EU average, including SMEs with at least a basic level of digital intensity and the uptake of advanced technologies by enterprises such as cloud, big data, and artificial intelligence. Still, there are areas where German businesses score considerably below the EU average are e-invoices (18% compared to the EU average of 32%) and ICT for environmental sustainability (57% compared to 66%), and nationwide, only 10.9% of the job advertisements offer the option of home office.

Companies implemented the following digitalisation projects by 2020:

- Digitalisation of contact with customers and suppliers: 58%.
- Renewal of IT structures & new applications: 54%.
- Development of know-how: 40%.
- Introduction of new digital marketing/sales concepts: 31%.
- Linking IT between functional areas: 27%.

Germany has introduced several strategies, initiatives, and activities to support the digital transformation of companies and the deployment and uptake of advanced technologies. Several measures are specifically tailored to SMEs. The current focus is mainly on the continuation or further development of existing measures. In the coalition agreement, the newly elected government pledged to create a friendlier environment for (digital) start-ups.

Almost every second employee in Germany (45%) currently has access to training and development measures designed to prepare them for digitalisation. Companies in western Germany offer such training measures significantly more frequently than companies in eastern Germany.

In principle, most companies are now taking a strategic approach to digitalisation. But 13% still do not have a digital strategy. A year ago, 16% and in 2019, even 26% of companies were strategy-free regarding digitalisation. Around one in three companies (34%) currently has a central digital strategy, while 52% have strategies for digitalisation in individual company divisions.

Almost one in five companies (18%) states they want to fill or create a CDO position. Such a position already exists in 19% of companies. This is the result of a survey of 604 companies with 20 or more employees commissioned by the digital association Bitkom.

### **3.2.2 Human capital dimension – with a focus on advanced skills and development.**

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On Human capital, Germany ranks 16th out of 27 EU countries, below the EU average. Basic digital and digital content creation skills levels are below the EU average. ICT specialists account for 4.9% of the workforce (compared to the EU average of 4.5%), and 4.9% of all graduates are ICT graduates (compared with the EU average of 3.9%). At 19%, the proportion of female ICT specialists is as high as the EU average. Among German enterprises, 24% offered specialised ICT training to their employees in 2020.

In June 2021, the first implementation report on the German national skills strategy was published. The report detailed progress in the 10 action fields identified in the strategy (adopted in 2019). The new German government has indicated to continue with the strategy. Over three-quarters of the agreed measures and initiatives were implemented or launched by June 2021 and are documented in the implementation report. The digitalisation of education is also one of the six priority areas in the German RRP. There are three measures of particular relevance here: the investment programme for teacher devices, the education platform and educational centres of excellence.

In 2021, projects worth over EUR 2 billion were approved under the Digital Pact for Schools (DigitalPakt Schule) for building digital infrastructure and supporting the digital transformation of schools. The federal government and the states agreed to allocate EUR 5 billion in federal funding to the pact between 2019 and 2024. The aim is to equip all public and vocational schools with modern digital infrastructure. In the exceptional situation caused by the Corona pandemic, the federal government and the federal states have concluded supplementary agreements to the existing funding guidelines. The federal states will receive additional support in the form of an 'immediate equipment programme' for terminal equipment in schools, an agreement to promote the administration of IT in schools, and a programme for loaning equipment to teachers. The federal government is providing EUR 500 million for each of these programmes, while the federal states are contributing at least 10%, thus leading to around EUR 7.5 billion in federal funds for the pact. In addition, the federal states are stepping up their efforts to train teachers in digital teaching and learning.

The Federal Ministry of the Interior and Community supports the 'Germany secure in the network' initiative (Deutschland sicher im Netz e.V.), which launched a programme in March 2022, called DsiN-

Digitalführerschein to raise the level of digital skills and competencies among the general public to help them become more involved in the digitalised society. The programme provides free, interactive online courses to develop digital skills for professional and private contexts. Certificates are issued so that participants have evidence of their digital skills to show employers.

Germany does not have a national Digital Skills and Jobs Coalition. The country participated actively in the 2021 EU Code Week, organising 997 events involving 26 777 participants, of whom 42% were girls or women. Some 15% of the activities involved schools.

Digital skills are the focus of several measures in Germany, including the German RRP, covering areas such as teacher training, upskilling, and reskilling the workforce, CET, increasing the number of ICT specialists and narrowing the gender gap. These measures are already showing results in some of the indicators.

### **3.2.3 Measures to support digitalisation and digital skills in SMEs, NGOs, and Start-ups.**

With the 'SME digital' initiative (Mittelstand-Digital), Germany is continuing to support businesses, especially SMEs, in their digital transformation. This approach consists of three strands: the SME digital centres of excellence network (Mittelstand 4.0 Kompetenzzentren and the new Mittelstand-Digital Zentren), the investment support scheme Digital Now (Digital Jetzt) and the initiative on cybersecurity for SMEs (IT-Sicherheit-in-der-Wirtschaft).

There are 26 SME centres of excellence, each with a regional or industry-specific focus. The centres support SMEs free of charge in identifying and implementing suitable digital solutions. One central role of the centres is to provide SME staff with training on digital technologies. The Centres also identify and develop best practice projects with SMEs to demonstrate possible digital solutions. As a part of the AI strategy of November 2018 (see above), 19 centres of excellence have extended their support to 'AI Trainers' (KI-Trainer).

Digital Now: To make it easier for SMEs to implement digitisation, the new funding programme "Digital Now - Investment Support for SMEs" offers financial grants to stimulate corresponding investments in small and medium-sized enterprises - including craft enterprises and the so-called liberal professions. Grants are available for:

- Investments in digital technologies, as well as
- Investments in the qualification of employees on digital topics.

The digital now programme (Digital Jetzt) has provided 2 800 SMEs with financial support for digital skills and technologies projects. From September 2020 to the end of 2021, it invested around EUR 280 million. Financial support increased in 2021, bringing the total support available until 2024 to about EUR 460 million.

Go digital: The current funding period runs from 2022-2024. The funding pot has a volume of € 72 million. The nationwide Go Digital funding programme of the Federal Ministry of Economics and Climate Protection is designed to support small and medium-sized enterprises in opening up digital markets. The programme promotes a variety of measures with an amount of up to 50%. These

measures are advised, supported in the application process, and implemented by authorised agencies such as Outline.

With its five modules "Digitisation Strategy", "IT Security", "Digitised Business Processes", "Data Competence - go-data", and "Digital Market Development", "go-digital" is explicitly aimed at small and medium-sized enterprises in the commercial sector and the skilled trades. Individually and practically, the programme offers advisory and implementation services to support companies on their way to the digital future.

### **3.2.4 What are the measures on e-leadership within the national policy strategy?**

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The Federal Minister for Digital Affairs and Transport, Volker Wissing, presented the strategy at the cabinet retreat in Meseberg on 31 August 2022:

In a constantly changing digital economy, the organisation and culture of work are also changing. To make the best possible use of the opportunities offered by flexible working models, the platform economy, AI and data-driven innovations for the new world of work, we must design the framework in such a way that working relationships are oriented towards the needs of employees and companies as well as the requirements of good work.

- We are developing a practical, modern legal framework for mobile work that considers the interests of workers and companies for flexibility and enables a fair balance of interests between the concerns of workers and companies.
- We bring good examples of a human-centred, innovative introduction and application of AI in companies, especially SMEs, into the transfer via the New Quality of Work Initiative (INQA).
- We accompany companies, especially SMEs and their employees, as well as (solo) self-employed, in digital transformation with customised analyses and innovative qualification offers through "future centres" that are set up nationwide.

### **3.2.5 Strategies & programmes promoting digital jobs/skills at national or regional level.**

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The current federal government's digital strategy states:

"The digital transformation is a great opportunity that we will shape optimistically, pragmatically and socially acceptable so that both companies and employees have even better prospects. Rapid digitalisation is contributing to persistent and cross-sectoral bottlenecks in IT occupations. Especially in the increasingly location-independent digital industry, German companies are competing internationally for high potentials. A shortage of skilled workers must not become a brake on digital transformation. Securing skilled workers is, first and foremost, a task for companies. The Federal Government's skilled labour strategy provides a supportive framework.

- We are strengthening gender equality in the labour market as a universal principle, also in professions that men have dominated, and facilitating the foundation for greater labour force participation through a good work-life balance.
- We will identify new channels/networks for calls for proposals to reach underrepresented target groups such as women and people with an immigration background.
- Germany must be a country of immigration that is also attractive in international competition, especially for IT professionals. We will improve the framework conditions for immigration so

that foreign professionals and their families enjoy living and working in Germany and stay here."

To promote more women in science, technology, engineering, and maths (STEM) professions and as ICT specialists, in 2008, the Federal Ministry for Education and Research (BMBF) launched the 'National pact for women in STEM'. It has more than 300 members: STEM education initiatives, universities, R&D, engineering associations, employers' federations, job centres and industry. Since 2021, the pact has been embedded into the activities of the federal STEM agency called 'STEM connected' (MINT vernetzt), funded by the BMBF, to boost its impact. In addition, the BMBF provides ongoing support for measures to encourage young women to study ICT sciences, which helps to increase the number of female graduates.

### 3.3 Greece.

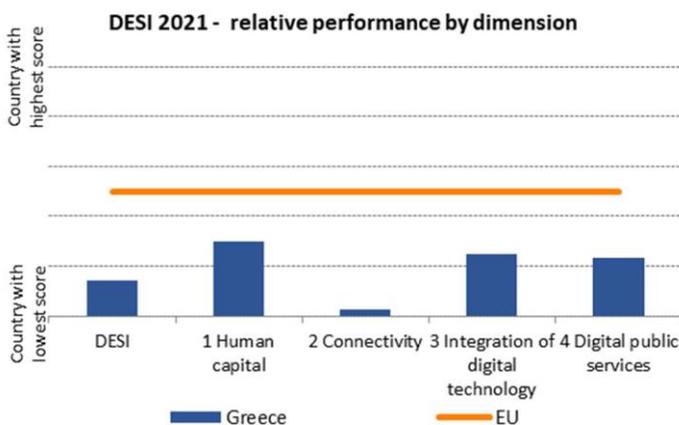
#### 3.3.1 Current status of digitalisation and the digital economy in Greece.

Regarding the status quo of digitalization and digital economy in Greece, unfortunately, Greece has the lowest DESI scores across Europe, along with Romania and Bulgaria. Greece ranks 25th of 27 EU Member States in the 2021 edition of the Digital Economy and Society Index (DESI) (just in the third (3rd) place before the end). The score of Greece is 37.3, while the average score of the EU member states is 50.7.

According to the Digital Economy and Society Index (DESI) 2021 of Greece, published by the European Commission (here), Greece continues to improve its performance in almost all DESI dimensions. In most cases, it still scores below the EU average. Overall, the country has made slight progress in digital skills.

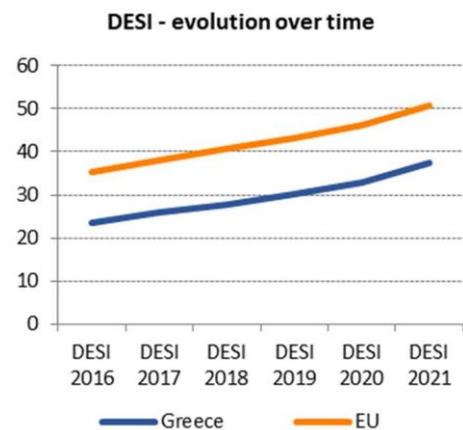
Some aspects of the index regarding Greece are the following.

- Greece improved its connectivity scores and has started deploying very high-capacity networks. However, it remains far below the EU average in very high-capacity network coverage and fixed broadband take-up speeds of at least 100Mbps.
- The deployment of future-proof networks is likely to be accelerated with the expected investments in fibre (such as the Ultra-fast Broadband Project) and the 5G network deployment.
- Greece scores 99% in the 5G readiness indicator, which means that almost the total 5G pioneer spectrum harmonised at the EU level has been assigned.
- Greece is well below the EU average in integrating digital technologies into business activities.
- On the digitalisation of public services, in 2020, Greece scored above the EU average in the number of e-government users, while it far exceeds the EU average in open data readiness, having already implemented relevant legislation and policies.



Source: DESI 2021, Greece.

Figure 3. DESI 2021 – relative performance by dimension



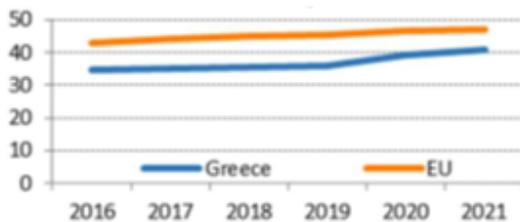
Source: desi 2021, Greece

Figure 4. DESI – evolution over time

On the other hand, the digitalisation of enterprises remains slow. Structural measures to create an environment conducive to digital innovation in the long-run (e.g., Digital Innovation Hubs) are needed, focusing on small and medium-sized enterprises (SME). Generally, there is a considerable effort to accelerate the country's digital transformation, including several legislative reforms and subsidy projects from EU co-funding.

### 3.3.2 Human capital dimension – with a focus on advanced skills and development.

Regarding the human capital dimension, focusing on advanced skills and development, Greece's DESI Human capital score is 41.0, while the EU average score is 47.1.



On Human capital, Greece ranks 21st of 27 EU countries, remaining below the EU average. The percentage of people with at least basic digital skills is low (51%).

Source: DESI 2021, Greece.

Figure 5. Human capital 2016 - 2021

Human capital	Greece			EU
	DESI 2019	DESI 2020	DESI 2021	DESI 2021
<b>At least basic digital skills</b> % Individuals	<b>46%</b> 2017	<b>51%</b> 2019	<b>51%</b> 2019	<b>56%</b> 2019
<b>Above basic digital skills</b> % Individuals	<b>22%</b> 2017	<b>23%</b> 2109	<b>23%</b> 2019	<b>31%</b> 2019
<b>At least basic software skills</b> % Individuals	<b>52%</b> 2017	<b>56%</b> 2019	<b>56%</b> 2019	<b>58%</b> 2019
<b>ICT specialists</b> % Individuals in employment aged 15 - 74	<b>2.3%</b> 2018	<b>2.1%</b> 2019	<b>2.0%</b> 2020	<b>4.3%</b> 2020
<b>Female ICT specialists</b> % ICT specialists	<b>16%</b> 2018	<b>20%</b> 2019	<b>27%</b> 2020	<b>19%</b> 2020
<b>Enterprises providing ICT training</b> % enterprises	<b>14%</b> 2018	<b>15%</b> 2019	<b>12%</b> 2020	<b>20%</b> 2020
<b>ICT graduates</b> % graduates	<b>2.9%</b> 2017	<b>3.1%</b> 2018	<b>3.4%</b> 2019	<b>3.9%</b> 2019

Source: DESI 2021, Greece.

Table 2. Human capital indicators in DESI 2021 GREECE - EU.

- The share of employed ICT specialists (2.1% in 2019) remains low in 2020 (2%) compared to the EU average (4.3%). However, among the country's ICT specialists, the proportion of female ICT specialists is growing extremely fast (from 20% in 2019 to 27% in 2020). It is well above the EU average (19%), making Greece a front-runner in this area.
- Only 12% of enterprises are providing ICT training to their employees in 2020, compared to the EU average of 20%. Greece placed the development of digital skills at the core of its new digital transformation strategy to facilitate the use of public services and ensure the reskilling and upskilling of the workforce.

Several initiatives are in place to support the development of the population's digital skills, such as the Greek National Coalition for Digital Skills and Jobs<sup>3</sup>, under the responsibility of the Ministry of Digital Governance and supported by the Ellada 2.0 strategic plan. In 2020, the Coalition set up four working groups:

- i. education;
- ii. training;
- iii. ICT professionals; and
- iv. general public.

The aim is for public and private entities and members of the Coalition to work together to develop initiatives for basic and advanced digital skills.

In 2020, the Ministry of Digital Governance created the Digital Skills Academy. This dynamic platform assembles all available training courses of national and international educational organisations to improve the digital skills of learners of all levels. It includes around 251 courses on 33 topics given by 35 different institutions and will be regularly updated with new courses. The Ministry is also planning to create a national digital skills framework and certification system, set up a national register of digital skills education providers, and develop a plan to improve the digital skills of all civil servants and local government employees.

On the education system, the COVID-19 pandemic accelerated the process of digitalisation. The Ministry of Education & Religious Affairs introduced a remote education strategy in 2020 for all education levels based on three pillars:

- synchronous education, such as live lessons on online platforms for all levels of education;
- providing asynchronous education, such as educational material on websites and platforms for teachers and students of all educational levels; and
- educational television programmes for elementary school pupils.

A digital education action plan was also adopted, which includes the revision of curricula, the provision of a basic certificate for IT skills for 15-year-old students and the provision of digital education resources for primary and secondary education. A major development was the use of specialised technology support for digital accessibility for children with special needs (e.g., transcribing all primary and secondary school textbooks into braille code). In parallel, through the 'Digital Access' (Psifiaki Merimna) programme, every pupil and student whose family meets specific financial criteria are provided with a voucher for 200.00€ to purchase technological equipment (tablet, laptop, PC).

The eTwinning platform is very popular in Greece. So far, 9.848 schools, 31.199 teachers and 18.512 projects have been registered, and 30 educators from 24 Greek schools won the eTwinning European Prize for 2021.

In 2020, Greece was once again very active in EU Code Week, with 68,000 people participating in 1.179 activities - ranking Greece among the six most active countries. Furthermore, almost 6,000 students and over 1,600 school teams from all over Greece participated in the Panhellenic Robotics Training Competition.

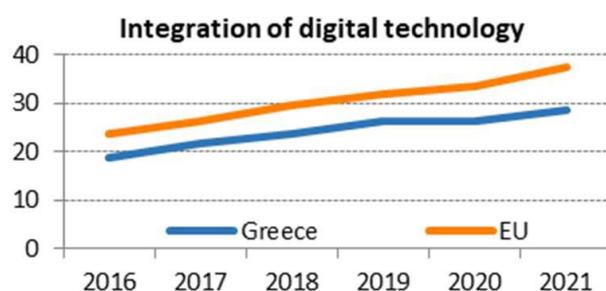
Several initiatives have been launched to address the lack of digital skills in the labour force. The Central Association of the Chamber of Greece, under the guidance of the Education Research Centre of Greece, launched an action to upgrade the digital skills of employees in the private sector, including certification, for 15,000 beneficiaries. Other actions for training in the ICT sector were launched by the Manpower Employment Organization (OAED) under the guidance of the Ministry of Labour and Social Affairs for the unemployed graduates of universities and technical institutes.

Despite the actions already initiated to foster digital skills for all, extra efforts, especially for advanced digital skills, will be needed considering the ambitious target in the Digital Decade. Greece needs to massively stimulate the upskilling and reskilling of the labour force and train future generations of workers. The lack of capacity in specialised education and training programmes in areas such as Artificial Intelligence (AI), quantum technologies, and cybersecurity remains a major challenge.

In collaboration with universities and enterprises, additional action would be welcome to provide education and training and increase the number of digital experts needed in all sectors of the economy.

### 3.3.3 Measures to support digitalisation and digital skills in SMEs, NGOs, and Start-ups.

According to the DESI scores, Greece scores 28,5 in the Integration of digital technology, while the EU average is 37.6. On integrating digital technology into business activities, Greece ranks 22nd in the EU. (As described in the next image for 2016-2021.)



source: DESI 2021, Greece

Greek enterprises are slowly adopting digital technologies. Only 19% of Greek enterprises using social media compared to an EU average of 23%. 38% of enterprises use electronic information sharing (above the EU average of 36%). On the adoption of advanced digital technologies, Greece's enterprises are among the frontrunners for using AI (34%), well above the EU average (25%). On ICT for environmental sustainability, at 65%, Greece is close to the EU average of 66%. The same applies to big data analytics, where at 13%, Greece is close to the EU average of 14%.

Figure 6. Integration of digital technology

## Digitalisation

To support digitalization, the Digital Transformation Bible was created. The Digital Transformation Bible includes strategic measures to make enterprises in Greece more digital. Having identified the obstacles to the digitalization of enterprises, the strategy focuses on the following:

- i. adapting information systems and digital services for the export orientation of enterprises;
- ii. disseminating best practices for strengthening the digital presence of Greek enterprises;
- iii. creating new clusters and ecosystems;
- iv. making better use of data for developing new products, business models and markets;
- v. training employees and entrepreneurs in digital skills.

For example, an action named e-retail (e-lianiko), launched by [EPAnEK](#), will provide grants to SMEs in the retail sector for the development/upgrade and management of an e-shop for the retail sector.

AI is one of the main strategic action areas of the Digital Transformation Bible. The Ministry of Digital Governance is preparing a Greek national AI strategy with the involvement of major stakeholders and experts in Greece and the EU. Its main objective will be to determine the conditions for the development of AI, including skills, a trust framework, data policy, and ethical principles for its safe development and use. It will also define national priorities and areas for maximizing the benefits of AI to meet societal challenges and foster economic growth.

To maximise digitalisation and upgrade the digital skills in SMEs, NGOs or start-ups, a plan has been created. The plan includes significant measures to increase the digitalisation of Greek enterprises, notably investments in the form of grants for the digital transformation of SMEs (budget EUR 375 million).

The reforms and investments included in the plan are expected to help SMEs: take up digital technologies; adopt and develop innovative digital solutions tailored to the specific needs of their industries; expand their digital presence, for instance, through participation in e-commerce platforms; and reduce their operating costs, through more efficient data processing.

The plan also envisages a budget of EUR 330 million in Loan Facility funding for the digitalisation of SMEs and a budget of €770 million for the digitalisation of large enterprises. Finally, the plan also includes a measure called 'Accelerating Smart Manufacturing', which aims to provide financial support for small and medium manufacturing enterprises to enhance their technological infrastructure, upgrade their manufacturing equipment using state-of-the-art smart technologies with low environmental impact and ultimately accelerate the industry's transition to Industry 4.0.

## Digital skills

In Greece, according to the Digital Transformation Bible, there would be:

Development of advanced digital skills in intermediate citizens and of high digital maturity - educational actions for its utilization Strategy for Artificial Intelligence. The initiative includes developing and implementing educational programs addressed to all citizens, entrepreneurs, researchers, and public bodies with medium or high-level digital skills who want to upgrade their skills for the promotion of activities in the context of its national development economy and collective prosperity. The initiative concerns actions, such as education and training of the various user groups for the diffusion of know-how in the research and academic community, in executives

of small and medium enterprises (e.g., professionals in the tourism sector, processing, retail, etc., in which the adoption of TN solutions will have a beneficial impact) and to Public Administration executives. Indicatively mentioned the development of skills in technologies and applications of combination, virtual and augmented reality, as well as the creation and operation of a national digital interactive centre and satellite-connected centres in the territory.

### **3.3.4 What are the measures on e-leadership within the national policy strategy?**

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On 23 June 2021, Greece adopted the 2020-2025 'Digital Transformation Bible', a new holistic digital strategy led by the Greek Ministry of Digital Governance, which describes 455 specific projects (of which 145 are ongoing) for implementing the strategy for a 'Digital Greece'. It includes the following strategic axes for the digital transformation of Greek society and economy:

- i. connectivity;
- ii. digital skills;
- iii. digital state;
- iv. digital business;
- v. digital innovation; and
- vi. integration of digital technology in every sector of the economy.

Greece also accelerated legislative reforms to create the right supporting framework conditions for implementing the new digital strategy. One example is the adoption of the Code of Digital Governance on 22 September 2022, which includes, among other provisions, the transposition of Directive (EU) 2018/1972 on establishing a European Electronic Communications Code (EECC) and which unifies the legislative framework on key elements.

Greece was the first Member State to transpose the EECC in September 2020. Furthermore, the digitalisation of public services is high on the country's political agenda. In 2020, Greece acted swiftly and decisively during the COVID-19 crisis to make public services available online in times of lockdown and quarantine so that the general public and enterprises could continue to benefit from public services remotely. The e-government portal 'Gov.gr' is now widely used by the public.

### **3.3.5 Strategies & programmes promoting digital skills/jobs at national & regional level.**

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The Digital Transformation Bible 2020-2025 is a record/tool of the necessary interventions in the technological infrastructure of the state, the education and training of the population for the acquisition of digital skills as well as in the way Greece utilizes digital technology in all sectors of the economy and public administration. Its main role is to describe the national strategy's vision, philosophy, and goals for the country's digital transformation. In addition, it describes more than 400 projects, classified into short-term and medium-term, horizontal, and sectoral, which implement the strategy for Digital Greece.

## 3.4 The Netherlands.

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### 3.4.1 Current status of digitalisation and the digital economy in the Netherlands.

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**The Netherlands ranks third in the European Union (EU) on the 2022 Digital Economy and Society Index (DESI).** The country, which held the No. 4 spot in the two previous annual rankings, continues to foster innovation as it prioritizes digitalization on a national scale. The Netherlands ranks second for human capital and connectivity and fourth for integrating digital technology and digital public services.

From 2018, the Dutch Digital Strategy (DDS), updated annually, unites all related digital policies under the government. An inclusive digital transition is of utmost importance for Europe and the world.

To date, 960 million euros have been allocated to projects in quantum computing, artificial intelligence (AI), and life sciences and health. Investments of hundreds of millions of euros have been recommended for even more digitally focused projects. These investments will prioritize future growth areas such as innovation, research, and knowledge development.

It's not just the innovation and digitalization that sets the Netherlands at the forefront but how the Dutch put these skills to use in the broader economy. The Netherlands is a place where businesses can accelerate to benefit people and the planet.

### 3.4.2 Human capital dimension – with a focus on advanced skills and development.

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Netherlands scored 3rd in the DESI ranking compared to its previous year. With a total score of 67.4 compared to the mean score of 52.3. The country has been a consistent top performer in the EU and is, despite its already high scores, still able to make progress in some key areas.

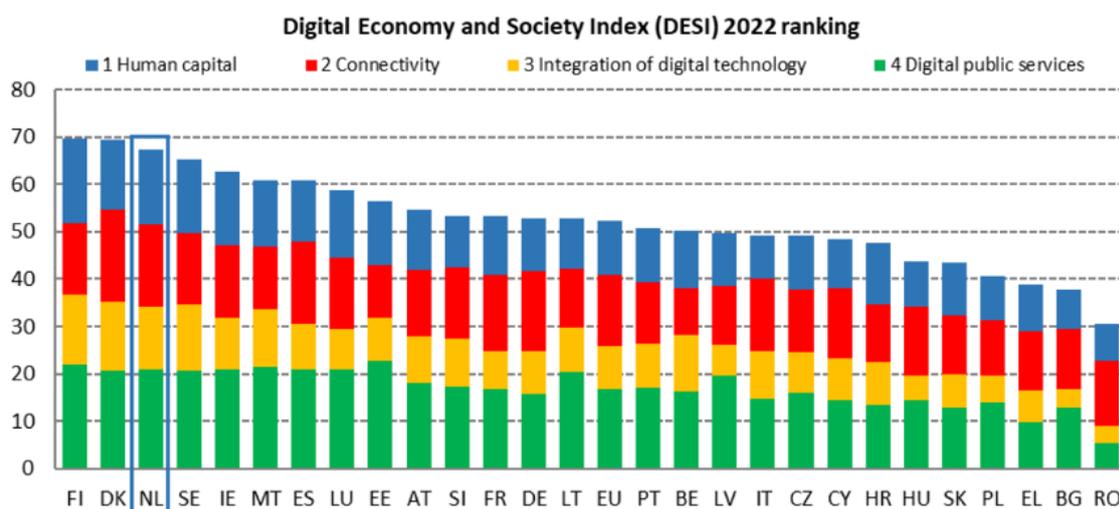
It continues to score very highly for the share of its population with at least basic digital skills, and it is placed at the top of EU countries regarding individuals with above basic digital skills. The Netherlands is one of the top five EU countries for the share of ICT specialists as a percentage of its workforce. However, the Netherlands still requires many more ICT specialists to continue being frontrunners in the digital transition. In particular, despite steady progress, the 3.4% of graduates who studied ICT out of all graduates in the Netherlands remains behind the EU average of 3.9%. In addition, less than a quarter of enterprises in the Netherlands provide ICT training to their employees. While this is slightly above the EU average, more effort is needed to alleviate Dutch enterprises' structural difficulties in finding qualified ICT personnel. Additionally, growth in the share of female ICT specialists has been minimal, and the Netherlands continues to perform below the EU average on this measure. Only 18% of all ICT specialists in the Netherlands are women, compared to an EU average of 19%.

In the future, the government's work on digital inclusion will shift part of its focus to advanced digital skills, information skills and digital awareness. The Dutch Smart Industry programme integrates advanced digital skills objectives to promote and advance the Dutch digital economy. Every Fieldlab within the Smart Industry Programme – bringing together researchers and entrepreneurs to

encourage innovation – also functions as a ‘Skillslab’ for all participants. It further urges all participants to foster a continuous learning culture.

Additional measures to help upskill and re-skill the Dutch labour force are expected in 2022 with the implementation of an individual learning budget for workers called STAP (Stimulerend Arbeidsmarkt Positie). From September to December 2021, companies could apply for a EUR 3 750 subsidy to re-skill new or existing employees with digital skills. The results of this scheme are not yet published, but there are plans to renew the subsidy scheme in 2022.

The Dutch government also created a specific task force for diversity & inclusion in the ICT sector. The taskforce was developed as an initiative of DigitalNL, the Dutch industry organization for the digital sector, and the Dutch Ministry of Economic Affairs and Climate Policy. The taskforce also supports the Dutch government’s ambition to get to full gender parity for ICT specialists by 2030, in keeping with the objective of the European Digital Decade’s targets. To achieve this, the government will rely on sharing best practices between companies while a benchmark will also be developed.



Source: DESI 2021.

Figure 7. Digital Economy and Society Index (DESI) 2022 ranking.

### 3.4.3 Measures to support digitalisation and digital skills in SMEs, NGOs, and Start-ups.

On the integration of digital technologies, the Netherlands ranks fourth in the DESI 2022. Among Dutch small and medium enterprises (SMEs), 3 out of 4 already have a basic level of digital technology integrated into their operations. This is significantly above the EU average of 55%. This pattern of Dutch outperformance of the EU average can be observed for adopting several digital technologies. Specifically, Dutch enterprises perform well above the EU average for the share of enterprises using the cloud (60% vs an EU average of 34%), big data (27% vs an EU average of 14%), and the use of social media (49% vs an EU average of 29%).

However, the Netherlands does not lead much compared to the EU average in several other key indicators. This is the case for the share of SMEs selling online (23% vs an EU average of 18%), the percentage of SMEs’ e-Commerce turnover (15% vs an EU average of 12%), the use of AI (13% vs an EU average of 8%), the percentage of SMEs selling online cross-border (13% vs an EU average of 9%)

and the amount of electronic information sharing (43% vs an EU average of 38%). The Netherlands also performs below the EU average for using e-Invoices as a percentage of enterprises (25% vs an EU average of 32%) and the use of ICT for environmental sustainability (64% vs an EU average of 66%).

Overall, growth rates for most of these measures on the integration of digital technologies are limited. And although the Netherlands continues to perform well compared to other EU countries, more ambition and action are needed to increase its future performance sustainably.

Existing digital technology and innovation partnerships, including the Dutch Artificial Intelligence Coalition, the Dutch Blockchain Coalition, and the Smart Industry Programme, aim to propel the Netherlands to frontrunner status in digital, innovation, and high-tech expertise. The latter brings together 680 different companies and 50 knowledge- and test centres with EUR 140 million in government funding and welcomed its 49th Fieldlab in February. In April 2021, the State Secretary for Economic Affairs and Climate Policy concluded that the new Government coalition would have to develop a new strategy for the Smart Industry programme.

The Netherlands participates in several important projects of common European interest (IPCEIs) and technology Joint Undertakings. The country is preparing to submit a project portfolio for the IPCEI Microelectronics II, for which it has set aside EUR 230 million. The Netherlands is preparing to participate in the IPCEI on Cloud Infrastructure and Services to help roll out new cloud-edge technologies. The official submission is expected for the fourth quarter of 2022. The government is also planning to co-invest approximately EUR 70 million in 2022-2026 in investment projects in this field, including setting up new edge nodes.

Furthermore, the Netherlands participates in the Key Digital Technologies Joint Undertaking (KDT JU) under Horizon Europe. Dutch participants in this Joint Undertaking receive EUR 20 million to work on collaborative R&D&I projects. The Eureka Cluster programme, a thematic funding programme that brings together large companies, SMEs, universities, and research institutes, also receive an annual EUR 20 million contribution from the Dutch government. Another ad-hoc contribution of EUR 5 million on top of the yearly pledge was made in 2021.

In 2021, the Netherlands also increased its support measures for SMEs. A network of 'SME workplaces', bringing together local small businesses and technology students, grew to 20 workplaces, thanks to a specific subsidy scheme. New measures to increase the adoption of digital technologies are planned and are currently being tested as pilot schemes, while the ambition is for this network to reach more than 97 000 SMEs over the next 3 years. The European Digital Innovation Hubs (EDIHs) will provide access to technical expertise and experimentation for enterprises. The selection of the Digital Innovation Hubs that will participate in the network of EDIHs is ongoing. Six Dutch EDIH proposals have a successful evaluation result.

#### **3.4.4 What are the measures on e-leadership within the national policy strategy?**

The Netherlands has not underlined e-leadership within the national policy strategy.

#### **3.4.5 Strategies & programmes promoting digital skills/jobs at national & regional level.**

In 2021, 518 'Code Week' activities were organized in the Netherlands, of which 86% took place in schools. A total of 14 720 participants took part, half female. Overall, Dutch education's digitalization and innovation approach is developed per sector, usually in close cooperation with the Ministry of Education and Economic Affairs. This means that the Dutch government sets a general framework and creates financial incentives with conditions for digital education for other organizations (including Kennisnet, SIVON, SURF, and MBO-Digitaal). The Dutch government accelerated the development of online learning during the COVID-19 pandemic with additional financial support and the delivery of electronic and digital devices to schools and households that needed them. A multi-annual curriculum reform in primary and secondary education is ongoing, which should ultimately result in a more focused education in digital literacy as of 2024/2025. The envisaged Dutch education curriculum will not focus on coding, instead relying on a more holistic overview in which coding is taught alongside other basic ICT skills such as media literacy, information, and computational skills. In October 2021, the Dutch government announced the creation of a National Education Lab for AI to help integrate AI technology into education safely and ethically.

The Human Capital Agenda ICT (HCA-ICT) remains the Netherlands' main initiative for increasing the number of ICT professionals in the country. Initiated in 2015, it was renewed in 2019 with a budget of EUR 500 000. Recent efforts to tackle the shortage of ICT professionals in the Netherlands focus on two main pillars: (1) encouraging students to choose ICT-related studies and (2) promoting regional cooperation between education and business. In April 2021, the HCA-ICT presented a new scaling-up plan committed to educating and re-skill an additional 36 000 ICT students in cooperation with 4 000 companies.

The Dutch National Growth Fund completed its first round of investment screening in the spring of 2021 and allocated EUR 80 million to set up a National Education Lab for AI. This lab will allow stakeholders to work on AI-innovations to promote the safe and responsible use of AI technology within Dutch primary and secondary education. The project brings together schools, entrepreneurs, and students. It also enables participating schools to access well-developed public research infrastructure on AI for the first time in the Netherlands. Interested partners will start developing AI technology to improve the quality of Dutch education and integrate the use of technology in the education curricula while adhering to principles on ethical and responsible usage where the teacher remains the focal point. The initial investment of EUR 80 million will be used.

## 3.5 Portugal.

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### 3.5.1 Current status of digitalisation and the digital economy in Portugal.

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Over the years, Portugal has significantly evolved in digitalisation and economic indexes in various sectors.

According to the Digital Economy and Society Index (DESI) 2022 of Portugal, published by the European Commission, Portugal ranks 15th of 27 EU Member States, having moved up 1 position compared to the previous year. On the other hand, Portugal's results are slightly lower compared to similar countries.

Some aspects of the index regarding Portugal are the following:

- Social incentives: Portugal has taken several measures to equip its population with digital skills, including expanding connectivity and supporting technology adoption by small businesses. However, disparities remain between businesses and individuals when it comes to the adoption of information and communication technologies (ICT). Portugal's score (4.7%) is very close to the EU average (4.5%) - a trend that looks positive for its future share of digital specialists in the workforce in the context of the EU's Digital Decade target for basic digital skills and ICT specialists.
- Portuguese connectivity infrastructures are considered to be of good quality. The country scores well in terms of access to fixed broadband (minimum 100 Mbps) and fixed high-speed Internet coverage. The same is not true regarding the number of mobile data subscriptions per 100 inhabitants and the deployment of 5G technology. Portugal is carrying out strategies to leverage the implementation of ICT, including partnerships between companies and research institutes to foster innovation.
- Regarding the functioning of its public administration and the design of public services, Portugal stands out among EU leaders. The government's creation of the Council for Information and Communication Technologies (CTIC) has enabled the coordination and implementation of the Digital Transition Strategy in the public sphere. Through investments in "digital enablers" (digital identity and interoperability platforms) and political support in favour of reforms, Portugal was able to digitalise its government services, as exemplified by the SIMPLEX administrative simplification programme in operation since 2006. The Portuguese digital strategy focused on three fields: health services, justice, and de-bureaucratisation, ensuring data protection, cybersecurity and public participation. Except for the number of users of eGovernment services and mega data applications, Portugal exceeds or equals the EU averages in digital public services.

The digital dimension accounts for 22.1% of the Portuguese Recovery and Resilience Plan (PRR) overall. Significant digital measures such as: education and training in digital skills, the digital transformation of companies, and the digitization of the State to achieve:

- i. the sustainability of public finances;
- ii. a competitive business environment;
- iii. Efficient Public Administration.

Such measures were chosen as priorities for Portugal in the digital domain. Among the digital measures already implemented is the signing of contracts for the acquisition of computers for students and teachers to improve the connectivity of public schools; digitising educational content; training teachers in basic or advanced digital skills, including the integration of digital technologies in curricula; and provide digital education labs equipped with advanced digital technologies for education, such as 3D printers and educational robots.

In addition, digital innovation centres (DIH) will provide consultancy services to 4,000 companies to improve their production processes through automation or the implementation of disruptive technologies.

The regulation of the digital transformation of Public Administration is already in force through the Strategy and Action Plan for the Digital Transformation of Public Administration 2021-2026.

There is an ongoing tender for the construction of digital infrastructures within the scope of 360° Accessibilities to facilitate the access by people with disabilities in society through tools and digital information services adapted to their needs.

### **3.5.2 Human capital dimension – with a focus on advanced skills and development.**

Portugal ranks 14th out of the 27 Member States in the human capital dimension and is in the EU average. With a score above the EU average, more than half of the Portuguese population has the necessary skills (basic digital skills or above basic level) to thrive in a digitalised world, indicating a higher uptake of digital technologies and online services in Portugal. On the other hand, Portugal still needs to catch up with the best performing Member States. In percentage terms, the number of employed ICT specialists reaches the EU average, although the level of ICT graduates is lower (2.6 % against 3.9 %). In turn, the share of female ICT specialists is 21%, exceeding the EU average of 19%.

Human Capital	Portugal		EU
	Rank	Score	Score
DESI 2022	14	45.9	45.7

Source: DESI 2022.

**Table 3. Human capital Portugal – EU.**

Human capital	Portugal			EU
	DESI 2020	DESI 2021	DESI 2022	DESI 2022
<b>At least basic digital skills</b> % Individuals	NA	NA	55% 2021	54% 2021
<b>Above basic digital skills</b> % Individuals	NA	NA	29% 2021	26% 2021
<b>At least basic software skills</b> % Individuals	NA	NA	61% 2021	66% 2021
<b>ICT specialists</b> % Individuals in employment aged 15 - 74	3.1% 201*	4.0% 2020	4.7% 2021	4.5% 2021
<b>Female ICT specialists</b> % ICT specialists	18% 2019	23% 2020	23% 2020	20% 2020
<b>Enterprises providing ICT training</b> % enterprises	28% 2019	23% 2020	23% 2021	20% 2020
<b>ICT graduates</b> % graduates	2.2% 2018	2.3% 2019	2.6% 2020	3.9% 2020

Source: DESI 2022.

**Table 4. Human capital indicators in DESI 2022 Portugal - EU.**

The share of companies providing ICT training is 23%, surpassing the EU average by 3 percentage points.

### 3.5.3 Measures to support digitalisation and digital skills in SMEs, NGOs and Start-ups.

#### Businesses' Digital Transformation.

With the support of hubs, SMEs will be able to test new digital technologies, access advanced digital skills, get specialized training, advice and access to the funding needed for their digital transition, promote collaboration with other SMEs, large enterprises and entities from the research and innovation ecosystem.

#### Digital Volunteers Programme: mentoring SMEs and NGOs in their digitalisation.

Launched in 2020, 50 leading European companies presented a digital mentoring program to SMEs, NGOs and startups to deliver training, advisory services, or develop joint digital projects.

The Digital Volunteers Programme aims to create a wide network of European companies ready to support through their in-house experts the digitalisation of SMEs. This way, a globally enhanced digital business environment will be promoted to everyone. Also, the Programme play a key role in achieving the targets outlined in the Digital Decade: equipping at least 80% of the EU citizens with basic digital skills and reaching 20 million employed ICT specialists by 2030.

### **ComércioDigital.pt.**

In 2018 a protocol was signed between ACEPI - Associação da Economia Digital, CCP - Confederação do Comércio e Serviços de Portugal and .PT, under the aegis of the Ministry of Economy to develop the Project ComércioDigital.pt - Qualify the Commerce and Services for the Digital Economy that aims to modernize and train more than 50,000 SMEs, in the adoption of an effective and consequent presence on the Internet and support in the use and acquisition of digital marketing tools, for sustainable and globalized growth of their businesses.

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#### **3.5.4 What are the measures on e-leadership within the national policy strategy?**

Currently, there are no measures on e-leadership within the national policy strategy.

#### **3.5.5 Strategies & programmes promoting digital skills/jobs at national & regional level.**

In May 2021, Portugal aligned its National Digital Skills Initiative INCoDe.2030 with the Digital Transition Action Plan 2025-2030, intending to establish measures targeting specific groups and the general population. The Coalition brings together 37 entities, from various government actors and public institutions to various public and private entities, associations, companies, non-governmental organisations (NGOs), university centres, and industry confederations. Several programmes will be implemented to promote jobs and digital skills at a national level, namely:

#### **Digital School Programme.**

It aims to promote digital skills in schools, with an estimated budget of EUR 559 million (including connectivity and Internet access);

#### **Digital Academy Portugal Platform.**

Tool for self-assessment of digital skills, with individual training plans and access to training, to train 800,000 workers by 2025.

**Digital Qualification of Teachers.**

An initiative that aims at implementing measures to increase the digital competencies of all teachers and students.

**Employment + Digital.**

Programme for improving skills and requalification that aims to train 200,000 workers until 2025 through partnerships between the Institute for Employment and Professional Training, the Portugal Digital Mission Structure, and the employers' confederations.

**Young + Digital.**

A programme that aims to train 15.000 unemployed young people by 2023, with more than 8 000 participants since it began in the last quarter of 2020.

**UPSKILL.**

A programme that aims to retrain 3.000 unemployed people, converting them into IT specialists by 2023.

**Impulso Adults Programme.**

It was launched under the Portuguese RRP, to upgrade the skills of working-age adults. It will be implemented in articulation with the "Impulso young STEAM Programme" through an open call for proposals.

**Technological Academies.**

A programme that brings together technological organisations and universities to provide students with advanced skills in emerging technologies. More than 15,000 students have passed through the programme.

**I AM Digital.**

A programme that addresses the digital inclusion of the population and aims to reach one million digitally excluded people by 2023.

**MUDA (Movement for Active Digital Use).**

An initiative of 40 organisations from different sectors committed to increasing the number of Portuguese with digital skills, thus contributing to the goal of 80 % of people aged between 16 and 74 having at least basic digital skills.

**INCoDe.2030 Roadmap - Digital Skills.**

A national initiative that promotes digital skills among the general public. Provides studies, measures, and platforms to boost digital inclusion and literacy, training, qualification, and gender convergence programmes.

**Actions with a Seal.**

An initiative of the INCoDe.2030 Programme that distinguishes individuals, organisations and public and private entities that contribute to improving digital skills in Portugal. Initiatives that promote digital inclusion and literacy can apply, as well as educational measures for young people and the qualification of the active population, including the specialization of graduates to occupy advanced digital jobs and research projects.

**Engineers for a day.**

The Programme is part of the National Strategy for Equality and Non-Discrimination 2018-2030. It promotes the choice of engineering and technology among female students in primary and secondary education, with 10 411 participants since 2017.

**Promova - Gender Equality Opportunities in Senior Management.**

A project that aims to develop female talent and foster their promotion to senior management positions in companies.

**Agreement on Vocational Training and Qualification.**

Established in 2021, it aims to ensure that by 2023 all unemployed people receive digital training under the Digital Guarantee Strategy. The Digital Skills Certificate Programme for the acquisition and certification of skills in technologies and digital media improves the skills of the Portuguese.

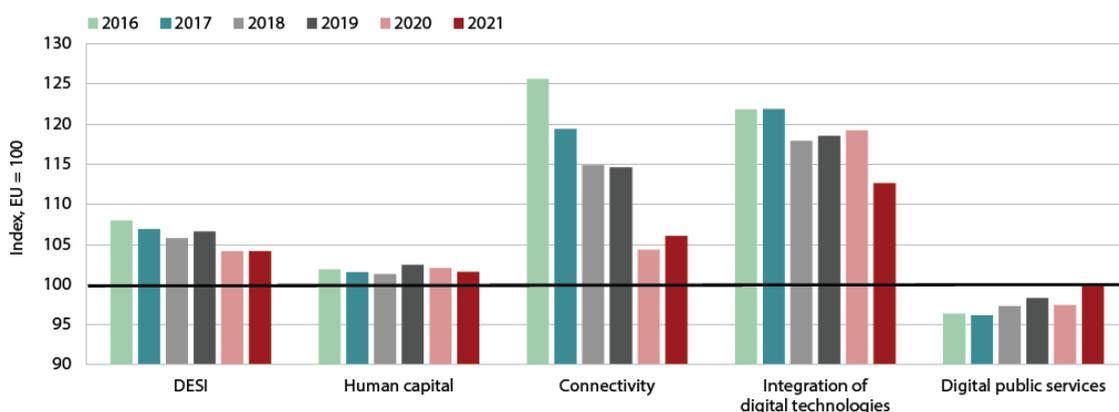
### 3.6 Slovenia.

#### 3.6.1 Current status of digitalisation and the digital economy in the Netherlands.

Slovenia ranks above the EU average in digitalisation of the economy and society, showing some progress in the past year but slowly losing its advantage over the EU average in the long term. According to the revised methodology, Slovenia has ranked above the EU average in the Digital Economy and Society Index (DESI) since 2016. In 2021, it moved up one place (to 13th), but it has been at a similar level, i.e., between 13th and 14th among EU Member States, since 2016. On the other hand, its advantage over the EU average decreased from 8 to 4 index points between 2016 and 2021, with no change in the last year. The IMD's World Digital Competitiveness Ranking, according to which Slovenia has moved from 34th to 31st place between 2017 and 2020, while in 2021, it fell to 35th place among the 64 countries analysed worldwide, also indicates that the country is merely maintaining its relative position in the field of digitalisation (IMD, 2021).

Slovenia is becoming increasingly open to digitalisation, with positive trends in digital public services, while losing comparative advantages in connectivity and integration of digital technologies. The Eurobarometer data indicates that people's attitude towards digitalisation has improved significantly in recent years: while in 2017, Slovenia still had the lowest share of citizens among EU Member States who positively evaluated the impact of digital technologies on society (but not on the economy), in 2021, Slovenia has the sixth highest share of respondents who positively evaluated the impact of digital transformation on the economy and society (Eurobarometer, 2021). While the analysis of the individual components of the DESI shows (see Figure 37) that Slovenia has made progress in digital public services, it maintains its relative position slightly above the EU average in human resources. On the other hand, it is losing competitiveness in connectivity and digital technology integration, where it still has comparative advantages, but they are much less pronounced than in 2016.

The new European Digital Economy AND Society Index DESI, puts Slovenia ahead of the EU average but with a gradually decreasing advantage over the EU average.



Source: EC (2022); Calculations by IMAD.

Figure 8. DESI indicators 2016 - 2021.

Among digital public services, there has been a marked improvement in the use of digital e-government services, while digital services for business remain uncompetitive. With significant progress in 2021, Slovenia has, for the first time, caught up with the EU average in digital public services, ranking 16th among EU Member States (it achieved the same ranking in 2019). The main reason for this notable progress lies in the significant increase in the share of people who have used the internet to interact with public authorities. On the other hand, digital public services for businesses remain as problematic as ever, with Slovenia lagging well behind other EU Member States, ranking 22nd. In terms of other indicators, e.g., digital public services for citizens or pre-completed forms, it is around the EU average – the same goes for open data (15th place), which deserves more attention in the future due to its strong multiplier effect on other areas.

While Slovenia has made slight progress in connectivity in the last year, it has noticeably reduced its comparative advantage in the long term. Slovenia is comparatively lagging behind in fixed broadband coverage, which is particularly disadvantageous in ensuring quality digital accessibility for all, especially in rural areas.

Slovenian companies, especially large ones, were among the more digitally intensive in 2021. According to Eurostat's Digital Intensity Index (SURS, 2020), which measures the state of informatisation and digitalisation, 25% of companies in Slovenia had a high or very high digital index in 2021. This puts the Slovenian business sector in a relatively strong position, ranking tenth in the EU, especially for large enterprises, 77% of which are digitally advanced, which is the fourth highest share in the EU.<sup>115</sup> Among medium and small enterprises, 40% and 20%, respectively, are digitally advanced, enough to rank 12th in the EU. In terms of the share of digitally advanced companies, large enterprises lag behind innovation leaders by 7 p.p., small enterprises by 16 p.p. and medium-sized enterprises by the largest margin (22 p.p.), confirming that these companies require additional economic policy attention (IMAD 2021). The share of digitally advanced enterprises is 13 p.p. higher in the West Slovenija cohesion region, at 31%, than in the East Slovenija cohesion region, representing a significant difference. This is particularly accentuated among medium-sized companies, with 51% of these companies being digitally advanced in West Slovenija and only 30% in East Slovenija. Among large companies, the difference can mainly be seen in the segment of companies with a very high digital index, which is 7 p.p. higher in West Slovenija. In this context, the corporate sector is gradually losing its digital comparative advantage, and the gap between large and other enterprises is widening.

The COVID-19 epidemic has particularly accelerated the initial stages of informatisation and digitalisation, while the pace of deploying more complex digital projects, including digital transformation, might have slowed.

The fact that the business sector continues to be slow to respond to the changing nature of innovation is also reflected in the lack of focus on introducing new business models, breakthrough, and disruptive innovation, and adapting business processes and organisations.

Slovenia did not accelerate its ICT investment in 2020; it has remained at around 2% of GDP for the last ten years. With a delay, the situation, and trends in the digital intensity of the economy are in line with the dynamics of investment in ICT, RDI, and other machinery and equipment, which was high to start with but has been declining relative to the EU as a whole.

### **3.6.2 Human Capital dimension – with a focus on advanced skills and development.**

While Slovenia remains slightly above the EU average in terms of human capital in the field of digitalisation, it is at the same time falling further behind innovation leaders. In the area of human capital, Slovenia's relative position remains slightly above the EU average at 13th place: slightly below average for online user skills and slightly above average for more advanced ICT skills. Despite the average performance, the relatively low share of Slovenians with at least basic digital skills stands out at 55 %, while the average for innovation leaders amounts to 70 %; the share is also significantly higher in the Czech Republic and Estonia, amounting to 62 %. In terms of more advanced ICT skills, Slovenia is slightly above the EU average, with a slight negative trend in the share of female ICT professionals employed and a positive trend in enterprises training their employees in ICT. Slovenia is well above the EU average in this area (by 31 index points in 2021), but at the same time, the gap with innovation leaders has widened significantly over the last three years.

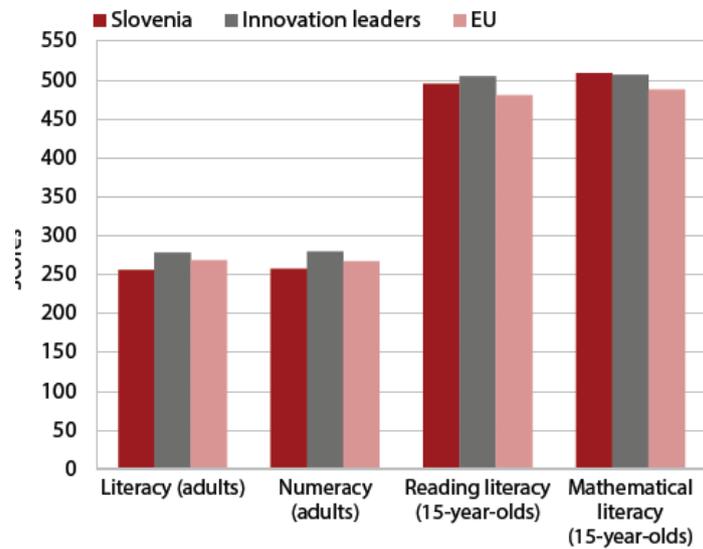
The government is revising its digital education strategy, addressing digital skills as part of its 2027 digital education action plan to stimulate businesses' uptake of digital technology. The problem of insufficient investment in digital technologies and competencies and the number of ICT professionals is particularly acute.

The educational structure of the adult population has been improving for several years (SURs, 2022), and the education of young people is relatively good; however, skills among the low-educated and older people remain low. Due to the long-standing high participation of young people in education and the transition of younger, better-educated people into older age groups, the share of adults with at least an upper secondary education increased in the last decade and was higher even than among the innovation leaders in 2020. However, the share of adults with tertiary education still lagged significantly behind, despite years of increase.<sup>130</sup> Due to much higher participation, the share of women in tertiary education is considerably larger than that of men (Eurostat, 2022).

The quality of education, as measured by the 2018 PISA study, indicated that Slovenian 15-year-olds outperformed their peers from the innovation leader countries in mathematics and science, while their reading literacy was lower by comparison and had even considerably deteriorated compared to 2015 (OECD, 2019b). According to the observations of the Court of Auditors (2021) and the analysis by Breznik et al. (2021) there is room for improvement in working with gifted pupils and students, who are the potential future talent. It is, however, encouraging that between 2010 and 2020, the share of young people (aged 15–29) who believe that schooling provided them with the relevant skills to start a business and motivated them to become entrepreneurs has increased.

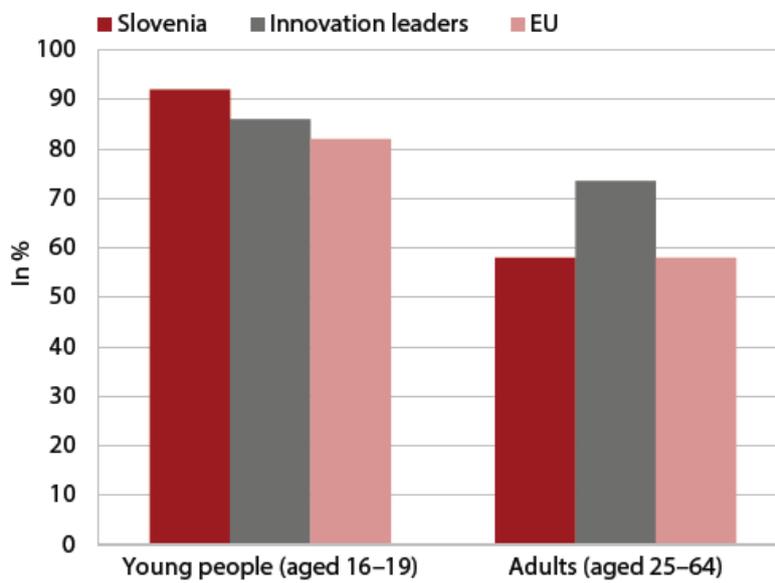
In 2020, children and young people underwent a temporary period of distance learning due to the epidemic, facilitated by a number of activities and adjustments (EC, 2020; MIZŠ, 2020; OECD, 2021); however, there have been some problems with the accessibility of education and negative impacts on knowledge and skills of pupils and students could become apparent in the future, especially the impact on the development of social skills (IMAD, 2021). The relatively good educational structure of the population and good performance of young people is also reflected in Slovenia's high ranking according to the CEDEFOP's 2020 European Skills Index, a composite indicator measuring the performance of a country's skills system, which ranks Slovenia third behind the Czech Republic and Finland (CEDEFOP, 2021). Less favourable is the skills development in adults. Their proficiency in literacy and numeracy is lower than in the innovation leaders and falls among the average of 19 EU Member States that are also OECD countries, and their digital skills were the same as the EU average;

however, the low level of skills of lower-educated and older people stands out in all three areas (Eurostat, 2022).



Source: OECD (2019f), OECD (2016), Eurostat (2022)

Figure 9. Youth Literacy



Source: OECD (2019f), OECD (2016), Eurostat (2022)

Figure 10. Share of young people and adults with basic or above basic digital skills.

Note: Figure 10 shows data for adults for the unweighted average of the 19 EU Member States for which data are available. For 15-year-olds, the unweighted average is calculated as the EU average.

Disparities in knowledge and skills can have a long-term negative impact on the development potential of the economy. While at the start of the COVID-19 epidemic in 2020, fewer companies faced a shortage of suitable job candidates due to economic downturn than in previous years, the number of such companies soon increased. In the second half of 2020, more than a third of all companies and over 60% of large enterprises faced a job candidate shortage (ESS, 2021). In particular, there has been a lack of profiles with upper secondary vocational and professional education and certain tertiary education profiles, especially science and technology graduates. While the share of these graduates is higher than in the innovation leaders (Eurostat, 2022), their 2020 numbers were lower than the 2012 peak due to unfavourable demographic trends (smaller generations) (SURS, 2022). With the increasing needs of the digital economy, the shortage of ICT graduates is also a growing concern. In the context of strengthening the country's development and research potential, the low number of new doctoral graduates is also unfavourable. For many years, the supply of healthcare graduates has been insufficient, which has become an even more pressing issue due to the COVID-19 epidemic. In addition, there is an oversupply of tertiary education graduates in the labour market; however, in most EU Member States, their numbers are even higher (Figure 45, left). As a result, the employment rate of tertiary education graduates in occupations requiring upper secondary education or less has increased substantially since the previous global financial crisis.

The long-lasting decline in the participation of adults in lifelong learning is extremely unfavourable in terms of the digital and green transformation of the economy and other development challenges. Participation has fallen significantly since its peak in 2010 and has been low among older people and low educated for many years. In terms of activity status, there has been a sharp decline in the participation rate of the unemployed, which could contribute to reducing the labour market mismatches and the lifelong learning participation rate of the employed persons (Figure 45, right), which has been lower in the private sector than in the public sector for many years (Eurostat, 2022), despite employees and managers recognising the need for additional skills. Such trends slow the development of human capital and have the potential to reduce labour market mismatches and have a long-term negative impact on the development potential of the economy. In 2020, the participation of employees in lifelong learning declined further because of the shut-down of the economy due to the COVID-19 epidemic and the decline in the educational provision that followed; at the same time, the need for certain skills and knowledge increased due to green and digital transformation, technological developments, etc.

Public and private expenditure on education and training for children, young people and adults is relatively low. Public spending on formal education (expressed as a share of GDP), mainly allocated for the education of children and young people, has mostly fallen since 2012 and was lower than the EU and the innovation leaders' average in 2018 (by 1.77 p.p.). The numbers were lowest for the tertiary level of education (falling behind by 0.75 p.p.) (Eurostat, 2022). Adults often pay for formal education out of their pocket (EC, 2020a). At the same time, public expenditure on adult education is low compared to other EU Member States (OECD, 2019a).

### 3.6.3 Measures to support digitalisation and digital skills in SMEs, NGOs and Start-ups.

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#### Digitalisation

The Digital Slovenia 2021 strategy 2016-2020 helped improve connectivity and wi-fi access in schools, digital literacy, and inclusion, also that of older people.

For Digital Transformation, there is also a tender P4D for SMEs to start their digital transformation. The maximum grant is 100.000,00 EUR. Having identified the obstacles to the digitalization of enterprises, the strategy focuses on:

- adapting information systems and digital services for the export orientation of enterprises;
- making better use of data for developing new products, business models and markets;
- training employees and entrepreneurs in digital skills.

The Ministry of Economic Development and Technology funds vouchers for digital competencies, marketing, strategy and cybersecurity for small and medium-sized enterprises (SMEs). Each year from 2020, SMEs received over 2000 vouchers to help them improve their digital performance.

The Digital Innovation Hub Slovenia is preparing consultancy services for digital education programs in companies and digital roadmaps matching their digital maturity. The project collaborates with the Slovenian Chamber of Commerce and Industry and the Ministry of Economic Development and Technology.

Slovenia has a solid and diverse start-up ecosystem powered by public and private initiatives. Each year, about 100-150 new start-up companies are created in Slovenia, giving the power to grow entrepreneurship in the country yearly. Given the state start-up scale, Slovenia is still low, with a limited impact on economics, despite the growth of the start-up ecosystem.

Recently, the priority has been the development of a start-up ecosystem, including active public sector assistance to improve regulation, making investors better for innovation. This is especially important in financial and technological activities and cryptocurrencies, on which the Slovenian ecosystem is focused. Slovenia has equal opportunities to create a powerful ecosystem just like other small European populations, Estonia and Latvia.

Investor capital and funding:

- a) Public sources of financing start-ups in Slovenia.
- In Slovenia, the most public fund for start-ups goes through Slovenian Enterprise Fund (SPS) and SID Bank - with the support of the Minister of Economic Development and Technology, which are the most known institutions for financial support for start-ups.
  - SPS offers different sources of financing for start-ups:
  - P2: The SPS provides EUR 2.16 million every spring to those that apply for the P2 call and match the criteria. The maximum amount that can be received is € 54,000, awarded to 40 companies annually.
  - SK75 - A loan of € 75,000 to enter the market. The loan amount is received in three equal partial amounts. The annual rate is 4.0 % and is fixed. SI-SK - From € 100,000 to € 600,000 in co-investment money for rapid growth. The amount assigned to the company is an equity investment. As a rule, it is usually taken in 4 equal partial amounts.

Funds can be allocated only to a company with an additional capital contribution to the company, which will submit an additional capital contribution, which will receive it from one or more private investors.

- Voucher schemes: They represent easy access that co-finances individual services. Businesses can rent them throughout the year. The only rule is that they can apply a maximum of 3 times per year. They can choose from vouchers for different content, so they exist, e.g., Quality certificates, intellectual property protection vouchers, a voucher for market research of foreign markets, etc.

**b) Private funding sources.**

Ownership funding is also developing in Slovenia. These forms offer primarily:

- Business Angels: they help start-ups in obtaining investors.
- Venture capital funds: ABC Accelerator, SID Bank, Alpvent, Silicon Gardens, South Central Ventures, Meta Ingenium, Alfi Private Equity Fund, DTK Murka Venture Capital, etc.
- Established companies: corporate entrepreneurial accelerators, Company Builders, corporate VCs, POC Financing.

In a study by the World Entrepreneurial Monitor (GEM) 2020, it was the most criticism for Slovenia at the expense that there is too little seed capital and subsidies that the start-ups would receive in larger amounts. There is also too little venture capital and professional foreign investors.

### **Digital skills**

Guidelines for active employment measures for 2021-2025 were adopted in early 2021, focusing on digital skills, literacy, and lifelong learning, especially for vulnerable groups. The Chamber of Commerce's Digital Academy has been running since 2017.

This includes setting up a competence centre for upskilling civil servants and strengthening their digital skills, developing IT solutions for education, training teachers, modernizing curricula for digital skills development, and digitally equipping learning places.

Slovenia needs to make greater use of its intellectual potential and, as a small economy, build its flexibility on knowledge. The DESI index identifies 4 key indicators: human capital, digital connectivity, digital integration, and digital public services. Slovenia must make progress on all indicators, as they influence each other.

In line with the EU's digital compass targets, we should increase the number of experts by at least 5,000 annually by 2030, which is now around a third of that.

Therefore, it is necessary to reform the education system, increase the number of students and graduates, open the door to international students and ICT professionals, and adjust tax policy.

Small and medium-sized enterprises are the dynamic engine of the economy, so they need to be provided with all available support in the transition to the digital economy.

### **3.6.4 What are the measures on e-leadership within the national policy strategy?**

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The Digital Slovenia 2021 strategy 2016-2020 mentions digital competencies in various fields. To establish an inclusive digital society, activities must be directed towards all those in the most disadvantaged position in ICT knowledge and skills in acquiring and maintaining e-competences. These are primarily groups with lower education, the elderly, or any other group with fewer opportunities, such as unemployed persons, persons with special needs, minorities, immigrants, etc. Above all, measures should be implemented for these groups to overcome the unequal possibilities of using ICT and thus enable them to be included in the digital society.

Strategic goals are:

- Improving e-competencies and e-skills of the population.
- Opening and adapting the education system to new generations and the needs of the digital society.
- More digital content and digital literacy at all levels of the education system.
- Greater e-inclusion and enabling access to e-services for all population groups, especially the less educated, the elderly, the disabled and the inactive.
- Improving web accessibility in accordance with international guidelines.
- Improving e-skills to use ICT for new digital jobs.

But there is a lack in our national measures because they do not specifically address e-competences for the leadership.

Also, digital competencies are addressed in the Slovenian Cohesion Policy Programme for 2021-2027.

### **3.6.5 Strategies & programmes promoting digital skills/jobs at national & regional level.**

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- Smart Specialization Strategy (S4) mentions green and innovative jobs in various places. Also, it is addressed in a separate document, Digital Slovenia 2020, which envisages the establishment of the Slovenian Digital Coalition to unite stakeholders developing the digital economy and establishing digital jobs, as well as other stakeholders of the digitisation of Slovenia. Formal and informal education should be opened to new ideas and adapted to new generations, the need for education for new digital jobs, and the equal participation of all generations in the European digital society. The digitisation of the private sector is, therefore, a condition for digital growth and new digital jobs.
- Slovenian Development Strategy 2030 mentions high-quality jobs. This means that by creating products and services with high value added, we would not just bridge the development gap with the economically more advanced countries. The creation of high value added will be supported by innovations, basic and applied research, the promotion of creativity and the exploitation of digital potentials and every opportunity afforded by the fourth industrial revolution. This goal will also be achieved by adapting jobs and work organisation to demographic changes, technological developments, and climate changes, where digitalisation is also one of the key areas.

- Vision of Slovenia 2050 mentions that digital excellence and the circular economy model create work opportunities, which drive economic development.
- Digital Slovenia 2030 – is in preparation, digital jobs will be a crucial part of the Strategy.
- Smart Specialization Strategy S5 – to be confirmed.
- Slovenian Cohesion Programme for 2021-2027 will fund projects where the digital competencies and skills of the employees will be gained. Many priorities in the document include digital skills, as well as in the private and public sectors.

## 4. Good practices.

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In this chapter, we want to share some inspiring examples of good practices for tech-based and non-tech-based organisations. But what are tech and non-tech-based organisations when “Even a Salad Chain Wants to Call Itself a Tech Company”. The distinction is often not easy to make because almost every company uses innovative technologies or will have to use them in the future, as described above. There is a US DIY chain that uses augmented reality, visual and voice search, way-finding maps, and pick-up lockers. Fast Food chains are using artificial intelligence for customized menu displays which show different menu options based on time of day, weather, current restaurant traffic and trending menu items. In sports stadiums or concert halls, guests search for the best seats on an online seating plan, and supermarkets use scan-and-go features.

So, it seems that many traditional companies are turning to tech businesses, thanks to the pervasiveness of digital tools. No organisation, company or service can exist without the proper technical support from those working in IT job profiles or with high digital skills. The line is very blurry, but using technology, being tech-related does not mean being tech-based.

For distinguishing between tech-based and non-tech-based organisations, the E(U) - Leaders project refers to the focus.

A tech-based company is a “*business that provides a digital technical service / product / platform / hardware or heavily relies on it as its primary revenue source.*” (Catherine Heath, 2017). In focus, there can be:

- the product, independent if hardware or software, that is created or sold or
- a technology created and used as part of a product.

A non-tech-based company does not need technology for the core business or field of activity. It can be the café around the corner, the bookstore in the neighbourhood, and a large production facility for cars with a very high degree of automation. The E(U)-Leaders project also includes NGOs in this category. As stated, all these organisations use digital technology and might even depend on it, but their core idea of what they create, produce, sell or offer to clients is different.

## 4.1 Cyprus' Cases.

### 4.1.1 Case 1 – Cyprus.

Case 1 – Cyprus   PLAYTECH BGT SPORTS LTD		
<b>Name / Title of the good practice</b>	People's well-being and development	
<b>Owner of the good practice</b>	Name: PLAYTECH BGT SPORTS LTD Location: CYPRUS <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based	
<b>What are examples of good digital leadership in this company?</b>	<ul style="list-style-type: none"> <li>Technology is at the centre of business change.</li> </ul>	<ul style="list-style-type: none"> <li>Support employees with the latest tools (Zoom, Teams, Cloud, Server, Jira, Confluence)</li> <li>There is continuous communication from HR via emails and group calls to employees and managers.</li> </ul>
	<ul style="list-style-type: none"> <li>Increased focus on employees' wellbeing.</li> </ul>	<ul style="list-style-type: none"> <li>Academy intranet (company internal tool) with workshops offered by the company during lunch breaks. These workshops are related to workouts, tips for correct body posture while working from home, healthy recipes, and information security tips)</li> </ul>
	<ul style="list-style-type: none"> <li>Constant communication with teams and new employees.</li> </ul>	<ul style="list-style-type: none"> <li>Virtual coffee breaks one-to-one to get people to socialise and get to know each other.</li> <li>Onboarding tool: HR uses <b>emborder online tool</b> for all newcomers. They assign a buddy to each newcomer, and they can contact remotely via this tool for support, especially in the first days of the newcomers.</li> </ul>
	<ul style="list-style-type: none"> <li>Training and development.</li> </ul>	<ul style="list-style-type: none"> <li>Support employees with learning and development programmes to enhance their personal and professional development. Over 4,000 employees participated in courses in H1 2021. They covered various topics, including workplace well-being, leadership and management, mental health, information security, diversity, and inclusion.</li> </ul> <p>Examples:</p> <ol style="list-style-type: none"> <li>Online yoga and pilates sessions. A coach is connected remotely via Zoom and delivers various sessions, especially during a lockdown.</li> <li>Virtual Psychology workshops, especially during the lockdown period, to encourage employees' positive thinking.</li> <li>Online workshop for gender equality (open discussion with all employees).</li> </ol>

Case 1 – Cyprus | PLAYTECH BGT SPORTS LTD

	<ul style="list-style-type: none"> <li>Flexibility and adaptability.</li> </ul>	<ul style="list-style-type: none"> <li>They have established a hybrid model work policy, allowing employees to work a minimum of 2 times per week from the office and 3 from home in a pilot phase, giving them the flexibility to choose in collaboration with their manager.</li> </ul>
	<ul style="list-style-type: none"> <li>Motivational actions are regularly taken by HR.</li> </ul>	<ul style="list-style-type: none"> <li>Rewarding employees' performance and productivity. (Christmas and Easter gifts to employees' homes, gifts to people restricted to stay at home due to COVID, birthday gifts, e-vouchers for food and drinks).</li> </ul>
	<ul style="list-style-type: none"> <li>Work culture and atmosphere.</li> </ul>	<ul style="list-style-type: none"> <li>Virtual Team building activities, quiz games, bingo games and challenge workouts.</li> <li>Virtual coffee breaks one-on-one to get people to socialise and get to know each other.</li> </ul>
<p><b>Target group of the good practice</b></p>	<p>All employees.</p>	
<p><b>What are the success factors for implementing digital leadership?</b></p>	<p>Employees feel the company is like a family. They have created a cosy and relaxed virtual environment like the physical environment in their offices.</p>	
<p><b>What are the challenges in implementing digital leadership?</b></p>	<p>The company is expanding, and it isn't easy to maintain all these activities with time. People do not meet each other so often face to face.</p> <p>Due to remote working, which is now established with the hybrid model, the company needs to be very well organized, proactive and think of new ideas to keep all people connected.</p>	
<p><b>Further reading &amp; contact</b></p>	<p><a href="https://www.playtech.com/playtech-one">https://www.playtech.com/playtech-one</a></p>	

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#### 4.1.2 Case 2 – Cyprus.

Case 2 – Cyprus   Ernst &Young													
<b>Owner of the good practice</b>	<p>Name: Ernst &amp;Young   Audit   Tax   Strategic &amp; Transactional   Advisory Services</p> <p>Location: Nicosia, Cyprus</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>												
<b>What are examples of good digital leadership in this company?</b>	<table border="1"> <tbody> <tr> <td> <ul style="list-style-type: none"> <li>Seamless integration to a digital workplace.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>By creating a digital workplace in the cloud, information is accessible from anywhere, at any time and on any device.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Enhanced collaboration.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>These tools increase productivity by making all collaboration, conversations, chats, online meetings, shared files, decisions and tasks available in one application.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Tools can make a difference.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Remote work tools can compartmentalize information into channels or categories so that workers can easily coordinate their work and find what they need when they need it.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Increased focus and transparency.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Built-in tools such as targeted messaging and notes allow group leaders to easily communicate and document decisions to specific people or the team.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>Asynchronous decision-making and collaboration.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Organise webinar series for employees and stakeholders with tips for remote management of the teams.</li> </ul> </td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>New metrics to consider at performance review time.</li> </ul> </td> <td> <ul style="list-style-type: none"> <li>Informed and data-driven strategic workforce planning.</li> </ul> </td> </tr> </tbody> </table>	<ul style="list-style-type: none"> <li>Seamless integration to a digital workplace.</li> </ul>	<ul style="list-style-type: none"> <li>By creating a digital workplace in the cloud, information is accessible from anywhere, at any time and on any device.</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced collaboration.</li> </ul>	<ul style="list-style-type: none"> <li>These tools increase productivity by making all collaboration, conversations, chats, online meetings, shared files, decisions and tasks available in one application.</li> </ul>	<ul style="list-style-type: none"> <li>Tools can make a difference.</li> </ul>	<ul style="list-style-type: none"> <li>Remote work tools can compartmentalize information into channels or categories so that workers can easily coordinate their work and find what they need when they need it.</li> </ul>	<ul style="list-style-type: none"> <li>Increased focus and transparency.</li> </ul>	<ul style="list-style-type: none"> <li>Built-in tools such as targeted messaging and notes allow group leaders to easily communicate and document decisions to specific people or the team.</li> </ul>	<ul style="list-style-type: none"> <li>Asynchronous decision-making and collaboration.</li> </ul>	<ul style="list-style-type: none"> <li>Organise webinar series for employees and stakeholders with tips for remote management of the teams.</li> </ul>	<ul style="list-style-type: none"> <li>New metrics to consider at performance review time.</li> </ul>	<ul style="list-style-type: none"> <li>Informed and data-driven strategic workforce planning.</li> </ul>
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<ul style="list-style-type: none"> <li>New metrics to consider at performance review time.</li> </ul>	<ul style="list-style-type: none"> <li>Informed and data-driven strategic workforce planning.</li> </ul>												
<b>The target group of the good practice</b>	Customers, partners, and employees.												
<b>What are the success factors for implementing digital leadership?</b>	EY empowers its people with the right mindsets and skills to navigate what's next, become the transformative leaders the world needs, pursue careers as unique as they are, and build their own experiences. As an innovative company, based on their values, they integrate technology and modern approaches to connect easily globally with employees, partners, and clients.												
<b>What are the challenges in implementing digital leadership?</b>	From employee health and safety to exceptional people experiences, the boundaries of HR are shifting in real-time. HR teams must migrate												

Case 2 – Cyprus   Ernst & Young	
	from the services that have defined HR historically to the new people services that will define the function for years to come.
<b>Further reading &amp; contact</b>	<a href="https://go.ey.com/3RTJoJh">https://go.ey.com/3RTJoJh</a>

#### 4.1.3 Case 3 – Cyprus.

Case 3 – Cyprus   A. ZORBAS & SONS LTD	
<b>Owner of the good practice</b>	Name: A. ZORBAS & SONS LTD Location: CYPRUS <input type="checkbox"/> Tech-based <input checked="" type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees and, consequently, customers.
<b>What are examples of good digital leadership in this company?</b>	Weekly control by internal staff and monthly control by external mystery shoppers (mystery shoppers are unknown external persons to the employees entering the facilities as customers). This assists in cross-checking the results from the internal inspection. Overall, the physical controls allow the on-site monitoring of the implementation of procedures and identify any non-conformities.  KPI's monitoring – reporting, complaints, monitoring through measurable indicators (e.g., sales, earnings etc.). Deriving either from accounting systems or other custom-made systems (e.g., customer satisfaction software) – Assists in identifying any inconsistencies early and taking actions to achieve objectives.  Acknowledge employees' contributions through bonuses, an employee of the month notification, etc., to enhance their commitment towards the company.
<b>What are the success factors for implementing digital leadership?</b>	Empowering employees' commitment to customer satisfaction.
<b>What are the challenges in implementing digital leadership?</b>	As the company is expanding, the increased number of employees and shifts requires high organizational skills and continuous supervision of all sites.
<b>Further reading &amp; contact</b>	Contact upon request Website: <a href="#">Zorbas Bakeries</a>

## 4.2 Italy's Case.

Case 1 – Italy   A TÜV NORD ITALIA S.R.L.	
<b>Owner of the good practice</b>	Name: A TÜV NORD ITALIA S.R.L. Location: ITALY <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees, shareholders, customers.
<b>What are examples of good digital leadership in this company?</b>	Virtual meetings, online training, annual virtual exchange of experiences (concerning experience gained through the year from work, any issues encountered and how they were handled, any new subjects for which employees shall be trained), using various platforms such as Teams, Cisco Webex etc. Assists in direct, though distant communication and enhances the knowledge status of employees that is required in this multi-disciplinary work environment. Monthly KPIs monitoring, and reporting, with the use of SAP, assists in identifying any inconsistencies early and taking actions to achieve objectives. KPIs are highly used for motivating employees as a number of benefits for the employees rely on their achievements. Complaints monitoring through the software incorporated on the website. This enables the company to monitor for any deficiencies in its procedures or any problems with its employees and take actions for improvement through additional motivational measures (e.g., further bonuses, increased salary, job position change etc.).
<b>What are the success factors for implementing digital leadership?</b>	Professionalism and expertise.
<b>What are the challenges in implementing digital leadership?</b>	Employees require a high level of expertise and competency to provide the services.
<b>Further reading &amp; contact</b>	<a href="https://www.tuv-nord.com/it/it/home">https://www.tuv-nord.com/it/it/home</a>

### 4.3 Germany's Cases.

#### 4.3.1 Case 1 – Germany.

Case 1 – Germany   AviloX GmbH	
<b>Owner of the good practice</b>	Name: AviloX GmbH Location: Leipzig, Germany <input type="checkbox"/> Tech-based <input checked="" type="checkbox"/> Non tech-based
<b>Company size</b>	SME
<b>Sector</b>	ICT, Service provider
<b>What defines good leadership in digital teams?</b>	A good leader sets a healthy framework for employees to organise themselves and creates structures for a healthy and efficient work organisation. They support and motivate the employees to achieve their goals and results and create a feedback loop between team and strategic company goals. It also proactively drives the connection and networking in the digital team for a healthy, social togetherness and ensures that the employees continuously develop themselves.
<b>What distinguishes digitally working leaders?</b>	<ul style="list-style-type: none"> <li>▪ Is a role model for digital cooperation in the virtual space and considers the agreements made.</li> <li>▪ creates transparency in work processes and results, creates knowledge flow.</li> <li>▪ has a high degree of personal responsibility and self-organisation.</li> <li>▪ Lives an open error culture, proactively gives and requests feedback (including on digital cooperation) - Is self-reflective.</li> <li>▪ Tries to create an atmosphere of psychological security.</li> <li>▪ Technically endeavours to operate the digital infrastructure following the common agreements and seeks help if support is needed.</li> </ul>
<b>What are the success factors for implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ IT infrastructure that enables transparent collaboration in the digital space (e.g., M365, GSuite or similar) and the necessary budget.</li> <li>▪ Openness and the courage to accept one's fallibility.</li> <li>▪ Trust in the team, allowing self-organisation.</li> <li>▪ Practices or formats that support the continuous development of the digital team (conflict formats, retrospectives, etc.) and the prioritisation of tasks.</li> </ul>
<b>What are the challenges in implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ To build enough trust within the team (psychological security).</li> <li>▪ Needs healthy and efficient self-management from employees/manager.</li> <li>▪ Requires the ability to delegate and prioritise tasks.</li> <li>▪ Needs transparency of work processes and knowledge management (where can I find knowledge about what? Who can I ask about what?)</li> </ul>

Case 1 – Germany   AviloX GmbH	
<b>Who is driving the digital transformation in your company?</b>	<ul style="list-style-type: none"> <li>▪ Everybody</li> </ul>
<b>How can the success of digital leadership be measured?</b>	<ul style="list-style-type: none"> <li>▪ Work results</li> <li>▪ Contribution to the company's goals</li> <li>▪ Economic efficiency</li> <li>▪ Employee satisfaction</li> <li>▪ Feedback from the employees to the managers.</li> </ul>
<b>What do employees value about being (digitally) managed?</b>	<ul style="list-style-type: none"> <li>▪ Participation.</li> <li>▪ Transparency and information.</li> <li>▪ Getting and receiving feedback.</li> <li>▪ Cooperation "that feels more like being at eye level".</li> <li>▪ Self-determination and freedom of action, autonomy.</li> </ul>
<b>Further reading &amp; contact</b>	<a href="https://avilox.de/">https://avilox.de/</a>

#### 4.3.2 Case 2 – Germany.

Case 2 – Germany   flaixible GmbH	
<b>Owner of the good practice</b>	Name: flaixible GmbH Location: Aachen, Germany <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>Company size</b>	SME
<b>Sector</b>	Service provider, ICT
<b>What defines good leadership in digital teams?</b>	<p>As a good manager, you are first and foremost present and transparent as a contact person for all employees. We set a good example by communicating at eye level and always having an open ear, regardless of whether it is an issue regarding the company or private concerns.</p> <p>Humanness comes first, and good communication is essential. Regular exchanges not only help us overcome challenges together but also enable us to take on board the views of our employees to change and improve ourselves in leadership.</p>
<b>What distinguishes digitally working leaders?</b>	<p>Leaders who work digitally pursue a vision. A "lean" approach characterises the way of working. This means that strategies are developed and tested, and mistakes are learned from to improve and modify the strategies. Through this constant flow, leaders make a sustainable contribution to business improvement. Digital leaders are willing to engage in continuous learning to be the first point of contact for their employees' questions and concerns and thus be perceived as exemplary experts. In addition, our digital leaders have a "think outside the box" attitude. Overall, accessibility, transparency and digital know-how are good indicators of a good and trusting relationship between employees and digital leaders.</p>

Case 2 – Germany   flaixible GmbH	
<b>What are the success factors for implementing digital leadership?</b>	A clear structure is indispensable for decentralised and digital work. In addition, one should always work from the customer's point of view to perfect one's steps (What would be perfect digital customer service for me?)—likewise, our motto, "Where work feels like home", plays a big role. We want happy and satisfied employees. We promote this out of conviction! The willingness of the team to drive their efficiency and to always want to improve themselves is also part of successful digital leadership. Finally, the employees need to be suitably equipped. This includes not only the hardware but also the necessary technology behind it. If there are problems with the equipment, we react very quickly. Our team should not lack anything for successful and fulfilling work.
<b>What are the challenges in implementing digital leadership?</b>	You have to pick up all colleagues at their current level of knowledge, train them together and bring them together through team-building measures. In this way, we not only develop professionally but, at the same time, strengthen the bond within the team. Despite thorough and regular training, there may evolve ambiguities or concerns, some of which are challenging. In regular feedback meetings, we address all possible concerns of the employees to improve our leadership and recognise and tackle upcoming challenges jointly.
<b>Who is driving the digital transformation in your company?</b>	We want to be a pioneer in digital transformation. That is why our vision is the biggest driver. We want to be part of the change and, of course, remain competitive and modern. So we all work together as a team to ensure that the digital transformation progresses in our company.
<b>How can the success of digital leadership be measured?</b>	<ul style="list-style-type: none"> <li>• Employee satisfaction</li> <li>• Regular feedback meetings</li> <li>• Regular analysis, maintenance and expansion of our KPIs</li> </ul>
<b>What do employees value about being (digitally) managed?</b>	As our team is very young, we have many digital natives working for us, for whom a digital world has long been part of everyday life. That's why our employees appreciate that we are incorporating more and more gamification into the company. In addition, we have developed a working time model that is as flexible as possible. This allows our employees to freely arrange their working hours to perfectly combine work with everyday life and thus enable a perfect interplay between work and private life. In addition, we work almost paperless, which ultimately also benefits the environment.
<b>Further reading &amp; contact</b>	<a href="https://www.flaixible.de/">https://www.flaixible.de/</a>

### 4.3.3 Case 3 – Germany.

Case 3 – Germany   Mitteldeutscher Rundfunk	
<b>Owner of the good practice</b>	<p>Name: Mitteldeutscher Rundfunk (Central German Broadcasting)</p> <p>Location: Leipzig, Germany</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>
<b>Company size</b>	Around 2000 employees
<b>Sector</b>	Media
<b>What defines good leadership in digital teams?</b>	<ul style="list-style-type: none"> <li>▪ Mobile working.</li> <li>▪ Trust in employees.</li> <li>▪ Motivation instead of control.</li> <li>▪ Leadership without direct personal contact the mix makes the difference, now and then personal contact and the building of personal relationships is important despite digital work.</li> <li>▪ Results-oriented work (it's not so much about doing the time, but about delivering the work results).</li> <li>▪ The duty of care is even more difficult to implement in digital and distributed teams but is also important in home office situations..</li> </ul>
<b>What distinguishes digitally working leaders?</b>	<ul style="list-style-type: none"> <li>▪ Quite simple: The leader must demonstrate in practice what constitutes good leadership (see first question).</li> <li>▪ Must be a role model and lead the way.</li> <li>▪ Must be a credible example.</li> </ul>
<b>What are the success factors for implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ The mindset: independent and autonomous working methods of the employees (and of course of the managers).</li> <li>▪ Regulations that enable mobile working (from the home office) and provide the legal framework.</li> <li>▪ Collaboration tools such as MS Teams.</li> <li>▪ Access to relevant company applications (in the case of MDR, this is a Citrix terminal server farm via which a company desktop is made available).</li> <li>▪ Digitised company processes (no paper and signatures)</li> </ul>
<b>What are the challenges in implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ The employees are used to a different management approach (more guidance, more control, less personal responsibility) the way of working and the mindset must change.</li> <li>▪ The technical infrastructure must be in place (see the previous point).</li> <li>▪ The business processes must be digitalised.</li> </ul>
<b>Who is driving the digital transformation in your company?</b>	<ul style="list-style-type: none"> <li>▪ The pandemic.</li> <li>▪ The external framework in which public service broadcasting must reinvent itself.</li> <li>▪ Television, radio and online are growing together.</li> <li>▪ Political and societal pressures force it to produce more results with fewer resources.</li> <li>▪ The company, above all to save costs.</li> </ul>

Case 3 – Germany   Mitteldeutscher Rundfunk	
	<ul style="list-style-type: none"> <li>▪ For the many jobs that are no longer needed when everyone is mobile.</li> <li>▪ By eliminating services.</li> <li>▪ The employees, who can save commuting time (lifetime) through mobile working and can better organise their work themselves.</li> </ul>
<b>How can the success of digital leadership be measured?</b>	<ul style="list-style-type: none"> <li>▪ Results are (at least) as good as before digitalisation.</li> <li>▪ Employee retention.</li> <li>▪ Employee satisfaction.</li> <li>▪ Cost savings.</li> </ul>
<b>What do employees value about being (digitally) managed?</b>	<ul style="list-style-type: none"> <li>▪ They enjoy not having to commute they get the opportunity to work remote.</li> <li>▪ They can organise their work themselves.</li> </ul>
<b>Further reading &amp; contact</b>	n/a

#### 4.4 Austria's Case.

Case 1 – Austria   Dynatrace	
<b>Owner of the good practice</b>	Name: Dynatrace. Location: Linz, Austria <input type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees
<b>Company size</b>	Large company, approx. 3300 employees
<b>Sector</b>	Cloud Computing (ICT)
<b>What are examples of good digital leadership in this company?</b>	<p>Their ways of work:</p> <p>The Dynatrace Work Model has been designed to support increased connection and collaboration, driving cultural vibrancy and hyper-innovation while enabling a flexible work approach. People that work at Dynatrace are encouraged to find the solution that works best for them, and their team based on three options:</p> <p><b>Flex Office</b></p> <p>This is ideal for employees who want to enjoy the office vibe, use the different collaboration spaces and in-office benefits, and work at a dedicated desk—spending most of their working time in the office (at least 3 days a week).</p> <p><b>Flex Remote</b></p> <p>For employees who want the best of both worlds, seeking maximum flexibility between working from the office and home—spending at least 1-2 days/week in the office.</p> <p><b>Fully Remote</b></p> <p>Designed for specific roles and employees hired in locations far away from a Dynatrace office and presumed an eligibility check. With Fully Remote, you usually work from home and only occasionally travel to the office.</p> <p>Dynatraces Work Model is about maintaining flexibility and choice while enabling frequent in-person engagement and community-building opportunities. This in-person interaction allows them to build a culture focused on people first.</p>
<b>What are the success factors for implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ Empower leaders at the local level to make decisions that are best suited for their teams based on this company-wide framework.</li> <li>▪ Providing an environment in which we can all help each other be successful.</li> <li>▪ Building a culture of collaboration, innovation and flexibility.</li> <li>▪ Providing vibrant and collaborative on-site workspaces to support and encourage social connection, cooperation, and person-to-person engagement</li> </ul>
<b>Further reading &amp; contact</b>	<a href="https://careers.dynatrace.com/life-at-dynatrace/">https://careers.dynatrace.com/life-at-dynatrace/</a>

## 4.5 Greece's Cases.

### 4.5.1 Case 1 – Greece.

Case 1 – Greece   TOBEA	
<b>Owner of the good practice</b>	<p>Name: TOBEA</p> <p>Location: Patras, Greece</p> <p><input type="checkbox"/> Tech-based <input checked="" type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	All employees
<b>What are examples of good digital leadership in this company?</b>	<p>The team leaders communicate regularly with their teams and have created an atmosphere where employees feel understood and trustful. The leaders' empathy is aroused so teams can discuss which working system suits them better.</p> <p>The leaders/managers “invested” more in employees with more soft skills than technical skills, believing that soft skills “count” more. They believe in 60% soft skills and 40% technical skills. Technical skills can be taught and trained. Communication and trust between leaders and their teams are of utmost importance in physical presence or virtually. The company was able to work remotely even before Covid-19.</p> <p>The company has adopted the Hybrid model of working. Because of their empathy, the managers can communicate with their teams and decide which system suits them more on each occasion, period, and project.</p> <p>The company uses various tools to provide its employees with a Hybrid system of work, which helped the company go a step further.</p> <p>The company uses ‘Slack’ to communicate with each other and uses it as a chat. They have created group chats regarding the project and the teams. In this way, they have eliminated telephone calls within the company. The use of the telephone only occurs when something is urgent.</p> <p>Furthermore, the company uses the “ASANA Professional” software to manage their projects and tasks. It is easy to use, and employees can easily use it via their mobiles. It is addressed for both the office-based and the “production” teams. With this system, the managers and their teams can monitor the progress of each project and task wherever they are. Teams and leaders can also make comments. During the years of its use, managers are adding whatever they need to help monitor and automate the processes. This tool is mandatory for every project and daily tasks, for nothing to be forgotten or for the deadlines to be overcome. Except for monitoring the processes, this system has information available to the end users (employees), such as communication info. In addition, the production team uses it to save photos, fill in the predetermined checklist during the installation, and uninstall the SEATRAC, so leaders have the needed info in real-time by checking the system.</p> <p>TOBEA uses Dropbox as a cloud for managing and saving documents. Leaders and teams have access to the files, and by its use, they have</p>

Case 1 – Greece   TOBEA	
	<p>eliminated the use of paper within the company, giving another “Greener” approach to the company. The access differs from the employees to the leaders. Also, the company uses an ERP System.</p> <p>The COO Agile Coach trains all employees before using each tool to learn the use of each system. The training is held online via the ZOOM platform and in person when needed.</p>
<b>What are the success factors for implementing digital leadership?</b>	<p>During Covid-19, the company’s leaders had to “prove” that they trusted their team. As the team was keen on using the available digital tools and available systems because of the training they had in advance, when the isolation took place, they could work without a problem as the transition was smooth.</p> <p>The leaders could solve problems and communicate with their team as they were used to. The most important thing was that the leaders’ empathy was aroused as the effects of Covid-19 affected their teams in multiple ways. Due to the atmosphere that has been created, employees can communicate their thoughts and concerns, and the leaders can identify their needs. The training is helpful, and the work can be done wherever the team is.</p>
<b>What are the challenges in implementing digital leadership?</b>	<p>To create a trustful and good atmosphere, HR needs to spend time in relationship-building, which is difficult as the company grows. The company needs to be well organised and proactive to keep this atmosphere and spend time in training.</p>
<b>Further reading &amp; contact</b>	<p><a href="https://tobea.gr/">https://tobea.gr/</a></p>

#### 4.5.2 Case 2 – Greece.

Case 2 – Greece   INTERMEDIAKT	
<b>Owner of the good practice</b>	<p>Name: INTERMEDIAKT</p> <p>Location: Athens, Greece</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	<p>All employees</p>
<b>What are examples of good digital leadership in this company?</b>	<p>The company identified the need to create strong relationships with its employees. Furthermore, the employees had the concept of online distance / remote working as a given. The company emphasises team building, and the leaders communicate their visions with transparency and by providing feedback reports/surveys so that all people, roles, and positions of the organization are represented.</p> <p>The company has been using it even before Covid-19 Microsoft 365. The company uses Teams, where they create groups and projects and give the essential credentials to each employee involved to access only projects and tasks that they are involved in and not get distracted by notifications and tasks that are not involved.</p>

	<p>INTERMEDIAKT uses the calendar to schedule their appointments, meetings, deadlines and keeps every employee and team informed about the team's availability for further meetings and deadlines.</p> <p>The use of Microsoft has gradually developed. They have also been using the planner for tasks and milestones to fully understand each project and its progress.</p> <p>As the company recognises that not all employees are keen on using this tool (Microsoft 365), it has created (online) manuals and guidelines and has held online and in-person training. They have also created videos that employees can watch and learn about the use of this range of tools by using their email and personal given password. The company also provides webinars available in Microsoft 365.</p>
<b>What are the success factors for implementing digital leadership?</b>	As remote work is a given, transitioning to the virtual environment when needed is smooth. Human-centred management makes employees feel comfortable expressing their concerns and thoughts, which adds value to the company.
<b>What are the challenges in implementing digital leadership?</b>	Connecting a fully digitally transformed team to the labour market is difficult.
<b>Further reading &amp; contact</b>	<a href="https://intermediakt.org/">https://intermediakt.org/</a>

#### 4.5.3 Case 3 – Greece.

Case 3	
<b>Owner of the good practice</b>	<p>Name: INTRASOFT GREECE</p> <p>Location: Athens, Greece</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	All employees
<b>What are examples of good digital leadership in this company?</b>	<p>Employees' well-being is essential to Intrasoft. The company promotes a work culture of wellness and well-being by adopting a holistic approach to improve the overall well-being of their employees, respecting and maintaining a work-life balance.</p> <p>The company is Microsoft certificated, so it only uses and works on the Microsoft available tools. For instance, the company uses Share Point (cloud) and Teams. The company was able to work remotely even before Covid-19.</p> <p>During Covid-19, the company, along with the managers/leaders and HR, made a great effort to enable the employees to work remotely in the same philosophy as when they were working in the company. To do so, sessions and training were organised to train the managers on working in a virtual environment and leading their teams. Furthermore, the employees were trained on how to participate in virtual meetings. The managers and their teams were trained with training available at Udemy and seminars organised by the HR.</p>

	<p>The company set some guidelines for a productive and work-balanced virtual environment with their teams. Weekly the managers have sessions with the HR and can share their thoughts and concerns regarding the management of their teams.</p> <p>The managers and their teams set some rules for their virtual meetings. For instance, the meetings can't last less than 30' and longer than 60'. The online meetings are held in Teams and are not allowed for a meeting to be held beyond working hours.</p> <p>Furthermore, leaders arrange meetings once a week with their teams, not only for work but also to spend quality virtual time with their teams. The managers and their teams meet virtually to listen to music, have a coffee, and generally spend some time together even after working hours. By doing this, managers arouse their empathy, and the teams feel understood. They are also able to meet online with other members and teams of the company. The teams can listen to music shared on Spotify created by the company and the teams themselves.</p> <p>The hybrid model that is now set is working in the company 3 days per week and twice remotely. Of course, this is arranged by each team and the managers.</p> <p>Employees' well-being is crucial to Intrasoft. They include wellness, sports events, and their own sports teams, engaging presentations on well-being, office ergonomic and mental health sessions like yoga sessions, chair massage at the office, and others. Some of these sessions during the covid-19 and up to now are held online (e.g., Yoga sessions), and the company is always trying to improve them. In the last months, as the hybrid model was adopted, the company has provided salsa sessions to their employees so that teams can join them physically or virtually.</p> <p>The company wishes to constantly improve in terms of technical and managerial know-how, along with the quality of deliverables; going Agile was a natural step forward for INTRASOFT. The company embraces the Agile business model, scaling up Agile across Delivery Groups, Product lines, and Supporting services/functions. Due to the rapid developments in the IT industry, INTRASOFT's employees are continuously trained in new technologies and methodologies. The company's methods for fast adaptation to rapid-changing technologies include constant observation of all IT areas relevant to the services we provide and learning initiatives. INTRASOFT constantly observes and adapts modern technologies keeping up to date with all their staff. Every employee is trained accordingly.</p> <p>The company utilizes the most modern methods for continuous learning, such as micro-learning and blended learning. The employees can attend learning initiatives, online sessions, workshops, instructor-led training, and in-house academies. Moreover, employees have full access to Udemy for Business.</p>
<p><b>What are the success factors for implementing digital leadership?</b></p>	<p>In recent years, INTRASOFT has entered a new philosophy with a human-centered character, which is strongly reflected in the company's actions. For instance, employees participated in activities, contributing to a more sustainable world and environment. Those events are helping the employees bond and contribute to a better and Greener future. As the employees have full access to the training, they can "grow" themselves and feel</p>

	evolved. The culture of maintaining a work-life balance helps them feel important.
<b>What are the challenges in implementing digital leadership?</b>	The challenge was for the employees to understand that the company's events and activities were for maintaining a work-life balance and contributing to a more sustainable world and environment, which was made clear when e-leaders communicated the company's vision during meetings and training.
<b>Further reading &amp; contact</b>	<a href="https://www.netcompany-intrasoft.com/">https://www.netcompany-intrasoft.com/</a>

## 4.6 Denmark's Case.

Case 1 – Denmark   SITEIMPROVE	
<b>Owner of the good practice</b>	Name: SITEIMPROVE Location: DENMARK <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	All employees
<b>What are examples of good digital leadership in this company?</b>	<p>The company has fostered an environment of mutual respect and trust. They support an open feedback culture to learn and grow from their mistakes. They strive to be the best they can be and inspire each other to develop and succeed individually and as a team. They demonstrate transparency and communicate what they do, how they do it, and why with integrity and accountability. Siteimprove shares an open and honest work environment where everyone is encouraged to speak their mind, contribute ideas, and take on responsibility. Siteimprove has fostered the 70-20-10 model. It's key for the company that their employees have the opportunity to learn and develop as people and professionals.</p> <p>As a general guideline, Siteimprove follows a 70-20-10 model for personal development, a general approach to how people learn and develop their skill set in the workplace. In brief, the 70-20-10 model is 70% on-the-job learning, 20% learning from others, and 10% formal learning. Part of the 20% of your learning from others can come through the Siteimprove Mentorship Program. The program's purpose is to foster professional relationships and allow employees to build connections, share knowledge, and help each other develop personally and professionally.</p> <p>At Siteimprove, their Education &amp; Learning team, with members in Copenhagen and Minneapolis, supports all Siteimprove offices globally with their training courses. The purpose of the Education &amp; Learning team is to enable scalable learning solutions that all employees will benefit from, no matter where they are located. Supporting career growth: Every Siteimprove employee will have an annual Performance Review where they look back on the past year with their manager and discuss and evaluate performance.</p>
<b>What are the success factors for implementing digital leadership?</b>	The review is followed by an annual Personal Development Plan meeting where each employee and their manager look forward, set individual goals, and create a Personal Development Plan that supports future career development in Siteimprove.
<b>What are the challenges in implementing digital leadership?</b>	NA
<b>Further reading &amp; contact</b>	<a href="https://www.siteimprove.com/">https://www.siteimprove.com/</a>

## 4.7 The Netherlands' Cases.

### 4.7.1 Case 1 – The Netherlands.

Case 1 – The Netherlands   SAP Netherlands	
<b>Name/Title of the good practice</b>	Switching to a cloud-based model
<b>Owner of the good practice</b>	Name: SAP Netherlands Location: Netherlands <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>Target group of the good practice</b>	Companies using the SAP software
<b>Description</b>	The pioneer software company recently switched to a cloud-based model, which led to a higher degree of customer customization regarding online purchases, enhanced collaboration amongst departments, reduced maintenance costs, improved communication between departments along with information accessibility also improved and lastly, as all the company's data can be found in one place, the back-up and restoring of data has been made easier.
<b>Success factor</b>	Higher degree of customer customization and centralization of data.
<b>Challenges and risks</b>	High investment in R&D related to the project elevates the risk binomial of the company.
<b>Further reading &amp; contact</b>	NA
<b>Source</b>	<a href="https://www.theceomagazine.com/executive-interviews/it-electronics/powering-digital-transformation-sap-netherlands/">https://www.theceomagazine.com/executive-interviews/it-electronics/powering-digital-transformation-sap-netherlands/</a>

### 4.7.2 Case 2 – The Netherlands.

Case 2 – The Netherlands   Phillips Health Care	
<b>Name/Title of the good practice</b>	HealthCare anytime, anywhere.
<b>Owner of the good practice</b>	Name: Phillips Health Care Location: Netherlands <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>Target group of the good practice</b>	Healthcare companies.

### Case 2 – The Netherlands | Phillips Health Care

<b>Description</b>	Telehealth and remote patient monitoring will become a mainstay of healthcare, supplementing in-person care. Much of the care currently taking place in hospitals for patients with chronic conditions will move into lower-cost settings such as the home. New access points like retail health clinics will bring care closer to local communities. Virtual collaboration between healthcare providers will also help extend the reach of specialist care to remote and rural regions where specialist staff is in short supply. Doctors will be able to video call patients in real-time to tackle the issue rapidly.
<b>Success factor</b>	Outsourcing the diagnosis phase towards customers, reducing time & increasing the effectiveness of hospital facilities.
<b>Challenges and risks</b>	Very high amounts of investment in order to produce the software, algorithms and interface. Educating people into new ways of performing traditional activities affecting the perceived reliability of the service.
<b>Further reading &amp; contact</b>	-
<b>Source</b>	<a href="https://www.philips.com/c-dam/corporate/newscenter/global/standard/resources/healthcare/2021/digital-transformation/philips-digital-transformation-position-paper.pdf">https://www.philips.com/c-dam/corporate/newscenter/global/standard/resources/healthcare/2021/digital-transformation/philips-digital-transformation-position-paper.pdf</a>

### 4.7.3 Case 3 – The Netherlands.

#### Case 3 – The Netherlands | Utrecht University

<b>Name/Title of the good practice</b>	Streamlining Education
<b>Owner of the good practice</b>	Name: Utrecht University Location: Netherlands <input type="checkbox"/> Tech-based <input checked="" type="checkbox"/> Non tech-based
<b>Target group of the good practice</b>	Stakeholders at Utrecht university.
<b>Description</b>	It became clear to create a more convenient IT experience for students and staff members. There was a dire need for better integration, interoperability and communication between platforms and applications. Utrecht University contacted Yenlo, a multi-vendor specialist, for integration technology and services. Together with Yenlo's experienced team, created a digital journey strategy and execution in which the communication platforms and services offered by the university were highly improved especially during the Covid Pandemic.

Case 3 – The Netherlands   Utrecht University	
<b>Success factor</b>	Availability and convenience of service
<b>Challenges and risks</b>	Poor knowledge of the topic and tech pessimism, need for guidance and contractual agreement with an external party
<b>Further reading &amp; contact</b>	-
<b>Source</b>	<a href="https://www.yenlo.com/blogs/examples-digital-transformation-companies/">https://www.yenlo.com/blogs/examples-digital-transformation-companies/</a>

## 4.8 Estonia's Case.

Case 1- Estonia   Cybernetica	
<b>Name/Title of the good practice</b>	X-Road, the state information's system which brings together people, the government, and companies.
<b>Owner of the good practice</b>	Name: Cybernetica Location: Estonia <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>Target group of the good practice</b>	Societies stakeholder.
<b>Description</b>	It's estimated that the Estonian national data exchange system, called the X-Road, helped Estonia save [1407 years], of working time in 2018 and is considered the backbone of e-Estonia. Estonian public administration databases were isolated, and data exchange between agencies, ministries and organizations was slow and inefficient. They were able to deliver a state-of-the-art solution for Estonia by using different technologies under a government set-up in a novel way. Thanks to the structure, which has security by design and distributed offered architecture, the data exchange platform has experienced virtually no downtime since its inception.
<b>Success factor</b>	The de-centralization of information and open access.
<b>Challenges and risks</b>	Different countries have different policies, and the government's threshold regarding how it shares its information is subjective across countries.
<b>Further reading &amp; contact</b>	-
<b>Source</b>	<a href="https://cyber.ee/resources/case-studies/x-road-as-created-by-cybernetica/">https://cyber.ee/resources/case-studies/x-road-as-created-by-cybernetica/</a>

## 4.9 Portugal's Cases.

### 4.9.1 Case 1 – Portugal.

Case 1 – Portugal   Feedzai	
<b>Owner of the good practice</b>	Name: Feedzai (Feedzai is the market leader in fighting financial crime with AI) Location: Aveiro, Portugal <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees.
<b>What are examples of good digital leadership in this company?</b>	During the COVID-19 pandemic, Feedzai had to implement a remote work strategy for more than 500 employees. To encourage the employees' positive thinking when working remotely, the "Wine Down" room was developed for virtual meetings scheduled on Fridays, always at the same time. In these meetings, employees from different locations promote virtual conversations on various subjects, such as: <ul style="list-style-type: none"> <li>• How do we have efficient meetings?</li> <li>• How to deal with working from home?</li> <li>• How do we maintain expectations?</li> </ul>
<b>What are the success factors for implementing digital leadership?</b>	NA
<b>What are the challenges in implementing digital leadership?</b>	Challenges were to involve the team in attending the meeting.
<b>Further reading &amp; contact</b>	<a href="https://observador.pt/especiais/pausas-virtuais-aulas-e-folgas-extra-como-a-feedzai-geriu-mais-de-500-pessoas-em-teletrabalho/">https://observador.pt/especiais/pausas-virtuais-aulas-e-folgas-extra-como-a-feedzai-geriu-mais-de-500-pessoas-em-teletrabalho/</a> <a href="#">About Us - The Story of Feedzai   Feedzai</a>

### 4.9.2 Case 2 – Portugal.

Case 2 – Portugal   Noesis	
<b>Name/Title of the good practice</b>	Noesis Academy
<b>Owner of the good practice</b>	Name: Noesis Location: Portugal <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees
<b>What are examples of good digital leadership in this company?</b>	The company developed an online platform for sharing knowledge from on-the-job learning and internal training academies. The main

	objective of this practice is the promotion of employee autonomous development.
<b>What are the success factors for implementing digital leadership?</b>	-
<b>What are the challenges in implementing digital leadership?</b>	Collecting data and finding elaborate material for learning and training academies.
<b>Further reading &amp; contact</b>	<a href="#">Quem Somos (noesis.pt)</a>

#### 4.9.3 Case 3 – Portugal.

Case 3 – Portugal – Asus Portugal	
<b>Owner of the good practice</b>	Name: Asus Portugal Location: Portugal <input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Employees
<b>What are examples of good digital leadership in this company?</b>	Asus recommends investing in flexible, security-certified cloud infrastructures, complemented by acquiring portable and autonomous devices. In addition, this company follows a management-by-objective approach and remote control by setting evaluation procedures, feedback mechanisms, and group calls to promote a feeling of team belonging.
<b>What are the success factors for implementing digital leadership?</b>	-
<b>What are the challenges in implementing digital leadership?</b>	Challenges were to involve the team in attending the meeting.
<b>Further reading &amp; contact</b>	<a href="https://www.itchannel.pt/news/negocios/como-as-empresas-portuguesas-estao-a-trabalhar-remotamente">https://www.itchannel.pt/news/negocios/como-as-empresas-portuguesas-estao-a-trabalhar-remotamente</a> <a href="#">Suporte Oficial   ASUS Portugal</a>

#### 4.10 Spain's Case.

Case 1 – Spain   Feedzai	
<b>Owner of the good practice</b>	Name: Feedzai (Feedzai is the market leader in fighting financial crime with AI) Location: Barcelona, Spain <input type="checkbox"/> Tech-based <input checked="" type="checkbox"/> Non tech-based
<b>The target group of the good practice</b>	Students
<b>What are examples of good digital leadership in this company?</b>	Use Social Media Platforms to strengthen the community of MBA and Executive Education Students to promote relationships, group work, and culture.
<b>What are the success factors for implementing digital leadership?</b>	-
<b>What are the challenges in implementing digital leadership?</b>	The challenges were to identify the best social media platform.
<b>Further reading &amp; contact</b>	<a href="https://www.iese.edu/">https://www.iese.edu/</a>

## 4.11 Slovenia's Cases.

### 4.11.1 Case 1 – Slovenia.

Case 1 – Slovenia   Jozef Stefan Institute	
<b>Owner of the good practice</b>	<p>Name: Jozef Stefan Institute</p> <p>Location: Ljubljana</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	<p>SMEs, manufacturing companies, employees in production, planners, team coordinators.</p>
<b>What are examples of good digital leadership in this company?</b>	<p>QLECTOR is developing artificial intelligence-based solutions for manufacturing, logistics and other industries powered by QLECTOR LEAP AI Platform. They are a team of machine learning experts with long experience in bringing cutting-edge technology into practice.</p> <p>QLECTOR LEAP helps to guide production processes in the same way as GPS supports your road trip. QLECTOR LEAP uses historical data and artificial intelligence to forecast production and suggest optimal measures for unplanned events. QLECTOR LEAP addresses challenges across different industries:</p> <p><b><u>AUTOMOTIVE:</u></b></p> <p>The automotive industry is known for its high efficiency due to the early introduction to the lean concept. QLECTOR LEAP maintains lean at all times. Partners can now reduce organizational downtime and inventory levels through forecasting tool change, material coverage, and HR requirements.</p> <p><u>Challenges:</u> time lost manually creating and updating production plans and schedules; time lost fine-tuning schedules via phone or e-mail; knowledge locked within the planner and team coordinator; more and longer downtimes due to slower response to unplanned events</p> <p><u>Benefits:</u> 1 day per week time savings for planners and team coordinators; on-time preparation for tool changes and 5% Overall Equipment Effectiveness (OEE) increase.</p> <p><b><u>HOME APPLIANCES:</u></b> The Appliance industry faces increasing portfolio customisation with shortened life cycles. Digital twin in QLECTOR LEAP helps partners to comprehend the complexity of their products through the prediction of production times of new products and helps to form optimal teams on assembly lines.</p> <p><u>Challenges:</u> Legislation raise in the minimum wage for assembly workers; unable to manage the complexity of diverse product portfolio; long and unpredictable lead times; manual scheduling of workers to assembly cells; high intermediate inventory.</p> <p><u>Benefits:</u> 1 day per week time savings for team coordinators; 10% shorter lead time and a higher turnover ratio.</p> <p><b><u>CHEMICAL:</u></b> Partners in the chemical industry have very high digital maturity due to traceability requirements. QLECTOR LEAP unlocks the value of data through the operational use of data for forecasting production and inventory levels, which trigger just-in-time delivery by suppliers.</p>

Case 1 – Slovenia   Jozef Stefan Institute	
	<p><b>Challenges:</b> Time lost manually checking realization on the shop floor to order materials and transportation; time lost manually creating and updating production plans; inability to establish just-in-time.</p> <p><b>Benefits:</b> 1 day per week time savings for team coordinators; enabling just-in-time delivery and replacing repetitive tasks with added value tasks.</p>
<b>What are the success factors for implementing digital leadership?</b>	<p>Crucial success factors for implementing digital leadership for manufacturing companies are:</p> <ul style="list-style-type: none"> <li>▪ One day per week saved time for planners and team coordinators.</li> <li>▪ 3-day forecast: prepare for organisational downtime 3 days ahead.</li> <li>▪ 25% Fewer Downtimes: reduce downtime by reacting to downtime faster and preparing for future events.</li> </ul>
<b>What are the challenges in implementing digital leadership?</b>	<p>Manufacturing companies and their employees have various challenges according to their type of industry:</p> <p><b>AUTOMOTIVE:</b> time lost manually creating and updating production plans and schedules; time lost fine-tuning schedules via phone or e-mail; knowledge locked within planner and team coordinator; more and longer downtimes due to slower response to unplanned events</p> <p><b>HOME APPLIANCES:</b> Legislation raise in the minimum wage for assembly workers; unable to manage the complexity of diverse product portfolio; long and unpredictable lead times; manual scheduling of workers to assembly cells; high intermediate inventory.</p> <p><b>CHEMICAL:</b> Time lost manually checking realization on the shop floor to order materials and transportation; time lost manually creating and updating production plans; inability to establish just-in-time.</p>
<b>Further reading &amp; contact</b>	<p><a href="https://qlector.com/index.html">https://qlector.com/index.html</a></p>

#### 4.11.2 Case 2 – Slovenia.

Case 2 – Slovenia   Digital Innovation Hub Slovenia	
<b>Owner of the good practice</b>	<p>Name: Digital Innovation Hub Slovenia</p> <p>Location: Ljubljana</p> <p><input type="checkbox"/> Tech-based                      <input checked="" type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	<p>SMEs.</p>
<b>What are examples of good digital leadership in this company?</b>	<p>The assessment is made as a multi-attribute tool, combining the main indicators of digital transformation: digital capability (Advanced technologies, SMACIT, Basic business technologies), Role of IT, Digital business model (value proposition, customers, activities), strategy, organizational capability (HR - employee culture, HRM), organizational culture, management; the tree structure with dimensions and subdimensions shows the weak and strong dimensions of the organization and also the growth opportunities.</p>

Case 2 – Slovenia   Digital Innovation Hub Slovenia	
<b>What are the success factors for implementing digital leadership?</b>	Over 1500 companies were included in the first assessment
<b>What are the challenges in implementing digital leadership?</b>	<ul style="list-style-type: none"> <li>▪ methodological adjustments each year must ensure the comparability of data;</li> <li>▪ companies will not do the second assessment after the completed digital transformation phase (gained with public funding);</li> <li>▪ security of data;</li> <li>▪ the tool is not made open source because of initial problems with gaining company trust.</li> </ul>
<b>Further reading &amp; contact</b>	<p><a href="https://www.mdpi.com/2079-9292/10/8/885">https://www.mdpi.com/2079-9292/10/8/885</a></p> <p><a href="https://dihslovenia.si/en">https://dihslovenia.si/en</a></p> <p>Katja Mohar Bastar <a href="mailto:katja.mohar-bastar@dihslovenia.si">katja.mohar-bastar@dihslovenia.si</a></p> <p>Karolina Kosjek <a href="mailto:karolina@dihslovenia.si">karolina@dihslovenia.si</a></p>

#### 4.11.3 Case 3 – Slovenia.

Case 3 – Slovenia   CirrioSoft d. o. o.	
<b>Owner of the good practice</b>	<p>Name: CirrioSoft d. o. o.</p> <p>Location: Ljubljana</p> <p><input checked="" type="checkbox"/> Tech-based <input type="checkbox"/> Non tech-based</p>
<b>The target group of the good practice</b>	All employees.
<b>What are examples of good digital leadership in this company?</b>	<p>Company CirrioSoft is developing an online platform for solving HRM challenges. Through their "cloud-based" tool - quantify, company decisions and changes related to HRM are introduced based on statistically tangible data instead of feelings, emotions and opinions. At CirrioSoft, they achieve this through an in-depth analysis of the company (client) and all its employees with their "custom human-assisted software". After the quantify analysis, clients receive a management report that includes indicators of the company's health, employee competencies, their roles, etc.</p> <p>The quantify tool is intended primarily for companies where the added value of employees is of great importance, as this is where the contribution is greatest. The competition either does not offer a comprehensive solution (quantify enables both data collection and analysis as well as interpretation in the form of a company report and individual employee reports) or does not focus on individual employees but only on the company as a whole. In addition, the results are given in the online platform.</p>
<b>What are the success factors for implementing digital leadership?</b>	Quantify platform empowers employees with the right mindsets and skills to navigate their careers in the best possible way and become transformative leaders. The platform:

Case 3 – Slovenia   CirrioSoft d. o. o.	
	<ul style="list-style-type: none"> <li>▪ Identifies key employees.</li> <li>▪ Motivates workers in your company.</li> <li>▪ Management finds out how committed, connected, and psychologically safe the employees feel.</li> <li>▪ Discovers the flow of communication.</li> <li>▪ Defines structures of teams.</li> <li>▪ Make work enjoyable.</li> <li>▪ Enables professional growth: competency reports in 1 hour, set personalised goals and action plans, get support from trusted coaches and educators.</li> </ul>
<b>What are the challenges in implementing digital leadership?</b>	Correct data collection and analysis, and interpretation.
<b>Further reading &amp; contact</b>	<a href="https://www.quantifyfly.net/">https://www.quantifyfly.net/</a> <a href="mailto:luka.pregelj@quantifyfly.si">luka.pregelj@quantifyfly.si</a>

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