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Create a platform to ensure citizens participation in design of the cities of the future. Preparatory action.

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Abstract

There has been a recent shift in Europe towards empowering citizens to shape Digital Transformation and Future cities. However, current methods of participation are unsuitable or unhandly for many people. In this paper, we report on the DT4REGIONS platform, a web based platform to exchange knowledge, real cases and decision making to citizens through DTStories and DTSolutions. Investigating the extent of Living Lab methodologies while addressing barriers to participation in conceptualization. The research contributes to both Digital Transformation citizen involvement and planning future cities. The platform leverages citizen knowledge, allowing high level expertise interactions, encouraging citizens to reflect and comment on their environment. Taking a case study approach, the paper discusses the divergences in citizen participation on the decision making process, focusing the design and deployment of the platform to tackle those blanks, in a city and regional level, through a survey with 38 city or region administration leaders and a workshop with 50 experts. The paper discusses the potential of the DT4REGIONS platform to address more conceptual issues, based on real study cases and concludes by a discussion on how the degree of this participation might be.

Preface

This thesis, framed by the preparatory action DT4REGIONS, gave me the opportunity to take a closer look at my work done the last six months. An opportunity to step back, look it coldly and analyse, identify and criticise the work I did. It was a really interesting exercise which helped me to realise the amount of work that requires to develop something, that if you don't step up and invest your time on it, no words will be written. In addition, the thesis is a self reflection. It has my ups, also my downs, but I am grateful to my coworkers, supervisors, friends and of course family, whom without them this thesis would still be blank.

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1. Introduction

Since humans exist those had find a “save” place to live. The early beginnings, nomads, used natural spaces as caves to protect themselves from adverse climatology, rough weather conditions. To stablish small villages, starting to tame animals and soil, build shelters and later houses. Different ages had past until humanity arrive to actuality. Meanwhile, putting the focus on the cities some relevant facts for this paper that can be considered tipping points for the city per se can be identified.

As the Industrial revolution lead an economic growth of cities and its expansion lots of working opportunities, a demographic shift and the reshape of regions occurred. The Industrial revolution gather citizens originally living in rural areas in cities or small communities, to work in factories, whom were chasing the dream of an economically healthier live. Initially those cities had a common epicentre eye, rivers. Rivers were need, originally before factories, to run the mill press the grain to do flour. Lately, to run the mentioned factories, for instance in Catalonia a really strong and important textile industry. Within some years another transition happened, factories were replaced by offices and the weaving loom by computers. The OECD communities leading towards this shift, where progress lead the development of those cities side by side the education level of its citizens. The Downtown emerged, and conflicts like Jane Jacobs against Robert Moses, this last one representing the traditional power, begun. This fact evidenced that cities are thought, designed and construct for and from a very specific part of the population, with a big economic interest behind. Even though this dispute occurred, was just a glimpse of light in the history of the evolution of the city. The hierarchical relationship between the employer and the employee remained. And the public administration mirrored it, clearly form a regional level to a blurry local level. With the scope to the unlimited growth, nowadays, cities gather the vast majority of people living in urban areas, whom will do so for the foreseeable future. Mega cities, the largest category of urban agglomerations, attract considerable attention because of their population size, economic, socio-cultural, environmental and political influence and its geographical complexity. Until 1975 there were just three mega cities in the world: New York, Tokyo and Mexico City, today there are 27 cities having more than the defined 10

million inhabitants (Taubenböck, H., Esch, T., Felbier, A., Wiesner, M., Roth, A., & Dech, S., 2012).

This major fact, sketched what could be the next shift, that is already happening. The European Union has put some effort on leading this shift. The European commission launched many projects to tackle from different angles this transition. The Digital transformation, Artificial intelligence, Big data, Blockchain, are some of the factors of this transition. And the "freedom" Digital transformation has brought to educated employers is key. During the COVID-19 pandemic confirmed the previously mentioned "freedom" for people working in offices, cities no longer have to take in account the need of an epicentre eye, the office. New technologies as Artificial intelligence and big data leading the digital transformation, brought the chance to reshape cities reality, brought the chance to rethink the decision making process and more concretely, how to do it by applying a citizen-centric approach, in which citizens become actors and not factors of the fundamental transformative changes to happen in the years to come. AI-based technologies, among other recent technological advances associated to the Digital Transformation, has generated an enormous attention, with numerous works and debates in the field of ethics, creating tensions in the existing regulatory frameworks, and arising many questions in essential dimensions of our life, such as our identity as individuals, our right for privacy, the potential roles that we can play in a dynamic labour market, and much more. Particularly, this has been associated, though not exclusively, with the unleashed capacity of automation of processes, the increased machine-based decision-making with a focus on the way in which these decisions could be biased and controlled, and the possibility of monitoring, profiling, processing and creating massive data in real time in the Internet.

As today's reality showed that the trend is changing and this project aims to help to define how this change should be done. Through putting people first, listening to the final user, gathering all concerns and proposals. Therefore, citizens deciding in which type of cities they are willing to live, instead of being pushed by their imminent needs. Or what others think is best for them.

Within the DT4Regions, European, project framework and living.eu initiative, a European platform for Regions to enable AI and Big Data collective solutions, is being developed. Taking in consideration the needs mentioned before, the European Network of Living Labs is leading the Mutual learning and Community building work package, in order to really make these solutions collective, with an active and strong community. The solutions proposed in the platform pretend to solve real, daily problems that citizens might face.

2. Objectives

The objective of this research is to analyse the platform developed in the framework of two european projects. This will imply a review of the development process, its capacity to engage and promote citizen participation. Finally, suggestions and recommendations to improve community learning and the impact and accessibility of the platform will be offered.

The following specific objectives of the paper are:

- A comprehensive literature review on the concept of citizen participation.
- Identify the key elements necessary to integrate citizen participation into the design of the cities.
- Analysing the platform to facilitate citizens' participation in decision-making from the early beginning.
- Assessing the capacity needs of the decision-making process through a platform.
- Testing the citizens' contribution to the project.
- Correcting the model

3. Contextualization

The following chapter aims to explain the framework of the research starting from the early beginning of human history in relation to how they were living and introducing some of the relevant factors of the evolution of the city that happened till now, and are needed to understand the meaning of the current research. Afterwards the two European projects that this research contributes, are explained in detail while framing the reality the European cities and regions face. Last but not least, in this chapter some concepts relevant to the topic are introduced.

3.1. 'The city' & its history

In Mesopotamia and Egypt, the cities date back to the first Hittite settlements. In the basins of the Tigris and Euphrates rivers, humans became sedentary in their search for food and water, giving rise to Babylonian urbanism (Lapidus I., 1969).

Throughout history, there will be a constant dichotomy between movement and settlement. The first urban settlements sought good orographic conditions, abundance of water, rivers, and fertile land that would allow their inhabitants to acquire control over the use and transformation of natural resources. A domain that led to the agricultural revolution and with it to the first market logics dominated by the climatic factor. The first archaeological evidence of urban life dates back to 3,500 to 4,000 BC. and they were the seed of the subsequent urban revolution (Chalamanch M., 2020).

As Massimo Carrari carefully explains in his book and points out that the great Central European linguist Émile Benveniste already mention it many years ago, *polis* and *civitas* both liquid concepts to define 'The city' (Cacciari M., 2004).

The Greek word *polis* refers first and foremost to the seat, dwelling, or place where a certain *genos*, people, has its roots (Cacciari M., 2004). With the main focus on a determinate group of people, with the same traditions, *ethos*. The Latin term *Civitas* derives from *civis*, it is a result of *cives*' in the same place and subject to the same laws. A perfect correspondence exists between *polities* and *civitas*; the last alludes to the city, the first to the citizen.

The *polis* with a relevant importance on the roots, didn't allow the city to grow 'wild'. However, the nature of the *civitas* with the main example Rome, the big *urbs*, under the same laws and one common objective, the future, could grow without limit. The concept of the Rome *mobilis*, the city in its essence is constantly changing, is alive, the first attempt of globalization the *imperium sine fine,* appears (Chalamanch M., 2020). Growing is the fundamental and programmatic nature of the *civitas*. There is no *civitas* that is not augescens. According to the European perspective, the city is closely related to the Roman one where different cultures live together under the same law. In other words, the evolution of the city towards the metropolis began with the Roman *civitas mobils augescens*, not with the Greek polis (Cacciari M., 2004).

According to Charles Delfante (Delfante C., 2006), the "father of our cities" can be found in the Middle Ages with the creation of "bastides", the growth of villages into cities, or the foundation of new cities, set within a walled enclosure for defensive purposes. Consequently, the city grows in height as a result of its densification. Diverse urban structures are adapted to the needs of the different groups inhabiting the city: clergy, nobility, peasants, artisans. Thus, open squares are beginning to be needed for markets, around which the city grows. The creation of a common, complex, and unitary public space in a city leads to a sense of belonging, making the inhabitants pride of. The new cities as commercial hubs connecting continents throw the sea, grown close to coastlines becoming the biggest cities in the world during mid-16th century.

Later, with the arrival of the steam engine and the French Revolution in the 18th century, cities were consolidated as centres of industrial and commercial production (Sánchez, 2012). The old ramparts lose the defensive value, and start defining the inside and outside the old city just for economical purposes. The disappearance of the wall is not erased since its footprint becomes the start of the peripheral city, many times now converted into traffic rings (Azúa F., 2004).

Because of that the metropolis appears, ironically, regulated by industry and commerce using the Roman concept *civitas* as a starting point, instead of the Greek *polis.* Using the previously mentioned idea of the *civitas mobilis augescens* to explain the urban trasnformations and poitical revolutions which has the city in it's centre (Chalamanch

M., 2020). As Cacciari explains, losing the urban identity while creating the basis of the actual democracy and the modern urbanism (Cacciari M., 2010). The growth of those metropolis is strictly related with the rural to urban migrations, expanding cities passing through the mentioned wall, creating the peripheral city and projecting the unlimited growth and development of the city, from the "value" point of view, production, market and exchange. At the beginning of the 20th century, the city concentrated on the construction of transport and communication infrastructures. These infrastructures are essential for the development of a global economy based on the production of goods and services. With the appearance of the private vehicle, the limits between the rural and the urban are blurred through processes of suburbanization and urban dispersion, surpassing the limits of the city and consolidating metropolitan areas (Muñoz F., 2008).

Nowadays more than 55% of humans live in urban areas and the ONU predicted that around 2050 this number will increase up to 68% (Nations U., 2018). This fact will become a challenge to achieve a sustainable development avoiding social, economic or demographic problems, among others. The overcrowded metropolis, shifted the main purpose of the city and adds more layers of complexity.

The idea of an ideal city, that has been tried to achieve since the beginning of urbanism is just a fantasy on the paper (Rosenau, 1986). For many, the question of sustainability is the key criterion on which to found the new ideal city. The concept is limited in its theoretical value, valuable in its political impact, and promising in its architectural implications (Fernández-Ramírez, 2008). However, the complexity of the fact that nor just one city exists, as many cities exist as eyes look at it. And cities have been shape from the point of view of economic value. Among its characteristics, urban development is slow, to the point of bordering on a historical dimension, undergoing various interventions throughout different generations, with architects who add elements that complete the initial projects, analysing and responding to previous designs, dialoguing with them eagerly to magnify them. Public spaces are of great importance, as an imitation of the ancient agora, showcase or meeting points and public life. The urban layouts are the work of architect-artists who prioritize the idea of composition, the design of the whole governed by the principles of proportion and perspective. Here lies

one of the keys to the urban beauty of so many historic centres that maintain their fame today (Fernández-Ramírez, B., 2010).

Once the modern city had grown, with the mentioned rings around the old walls, with blurred differences between the rural and urban areas with the big suburbs, the crowded downtowns and all the features that define the city nowadays Khanna (Khanna, 2016) mentions that geography is starting to become obsolete, and the old arguments are no longer as important, and connectivity is the new path. This paradigm shift can be read as physical connectivity or digital, virtual connectivity. And as Calamarch reminds in the ending of his publication: “We cannot forget that the city is the largest and most complex creation of man for man.”

3.2. The city of the future – European context

Regarding the mentioned complexity, the involvement of citizens with different methodologies and the many shifts that cities experienced through the years the European Union has put some efforts on leading, framing and shaping the paradigm shift that humanity is facing. Some of this projects aligned with health, socio-economic perspective, digital transformation among others. From a specific topic to a transversal project, the EC is working hard to do not miss any parameter. Some of this projects related to digital transformation have been mapped.

The following section presents an overview of existing European Platforms that focus on BD and/or AI. These platforms were analysed in order to understand which services are already being offered. This information will be useful in defining the position and the value proposition of the future DT4region platform. Ten main initiatives have been identified, for each of them the following information has been provided:

- A description of the platform
- Key processes offered by the initiative, for example:
    - Publishing and elaboration of dataset
    - Publication of API services on a catalogue
    - Challenge and idea generation
    - Access or consumption of computing resources
    - Transparency of data report
- Dataset: does the platform a repository of dataset that can be reused by users?

- Users: which the actors/users of the initiative/platform?

The analysis has focused exclusively on Platforms with a European scope, therefore not taking into consideration the great amount of national and regional platforms available especially in the field of open data. On a European level, it was possible to identify six main typologies of platforms and services:

1. Online repository of dataset, solutions, services or research: In this category belong platforms that provide access to catalogues of data, of solutions, of specific services or list research and papers. Here information is catalogued according to specific criteria and a search engine allows users to search the catalogue. Some of these platforms aim to become a one-stop-shop for users looking into specific knowledge, data and services around BD and AI (e.g. JoinUp, AI4EU, data.europa.eu, Connecting Europe Facility; EUHUBS4DATA)
2. Test Infrastructure: This typology includes platforms that provide virtual environment that can be used to experiment with BD sources and models or AI solution and design methods (e.g. CEF Big Data Test Infrastructure; AI4EU)
3. Monitoring and studies: Within this typology, we annoverated different initiatives that aim to monitor research and progress in industrial, technological and policy contexts. Platforms in this area collect information, studies, solutions and applications that can be used as basis for policy making or to make informed decision on the use of these technologies (e.g. AI Watch, Living-in.EU)
4. Forum and collaboration: This category includes platforms that, in addition to information, also offer opportunities for participation and discussion between final users. In some cases the forum function is an additional resource of the platform, in other it aims to achieve collaboration opportunities among stakeholders (e.g.AI Alliance; Living in EU)
5. Capacity Building: This category is made up of platforms that provide real opportunities for capacity building by offering free training, webinars and resources to deepen knowledge in the field of BD or AI to interested users (e.g. data.europa.eu)
6. Challenge based /innovation procurement/ Open call: In this last category, we listed a new wave of platforms often created by European projects, which focus on an open innovation methodology to find solutions for common challenges. The challenge-approach is often translated in open call where interested parties can apply to provide

concrete solutions for challenges previously identified by public actors or consortia of stakeholders. In some cases, the open calls are link to innovation procurement leading the way for public administration to became the first users of innovation thus opening the market for them (e.g.AI4cities, EUHUBS4DATA)

In many cases, the platforms analysed can be categorised under one or more of the typologies above. A brief overview of these platforms and their services is presented below. The complete analysis can be found at the ANNEX. The following platforms worked as the role models for the DT4REGIONS platform, providing knowledge, expertise and a good understanding on which is the European reality and the starting point for the platform.

The platforms aim to work side by side on defveloping the awareness of Artificial Intelligence, Big Data or topics related to Digital Transformation, which is the main focus of the DT4REGIONS platform. From a more political point of view and further explain below LIVING-IN.EU leads the European political decalaration.

PLATFORM	**LIVING-IN.EU**
WEBSITE	https://living-in.eu/
DESCRIPTION	Living-in.EU is a political declaration to promote digital solutions throughout cities. It promotes smart mobility, sustainability, citizen participation. The political declaration has been signed currently by the Majors of 60 cities and regions, and it has become a reference tool for the alignment of strategies in the development of digital tools and skills for cities, including the use of AI-related solutions.

PLATFORM	**AI4EU**
WEBSITE	Home | AI4EU (ai4europe.eu)
DESCRIPTION	The H2020 project brings the AI stakeholders and AI resources together in one dedicated place, overcoming fragmentation, so that AI-based innovations (research, products, solutions) will be accelerated. The AI4EU Platform acts as the one-stop-shop for

	anyone looking for AI knowledge, technology, services, software, and experts. AI4EU will function as European AI market driver, offering a critical mass of resources, community networking effects, and rapid development and growth.

PLATFORM	**JOIN UP**
WEBSITE	Joinup (europa.eu)
DESCRIPTION	JOINUP is a platform created by the European Commission and funded by the ISA2 Programme. It was established to share and reuse interoperability solutions for public administrations, businesses and citizens.it aims to become a one-stop-shop for interoperability solutions. An interesting study depicted in the platform is "Data Analytics for Member States and Citizens.", which explores the governance, technological and policy application aspect of big data in public administration, through a set of case studies and policy recommendations in support of the European Commission data strategy.

PLATFORM	**CEF BIG DATA TEST INFRASTRUCTURE**
WEBSITE	big data test infrastructure (europa.eu)
DESCRIPTION	CEF Big Data Test Infrastructure (BDTI) provides virtual environments that are built based on a mix of mature open source and off-the-shelf tools and technologies. The building block can be used to experiment with big data sources and models and test concepts and develop pilot projects on big data in a virtual environment. Each of these environments are based on a template that supports one or more use cases. These templates can be deployed, launched and managed as separate software environments. Specifically, the Big Data Test Infrastructure provides a set of data and analytics services, from infrastructure, tools and stakeholder onboarding services, allowing European

	public organisations to experiment with Big Data technologies and move towards data-driven decision making. The platform will be no longer updated and a new platform will be provided in the near future.

PLATFORM	**DATA.EUROPA.EU**
WEBSITE	data.europa.eu
DESCRIPTION	The portal provides access to open data from international, EU, national, regional, local and geo data portals. It replaces the EU Open Data Portal and the European Data Portal. The portal addresses the whole data value chain, from data publishing to data reuse. Going beyond collecting metadata (data about data), the strategic objective of the portal is to improve accessibility and increase the value of open data. Users can use and reuse these data for commercial or non-commercial purposes. Aim of the portal is to provide easy access to data, free of charge, so that they are put to innovative use, thus unlocking their economic potential. The portal is also designed to make the EU institutions and other bodies more open and accountable.

PLATFORM	**AI WATCH**
WEBSITE	AI Watch (europa.eu)
DESCRIPTION	AI Watch is an initiative of the European Commission (EC) jointly developed by the EC joint Research Centre (JRC) and the Directorate General for Communications Networks, Content and Technology (DG CONNECT). The aim of AI Watch is to monitor the industrial, technological and research capacity, as well as the policy initiatives in the Member States, together with the uptake and technical developments of Artificial Intelligence

	and its impact in the economy, society and public services. Further, AI Watch provides a number of analyses necessary to monitor and facilitate the implementation of the European Strategy for AI

PLATFORM	**AI ALLIANCE**
WEBSITE	European AI Alliance | Futurium (europa.eu)
DESCRIPTION	The European AI Alliance is a multistakeholder forum for engaging in a broad and open discussion of all aspects of AI development and its impact on the economy and society. It is steered by the High-Level Expert Group on AI (AI HLEG), which consists of 52 experts who have been selected by the Commission for this task, which includes the definition of a framework for trustworthy AI.

PLATFORM	**CONNECTING EUROPE FACILITY**
WEBSITE	https://digital-strategy.ec.europa.eu/en/policies/open-data-portals
DESCRIPTION	The principal function of the European Data Portal is to provide a single point of access in all 24 EU official languages for data published by public administrations at all levels of government in Europe (EU countries, countries of the European Economic Area and certain other European countries).

PLATFORM	**AI4CITIES**
WEBSITE	AI4Cities | Home
DESCRIPTION	The AI4CITIES project which is based on public procurement for innovation to get the right technologies for local public issues. In particular the project aims at accelerating carbon neutrality through AI based solutions dealing with

	mobility and energy. Selected cities (as Helsinki, Amsterdam, Paris etc..) are going through a Pre-Commercial Procurement (PCP) to find solutions to make their mobility and energy domains more carbon neutral. In the 2nd phase of the project, ten Suppliers working on Energy solutions and ten working on mobility solutions will be developing the first prototypes of the designs created in the first stage of the project.

PLATFORM	**EUHUBS4DATA**
WEBSITE	https://euhubs4data.eu/
DESCRIPTION	The European federation of Data Driven Innovation Hubs aims to consolidate as the European reference for data driven innovation and experimentation, fostering collaboration between data driven initiatives in Europe, federating solutions in a global common catalogue of data services, and sharing data in a cross-border and cross-sector basis. With the objective of serving as reference to the establishment of the Common European Data Spaces, the federation is initially composed of 12 DIHs, covering 10 countries and 12 different regions, and plans to increase the geographical coverage by incorporating other relevant initiatives in the upcoming months.

3.3. Living-in.eu

The first mentioned platform LIVING-IN.eu actively takes part in the development of the DT4REGIONS platform helping to develop the Mutual learning community that will be further explained. Regarding that fact with LIVING-In.eu, decision makers at all levels of government together with organisations and networks of cities and communities of all sizes (EUROCITIES, 2022), believe that strong cooperation through multi-level governance in the EU and co-creation with citizens are key to the common mission of

turning European cities and communities into smart and sustainable places where people enjoy living and working. LIVING-IN.eu aims for a cohesive, digital Europe, where every community can enjoy the economic and social benefits of this transformation, while making sure not to leave anyone behind (EC of Regions, 2022). LIVING-IN.eu therefore underline the need for sufficient public and private investment in digital services, technologies, infrastructures and skills to achieve this goal.

At a time when European cities and communities are facing a growing range of challenges, this declaration marks an important step in the launch of the 'European way' of digitally transforming cities and communities. This approach will ensure technological leadership in the EU while respecting European values and diversity, as well as individuals' digital rights.

Although a number of initiatives have led to successful innovative digital solutions, their impact on society as a whole remains limited and unevenly distributed across the EU. The extensive uptake and scaling up of these solutions are crucial to help our cities and communities meet their climate targets and reduce their environmental footprint. It will also encourage citizen participation, and help all types of businesses, including SMEs and start-ups, to prosper. It is time for all levels of government in the EU to join forces to scale up digital solutions so that at least 300 million Europeans can enjoy a better quality of life by 2025 (General Assembly, 2015). Encouraging the use of commonly agreed digital solutions among regions, cities and communities will help close the digital divide and reduce inequalities for a stronger territorial cohesion.

Digital solutions underpinned by locally-generated data are essential for delivering more informed, innovative and high-quality services to the public and to businesses. These solutions include smart urban mobility, energy efficiency, sustainable housing, digital public services and civic-led governance. If the public is to trust these systems, data must be used responsibly through digital platforms as DT4REGIONS, and its quality, security and privacy must be ensured.

Cooperation across geographical areas and between sectors will boost innovation and allow cities and communities to develop efficient, cost-effective and citizen-centric

services. Therefore, the deployment and scaling up of open, interoperable, cross-sector and cross-border platforms as a means to boost digital transformation is at the heart of this declaration. This will help ensure technological sovereignty in the EU and the co-creation of digital solutions that do not lock European cities and communities into specific technologies.

3.4. DT4REGIONS

DT4REGIONS is one of this EU projects, specifically focused on regions and cities, around the topic of Digital Transformation lead by Artificial Intelligence(AI) and Big Data technologies. DT4REGIONS aims to create a European Platform for Regions to enable AI and Big Data collective solutions. It will be a unique challenge-based innovation platform for the development of tools and services of public interest. At the same time, it will enhance public administration efficiency and effectiveness in user-centric services.

Bringing together 14 partners and 13 supporting organisations from across Europe, the project has the real needs of a network of regions at its heart. Technical partners provide assistance to make the platform a sound and effective environment for the development of the next era of AI and Big Data for the digital transformation of public administration. Within this context, public administrations will be engaged in defining the platform services and will benefit from dedicated capacity building and mutual learning activities, with a view to exploiting the full potential of the platform itself. Regional innovation ecosystem actors will contribute to the identification of the platform functionalities and contents, as well as of the future public services to be developed and delivered on the back of AI and Big Data solutions (European Commission, 2022).

The goal of the DT4REGIONS project is to engender a critical mass of regional governments and officers actively involved leading with public services, citizens, side by side private companies and the academia, in order to produce network economies where the utility increases with the number of data consumers. Nevertheless, it is well known that for such communities to emerge, it is necessary to begin with content and

services that the users can gather around and flourish. Therefore, the Project devotes substantial effort into generating, organising, and distributing already existing tools, services, and datasets, focusing on the concrete research questions rather than the technical solutions. In this context, a storytelling approach would allow for effective communication. Thus, has been identified as the platform's building blocks the challenges or business needs faced by the stakeholders as public administrators, which can be addressed by adopting AI and big data technologies. These blocks, which are called DT stories in view of their narrative structure, define the main components displayed on the platform website, under the DT Book module (Deloitte, 2022).

3.5. DTStories

A DT story represents an identified opportunity for value creation through digital transformation. It may be described as a set of problems to tackle or specific strategic objectives to achieve by implementing innovative practices, such as AI technologies or Big Data. Thus, it should be formulated as a change in existing processes: what are we striving to attain through digital transformation? Which organisational change would we like to manage using AI solutions or Big Data?

The primary purposes of publishing a DT story are:

- increasing awareness about existing business needs and requirements of public administrations to facilitate the alignment of development work,
- calling on the entire internet community to help address specific business needs,
- building communities of institutions which face similar challenges.

The components of a DT story are:

1. Title
2. Author
3. City or Region associated with the Author
4. Country of the Author
5. Category (single)

6. Themes (multi)
7. Status (open or closed)
8. Description (incorporates the abstract, strategic objectives, and expected benefits)
9. Resources (name, type, version, labels, URL, license)
10. List of DT Solutions *(see the Section DTSolution)*

The following principles should be taken into account while writing the description of a DT story:

- **Clarity and conciseness**. The reader should be able to intercept the main problems or business needs of the DT story from the title, the themes, and the abstract. A quick look at the first lines of the description would allow the platform users to determine the problem's relevance and similarity to their own scenarios and thus identify common needs.
- **Generality**. It should not present contextual factors unless needed to specify the strategic objectives or expected benefits. Too many constraints could discourage potential contributors from publishing their DT solutions if they think they can partially tackle the challenge described in the DT story. In contrast, a more general description would be more inclusive and stimulate the flourishing of communities of practice.
- **Technological neutrality**. It should focus on functional needs and not impose specific technical implementations or products, in order to minimise the technological dependencies.

3.5.1. Example of a DTStory

Intelligent digital workspace in the era of smart working

Italy | Emilia-Romagna Region

Published by: Emilia-Romagna Region

Published at 16/06/2022 Last update 23/08/2022

Enhancing internal management

Contribute

Description

Regions and Cities | Transport | Environment

In the last years, but more intensively during the pandemic emergency, the private sector and public administrations have massively implemented smart working and remote work practices. In this context, the Emilia-Romagna Region policymakers wonder how to use, also thanks to a more efficient and AI-driven management, the data produced by these new work organization models to push towards the achievement of strategic objectives defined in the Pact for Work and Climate, the Italian and European Union strategy for climate neutrality and transition towards a new, more environmentally and socially sustainable economy.

Problem or opportunity (Strategic objectives)

In particular, the Emilia-Romagna region aims to increase its quality of administration and staff performance, with a focus on the following commitments:

- Speeding up the environmental transition by promoting more sustainable mobility, reducing private motorised traffic, and fighting buildings' energy waste and optimizing its own workspaces.
- Adopting good practices and creating innovative welfare, such as improving the workers' work-life balance to reconcile work, personal, and family plans.

The data available to support the development of digital transformation solutions contains personally identifiable information and is not attached to the story:

The employee registry:

- Employee_id: identification number in our HR system (0123456789)
- Birthday: date in DD/MM/YYYY format (12/12/1975)
- Gender: string indicates gender (M/F/NB)
- Organisation unit: organisation unit internal code (D032)
- Smart working flag: flag indicating if the employee has smart working rights (S/N)
- Workplace_id: office code (BO30)
- Country, region, province, city, address, zip code: Geographical informations as separated fields (Italia, Emilia-Romagna, BO, BOLOGNA, VIA DELL'INDIPENDENZA 1, 40121)

The offices registry:

- Workplace_id: office code as is in employee registry (BO30)
- Country, region, province, city, address, zip code: Geographical informations as separated fields (Italia, Emilia-Romagna, BO, BOLOGNA, V.LE ALDO MORO 30, 40128)
- Status: Boolean flag indicates if the office is still available (true/false)

Expected benefits

The main beneficiaries of the actions would be, in the first place, the about 4000 employees and collaborators of the Emilia-Romagna Region. Specifically, more flexible forms of labour should contribute to creating a better working environment and, not least, facilitate the work and life needs of vulnerable categories of workers, such as expectant mothers, people with disabilities, and rural inhabitants who are struggling to reach their workplaces. The increase in well-being and optimal use of the public assets would also improve the productivity of the Organization, reduce energy consumption and pollution, and hence produce benefits for the entire community. Finally, remote working may support the repopulation of rural villages in the territory.

Resources

documentation

Pact for work and climate (Emilia-Romagna)

1.0

Published 16/06/2022 Last Updated 16/06/2022

environmental transition

View License

Solutions

★★★★★ 5.0

Identification of the optimal location of co-working spaces using clustering methods

The proposed solution exploits the potential of the clustering techniques to help the Emilia-Romagna Region get insights into the mobility of the collaborators who commute to work and find homogenous areas of workers,

Know more >

Contribution by external users to submit DT Stories and DT Solutions is not yet available on the DT4REGIONS Platform – This feature will soon be added. Contact us for more information.

A DT story may be an open challenge if it lacks a well-established solution. In this case, an author can solely publish a DT story without a DT solution with the aim of asking the community for help in endorsing the issues they are facing. On the other hand, if some solution has already been implemented, the author could publish, together with the DT story, a DT solution that describes the tangible resources employed.

3.6. DTSolution

A DT solution is a reusable, interoperable, and self-contained set of digital resources and documentation that has proven its value in addressing the business challenges defined in a DT story. From the technical point of view, a DT solution includes an IT service either procured or developed which implements AI technologies applied on datasets of any size, e.g., Big Data, and format (tabular, streams, etc…).

To facilitate the reuse of such tools, the publisher of the DT solution is highly recommended to provide readmes, manuals, documentation, and licenses describing how and to which extent the solution can be implemented in other contexts. It is also recommended to (e.g., open-source programming frameworks and data formats) with the aim of empowering citizens, businesses, and academics to get involved in the design of new solutions, contribute to service improvement or maintenance, and give feedback about the quality of the system. Finally, the proposed solution should be interoperable to enable its integration into other systems. Providing all these components together should make transparent, open, and democratise the process of obtaining some beneficial results from employing AI technologies and Big Data in the public administration domain.

The components of a DT solution are

1. Title
2. Author
3. Country of the Author
4. City or Region associated with the Author
5. Themes (inherited from the associated DT story)

6. Description (incorporates the abstract, the tactical objectives, the methods, the functional requirements, the results and impact assessment, dependencies and constraints)
7. Resources (name, type, version, labels, URL, license)
8. Disclaimers.

The description should focus on how the proposed technologies can assist the public administration in achieving the strategic objectives defined in the DT story. However, a DT solution may not be perfectly tailored to the specific context illustrated in the DT story, neither it is supposed to address the challenges exhaustively. Even a fragmental proposal could be a starting point for the successful achievement of all the goals.

The description is articulated into abstract, tactical objectives, methods, functional requirements, results and impact assessment, and dependencies and constraints.

In the methods section, the information about development, implementation, and deployment processes are summarised. The complete and detailed technical documentation should be linked or uploaded into the resources section. It would possibly include all the instructions to deliver the outputs given the data and the software, the background and team portrayal (e.g., the history of the solution, and the info about the development team), and technical specifications describing the services exposed, the core processes, the architecture, and the installation and configuration.

To evaluate the reusability/scalability of a DT solution, the functional requirements should be specified in the dedicated section. If any co-creation approach has been adopted, the external subjects engaged in the process should be reported here, as well.

Several barriers may be encountered in reaping the benefits of the solution in the public sector. These include conflicting organisational culture, uncertainty in regulations, insufficiently known impacts, lack of skills or expertise, underdeveloped data governance, and insufficient or low-quality data. Moreover, the solution may be dependent on other software that requires acquiring specific licences. Thus, limitations and barriers detected in the given context may be listed in the dependencies and constraints section.

For a public administration to reuse a solution, it should know that it is safe, technically mature and documented enough. Also, although many national and European registries or catalogues of solutions are already available, it is often difficult for public administrations to make a sound decision about which solution to choose because of the poor quality of the description provided. That is why the resources section is critical when creating a DT solution. As already mentioned, together with the source code and data, if available, the resource section should contain the technical documentation. These reading materials would possibly follow the rules specified in Annex IV (technical documentation) of the Artificial Intelligence Act (MADIEGA, T., 2021), especially if an AI technology is employed. To mention some, these rules require the description of: the methods and steps performed for the development or the integration of the system; the design specifications, the main classification choices, what the system is designed to optimise, and the relevance of the different parameters, the description of the system architecture, the data requirements, assessment of the human oversight measure, and the validation and testing procedures used. The availability of rich documentation not only allows for a detailed investigation of the solution, but also offers a strong indication of the solution's maturity and support level. Other essential resources are Intellectual property rights and licensing. They include the formal definition that refers to or describes the licensing mechanism, ownership rights, restrictions, and user responsibilities related to the distribution and reuse of the solution.

Finally, the DT solution would come with disclaimers detailing how the risks delivered by the employed technologies have been mitigated. These risks may be related to ethical, social, or environmental implications, such as discriminatory biases, non-explainability or non-accountability of predictive algorithms, job loss, societal fragmentation, and damage to the natural environment; or they may concern legal infringements or security and cybersecurity aspects (e.g., privacy protection if personal or sensitive data are processed). Examples of such disclaimers can be a declaration of compliance with the GDPR or the results of a trustworthy AI technology assessment.

3.7. The structure

The DT stories will be published by the platform users in the DT Stories submodule, placed under the DT Book module. The following picture illustrates the hierarchical structure of the mentioned components.

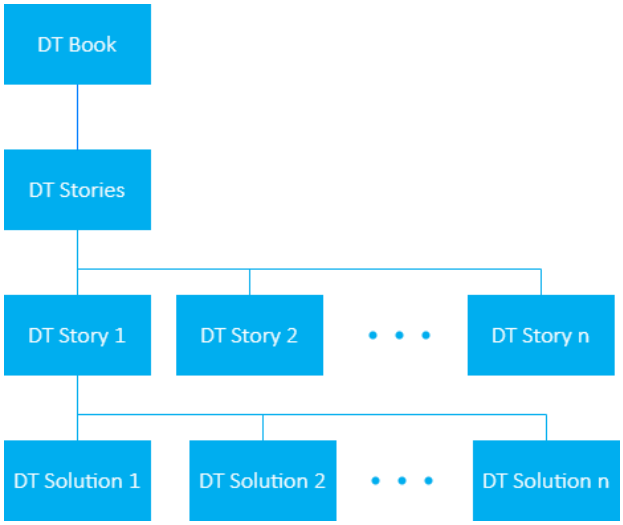

Image 1: Scketch of the structure of the platform

3.8. Forum

In order to incentivise this critical mass, the platform will have a module called forum which aims to be a collaborative and interactive environment, serving as a community of practice, where knowledge and experiences are exchanged in a lively debate. In this forum, users will be able to discuss and upload content about several topics, such as ethics, organizational, social, and technical implications of AI and BD technologies.

3.9. Academy

The DT4Regions platform guarantees Mutual Learning Communities, those are spaces in which the participants (experts, practitioners and newcomers) share their knowledge in a very practical way, by exchanging practices, examples and resources. This is the precise objective of the DT4Regions project for AI and Big Data in the specific context of the community of public servants. The DT4Region project is developing a Pilot to understand how these Communities of Mutual Learning can be organized in a sustainable way, making use of the features provided by the DT4Regions platform. Furthermore, to make this discussion mass critical the platform will also have a specific

module to build a learning environment featuring dedicated training activities and webinars, in the format of videos. This academia will be alive and more resources can be added.

3.10. Citizen participation

In Enrique Conejero Paz's article (Conejero Paz, E., 2005) it is explained how to overcome the bureaucratic-hierarchical governance model, it will be necessary to use a new way of governing, such as governance, which is a more cooperative model, in which the currently non-state actors will be incorporated into the policy cycle. This participatory model must be based on the idea of self-government of the community of citizens, through the deliberation, it means that decision-making must be collective, with the participation of all those who will affect that decision, so it will be necessary to form citizens as co-decision-makers, co-responsible and co-evaluators of the public policies, implementing active channels of citizen participation in the decision-making, but to achieve a greater social participation it will be necessary to achieve asocial cohesion, reducing economic and social inequalities. That is why it is important to decentralize government, since the centralization does not allow local governments to be considered the only relevant actor, since their decisions have to be supported by the central power of the State. As Juan-Cruz Alli Aranguren explains in his article (Aranguren, J.-C. A., 2001) this model of governance is not based on the vertical relations of the hierarchy, but on the horizontal ones.

3.10.1. Forms of participation

We will see different forms of participation as Patrick Bishop and Glyn Davis explain in their article (Bishop, P., & Davis, G., 2002) and which is also explained by B.C. Smith in his book (Smith, B., 2007) that can be implemented in a governance model to incorporate collective decisions in to policy:

- Representation of the administrative bodies: In this form of representation, the representatives of the designated groups may be part of the management bodies of the local entities.
- Management of public services: Through participation in the management of an institution, whether it is in the provision of services, there presentation of a community in functional boards or committees to administer the service of which the institution is a part.
- Action groups: By creating action groups and voluntary organizations to articulate the needs of the people which the government programs purport to serve.
- Representative of the Government: This type of participation may involve the creation of formal representative governance structures at different levels of the spatial hierarchy. It also requires them to participate in participatory planning, management and auditing with local institutions. The inhabitants of the area covered by the level of government shall vote periodically to elect their representatives to be part of the assemblies and councils.
- Participation as a society: In this governance model, there will be a long-term dialogue between government agencies and a number of stakeholders involved in particular policy areas. The government agrees to work with interests outside the state to set the direction of the policy and there will be a close working relationship between the government and the interest groups.
- Participation as control: In this model there is a direct relationship between individuals and public policy decisions. The traditional device of participation as a control is the use of referendums to impose binding options on governments and societies. This model does not allow to debate on the issues to be decided, it should be complemented with a space of reflection and debate to reach a common point.

According to Baum (Lake, D. A., & Baum, M. A., 2001), Citizen participation refers to citizen involvement in public decision making. Citizens are either individuals or organized communities and participation could involve observation or power, we also

have Citizen engagement which involves citizens in the decision-making process of public policies. To do so, they have to provide them with tools to consult and access public information, discuss with elected representatives and monitor the implementation of the projects. Citizen engagement requires an active, intentional dialogue between citizens and public decision makers and the goal is to improve public service deliveries and policy projects (Lodewijckx, I., & Cools, J., 2021). In order to classify either citizen participation or engagement, P. Cardullo and R. Kitchin (Cardullo, P., & Kitchin, R., 2019) draw as an extend on the Sherry R. Arnstein work (Sherry R. A., 1969) the ground roots of the citizen participation and the first to set a framework, 'The Ladder of participation', the 'Scaffold of Smart Citizen Participation'. The purpose of the thesis is to identify which parts of the scaffold are realistically reachable with the platform and how high on the scaffolding the platform can climb.

3.11. Ladder of participation

In 1969, Sherry Arnstein published a highly influential paper on the ways in which citizens are involved in the planning process and regeneration programmes. Her thesis was that planning is a top-down, technocratic exercise that takes little account of citizens' views or desires. She formulated a conceptual ladder with eight rungs (Cardullo, P., & Kitchin, R., 2019) Despite critique, the popularity of Arnstein's ladder endures due to its heuristic utility to reveal the extent to which citizens are involved [...] However, it is evident that Arnstein's formulation needs to be reworked in order to more fully

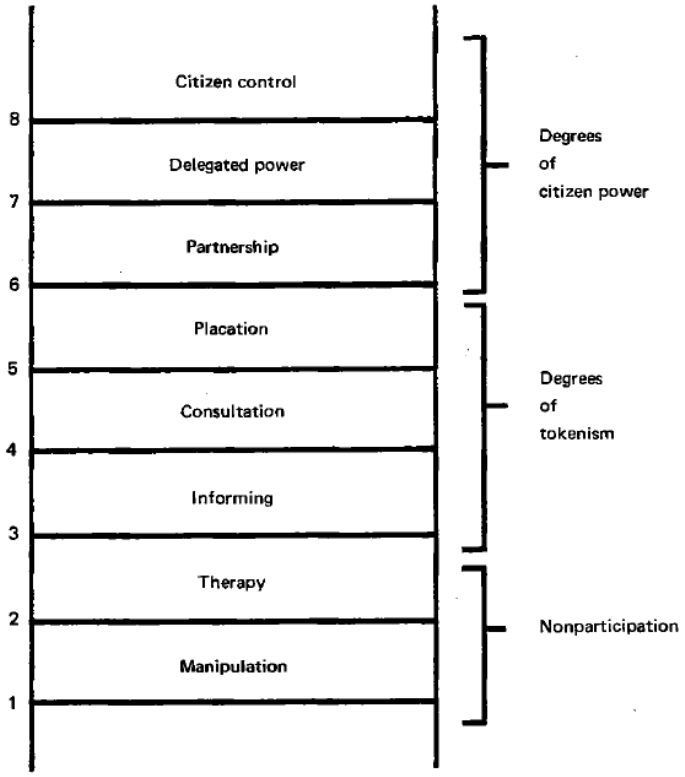

Image 2: Arnstein Ladder (Arnstein, S. R., 1969).

account for the type, role, function, political discourse/framing, and modality of citizen participation in the neoliberal, entrepreneurial city (Cardullo, P., & Kitchin, R., 2019). P. Cardullo and R. Kitchin reworked the original framework of Arstein's ladder, in order to provide a more borad and conceptual scaffold.The conceptual scaffold is a really interesting tool to identify the degree of power that citizens have in the decision making process and where administration is really trusting citizens letting them be part of the process.

<table>
<tr><th colspan="2">Form and Level of Participation</th><th>Role</th><th>Citizen Involvement</th><th>Political discourse/ framing</th><th>Modality</th><th>Dublin Examples</th></tr>
<tr><td rowspan="3">Citizen Power</td><td>Citizen Control</td><td>Leader, Member</td><td rowspan="2">Ideas, Vision, Leadership, Ownership, Create</td><td rowspan="2">Rights, Social/Political Citizenship, Commons</td><td rowspan="3">Inclusive, Bottom-up, Collective, Autonomy, Experimental</td><td>Code for Ireland, Tog</td></tr>
<tr><td>Delegated Power</td><td>Decision-maker, Maker</td><td>Civic Hacking, Hackathons, Living Labs, Dublin Beta</td></tr>
<tr><td>Partnership</td><td>Co-creator</td><td>Negotiate, Produce</td><td rowspan="2">Participation, Co-creation</td></tr>
<tr><td rowspan="3">Tokenism</td><td>Placation</td><td>Proposer</td><td>Suggest</td><td rowspan="5">Top-down, Civic Paternalism, Stewardship, Bound-to-succeed</td><td>Fix-Your-Street, Smart Dublin Advisory Network</td></tr>
<tr><td>Consultation</td><td>Participant, Tester, Player</td><td>Feedback</td><td rowspan="2">Civic Engagement</td><td>CIVIQ, Smart Stadium</td></tr>
<tr><td>Information</td><td>Recipient</td><td rowspan="2">Browse, Consume, Act</td><td>Dublinked, Dublin Dashboard, RTPI</td></tr>
<tr><td rowspan="2">Consumerism</td><td rowspan="2">Choice</td><td rowspan="2">Resident, Consumer</td><td rowspan="2">Capitalism, Market</td><td>Smart building/ Smart district</td></tr>
<tr><td>Smart meters, Mobile/locative media</td></tr>
<tr><td rowspan="2">Non-Participation</td><td>Therapy</td><td rowspan="2">Patient, Learner, User, Product, Data-point</td><td rowspan="2">Steered, Nudged, Controlled</td><td rowspan="2">Stewardship, Technocracy, Paternalism</td><td>Dublin Bikes, Smart Dublin</td></tr>
<tr><td>Manipulation</td><td>Traffic control</td></tr>
</table>

Image 3: Coneptual scaffold (Cardullo, P., & Kitchin, R., 2019).

After studying the Scaffold of P.Cardullo and R.Kichin and aiming the objectives of Co-creating the design of the cities of the future with citizens, the minimum ladder step that the platform aims is the higher from, tokenism constituted by *Placation*. In 'placation' rather than simply feedback on proposals, citizens are able to suggest alternatives and additions to those proposed. (Cardullo, P., & Kitchin, R., 2019) *Placation* can work to keep civic paternalism in check by challenging the aspirations and assertions of 'experts' and politicians. Nonetheless, Arnstein argues that citizens are asked to contribute to a set of initiatives which are already largely predetermined in their scope and how they will operate. In this sense, citizens are enabled to partially re-arrange the deckchairs on a ship's deck, but not to determine how the ship is run or its general course (Cardullo, P., & Kitchin, R., 2019).

Furthermore, in order to guarantee Co-creation, the lower form of Citizen power, *Partnership*, a key concept. In *Partnership*, planning and decision-making is shared, with agreed ground rules and mechanisms for moving projects forward and resolving impasses (Cardullo, P., & Kitchin, R., 2019). *Partnership* is also the first step in Arnstein's ladder that the modality is Bottom-up and therefore the first step on delegating power to Citizens. Living labs could be included in one of the tools implemented in this stage.

The highest steps of the ladder are constituted by *Delegated power* and *Citizen control. Delegated power* occurs when citizens gain the dominant decision-making authority and genuine specified powers within a co-shared initiative, and *Citizen control* happens when citizens are fully in charge of the policy and managerial aspects of a program or institution and can fully negotiate (Cardullo, P., & Kitchin, R., 2019). Arnstein's framework is rooted in the concept of power and the extent to which it can induce "significant social reform", affecting the outcome of a process and eventually redistributing "the benefits of affluent society" rather than being only an "empty ritual" (Cardullo, P., & Kitchin, R., 2019).

3.12. Concept of 4ps

In the EU, the formation of partnerships between public authorities, business actors and civil society have been seen as an important instrument for enhancing regional development. Partnerships are often defined as people and organizations from some combination of public, business and civil constituencies who engage in voluntary, mutual beneficial and innovative relationships to address common societal aims through combining their resources and competences (Svensson, B., & Östhol, A., 2002) and are often assumed to strengthen the institutional "thickness" of the regions, and thereby its capacity to act and compete with other regions (Amin, A., & Thrift, N. J., 1994)(Higdem, U., & Hanssen, G. S., 2014). They are physical regions or virtual realities where stakeholders form public private-people partnerships (4Ps) of firms, public agencies, universities, institutes, and users all collaborating for creation, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts (Westerlund & Leminen, 2011).

3.13. Concept of Living lab

Fulgencio et al. (2012) argue that the term “living laboratory” was probably used first time by Knight (Knight, T., 1749) in reference to the elements and conditions of a body and an environment of an experiment. Tarricone et al. (1990) introduced a living lab as a concept house for materials and construction by researchers. Moffat et al. (1990) views a living lab as a single country, which monitors its citizens to test connections between diet, lifestyle factors and disease. Bajgier et al. (1991) propose a living laboratory as a restricted city, where students learn real-life problems with other stakeholders. Lasher et al. (1991) define living labs as a development project in a vendor-customer relationship, where own employees provide information and test prototypes.

Living labs are a prominent and novel form of open innovation suggesting numerous benefits for multiple stakeholders (Leminen, S., 2015). Edvardsson et al. (2012) prior research has differentiated living labs from other forms of innovation. Today’s living labs are complex innovation and experimentation environments. Studies frequently attempt to differentiate living labs from seemingly similar innovation activities and methodologies in different test and experimentation platforms (Niitamo, V.-P., Kulkki, S., Eriksson, M., & Hribernik, K. A., 2006)(Leminen, S., Niitamo, V., & Westerlund, M., 2017).

Living labs have been documented to integrate a wide range of expertise (Abowd et al., 2000) and have been proposed to cross many disciplines and concepts such as innovation management, user-centered design, entrepreneurship, cognitive science, organization theory, management models, context awareness, human computer interaction, information science and social computing, among many others (Kviselius et al., 2009). Thus, living labs make a growing area of research crossing across multiple disciplines and being applied in many environments including buildings, cities, urban areas and rural areas (Leminen, S., Niitamo, V., & Westerlund, M., 2017).

4. Methodology

The following chapter aims to frame which research methodology has been followed to develop each of the activities and the analysis of the documentation. The Survey and the Workshop organised are detailed, and my contribution on them specified.

4.1. Literature

Literature related with the topics of contemporaneous cities, industrial revolutions, citizen participation and the ladder of participation among others, has been deeply reviewed, in order to extract the most important information to gather the necessary knowledge to develop the present paper. The information has been analysed and included in the paper in order to provide a clear contextualization and justify the needs that cities might have in the close future.

4.2. Survey

The DT4Regions and Living-in.EU initiatives have created a short survey opened for all the European cities and Regions to participate in from December 2021 to February 2022. The survey has been developed with the European commission specific tool EUSurvey (European Commission's ISA programme, 2022). This survey aims to find out more about the stakeholders and scope the needs of regions and cities in terms of mutual learning with reference to digital transformation initiatives and processes. The results of the survey will help identify the types of organisations that should be included in the 'on boarding' process for a successful digital transformation at regional and local level and what kind of services should be offered within our joint Capacity Building Programme. Within both initiatives, a common Capacity Building Program will be developed with the aim of raising awareness and knowledge about the role of ICT applications in enacting the digital transformation of public services, as well as stimulate peer to peer knowledge sharing on digital transformation among cities and regions, with the final goal of Living-in.EU and DT4REGIONS of being a knowledge exchange hub of a wide variety of information for mutual learning on the digital transformation of European cities and regions on AI, big data. Finally, the feedback will support the creation of a shared vision

for building a network of linked Local Digital Twins (of cities, municipalities, regions or MS) by 2030.

The survey was distributed to the DT4REGIONS partner territories, as well as to the 100+ signatories of the Living-in.EU initiative, ENoLL and ERRIN network members representing governmental actors from European regions and cities. All other regional and local public administrations interested in digital transformation are also encouraged to participate. The survey is a closed form with open and closed, qualitative and quantitative questions. An action-research methodology was not applied. The survey can be found in Annex II.

I did not help with the conceptualization and creation of the survey, collection phase. However, I was in charge of cleaning the data, exploring and analysing the results, summarizing and reporting the most relevant information. In order to analyse the results of the survey the answers were divided between qualitative, open text answers, with unlimited or limited characters, and quantitative, numerical values. Within the numerical values *ratings* and *number of time selected* could be found. In order to clean the data and prepare it to be analysed Excel was implemented. Therefore, a standard data visualisation was not acceptable. It was key to maintain the horizontal relationship between questions and not tackle them individually, in a vertical way. In order to do that some research was done and an experimental integrated tool from Microsoft, in its alpha status was used, ‘power bi’. Power bi, is an integrated API in Microsoft that helps to a fast and user-friendly way to quickly make data-driven decisions. Power bi allows interactive graphics with a simple question filter and its corresponding displays.

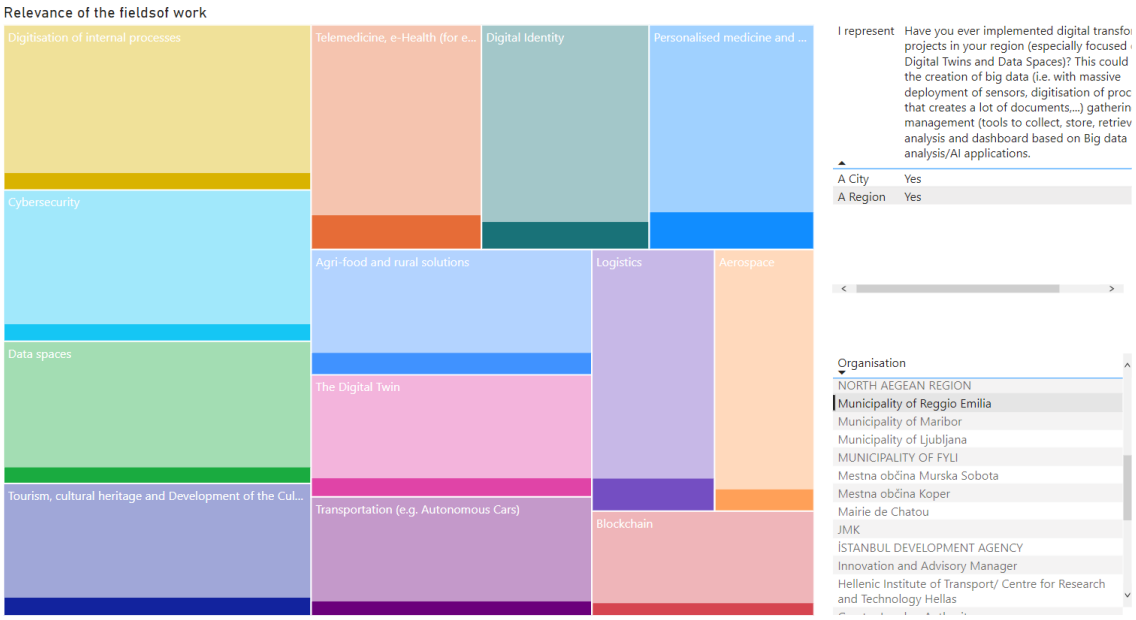

Image 4: Example of Relevance of the fields of work selected by the Italian Regions.

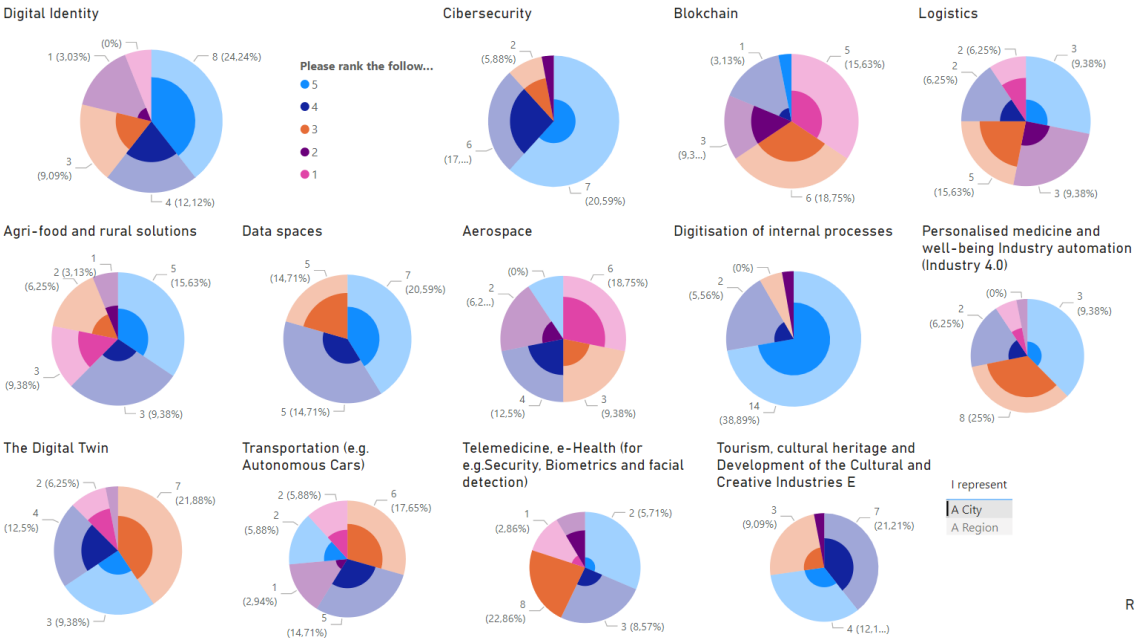

Image 5: Selection of the relevance of each topic for all the cities, colours sorted as the first legend indicates.

4.3. Workshop

With the goal of engaging the relevant and interested actors from DT4REGIONS partner territories, as well as to the 100+ signatories of the Living-in.EU initiative, ENoLL and ERRIN network members representing governmental actors from European regions and

cities, in co-developing together with us this joint Capacity Building Programme on digital transformation, an online workshop has been organised, sharing the results from the survey further scoping the needs of cities and regions. The workshop took place on the 31st of March.

Image 6: DT4REGIONS and Living-in.eu Capacity building Workshop Dissemination.

The workshop had also served to align the scope and expected results of the Platform. Public authorities at the local, regional and national level, municipalities, policymakers, European Commission, supporters and signatories of the LIVING-IN.EU declaration, as well as DT4Regions project partners and supporting organisations, were invited to join the event to reflect on a joint approach for improving the capacity and increasing knowledge on the digital transformation of European cities and regions.

As presented in the agenda below, the event was opened by **Dr. Francesco Raphael Frieri**, *General Director of Emilia Romagna Region*, briefly presenting the importance of the results achieved so far within the DT4REGIONs project, and especially with the joint Survey. Dr. Frieri also introduced the objectives of the workshop and focused the attention of the audience on the needed alignment between the LIVING-IN.eu initiative to support the digital transformation of public administrations, not only at regional, but also at city level.

As part of the workshop, a one-hour interactive session had been held where participants had an opportunity to get to know other cities and regions interested in engaging in the capacity building programme of the two initiatives and exchange on their needs in terms of trainings in the field.

Agenda Point	*Time*	*Speakers*
Welcome & objectives	10.00 – 10.05 am	***Francesco Raphael Frieri**, General Director, Emilia-Romagna Region, Italy*
DT4REGIONS and Living-in.EU Initiatives: Strategic Alignment	10.05 – 10.20 am	***Noirin Ni Earcain**, Seconded National Expert at DG CONNECT at European Commission*
The Joint Capacity Building Programme and Results from the Survey	10.20 – 10.25 am	***Francesca Spagnoli**, Head of Projects & Capacity Building at the European Network of Living Labs*
Interactive Session: Further Scoping the Capacity Building Needs of European Cities and Regions	10.35 – 11.35 am	*Session moderated by **Francesca Spagnoli & Fernando Vilariño***
Break		
Wrapping and conclusion	11.45 - 11.55 am	***Fernando Vilariño**, Leader of the Action Oriented Task Force on Social Impact of AI and Associate Director at Computer Vision Centre*
Closing of the event	11.55 am - 12.00 pm	***Stefania Sparaco**, DT4REGIONS Project Coordinator, Emilia-Romagna Region, Italy*

Figure 11: DT4REGIONS and Living-in.eu Capacity building Workshop Agenda.

5. Results

The current chapter aims to explain in detail the results extracted from the activities described in the previous section, from an objective perspective. Some graphics are included to a better understanding of the results while adding extra information.

5.1. Survey

In total 38 answers were received to the survey, which provided very insightful information in terms of stakeholder mapping, as well as interests and needs of European cities and regions in terms of future trainings and learning offerings. The distribution of answers was quite equal between regions and cities, and most of them already have experience in implementing digital transformation projects (28 out of 38 answers). In general, most of the respondents to the survey showed willingness to contribute to the development of the training programme of DT4Regions and Living-in.EU, to be combined with an inventory of already existing training courses on digital transformation.

5.1.1. Stakeholders Engagement results

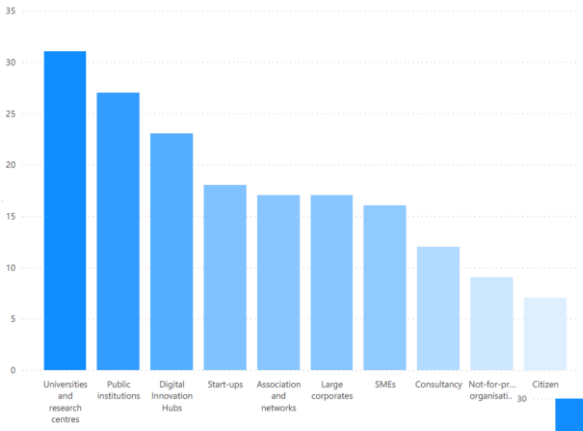

Image 7: Key stakeholders.

In order to developed the platform a stakeholder analysis was made. It was asked to the main regions and cities the Key stakeholders of every region, the current engagement with them and which of the stakeholders benefit the most in each region. The European regions and cities identified *Universities and Research centres* and *Public Institutions* as the key stakeholders. Surprisingly, *Citizens* are the least important stakeholder.

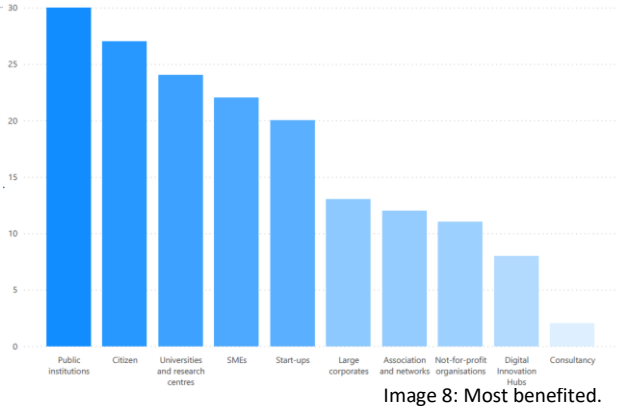

Image 8: Most benefited.

However, the European regions and cities agreed that the stakeholders that benefit the most are *Public institutions* and *Citizens.* Apart from these two benefited, they also agreed that *Consultancy* is clearly the least benefited from the European regions and cities leaders point of view.

Furthermore, in the survey also was asked how the European regions and cities engaged the stakeholders to be active in their communities, as it is highly relevant for the platform. The European regions and cities coincide that *Conferences* is the most used to engage all the stakeholders in general. Moreover, when we take a closer look we see that citizens are barely engaged through *Policy lobbing, Public procurement and Grant funded projects.* On the same wavelenght, citizens are harly ever involved in *Trainings* or *Policy Reports*.

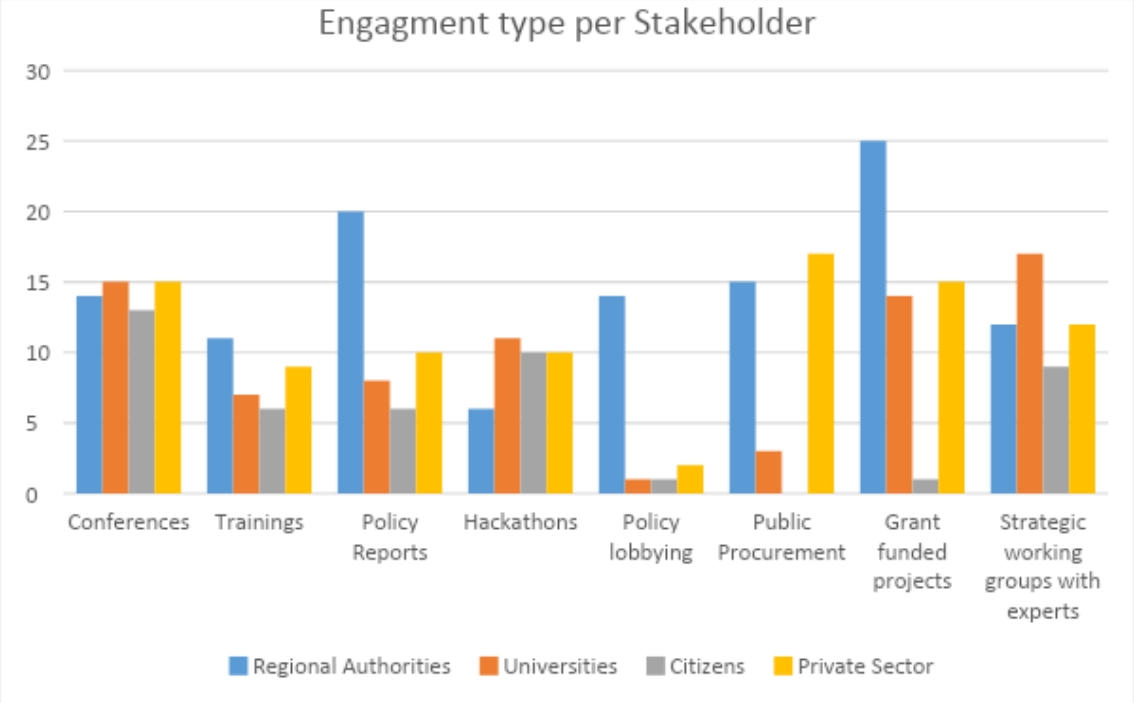

Image 9: Identification of which type of engagement is used by the regions and cities for each stakeholder.

5.1.2. Capacity building needs results

In order to shape the platform, the capacity building needs where asked in the survey. The most relevant topic regarding the Platform asked in the survey relays on what the community expected to find in the platform. The European regions and cities identified

Artificial Intelligence and Big Data as the most interesting topics to learn. Apart from these two initial topics, they are also eager to have specific trainings on the concept of Data Spaces and Living Labs for the Digital Transformation of Cities and Regions, along with Cybersecurity, Digital Identity and Digital Twins.

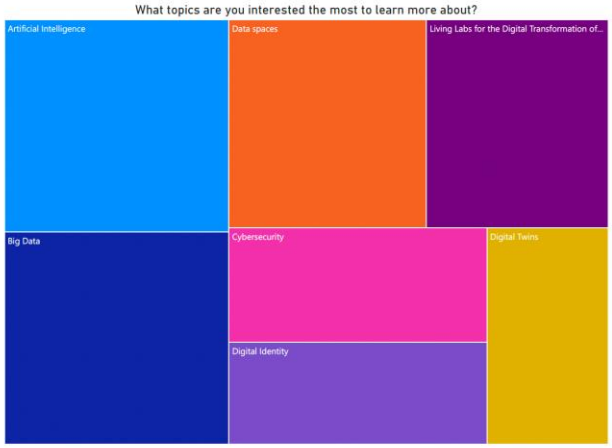

Image 10: Most interesting topics.

Also was asked how this training should be provided within the platform. For most of the respondents to the survey, *workshops* and *case studies / best practices* have been selected as the preferred formats for learning more about digital transformation of European regions and cities. Along with these, also peer to peer on site trainings have been identified as very relevant formats, in conjunction with short videos and MOOCs. Exercises and public debates are the least preferred formats for the Capacity Building Program.

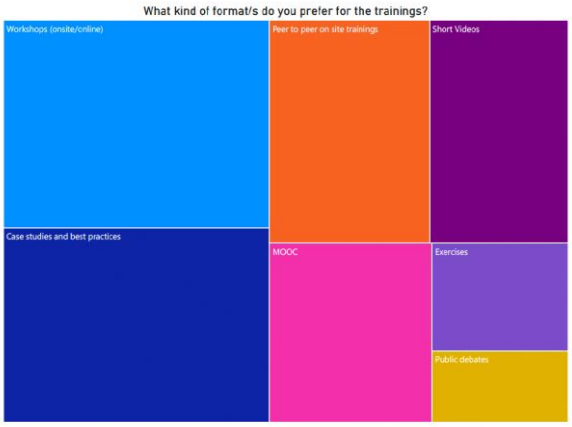

Image 11: Training preferences.

5.2. Workshop

The event was hosted via the online platform zoom and gathered 50 participants from municipalities of European cities and regions, as well as policy makers, academia, and industries. After a short presentation an interactive session moderated by Prof. Fernando Vilariño, Leader of the Action Oriented Task Force on Social Impact of AI and Associate Director at Computer Vision Centre started. The aim of the session was to gather feedback and insights from the participants on our learning offer through 3 main exercises.

5.2.1. Exercise 1

The first exercise was devoted to further explore the context in which cities and regions are working for enacting digital transformation. The participants were asked to identify and rate which are the main challenges they are facing, and the barriers they encounter every day for deploying AI, as well as the main fields of work they are interested to exploit more in terms of digital transformation. Also was requested to the participants to vote for the most relevant ones to come up with a specific set, thus representing as much as possible the complete context for European cities and regions.

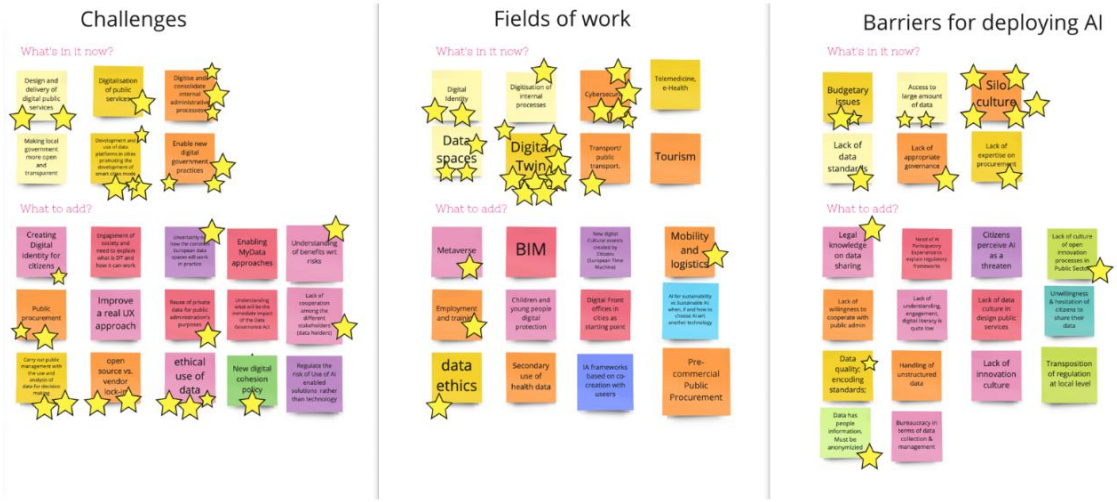

Image 12: After comparing and adding topics to the Exercise 1.

The first part of the exercise, identifying and rating the main challenges that participants are currently facing, *Digitise and consolidate internal administration processes* and *Development and use of data platforms in cities promoting the development of smart cities model* where highlighted form the pre-set challenges that could be found in the survey. Therefore, *ethical use of data, open source vs vendor lock-in* and *Carry out public management with the line and analysis of data for decision making,* where added by the participants among others, and rated as the most faced.

The second part of the first exercise, also consists in identifying and rating which fields of work where more interesting form their expert point of view. From the pre-set survey fields, the topic selected most times was *Digital twins*, with a big difference form the *Cybersecurity* and *Data Spaces,* which follows closely. The new fields of worked

proposed by the participants, where not rated as important as the previously ones mentioned.

The third and last part of the first exercise, consist in identify and rate the barriers they face daily while developing AI. This phase rates the *Silo Culture* as the most common barrier, *Budgetary Issues* and *Access to a large amount of data* are also identified as problematic. The participants coincide that a lack of knowledge on privacy policies exist and a standardized process could help.

5.2.2. Exercise 2

After reaching an agreement in the first exercise and settling in which context the European Regions and Cities, as well as policy makers, academia, and industries, are, the second exercise took place. The aim was to further scope the needs in terms of Capacity Building for the participants. The exercise started with selecting additional **topics**, to the already identified ones by the team (e.g. AI, big data, data spaces, Living Labs for the Digital Transformation of Cities and Regions). *Data ethics and privacy issues* were clearly the ones prioritized by the participants, along with the topics reflecting the main fields of work selected by the audience in the first exercise, such as *Digital Twins, Cybersecurity, Interoperability,* as well as *Blockchain*.

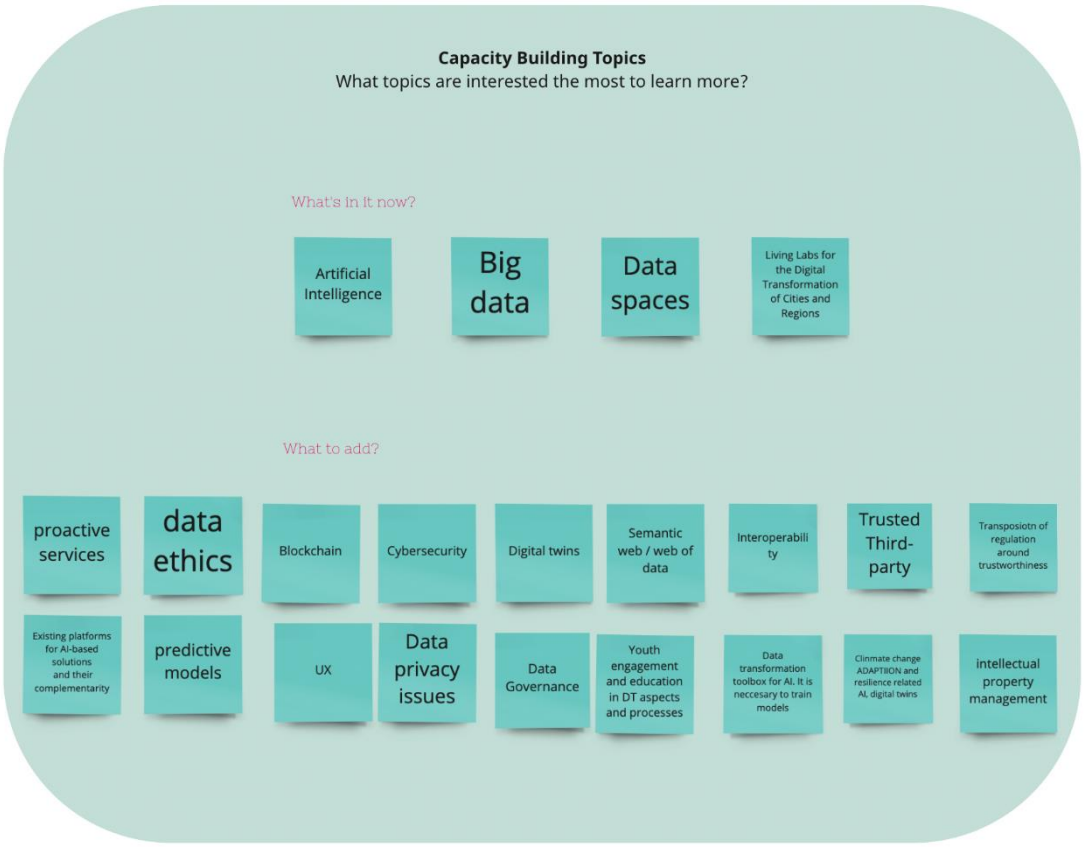

Image 13: After comparing and adding topics to the Exercise 2.

With reference to the learning formats, additionally to workshops, case studies, peer to peer on site trainings, short videos and MOOCs, the audience suggested for the specific context of the DT4REGIONS and Living-in.eu Capacity building Programme to consider implementing mastermind groups, demo days, competitions to validate knowledge after training, fuck-up nights for presenting pitfalls and challenges of AI.

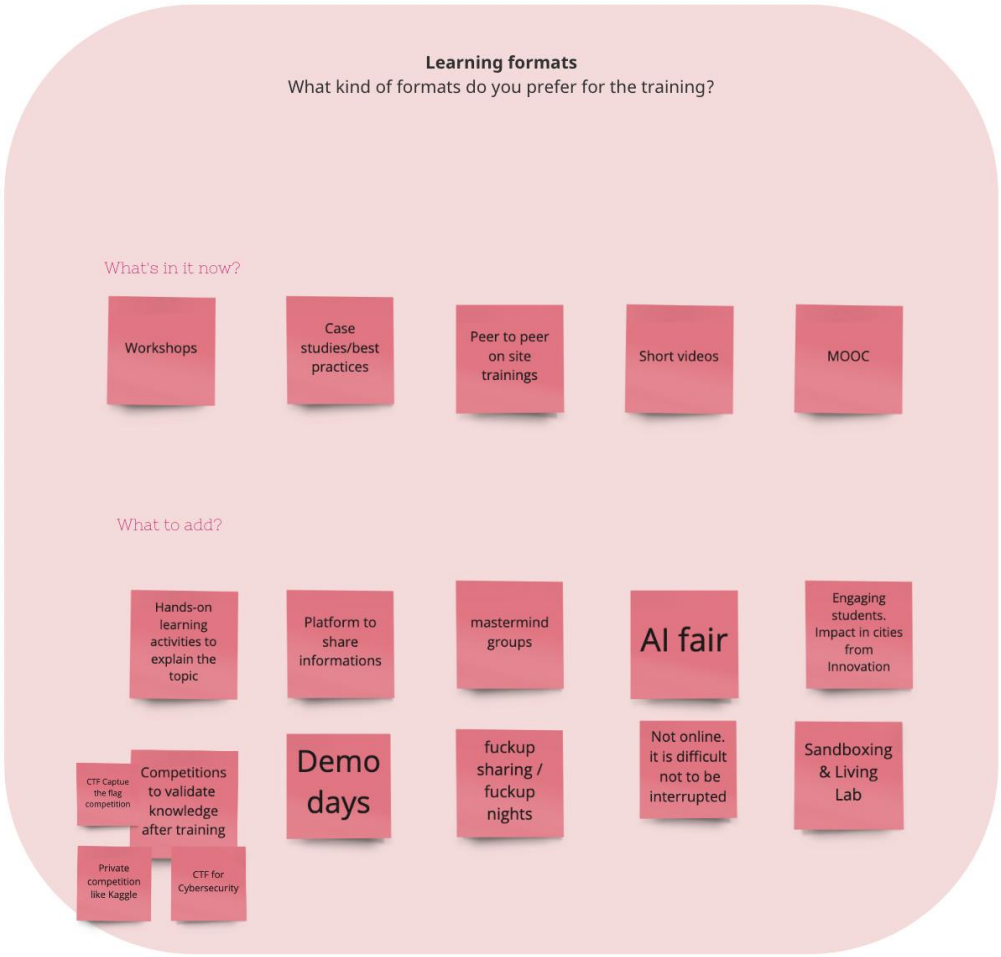

Image 14: After comparing and adding topics to the Exercise 2.

In terms of modules of the platform, the audience would be interested to also benefit from:

- A series of proactive services.
- Governance models for multi-stakeholder projects and innovation techniques.
- A dedicated module for explaining processes and how to improve them.
- A module to identify EU funding opportunities and cooperation.
- A module on fair AI (based on https://www.elementsofai.com/).

Finally, regarding the best practices, the relevant topics under which they should be organised are:

- Pre-commercial Procurement.
- Citizen Engagement in AI through ARTS.
- Integration inside the European data space.
- Proof of concepts.
- Intellectual property management.
- From R&D to mainstream delivery.

5.2.3. Exercise 3

The last exercise of the workshop was devoted to scope what the participants expect to see in the different modules of the DT4REGIONS platform, aligned with their needs in terms of Capacity Building.

Within the general awareness module, the participants would like to find a news section, a map of the institutions part of the community and articles presenting the added value of digital transformation for public services of cities and regions.

In the knowledge exchange module, the audience would like to access recordings/videos from the webinars, updates on regulatory developments on AI, technical examples and explanation on which and how successful solutions can be replicated in other cities or regions, as well as results/reports from the workshops.

The community of practice should serve as a forum for sharing AI stories, data stories or big data stories, and probably having an interactive discussion on it. This approach includes sharing new approaches for implementation of digital transformation processes and related impact in cities in terms of behavioural change. The community of Practice should be prioritised based on the topics and challenges identified through this workshop.

Finally, the success case repository module, should present experiences outside the EU, video pillars for brief exchange on selected topics and examples of good practices with

the ability to interact with their owners. The capability to see what the other cities and regions are doing in order to replicate the same solutions is crucial, to also understand how many of these cities and regions have already implemented the same services and enable a successful alignment with other cities and regions, for example, how to adapt procurement processes in our specific local context. This module should enable the audience to team up with other people from cities and regions facing the same challenges.

However, there is also the need of having strong scientific evidences on the results achieved on artificial intelligence and big data by the community, not only in terms of case studies, but also through scientific evidences (papers, publications, etc…), from both social and technical sciences. This would help to feed both the implementation side, but also the research side informing the implementation of technologies. The learning community should benefit from these different levels of contributions, thus including the best practices.

6. Analysis

The present chapter analyses the results presented before linking thoughts with the documentation reviewed previously, from a subjective point of view. Using the results and the analysis to further analyse the platform and the possible updates the platform could have.

6.1. Survey

6.1.1. Stakeholder analysis: Citizens as the least important stakeholder

From the several activities showed at Results section, some questions in the survey target directly the topic issued in this paper, a couple of big statements can be extracted. The European regions and cities as mentioned identified *citizens* as the least important stakeholder, those are going to become the final user and the main affected by any little change that the city will experience. We can assume that from the point of view of the European regions and cities nowadays *citizens* lack of effective power and that is why they are the least important stakeholder. For instance, this lack of power can be closely related with the fact that citizens do not take decisions on where money should be invested; citizens cannot decide which projects are financed with public money. As the ones identified as most important stakeholders can do, *Universities and Research centres*. However, all the European regions and cities agreed that the most "benefited" are those citizens.

6.1.2. Stakeholder analysis: Type of learning materials

Starting from general view of the **Image 9.**, can be grasp that the regional authorities are the stakeholder whom had to be more engaged, by for the European regions and cities. Can be assume that fact happens due to the grand funded projects that *Universities and Research centres* (the most important stakeholders) are heavily dependent from those mentioned before. And the projects are approved by the regional authorities. Furthermore, form this general point of view we can confirm that *citizens* as stakeholders are the least engaged by the European regions and cities. And only in one

type of engagement the citizens are more important than Regional authorities, *hackathons.*

Taking a closer look to the **Image 9.** we can see that when referring to *Policy Reports, policy lobbying* and *Grand funded projects,* the most relevant group is Regional authorities but the only type of engagement that Private sector lead is *Public procurement. Universities and Research centres* also lead a type of engagement *Strategic working groups with experts,* can be assumed to the fact that this mentioned experts mostly can be find at universities.

Moreover, and aligned with the topic, the preferred type of engagement, so the most selected for each stakeholder, for the European regions and cities, are *Grand funded projects*. Where the presence of *citizens* is almost inexistent. And the type of engagement identified by the European regions and cities with an almost equal distributed level of engagement through all the stakeholders, so presence of all sectors are *conferences.* Can be discussed if this type of engagement is as popular because of the low effort, the efficiency or the fact that all stakeholders are able to understand and take place in a conference.

6.1.3. Capacity building analysis: Public debates as the least preferred training

With the capacity building needs questions, in the survey, the participants were asked to rate the topics they were interested to learn more about, and *Digital twins* was the least preferred, *Artificial Intelligence* and *Big data* were the most selected. This fact can be interpreted that European Regions and Cities do not have enough knowledge to face the upcoming 'era'.

In the survey was also asked which type of learning materials the European regions and cities preferred. And again we can see that this type of learning materials is focus on the real solution practical point of view, which can be assumed that is the most direct solution based and therefore effective for them. However, once again citizens are left out of the process, assuming that not all the citizens have the required knowledge to follow the sessions and take part in the discussions.

6.2. Workshop

6.2.1. Exercise 1: Contextualization

During the workshop the mentioned survey before was used as a basis, for the discussion to begin. Slightly more of the half of the participants participated also in the previous survey. And the first exercise of the workshop had this mission. The results of the survey were expose to all the participants, the results were rate and in the workshop differencing form the survey the participants were asked to add new answers to the questions, and those were rated by all the group. This process was repeated for the 3 parts of the first exercise.

Taking a closer look to the results of the workshop and comparing them with the results of the survey we observe that these 4 categories in the **Image 10. & 12.** were also the most selected ones as a result of the joint DT4REGIONS and Living-in.eu survey. However, making local government more open and transparent has not been identified as a relevant challenge for the audience of the workshop. Other relevant challenges selected by the participants as very important ones, that were not consider in the survey are: *Ethical use of data, Open source vs. vendor lock-in, public procurement processes* and *the ability to carry out public management using and analysing data for decision making*.

With reference to the **new challenges** the workshop shed light upon, it is clear from the exchanges with the participants, that the current regulatory framework is not very much aligned with the need of public administrations in cities and regions in the EU, especially in terms of accessing the data, as relevant barriers are still evident. From that perspective, cities and regions need to have a hands-on approach to these challenges. Not only a regulatory framework, which is basic, but also a hands-on approach including the participation of the citizens for reducing trusting barriers.

In terms of **fields of work**, a difference can be found since *Digital Twins* is evidently the highest rated one, followed by (in order of relevance) *Cybersecurity, Data Spaces* and *Digital Identity*, showing a very focused alignment with the most rated topics from the survey, excluding *Digital Twins*. Other relevant fields of work have been discussed during

the workshop, such as the *Metaverse, Employment and Training services*, *Mobility and logistics*, *BIM, new Digital Cultural assets* and *pre-commercial public procurement,* among others. Despite this initial interest, however, these new fields of work have not been rated as the most relevant ones from the audience.

Finally, with reference to the **barriers for deploying AI**, the *silo culture* seems to be the most relevant issue, along with *budgetary issues* and *access to a large amount of data*. However, from the exchanges with the participants during breakout rooms, could be understood that it is not only the amount of data the issue, but there is a problem in the quality of data public administrations of cities and regions have access to. There is also an element of trust for third partners and an evident difficulty in scaling up the model for introducing procurement instruments within public sectors. Other interesting topics discussed during breakout rooms in terms of barriers for deploying AI (but not rated as the most relevant ones in the end by the participants) are: *legal knowledge on data sharing and transposition of regulations at local level*, *lack of trust by the citizens who perceive AI as a threaten*, *lack of open innovation culture in public services and digital literacy*, *need of AI participatory experiences to explain regulatory frameworks*, as well as the *need to reduce bureaucracy in terms of data collection & management*.

6.2.2. Exercise 2: Capacity building needs

During the workshop, following the survey structure, the capacity building needs were also asked. Form the participants was perceived an aligned output to the survey. Scoping them can be perceived that specific trainings should also deal with both the technical elements, such as legal instruments and tools, but also the processes for enacting artificial intelligence or new solutions based on big data to be developed in the specific local contexts by adopting open innovation approaches. Eventually, this open innovation approach would need also specific Capacity Building processes. More in general, we also discussed that the digital transition needs to start from scratch, tackled both from higher education levels, understanding this hands-on approach to be fostered into the degrees of artificial intelligence of computer science education in the various vertical sectors

(such as smart cities), but also through vocational training and other lower education levels, as otherwise it will not be possible to develop this digital transition completely.

All participants agreed on the use of exploiting hands-on learning activities as the most successful way for engaging with the participants and create a concrete impact on the community.

6.2.3. Exercise 3: Expected to see

The last exercise aiming to shape the form of the platform the participants agreed on three main pillars approached form different perspectives. The first mentioned was the need of having a place to stay updated, where news related to AI could be found as *updates on regulatory developments on AI, sharing new approaches for implementation of digital transformation processes and related impact in cities in terms of behavioural change, present experiences outside the EU and The capability to see what the other cities and regions are doing in order to replicate the same solutions is crucial, to also understand how many of these cities and regions have already implemented the same services and enable a successful alignment with other cities and regions, for example, how to adapt procurement processes in our specific local context.*

The second pillar of the requested Capacity building needs is tightly tight with the first one, both have to work in harmony. Creating a community was asked by the participants and some proposals where done. As we could see in the previous paragraph interacting between cities and regions is key. The participants agreed that *a map of the institutions part of the community* would be helpful. Moreover, *technical examples and explanation on which and how successful solutions can be replicated in other cities or regions,* were again interacting between members is needed, as *a forum for sharing AI stories, data stories or big data stories, and probably having an interactive discussion on it.* And from a more practical point of view *video pillars for brief exchange on selected topics and examples of good practices with the ability to interact with their owners,* close related on what was mentioned before.

The last but not least pillar of the requested capacity building needs by the participants, is a knowledge exchange section, *articles presenting the added value of digital transformation for public services of cities and regions, results/reports from the workshops, webinars, case studies, masterclasses, strong scientific evidences on the results achieved on artificial intelligence and big data by the community*, *but also through scientific evidences (papers, publications, etc…), from both social and technical sciences*.

6.3. Literature

6.3.1. Citizen participation key part of the process

When the Arnstein's tool is used it is key to identify which step of the ladder is expected to reach. Since is not the same to satisfy the legal requirements, which vary in every country, or to achieve effective citizen participation. Also, citizen participation as seen has different grades of involvement and the platform has to decide which type of participation is aiming. In the results the ladder steps are explained and introduced form the point that co-creation is guaranteed therefore below levels are not the scope. However, the co-creation concept can be understood from different angles and different levels of implication.

Tokenism, where placation can be found our first step also includes the Informing and consulting, but as mentioned this will be found in the following ones indirectly. Plactaion is the first to guarantee participation and the citizens play a proposer role, where they can suggest, but lack of real power due to is still a top-down decision making modality. However, for the platform can be interesting when related to select the most preferable DTSolution, among all the options. It's a low demanding effort form the citizens, also low time consuming and easy to all citizens to take part on it.

The following step Citizen power, this is divided in smaller steps. The first small step is the key and interesting concept of Partnership, citizens became direct co-creators, with power to negotiate and produce, and with real power bottom-up modality. In the platform this can be found as DTStories, where all the users of the platform will be able to create alone or as a group a DTStorie. This is a quite demanding process, which aims

to identify the addressing challenges but with extent detailed information and a bit complicated process. Therefore, since the process is complicated and group DTStories can be submitted, a citizen can join a working group with administrators, private companies and university or researchers.

The Delegated power can also be achieved by the mentioned DTStories when this Citizen is able to deliver a DTStory and/or DTSolution. Also, the binding of the partnership is key, assuring the citizen involvement during all the process, so they became the authors and therefore the “only” ones who are able to manage their story.

The last and final step of the ladder, Citizen control will not be able to be achieved with the platform since the platform just acts as a showcase of ideas, challenges or solutions. Citizen control requires of the power to take decisions by them own, and the platform doesn’t have that aim, yet.

6.3.2. Concept of 4ps: Assuring the citizen involvement.

As mentioned before the concept partnership is key to assure citizen involvement during all the process, stablishing a contract agreed from both sides and strengthen the Achilles heel, of losing peoples interest in the way.

6.3.3. Concept of Living lab: Adapting the methodology

Some evidences showed that the physical gatherings sometimes cannot be arranged, COVID-19, and had been proven that digital solutions are as valid, effective, as the physical ones. Therefore, since the Living Lab methodology has been proven to still work (Puy i Baqué, O., & Vilariño Freire, F., 2020) even during those periods, the platform should work as a Virtual Living Lab.

6.4. Analyse the platform

6.4.1. DTStories – Analyse the purpose, the components and the principals

DTStories act as the main components displayed on the platform website, under the DTBook module. Thankfully to the story telling approach DTStories are a more comprehensive tool, focused on the research question rather than the technical solution, which will also be available.

DTStories claim to act as a global solution to local problems, then might be adapted to other socio-demographic and economic realities, different locations or situations, increasing awareness on the existing challenges that public administrators and citizens are facing, aligning development work in order to save resources, increasing the, university, research efficiency. DTStory acting as an open call to the entire internet community, tackling specific business needs, challenges and gathering a community around it. This community will help addressing, first from a conceptual approach and luckily will develop a feasible solution, a DTSoution. This communities of citizens, public administrators, private companies and research centres and institutions will face similar challenges. The platform enacting as a co-working to co-create the previously mentioned and seek solutions.

The DTStory acting as an open call to any challenge that can be imagine has key components. The most important one and where all the DTSolution will rely on is the description, since the final purpose of the DTStory is to explain a problem, isn't expected to be solved. The DTStory can be related with other DTStories using the *Category* and *Theme* features, this allows to create links between communities and build up strong bonds. The DTStory can also have some resources linked to it. Any resource can be added; from a philosophical discussion, to a github code or other technical solution, and the community has to aim to gather both.

6.4.2. DTSolutions - Analyse the purpose, the components and the principals

The last component of the DTStory is a list of DTSoutions, these solutions gave answer to a specific DTStory, cannot exist for to different Stories. The Solution doesn't have to

be completed, implemented or functional, the aim is gathering as many solutions as possible to find the best for each case. Also, a non-working solution can be solved by someone external from the original author or group of authors. So the DTSolution as a set of reusable, interoperable and self-contained set of digital tools and documentation can enlighten other solutions related to the DTStory. Since the reusability of the tool is a key feature, the author is recommended to provide the information needed to do so.

6.4.3. Structure: Identify the weak step

So far the platform hasn't explained or guarantee how this mutual learning community will be constructed, how the community will be able to share knowledge exchange ideas and engage the community to enter and stay in the wheel of creating DTStories, developing DTSolutions and shearing the differences experiences faced, after implementing them.

6.4.4. Listening the audience: Implement a map

One of the requested features to start building the community is understanding the community and to do so, during the workshop was suggested to create a map with all the institutions, members of the community to better understand each reality. This as an add-on value to the platform that could serve as an introduction and home page, however is not enough to build the community on its own. Also was suggested the creation of a map that georeferenciate both DTStories and DTSolutions.

7. Discussion

This last Chapter dives into how the platform could be improved in the near future providing some insights on how to incentivise the building of a community could positively help the platform, while leading a Digital Transformation, the purpose of the same project.

In reference to the previous paragraph from the paper, section 3.11, the top step of Arnstein's Ladder is not always the goal of the platform. Due to citizens can't be forced to play a role that requires an amount of involvement, energy, effort and dedication that not everyone is willing to give. However, a study from the NTNU points that "In the former, the "citizen control" or "delegated power" categories of Arnstein are more feasible, while in the latter, "informing" and "consultation" may be more reasonable. On the other hand, the form of citizen participation in different projects, as well as different phases of planning and decision-making, can and should vary. While it is important that people can be directly involved in the initiation phases, being empowered to invent or claim the deliberative processes with other stakeholders, they should be able to trust their representatives and assign the necessary responsibility and tasks to them in the implementation phases, consenting to the information and consultation."(Gohari, S., Baer, D., Nielsen, B. F., Gilcher, E., & Situmorang, W. Z., 2020), in that case the platform can put a shy feet at the last step of the ladder while ensuring the minimum required by law and incentivize the community to climb a bit the ladder and guarantee the co-creation, and an open decision-making process, which is the main purpose of the platform.

Once the platform features have been analysed some limitations have been pointed. The platform does not guarantee the citizen power, lack of citizen participation is noticeable. As citizen participation is key on this paper some adjustments or upgrades should be taken in consideration. As exposed before, the aim of the platform is to co-create together with the citizens, and a key aspect is the community. The concept of people living in one particular area or people who are considered as a unit because of their common interests, social group, or nationality, is known as community. This strong

and active communities are catalysers on developing neighbourhoods (Cambridge dictionary - Community), specific projects at their future particular areas, cities. Currently, the way DT4REGIONS engage people to create this, needed, community is not as good it could be.

Empowering a Mutual Learning Community is the tool that this paper found that suits better to achieve the objectives set before. Mutual learning processes has been proved to be consistently more effective than other Participatory Design tools and methodologies (Robertson, T., Leong, T. W., Durick, J., & Koreshoff, T., 2014), as a resource in the research design. In this paper an innovative and dynamic idea to build this mentioned Mutual Learning Community is proposed.

7.1. Explaining the DTCafe

The concept of the internet considered as an imaginary area without limits where you can meet people in virtual reality, where images and sounds, produced by a computer, seem to represent a real place or situation (Cambridge dictionary - Metaverse), the metaverse, is not new, indeed many people live in it, spending lots of hours in Social media, Gaming or consuming online content synchronous or asynchronous. Then, why do not use this well-known metavers with a different approach. Creating a place in the net where people interested on specific topics can use this space to share ideas, gain knowledge or exchange opinions. Creating an informal cafe where specialised events like webinars, workshops, masterclasses or debates can happen at the same time as live music, board-games or external events as sport events. Creating this informal meeting place on the net, where the quadruple-helix can meet, it can be as easy you can imagine. Indeed, is not a new idea blogs already existed before. What is proposed in this paper is a more interactive tool.

This tool is proposed to be one general tool subdivided in 3 different and tightly related pillars. The first block proposes to give wings to all the users of the platform a white sheet where anyone can access, a free space where the roof does not exist and all the Ideas, thoughts and concerns would be gathered, the DTBord. A board inspired by Neàpolis Living Lab (Toledo, E., & Romero-Lengua, J., 2020), where anyone anonymously

or not can share an idea hoping to gather some early adopters (Kaminski, J., 2011) or even luckier a critical mass, and start the Mutual Learning process, within the community that step up. This idea, is converted into a DTStory and some related resources are added, experts on the topic have to step up one more time providing knowledge, papers, webinars, to allow all the users to be able to discuss the topic in case they want to, otherwise their opinion will also be herd from a conceptual point. This inexpert opinion is really interesting to gather, due the fact could be more creative and disruptive since has not a biased perspective. The next step of the process is to organize a webinar/workshop where all the opinions can be shared and heard, there is where the next pillar begins, the DTCafe.

The main part of the DTCafe is the creation of an open space, a space where people can meet, find and gather formally or informally with other members of the community. This DTCafe has some technical requirements that have to be understood before proceeding. As a preliminary idea and in order to test it with the fewer complications is assumed that the standard user has a limited device, a standard smartphone. It is also assumed that the net surfing knowledge is limited, the aim is to have a place for everyone in the platform, from the eldest to the youngest, taking in account legal considerations. Also, non-specific skills are required. Following the preliminary ideas everyone with access to internet and a will of using it will be able to be part of the community. The next, discussion are the technical requirements and how to implement them. Each user will need an avatar and a profile, which is key, this will be the public information and appearance the other users will have and see form you. The profile, has to be a default form with some compulsory information, and other optional. Also, depending on the type of user different profiles and forms will be required.

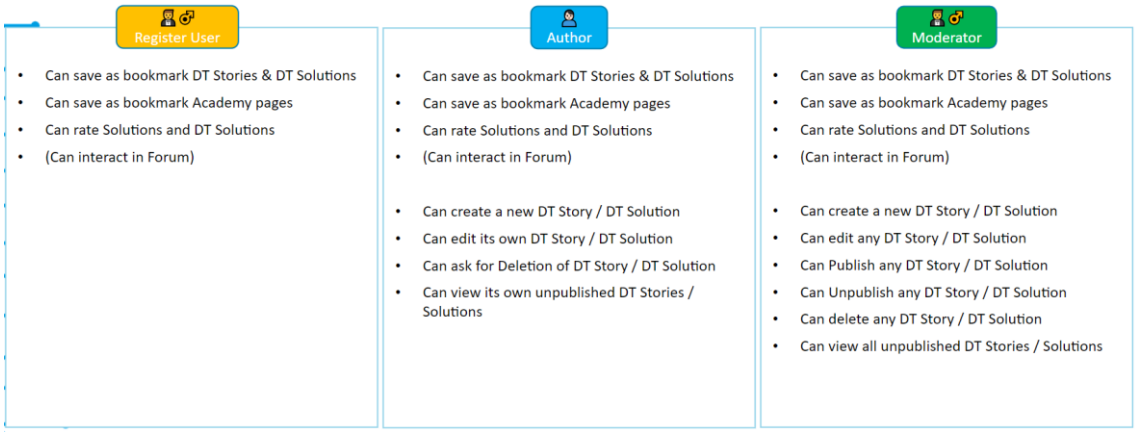

Image 15: Proposal of the profiles.

The currently existing users could be adapted to the requirements the DTCafe would have, following the same type of structure with different layers of power and permission.

A default avatar will be created, Steve, appearance of it will be changeable, as the gender or the height, the community will not be able to upload their own designs, yet. Remember that the idea is to keep the first MVP the simplest, adding that feature might slow down the simulation.

> The idea is to create a simulation, similar to real life scenarios. Once again gaming community has done some steps towards it and lead the transition. One of the pioneers on it sector and the most ever sold game is, 'The Sims™'. Launched on 2000, users used to control customizable avatars, living in a fictional city, as they pursue career and relationship goals. The simulator based on the 'The Sims™' will have similar features. Among other valid metaverses could be Minecraft or Pokemon, for instance.

Now that we have the platform and the people that are using it, some specific technicalities are required, keeping in mind, the simplest the better. In the platform a window might be found, using the same login that the own platform has the simulator will start, an order to get inside the cafe will be required to launch the simulator when needed instead of running in the background and slowing the whole platform. The platform as mentioned before is web based, so the user doesn't need to have any

download file, application or related on its end. All the simulation is hosted in the cloud and the user only has to select the orders he is giving to its avatar. The better internet connection the user has, the smoother and pleasant the experience will be. In the simulation, a pop up will appear when another user is selected manually. The pop up will contain a sum up of the profile and an option to “more information”, where you can find the minimum compulsory information and all related information the user gave, like linkedin or other social media, organization/region working for, … An important feature has to be considered if the graphics requirements of the simulation are high the costumer device might slow down, so everything that can be linked out of the simulator has to be ran out of the simulator. To sum up, a platform had been developed, users are taking part of it and information of the them is being displayed. However, the interaction is not possible yet. Here the gaming community also can help, a voice chat by proximity has been develop and is operational. Therefore, as long as the user device has a microphone and speakers the interaction will be possible. As said before many features can be added like video or real-time interactions, but for now the MVP should be as simplest as possible.

Last but not least, with all the ingredients together we cannot expect the platform to engage citizens by just existing, as we cannot expect a bread to be cooked just standing in the kitchen, some action is required. As well the DTCafe, we propose some actions can happen daily, weekly or monthly. In the paper we propose that hosting the webinar/workshop for the DTStories is a way to incentivise the use of the same. Also apart from formal events informal events like as mentioned before, can take place. At the end ideas also appear while showering.

Apparently, apart from the digital reality that allows a worldwide connection the DTCafe isn’t much different from other cultural cafes. The DT4REGIONS platform apart from the ongoing DTStories and the published DTSolutions, needs to be linked to the DTBoard where the ideas born in the DTCafe can be also shared,

Once the process is already running the community is gathering at the DTCafe discussing around the DTStory with enough resources in the platform to understand the problematic, developing even more research if needed and DTsolutions are created this

bottom-up iniciative, build up by the community, citizens, academia, public administration and private sector, has to decide on where to focus the efforts and resources. So the last and easiest pillar is needed, the DTVoting.

The idea goes quite straight forward, many solutions have been raised, but not all can be developed. The community has to step up one more time in deciding what will be implemented in their cities. Since cities never have been a sandbox it's important for the community to be part of this phase so they can feel how hard and rewarding is taking complex and decisions that affect directly to all the population.

8. Conclusion

In the current last paragraph some conclusions will close the thesis. Identifying the most important things in my subjective opinion and the most relevant for the thesis and the project. The conclusion starts summing up the criticism of the platform, follows with some conclusions regarding the DTCafe and sets what I think should be the next steps of the project.

8.1. General conclusions

- Surprisingly for me during all the process, citizens have been identified as the end user and the most benefited one in the whole process. However, they are not taken into consideration as stakeholders. Do we expect them to sit tight and watch? To not complain and just deal with what leaders decide?
- Following the same trend, when we asked the preferred way of knowledge exchange and shearing, the public debates were at the very bottom of the list. The fact of investing time to discuss different points of view is not effective enough for the “rush” time we are leaving these days, where the inputs are imminent.
- The platform was the first fully Virtual Learning Lab for use cases and mutual learning, through the DTStories as the core feature on shearing challenges and the DTSolutions on shearing solutions and working Case Studies.

8.2. DTCafe conclusions

- The DTCafe is the tool that enables the mentioned Living Lab based in a Virtual environment. However, an empty Living Lab is useless.
- The DTCafe is the tool that can satisfy the needs identified that the citizen participation process could have, while asures giving voice to the citizens that are taking part in the process.

8.3. Next steps

- The implementation of the new modules identified, an added effort on creating the community through the European Network of Living Labs, creating content for the platform and leading the shift to the global community.

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Annex I

The full description of the platforms identified during the contextualization phase can be found below:

PLATFORM	**AI4EU**
WEBSITE	Home | AI4EU (ai4europe.eu)
DESCRIPTION	The H2020 project brings the AI stakeholders and AI resources together in one dedicated place, overcoming fragmentation, so that AI-based innovations (research, products, solutions) will be accelerated. The AI4EU Platform acts as the one-stop-shop for anyone looking for AI knowledge, technology, services, software, and experts. AI4EU will function as European AI market driver, offering a critical mass of resources, community networking effects, and rapid development and growth.
KEY PROCESS OFFERED BY THE INITIATIVE	• The **search function** is one of the major functionalities of the AI4EU platform. There is a global feature which searches within the website and on targeted AI websites over the internet. The sort and filter capabilities of the search allow users to customise and refine their query. The search request API uses an advanced algorithm to search AI websites (previously indexed) and match the user's query. • News on cutting-edge AI applications, development trends, research, ethics and social impact • Catalog of AI assets, such as datasets, algorithms, tools and models • Access to the **AI4EU Experiments platform** where users can build AI solutions in an intuitive way: an open space for AI developers, offering visual and intuitive design methods. The AI4EU platform facilitates the creation of human-centered AI-solutions, building modular structures and using hybrid AI technologies.

	• Catalogue of AI European and national projects • Catalogue of European AI organisation • AI on-Demand Platform to support this ecosystem and share AI resources produced in European projects, including high-level services, expertise in AI research and innovation, AI components and datasets, high-powered computing resources and access to seed funding for innovative projects using the platform
DATASET	The platform offers a repository of dataset and assets that can be directly uploaded by users https://www.ai4europe.eu/research/ai-catalog The catalog can be searched by: Asset Type: As a service, Dataset, Docker Container, Executable, Jupiter Notebook Technical Categories: AI ethics, AI services, Audio processing, Automated reasoning, Commonsense reasoning, Computer vision, Connect and automated vehicles, Constraints and satisfiability, Knowledge representation, machine learning, multi agent system, natural language processing, optimisation, philosophy of AI, Planning and scheduling, Robotics and automation, searching Business Categories: Agriculture, Cloud, Edge & Infrastructure, Cultural Heritage, Earth Observation, Energy, Healthcare, Manufacturing, Maritime sector, Public services, Regional Engagement - DIHs, Telecommunication, Transportation Keywords

USERS	AI community, researchers, universities, research centres, private companies, public actors

PLATFORM	LIVING-IN.EU
WEBSITE	https://living-in.eu/
DESCRIPTION	Living-in.EU is a political declaration to promote digital solutions throughout cities. It promotes smart mobility, sustainability, citizen participation. The political declaration has been signed currently by the Majors of 60 cities and regions, and it has become a reference tool for the alignment of strategies in the development of digital tools and skills for cities, including the use of AI-related solutions.
KEY PROCESS OFFERED BY THE INITIATIVE	The platform is designed around a joint declaration which contains four types of commitment: • Financial • Technical • Legal • Education and capacity building Furthermore, it contains a minor part dedicated to solutions (currently 5 listed) apparently proposed and in used by declaration signatories • Urban digital twin • Urban data platform • Digital neighbourhood instrument • Citizen-centric "smart culture"

	Here signatories and interested parties can join to discuss with the other members and understand how to adopt the solution.
DATASET	Some solutions are offered but not real data set are provided
USERS	public administration, cities, municipalities

PLATFORM	**JOIN UP**
WEBSITE	Joinup (europa.eu)
DESCRIPTION	JOINUP is a platform created by the European Commission and funded by the ISA2 Programme. It was established to share and reuse interoperability solutions for public administrations, businesses and citizens.it aims to become a one-stop-shop for interoperability solutions. An interesting study depicted in the platform is "Data Analytics for Member States and Citizens.", which explores the governance, technological and policy application aspect of big data in public administration, through a set of case studies and policy recommendations in support of the European Commission data strategy.

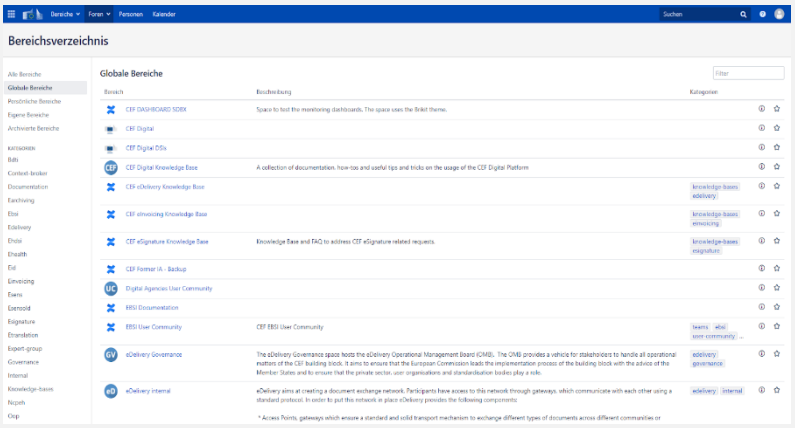
KEY PROCESS OFFERED BY THE INITIATIVE	The platform has three main functions: 1. **Sharing of information**, by publishing news, case studies and listing relevant events; 2. Cataloguing **re-usable interoperability solutions** such as software, taxonomies, vocabularies, code-lists, licences, organisational assets and guidelines; 3. Allowing public administrations, businesses and citizens to **collaborate** with each other on development projects. Joinup aims to build a **complete catalogue of interoperability solutions**. However, other catalogues of solutions exist outside of Joinup, for instance at the Member State level, or at international Standardisation Bodies. In order to bring all those catalogues together in one portal, Joinup can harvest them and offer a central entry point to a vast collection of interoperability solutions. 1. Getting the data On a regular basis, the descriptions of interoperability solutions are gathered; either by manually uploading them, or by having Joinup fetch them from a well known location. 0. Validation Before adding the solutions to the Joinup catalogue, the descriptions of the solutions are validated. If these descriptions

	follow the specifications of ADMS-AP, the information gets stored in the Joinup repository. 0. Publication of solutions The solutions of the Joinup catalogue are available on both the Joinup website, as well as through the Joinup API. Through the Asset Description Metadata Schema Application Profile (ADMS-AP) specification, Joinup allows publishers of interoperability solutions to describe their content and federate it on Joinup. By federating standards and solutions on Joinup, repositories instantly expand their user-base and expose their interoperability content to like-minded parties in need of them. Connecting with Joinup's ADMS-enabled federation provides the following benefits: The ADMS-enabled federation service allows publishers to describe their interoperability standards in a common way; Publishers can create metadata descriptions of their interoperability standards; The service helps publishers upload these metadata descriptions (in RDF format) on Joinup, the official EU interoperability platform.

DATASET	
USERS	Public administration, businesses, standardisation bodies, IT industry, Academia, developers of e-government solutions, Community of practices such as the European Interoperability Reference Architecture (EIRA), the Sharing and Reuse of IT solutions, the Semantic Interoperability Community (SEMIC), the Common Assessment Method for Standards and Specifications (CAMSS), and the community for the National Interoperability Framework Observatory (NIFO).

PLATFORM	**CEF BIG DATA TEST INFRASTRUCTURE**
WEBSITE	big data test infrastructure (europa.eu)
DESCRIPTION	CEF Big Data Test Infrastructure (BDTI) provides virtual environments that are built based on a mix of mature open source and off-the-shelf tools and technologies. The building block can be used to experiment with big data sources and models and test concepts and develop pilot projects on big data in a virtual environment. Each of these environments are based on a template that supports one or more use cases. These templates can be deployed, launched and managed as separate software environments. Specifically, the Big Data Test Infrastructure provides a set of data and analytics services, from infrastructure, tools and stakeholder onboarding services, allowing European public organisations to experiment with Big Data technologies and move towards data-driven decision making. The platform will be no longer updated and a new platform will be provided in the near future.
KEY PROCESS OFFERED BY	Main services offered by the platform are:

THE INITIATIVE	• **BDTI Test Infrastructure:** The test infrastructure allows users to request a virtual testing environment built on the Amazon AWS stack which provides a pre-configured and ready to use environment for analytics experiments. Users will have to provide background information about the pilot they wish to conduct and indications on the size of the pilot. Based on this information, the CEF BDTI team will assess the request, discuss the technical requirements through a workshop and provide users with the virtual environment that is best suited for their pilot. In addition, users will receive documentation that explains how the environment can be used. This service is available to European public administrations that have an interest in testing analytics tools and standards to harness the potential of their data • **Big Data and Analytics Software Catalogue:** This service provides a catalogue of open-source analytical software tools that users will be able to download for implementing big data solutions. European Public Administrations that would like to experiment the open-source solutions from the catalogue for their specific data analytics use case, can apply to run a pilot project on the BDTI test infrastructure service. • **Big Data Test Infrastructure Community Portal:** This service aims at building a big data community where users can share knowledge and big data artifacts (e.g. methodologies, statistical models, pilots' outcomes and datasets). It also provides an innovation portal where users can contribute with their own ideas in order to launch new propositions. The innovation portal is built within the private area of the European Commission Funding and

	Tender Portal and will have a recommendation engine for aggregating contributions aligned to the user's search.  *Figure 1 - Screenshot of PLATFORM CEF BIG DATA TEST INFRASTRUCTURE* • BDTI Advisory service for in-house implementation: This service aims to support the public administrations in implementing in-house the BDTI test infrastructure at the end of their pilot projects. The scope of the advisory service is to provide public administrations with: o an estimation of costs, resources and time needed for the in-house implementation of the test infrastructure; o a guide for the environment migration; o recommendations on the environment escalation, deployment of cloud infrastructure and how to bring the environment into production.
DATASET	They offer a Data Source Catalogue which provides a centralised repository of reliable data sources (mainly open data) to find data

	reusable for the execution of pilots on BDTI. Public Administrations may easily find open data sources (and related datasets) for a pilot execution
USERS	Public sectors entities or agencies , policy makers, IT practitioners, data analysts

PLATFORM	**DATA.EUROPA.EU**
WEBSITE	data.europa.eu
DESCRIPTION	The portal provides access to open data from international, EU, national, regional, local and geo data portals. It replaces the EU Open Data Portal and the European Data Portal. The portal addresses the whole data value chain, from data publishing to data reuse. Going beyond collecting metadata (data about data), the strategic objective of the portal is to improve accessibility and increase the value of open data. Users can use and reuse these data for commercial or non-commercial purposes. Aim of the portal is to provide easy access to data, free of charge, so that they are put to innovative use, thus unlocking their economic potential. The portal is also designed to make the EU institutions and other bodies more open and accountable.
KEY PROCESS OFFERED BY THE INITIATIVE	The Portal offers four main services: • **Data catalogues:** Divided in thematic areas (as Energy; Environment, Economy & Finance; Health; Education, Culture & Sport; Agriculture, Fisheries, Forestry and Food; Government & Public Sector; International Issues; JUstice, Legal System and Public Safety; Population & Society; Regions & Cities; Science & Technologies:

	Transports). A total of 83 catalogues from 36 countries is available for searches and reuse • **Dataset:** A total of 1 093 809 datasets comprehending also European Institutions Datasets • **data.europa academy:** an online academy with free available courses, which are structured along four themes: policy, impact, technology, and quality. These four themes cover topics ranging from the open data basics to new trends and challenges in the open data landscape. The curriculum is constantly updated with new courses and new learning material based on research and best practices. • **Studies:** Full collection of the outputs of the research that the project has developed since its inception, up to the most recent reports and the renown Open Data Maturity landscaping exercise performed yearly. It also offers a selection of relevant research and papers by other institutions.
DATASET	A total of 1,093,809 datasets comprehending also European Institutions Datasets
USERS	Data provider, policymakers, citizens, everyone interested in data

PLATFORM	**AI WATCH**
WEBSITE	AI Watch (europa.eu)
DESCRIPTION	AI Watch is an initiative of the European Commission (EC) jointly developed by the EC joint Research Centre (JRC) and the Directorate General for Communications Networks, Content and Technology (DG CONNECT). The aim of AI Watch is to monitor the industrial, technological and research capacity, as

	well as the policy initiatives in the Member States, together with the uptake and technical developments of Artificial Intelligence and its impact in the economy, society and public services. Further, AI Watch provides a number of analyses necessary to monitor and facilitate the implementation of the European Strategy for AI
KEY PROCESS OFFERED BY THE INITIATIVE	AI Watch can be browsed by topics. • AI for the public sector: an overview of potential use and impact of AI for the public sectors. It furthermore offers a methodology to assess the impact of AI in public services, a roadmap and framework for the use of AI in public services • AI Landscape: an overview and analysis of the Global and European AI landscape • Evolution of AI Technology: it monitors the evolution and progress of AI • Social Perspective: provides a multidisciplinary understanding of the impact that artificial intelligence has on people and society It offers furthermore a database of resources divided in: - Publication (84) - Visualisation (15) - Online resources (14) - Topic and tool (9) - Dataset (2)

DATASET	AI watch provides a dataset of selected AI cases from the public sector institutions in Europe on adopting and implementing AI. These can be accessed in different formats (ODS, CSV, XLS). AI watch is also currently testing the AI Public Services Explorer (AI-X - AI Public Services Explorer (ai-watch.github.io)) an exercise to provide an integrated view of public services using AI. This is organized in: • Services: Users can explore European public services making use of AI and find out their distribution and scope in terms of public administration levels and sectors. • Gallery: users can access statistics of AI public services based on their core characteristics, including geographic coverage and the technology used • Sources: users can access survey, catalouges and adat sets of cases and add their own cases
USERS	public administration, policy makers, data experts

PLATFORM	**AI ALLIANCE**
WEBSITE	European AI Alliance | Futurium (europa.eu)
DESCRIPTION	The European AI Alliance is a multistakeholder forum for engaging in a broad and open discussion of all aspects of AI development and its impact on the economy and society. It is steered by the High-Level Expert Group on AI (AI HLEG), which consists of 52 experts who have been selected by the

	Commission for this task, which includes the definition of a framework for trustworthy AI.
KEY PROCESS OFFERED BY THE INITIATIVE	Main sections and services offered are: • Blog: here users can find information on the Commission's work on AI. • Forum: users can raise AI-related topics and engage in open-ended peer discussions with other members of the European AI Alliance. • Documents: a collection of public documents on AI • Open library: a repository of all types of reports, papers, and other interesting documents on Artificial Intelligence which members of the European AI Alliance can add in order to share these with other members. • Events: overview of the upcoming meetings and events on AI. Finally, a self-assessment for AI systems provided. The Assessment List for Trustworthy Artificial Intelligence (ALTAI), is a practical tool that helps businesses and organisations to self-assess the trustworthiness of their AI systems under development.
DATASET	No dataset is available
USERS	High-level Expert group nominated by the European Commission, experts of AI, policy makers

PLATFORM	**CONNECTING EUROPE FACILITY**
WEBSITE	https://digital-strategy.ec.europa.eu/en/policies/open-data-portals

DESCRIPTION	The principal function of the European Data Portal is to provide a single point of access in all 24 EU official languages for data published by public administrations at all levels of government in Europe (EU countries, countries of the European Economic Area and certain other European countries). In order to foster comparability of data published across borders, it presents metadata references in a common format (Data Catalog Vocabulary application profile for data portals in Europe), using resource description framework (RDF) technology. It provides translations of metadata descriptions in all 24 languages using machine-translation technology. The portal complements national, regional and thematic open data portals, and the EU's Open Data Portal. Each of these portals target relevant user audiences, offering tailored content. This infrastructure will stimulate cross-border use of reusable information in Europe by improving the findability of data across countries and supporting the development of data applications and products including data from different countries. For example, by offering assistance on applicable licensing conditions.
KEY PROCESS OFFERED BY THE INITIATIVE	•
DATASET	The platform provides access to local platforms that store repositories of datasets in a common format: the Data Catalog Vocabulary application profile for data portals in Europe.

USERS	Mainly EU Public Administrations provide open datasets that can be reused in the EU

PLATFORM	**AI4CITIES**
WEBSITE	AI4Cities | Home
DESCRIPTION	The AI4CITIES project which is based on public procurement for innovation approach to get right technologies for local public issues. In particular the project aims at accelerating carbon neutrality through AI based solutions dealing with mobility and energy. Selected cities (as Helsinki, Amsterdam, Paris etc..) are going through a Pre-Commercial Procurement (PCP) to find solutions to make their mobility and energy domains more carbon neutral. In the 2nd phase of the project, ten Suppliers working on Energy solutions and ten working on mobility solutions will be developing first prototypes of the designs created in the first stage of the project.
KEY PROCESS OFFERED BY THE INITIATIVE	The project uses a challenge-based approach focused on pre-commercial procurement divided in 4-four phases: • Phase 0: Through an Open Market Consultation, the specification for the pre-commercial procurements tenders are identified • Phase 1: The solution Design Phase is a four-month phase in which the selected suppliers refine their proposed solutions concepts, in accordance with the input provided by the buyers group. A minimum of 40 contractors (20 for the mobility challenge [Lot1] and 20

	for the energy challenge [Lot2]) are selected for this phase. This phase foresees a total procurement budget of 1.600.000 euros. • Phase 2: The prototyping phase is a three-months phase in which the selected suppliers are expected to deliver their prototypes. This phase foresees a total procurement budget of 1.600.000 euros. • Phase 3: The prototyping testing phase is a six-month phase in which selected suppliers test their prototypes in at least two cities. This phase foresees a total procurement budget of 1.466.622 euros.
DATASET	No dataset is provided
USERS	Suppliers of AI solutions for the energy and mobility sectors; cities that might adopt AI solutions for the energy and mobility sectors

PLATFORM	**EUHUBS4DATA**
WEBSITE	https://euhubs4data.eu/
DESCRIPTION	The European federation of Data Driven Innovation Hubs aims to consolidate as the European reference for data driven innovation and experimentation, fostering collaboration between data driven initiatives in Europe, federating solutions in a global common catalogue of data services, and sharing data in a cross-border and cross-sector basis. With the objective of serving as reference to the establishment of the Common European Data Spaces, the federation is initially composed of 12 DIHs, covering 10 countries and 12 different regions, and plans to increase the geographical coverage by

	incorporating other relevant initiatives in the upcoming months.
KEY PROCESS OFFERED BY THE INITIATIVE	It provides **two main catalogues**: • A searchable catalogue of services in the field of data offered by the members of the EUHubs3Data • A catalogues of Dataset provided by EUHubs4Data members and open data sources, ready to be used. The catalogue also includes dataset of public administration (as for instance Open data from Barcelona City Council regarding public sector, procurement, human resources, legislation and justice) **Community:** EUHUBS4DATA furthermore aims to build an ecosystem that brings together all relevant European initiatives around the data economy and to encourage SMEs and startups to use and benefit from the federated services and data sources. **Open Calls and Experiments:** Finally, it has allocated 5.8M Euros to provide support to third parties to undertake a set of data driven cross-border experiments through three rounds of open calls. SMEs (including start-ups) and groups of web entrepreneurs can apply to the open calls to propose experiments that make use of the EUHubsData federated catalogue of data-driven services and datasets for the development of innovative products or advanced services.

DATASET	Dataset provided by EUHubs4Data members and open data sources, ready to be used.
USERS	Digital Innovation Hub, SMEs, startups, public administration

Annex II

The survey used and mentioned during the hole project can be found here, empty:

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Regional Stakeholder Questionnaire

DT4REGIONS is a European project aiming to create a unique challenge-based innovation platform for regions, designed to serve as a one-stop-shop for open-source Big Data and AI solutions and databases. The platform will enable the development of tools and services of public interest. It will also enhance public administration efficiency and effectiveness in user-centric services.

DT4Regions Objectives

Raise awareness and knowledge about AI and big data applications for public services; Stimulate peer to peer knowledge sharing on digital transformation among regions; Increase and enlarge policy discussions on topics of specific public interest;
Serve as a hub of a wide variety of information for mutual learning on the digital transformation of European regions and cities;
Foster innovation through practical exercises, including two hackathons, based on the concrete needs of public administrations and citizens;

The Living-in.EU Initiative

The LIVING-IN-EU “Join, Boost, Sustain” Declaration invites European Decision makers of EU Cities and Communities to bring the economic and social benefits of

the Digital Transformation to all local communities and implement an inclusive digital Europe, with powerful digital services, technologies, infrastructures and skills. The signatories of the initiative agree on the following principles:

a citizen-centric approach; a city-led approach at EU level;
the city as a citizen-driven and open innovation ecosystem; ethical and socially responsible access, use, sharing and management of data;
technologies as key enablers;
interoperable digital platforms based on open standards and technical specifications, Application Programming Interfaces (APIs) and shared data models.

Within both initiatives, a common Capacity Building Program will be developed with the aim of raising awareness and knowledge about the role of ICT applications in enacting the digital transformation of public services, as well as stimulate peer to peer knowledge sharing on digital transformation among cities and regions, with the final goal of Living-in.EU and DT4REGIONS of being a knowledge exchange hub of a wide variety of information for mutual learning on the digital transformation of European cities and regions on AI, big data. Finally, the feedback will support the creation of a shared vision for building a network of linked Local Digital Twins (of cities, municipalities, regions or MS) by 2030.

Expected Outcomes of the Capacity Building Program conducted by DT4Regions partners shared with Living-in.EU

- 2 workshops and 2 interactive sessions addressed to public administrators to share the platform's learning contents after a mapping of needs and recognition of good practice examples;
- 4 video webinars created around the main technologies on AI and BD and their potential use by the European public administrations. These webinars will be integrated in 4 online interactive sessions for awareness and online discussion with public administrators;
- 2 open debates organised by the ENoLL Action Oriented Task Force on the Social Impact of AI with the aim of identifying main questions dealing with AI and Big Data for all the stakeholders, and set-up a permanent on-line forum to exchange information using the platform tools;

Process & Activities

Our mapping exercise will start with an investigation of the regional and local actors relevant to digital transformation in regions or cities. This survey aims to find out more about the stakeholders and scope the needs of regions and cities in terms of mutual learning with reference to digital transformation initiatives and processes. The results of the survey will help identify the types of organisations that should be included in the 'on boarding' process for a successful digital transformation at regional and local level and what kind of services should be offered within our joint Capacity Building Programme.

The survey will be distributed to the DT4REGIONS partner territories, as well as to the 100+ signatories of the Living-in.EU initiative, ENoLL and ERRIN network members representing governmental actors from European regions and cities. All other regional and local public administrations interested in digital transformation are also encouraged to participate. The survey will remain open until the 18 February 2022.

We estimate that this survey will take around 30 minutes to complete. Thank you for your time and support.

Personal Information

* Full Name

* Organisation

* I represent

○ A Region ○ A City

* Name of the Region / City

* Email

Digital Transformation expertise in your area

* Have you ever implemented digital transformation projects in your region (especially focused on AI, Digital Twins and Data Spaces)?

This could include the creation of big data (i.e. with massive deployment of sensors, digitisation of procedures that creates a lot of documents,...) gathering and management (tools to collect, store, retrieve,) analysis and dashboard based on Big data analysis/AI applications.

- ( ) Yes
- ( ) No

If yes, please list the projects including a website link, where available.

Do you already have AI and/or Big Data solutions in use in your institution to address some of the challenges stated in question above? If yes, please specify.

500 character(s) maximum

What resources, financial (e.g. annual budget) and in-kind (e.g. training employees, collaborating with other entities on joint projects,..) does your territory currently commit to the deployment of IT tools and/or digital transformation process and services?

500 character(s) maximum

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* Which regional challenges do you hope to address through digital transformation?

- [ ] Design and delivery of digital public services
- [ ] Digitalisation and de-bureaucratisation of public services
- [ ] Enable new digital government practices
- [ ] Development and use of data platforms in cities promoting the development of smart cities model
- [ ] Establish an electronic identity for citizen
- [ ] Digitise and consolidate internal administrative processes
- [ ] Safeguard the digital autonomy of a region/country
- [ ] Secure supply chains for digital products and services
- [ ] Making local government more open and transparent
- [ ] Other

If other, please specify.

500 character(s) maximum

Can you select the following fields of work in terms of the level of implementation for your territory

(You should mark only those that had a relevant development. This will give information the maturity of the topic in the region)

- ☐ The Digital Twin
- ☐ Transportation (e.g. Autonomous Cars)
- ☐ Personalised medicine and well-being Industry automation (Industry 4.0)
- ☐ Telemedicine, e-Health (for e.g.Security, Biometrics and facial detection)
- ☐ Agri-food and rural solutions
- ☐ Tourism, cultural heritage and Development of the Cultural and Creative Industries Ethics in AI
- ☐ Logistics
- ☐ Blockchain
- ☐ Aerospace
- ☐ Cybersecurity
- ☐ Digitisation of internal processes
- ☐ Digital Identity
- ☐ Data spaces

Would you want to identify other topics not listed above as your AI-linked priorities for your territory?

1000 character(s) maximum

Please rank the following fields of work in terms of the interest for your territory.

(You do not need to have them developed, just interest. This will measure the relevance of topics)

The Digital Twin	☆
Transportation (e.g. Autonomous Cars)	☆
Personalised medicine and well-being Industry automation (Industry 4.0)	☆
Telemedicine, e-Health (for e.g.Security, Biometrics and facial detection)	☆
Agri-food and rural solutions	☆
Tourism, cultural heritage and Development of the Cultural and Creative Industries Ethics in AI	☆
Logistics	☆
Blockchain	☆
Aerospace	☆
Cybersecurity	☆
Digitisation of internal processes	☆
Digital Identity	☆
Data spaces	☆

What are the main barriers to the deployment of Big Data and AI technologies in your territory?

- ☐ Access to large amount of data Lack of data literacy
- ☐ Ethical issues
- ☐ Lack of expertise on procurement processes Lack of management skills
- ☐ Large value of data
- ☐ Budgetary Issues
- ☐ Legacy IT Systems
- ☐ Silo culture
- ☐ Lack of appropriate governance
- ☐ Lack of data standards

Do you have a digital transformation strategy in your region or city? If so, please upload any supporting document(s) and briefly describe it.

Stakeholder Engagement

* When discussing digitalisation in your territories, which stakeholders do you involve?

- ☐ Regional Authority
- ☐ Universities (Research Sector)
- ☐ Citizens
- ☐ Private Sector
- ☐ Other
- ☐ None of the above

For the group(s) selected above, including "other", please specify and add additional information, including the names of specific stakeholder organisations, for the group(s) selected above.

1000 character(s) maximum

How do you currently engage with those stakeholders?
Please only complete the 'other' if you have given the same answer above.

	Conferences	Trainings	Policy Reports	Hackathons	Policy lobbying	Public Procurement	Grant funded projects	Strategic working groups with experts	Other (specify)	We do not communicate with them
Regional Authority	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Universities	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Citizens	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Private Sector	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Please provide additional insights into your existing stakeholder engagement activities.

500 character(s) maximum

Concretely, how can DT4Regions and/or the Living-in.EU initiatives support the stakeholder engagement activities in your territory?

1000 character(s) maximum

Please rank the below stakeholder groups depending on their importance in the development and operationalisation of your digital transformation strategy.

Regional Authority	
Universities	
Citizens	
Private Sector	
Other	

* Would you be interested to share your experiences in digital transformation projects with other territories?

- ○ Yes
- ○ No
- ○ Not applicable

Please indicate any entities, stakeholders and actors in your region that are key when it comes to providing AI and/or Big Data resources and services.

- ☐ Public institutions
- ☐ Citizen
- ☐ Not-for-profit organisations
- ☐ Universities and research centres
- ☐ Digital Innovation Hubs
- ☐ SMEs
- ☐ Large corporates
- ☐ Start-ups
- ☐ Consultancy
- ☐ Association and networks
- ☐ Other

Please provide more information on the stakeholder groups selected above.

500 character(s) maximum

Please also indicate the entities, stakeholders and actors in your territory that benefit the most from such resources and services.

- ☐ Public institutions
- ☐ Citizen
- ☐ Not-for-profit organisations
- ☐ Universities and research centres
- ☐ Digital Innovation Hubs
- ☐ SMEs
- ☐ Large corporates
- ☐ Start-ups
- ☐ Consultancy
- ☐ Association and networks
- ☐ Other

Please provide more information on the stakeholder groups selected above.

500 character(s) maximum

Capacity Building Needs

In order to provide an effective capacity building programme, the section below aims to assess the training needs of regions and cities in Europe. The responses collected will be analysed by the ENoLL team and a short report will be drafted to inform the work on co-designing the DT4Region platform

What topics are you interested the most to learn more about?

at most 6 choice(s)

- ☐ Artificial Intelligence
- ☐ Big Data
- ☐ Digital Twins
- ☐ Living Labs for the Digital Transformation of Cities and Regions
- ☐ Data spaces
- ☐ Digital Identity
- ☐ Cybersecurity
- ☐ Other

If other, please specify.

What kind of format/s do you prefer for the trainings?

at most 8 choice(s)

- ☐ Workshops (onsite/online)

- ☐ Public debates
- ☐ Short Videos
- ☐ MOOC
- ☐ Exercises
- ☐ Case studies and best practices
- ☐ Peer to peer on site trainings
- ☐ Other

If other, please specify.

A Community of Practice supporting the creation of groups, upload of contents, and lively discussions across practitioners will be provided through the DT4Regions platform. What are the key elements you would like to see in the Community of Practice apart from the ones just mentioned?

1000 character(s) maximum

What are your learning needs in terms of repository of knowledge and would you be interested in co- developing the training programme with us?

500 character(s) maximum

Would you be interested in an inventory of external already available training courses on Digital Transformation for Regions and Cities?

☐ Yes ☐ No

If yes, please specify.

Please rate your interest in the following Modules of the DT4REGIONS Platform

General Awareness: a news module to generate general awareness of the activities of the community. This module will be the initial touchpoint for users interested in AI & BD for regions with frequent news and activity updates.	☆ ☆ ☆ ☆ ☆
Knowledge Exchange: Knowledge exchange component, where users are invited to submit their knowledge and experiences about the usage of AI & BD.	☆ ☆ ☆ ☆ ☆

Community of Practice: A Community of Practice supporting the creation of groups, upload of contents, and lively discussions across practitioners.	
Success Case Repository: A curated repository of good practices and success cases on the usage of AI and BD.	
Content Management: A content management module that will allow the moderation of contents and of the community. Content management will take care of multilingual needs of different stakeholders. The platform will have the capacity to be translated to several languages.	

Would you be interested in co-developing the training programme of DT4Regions and Living-in-EU initiatives with us?

- No interest
- Limited interest
- Interested
- Highly interested
- Fully interested