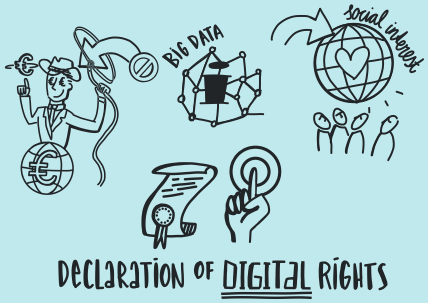
URBAN AGENDA FOR THE EU

DIGITAL TRANSITION PARTNERSHIP

FINAL REPORT

URBAN AGENDA FOR THE EU
WORKING TOGETHER FOR BETTER CITIES
DIGITAL TRANSITION



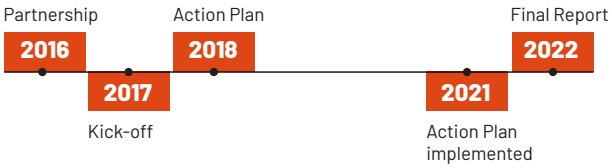
Contents

Introduction

The focus of the Digital Transition Partnership was to support European cities in exploiting the possibilities of digitalisation, empower their citizens to act in the digital age and assist European businesses to develop innovations and new business opportunities for global markets. The Partnership identified the following building blocks for successful transition into the digital age: expanding the knowledge, competence and digital skills of EU citizens and administrations at all levels; enabling and encouraging citizen-centric e-government; fair access to and use of data; accelerated adoption of digital emerging technologies; and adopting business model thinking in cities in order to achieve sustainable level of digitalization. The Action Plan established by the Partnership complements several EU level strategies, such as the Digital Single Market Strategy for Europe, European Commission's Digital Agenda which forms one of the seven pillars of the Europe 2020 Strategy, and The EU eGovernment Action Plan 2016–2020.

The work of the Partnership was guided by the three pillars of the Urban agenda for the EU- Better Regulation, Better Funding; and Better Knowledge. Some of the areas for intervention required actions under more than one of those pillars. For example, expanding the knowledge, competence and digital skills of both EU citizens and administration requires not only significant funding dedicated to the task but also identifying good examples and upscaling of these effective models.

The report presents a short overview of the main activities implemented, as well as outcomes achieved for each action of the Digital Transition Partnership. Also, the specific outputs produced (documents, websites, etc.) are listed with access links per action.



Timeline

The partnership was approved in 2016 and launched its work on the orientation paper at the kick-off meeting in Oulu, Finland in February 2017. In early 2018, the partnership presented its draft Action Plan, which was discussed at the public consultation during February–March 2018. In June 2018, the Action Plan was adopted. The partnership implemented the Action Plan during 2018–2021. In early 2022, the Final Report of the partnership is presented.

Partners

Urban Areas

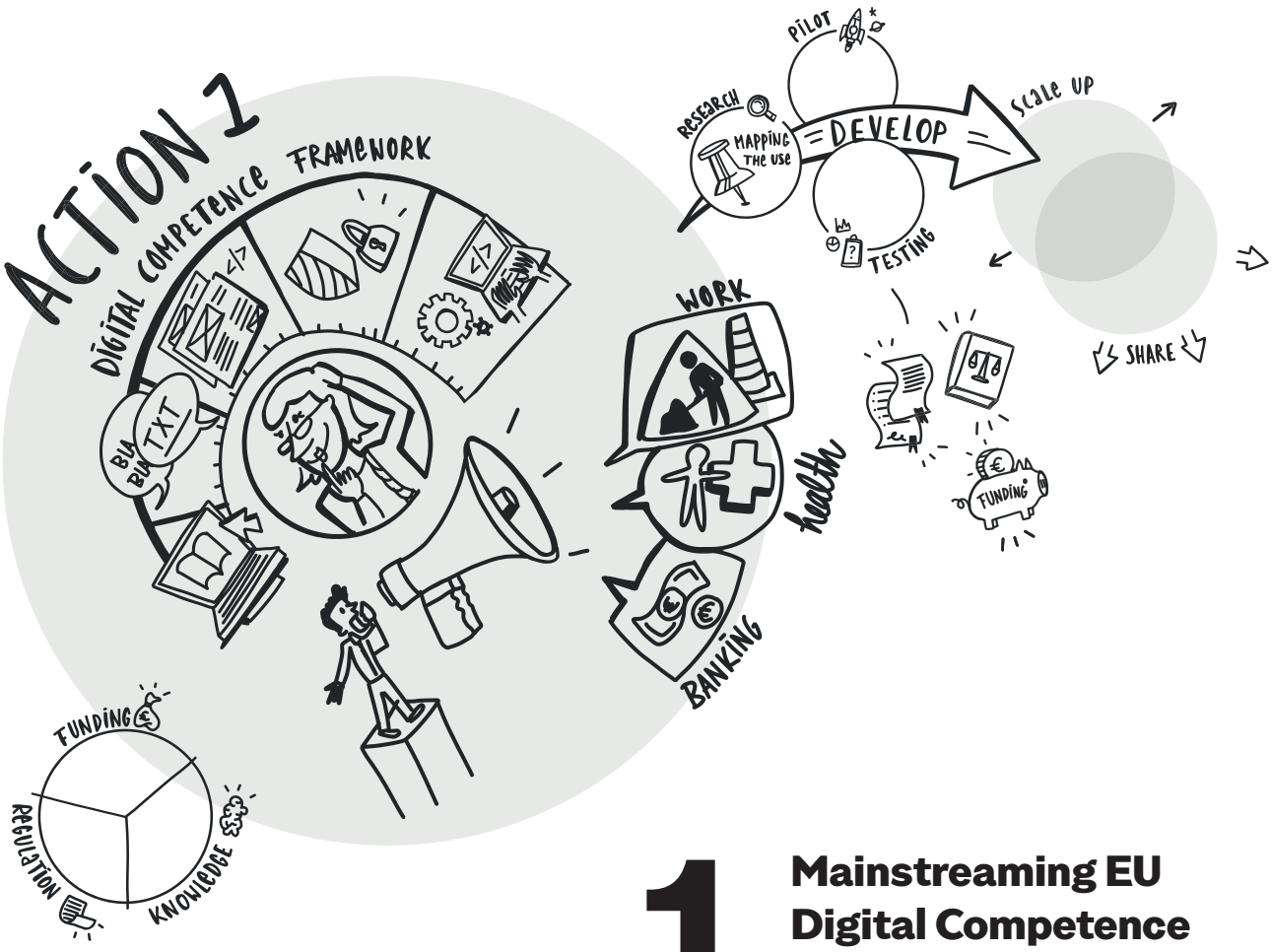
- Oulu (FI, Coordinator)
- Sofia (BG, Coordinator)
- Eindhoven (NL)
- Hamburg (DE)
- Helsingborg (SE)
- Lyon (FR)
- Rome (IT)
- Split (HR)
- Kutina (HR)
- Association of Municipalities and Towns of Slovenia
- Association of Netherlands Municipalities

Member States

- Estonia (Coordinator)
- Croatia
- Germany
- Hungary
- Romania

Other participants

- European Commission (DG REGIO, DG CNECT)
- Committee of the Regions
- Council of European Municipalities and Regions (CEMR)
- EUROCITIES
- URBACT (observer)
- Government of Flanders (observer)



1. Mainstreaming EU Digital Competence Framework for citizens into daily use

Development of information and communication technologies has increasingly digitalized various domains of life and work – making participation in different sectors of today's increasingly digitalised society and economy possible only when possessing sufficient digital skills. Digital competence is the 21st century skill – a basic requirement for every citizen for working, living and learning in the knowledge society. The ability to use digital technologies is the universal requirement to enable citizens to actively participate in the economy and society.

To improve the EU citizens' digital competence, European Digital Competence Framework for Citizens (also known as DigComp) has been developed by the European Commission. DigComp offers a tool to improve citizens' digital competences for work and employability, learning, leisure, consumption and participation in society. The problem is that DigComp is not yet in universal use. It remains also underused by employers in elaborating and offering training programmes to their employees to increase their digital competences.

The partnership concentrated its activities related to improving the digital skills on Action 2: "Digital Neighbourhood Instrument" of the DTP Action Plan. Relevant recommendations on how to increase the potential of DigComp tool have been included in the output of Action 2.

List of outputs:

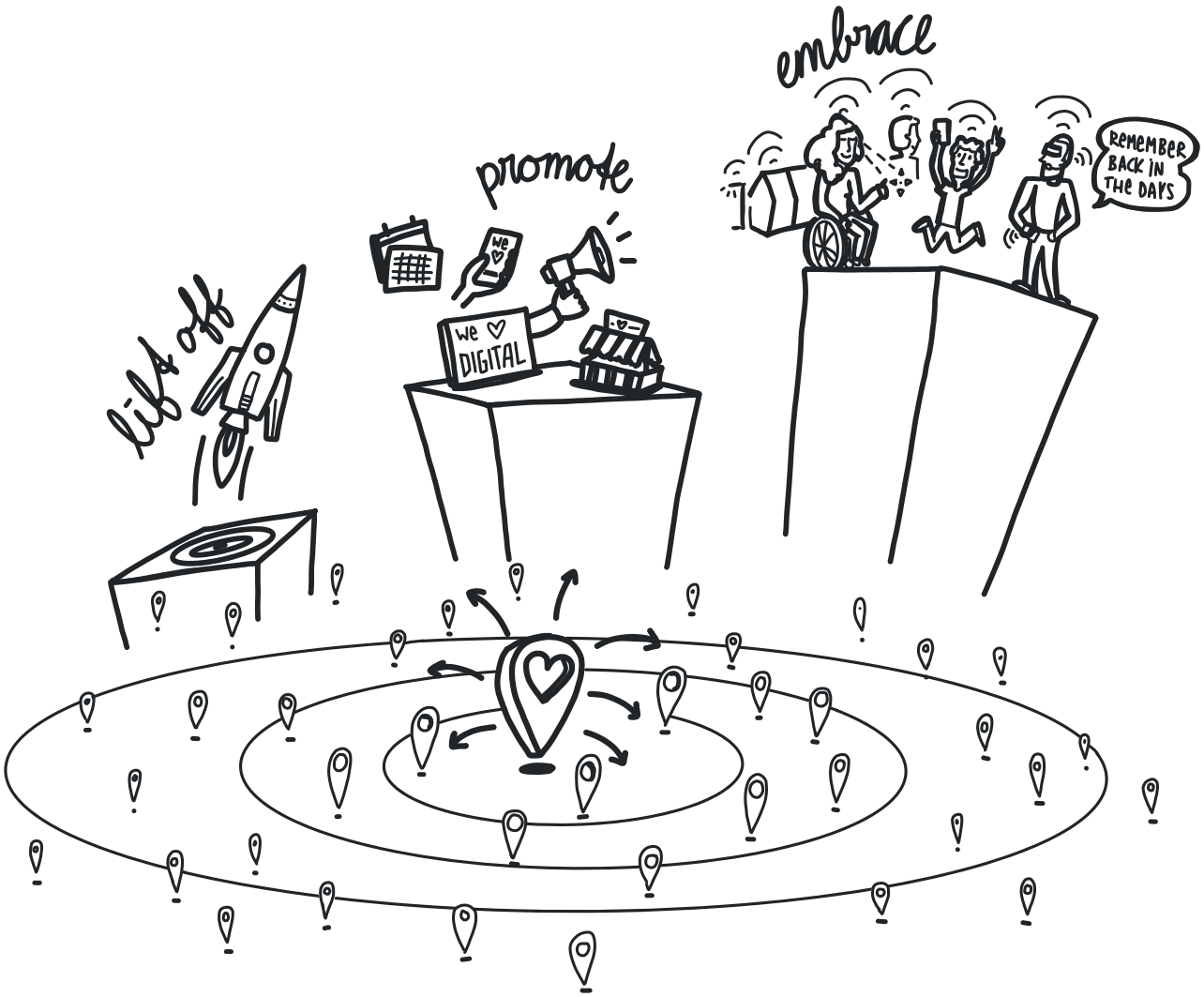
See Action 2 output A2.1. "*Digital Neighbourhood Instrument* - A general model and toolbox to establish a Digital Center".

2. Digital Neighbourhood Instrument

According to data approximately 170 million EU citizens lack even basic digital skills. This accounts for over 40% of Europeans between the ages of 16–74. Lack of access to digital services as well as lack of awareness of digital possibilities have a major impact on the digital divide, resulting in a social divide.

Digital transformation should promote the participation of everyone, in all aspects of society. The implementation of digital technologies must not lead to the exclusion of individuals or segments of the population. It must consider people's different ranges of possibilities to interact with digital tools. It should also ensure accessibility for persons with disabilities. No one should be left behind.

In order to address these issues two members of the Digital Transition Partnership set up pilots: in Sofia, Bulgaria and Helsingborg, Sweden to test different models for providing access to digital services. Valuable experiences from similar projects in Oulu, Finland were also collected.



Based on the experiences and insights collected, the partnership elaborated a general model with a toolbox on how to establish a Digital Center. The results have been formulated as a booklet. The goal of the booklet is to demonstrate both the necessity and benefits of establishing these centers in communities and cities: a physical space where the cities and the citizens can learn together and collaborate on their digital transition.

List of outputs:

A2.1. The booklet "*Digital Neighbourhood Instrument* – A general model and toolbox to establish a Digital Center", published in March, 2020;

The booklet has inspired Swedish libraries to create their own Swedish model which is now available as a course on the library's own digital education platform "*Digiteket*" (in Swedish only);

The booklet has been presented at conferences and webinars:

COP-CITIES Webinar: Community of Practice on Cities - How to scale up digital solutions in smart cities and communities May 26, 2020

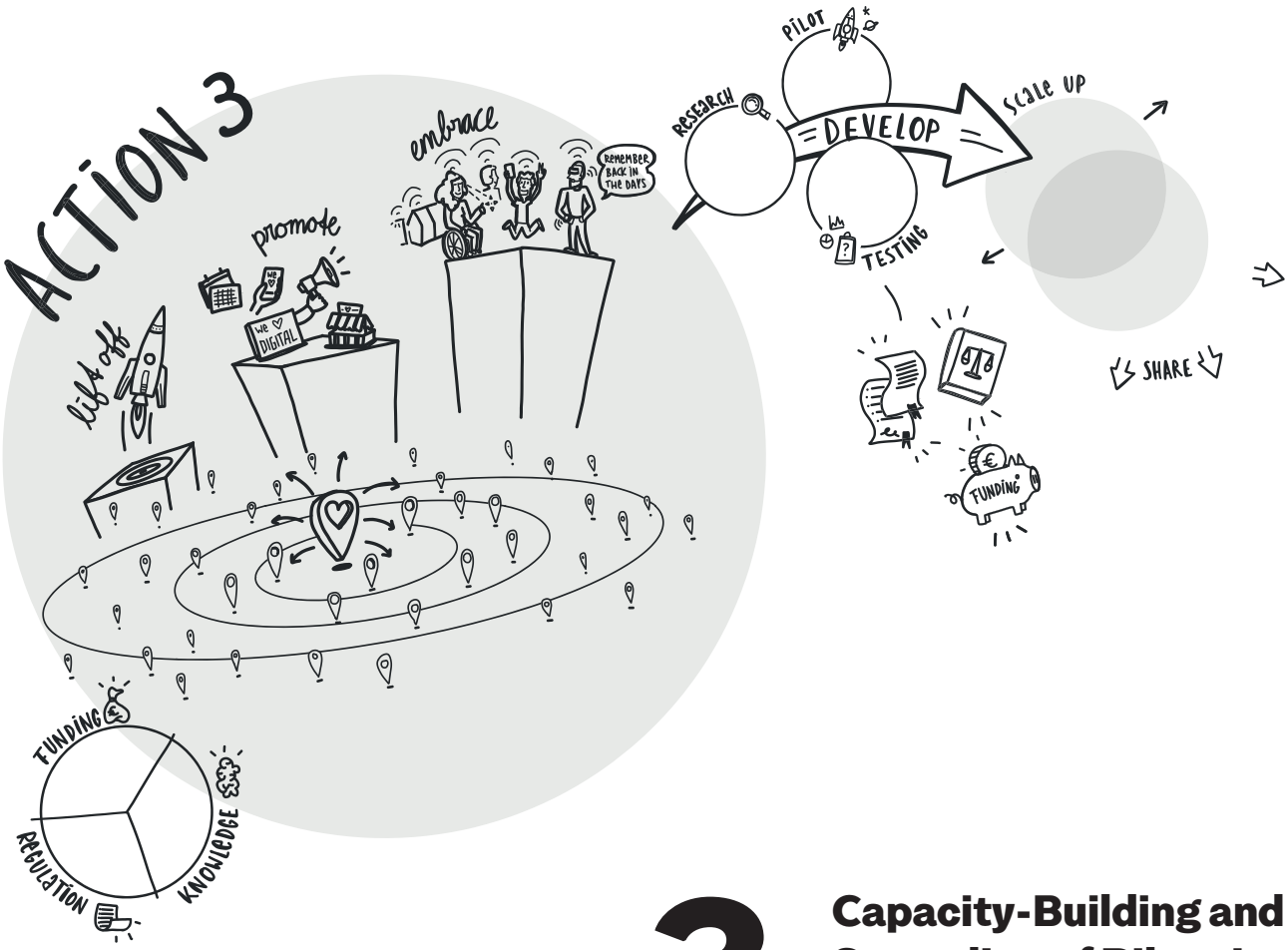
ICEGOV September 23, 2020

All Digital Summit, October 7, 2020

Articles about the booklet:

Seven European projects that address *digital* transformation of libraries

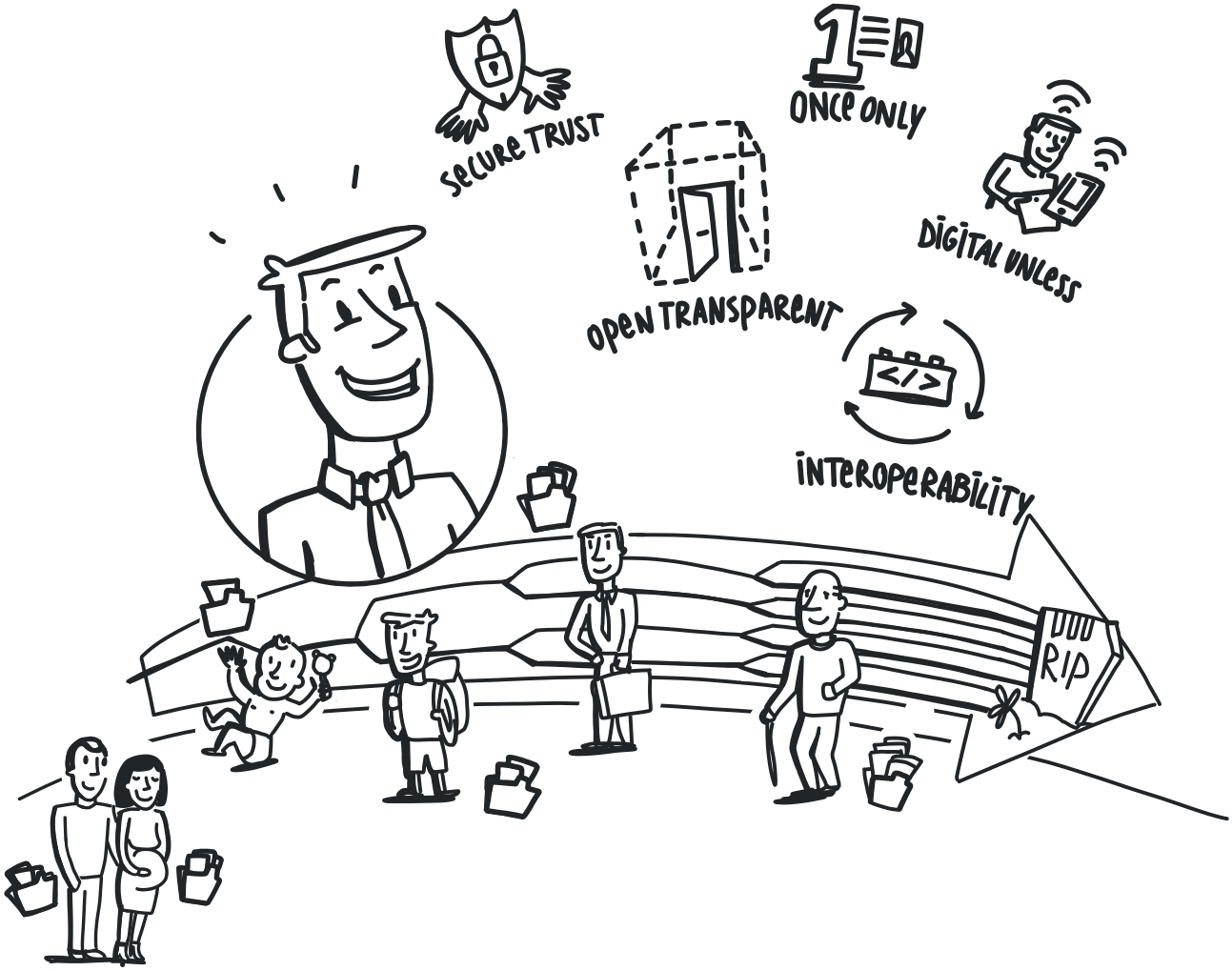
Living-in.eu, one of four examples on good solutions for capacity building



3. Capacity-Building and Spreading of Pilots in Regions and Cities

Current state of digital transition of European cities is very diverse. Large cities tend to be at the forefront of digitalisation due to higher demand for more complex services and interactions, and their greater capacity to develop and provide those services. Smaller cities and towns often lack the financial capacity and skills to develop digital services at the same rate. Enhancing the capacities of cities of all sizes to tackle digital challenges and deliver digital services to their inhabitants and businesses requires policy responses at all levels and by all actors, specifically targeting the cities that are lagging with their digital transformation.

In the overall trend of digitalisation, no municipality should be left behind, no matter how small its population or how limited its financial capacities. The partnership identified that specific assistance is needed to cities who are only on the verge of digitalization of their internal working processes and services to the citizens – on how and from where to start. For this, the partnership elaborated a step-by-step digitalisation strategy for digitally less developed cities to help those cities to start and then speed up their digitalisation processes. The guiding strategy gives an overview of the main internal working processes which should be digitalised in every city,



and also of the most obvious public services to digitalise. Some best practises for both categories are also included as examples. The strategy helps also to assess which digital competencies are required in the city and plan necessary training.

The trend of digitalisation of all aspects of society is here to stay, accelerated also by COVID-19 crisis, which started in 2020. Therefore, digitalisation is affecting cities even more profoundly in the coming years, with citizens and businesses expecting convenient digital options for services provided by cities. Streamlined level of digitalisation of administrative procedures and city services will soon be the absolute minimum expected from any city independent of its size.

List of outputs:

A3.1. *Digital Transition ABC*.

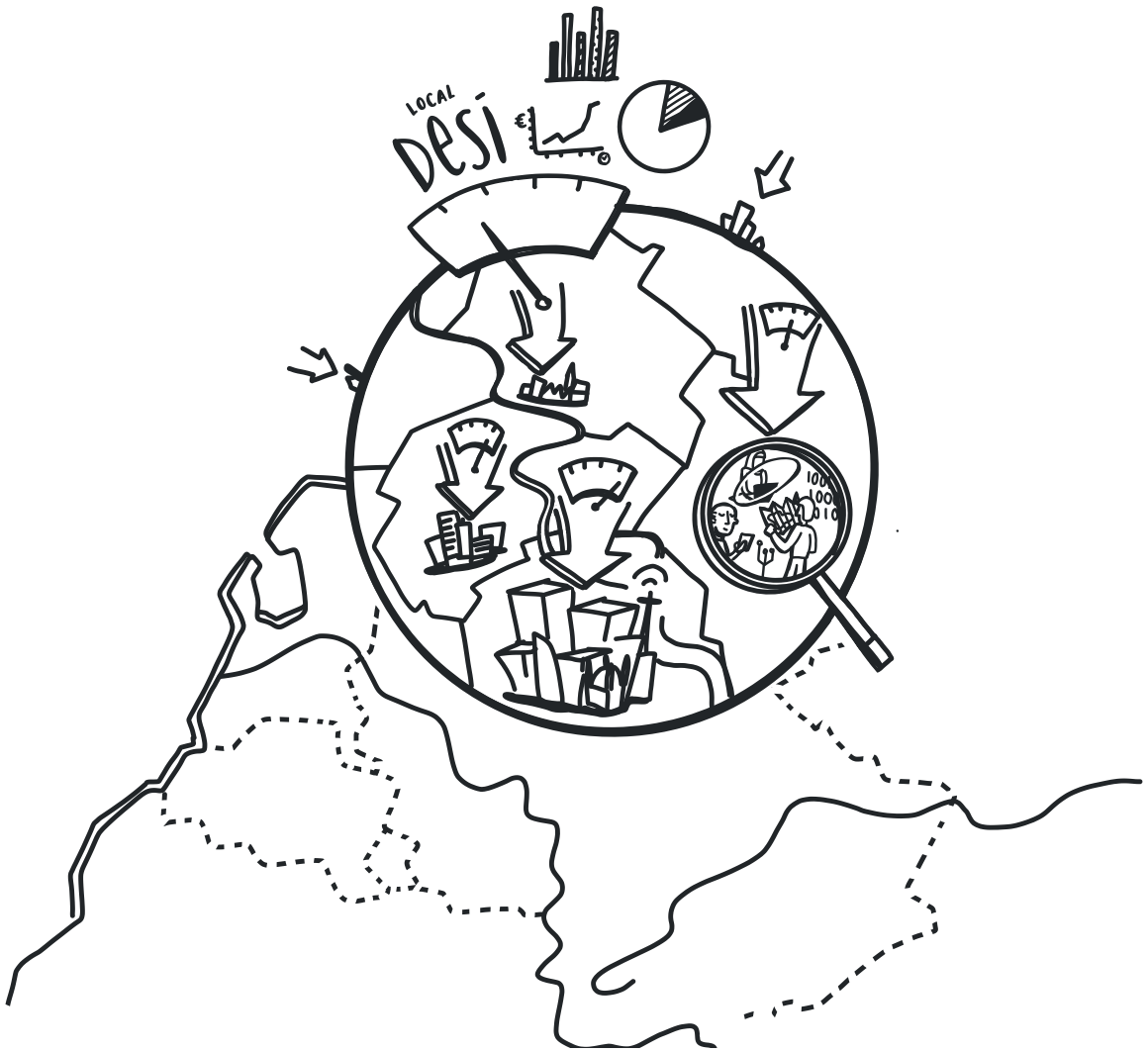
4. Helping cities develop a user-centric eGovernment model

The possibilities of technology are endless. Safeguarding the public interest is one of the main reasons for cities to grow towards a proactive role in this societal change, putting their citizens first. The European Union emphasizes an approach in which technology is citizen-driven and embraces ethical guidelines for future development.

Digital services can help people within cities and rural areas, to live their lives in comfort and offer support to remain healthy, gain knowledge, work, travel, save time and have fun. Currently many governments only provide a limited number of digital services for citizens, and many challenges still remain. Most services are either only local or national in scale, creating a diverse landscape, incompatibility issues and offering limited scalability, particularly at a European level.

The biggest challenge is to free data from silos and enable data to move to work towards generic services that do justice to people's needs and diversity, using Europe's diversity as a strength through coherence. Bringing it all together requires a social and technical framework that supports this aim.

For this purpose, the partnership developed a practical strategy and a modular online toolkit to help cities and governments to build a social and technical ecosystem for delivering digital services.



List of outputs:

A4.1. The Digital Services for Europe. *Practical Strategy towards Citizen-centered Services*;

A4.2. The Digital Services for Europe - toolkit; (English and partially available in Dutch, German and Estonian).

The toolkit consists of four components that offer knowledge, insight, applicability and a kickstart, respectively:

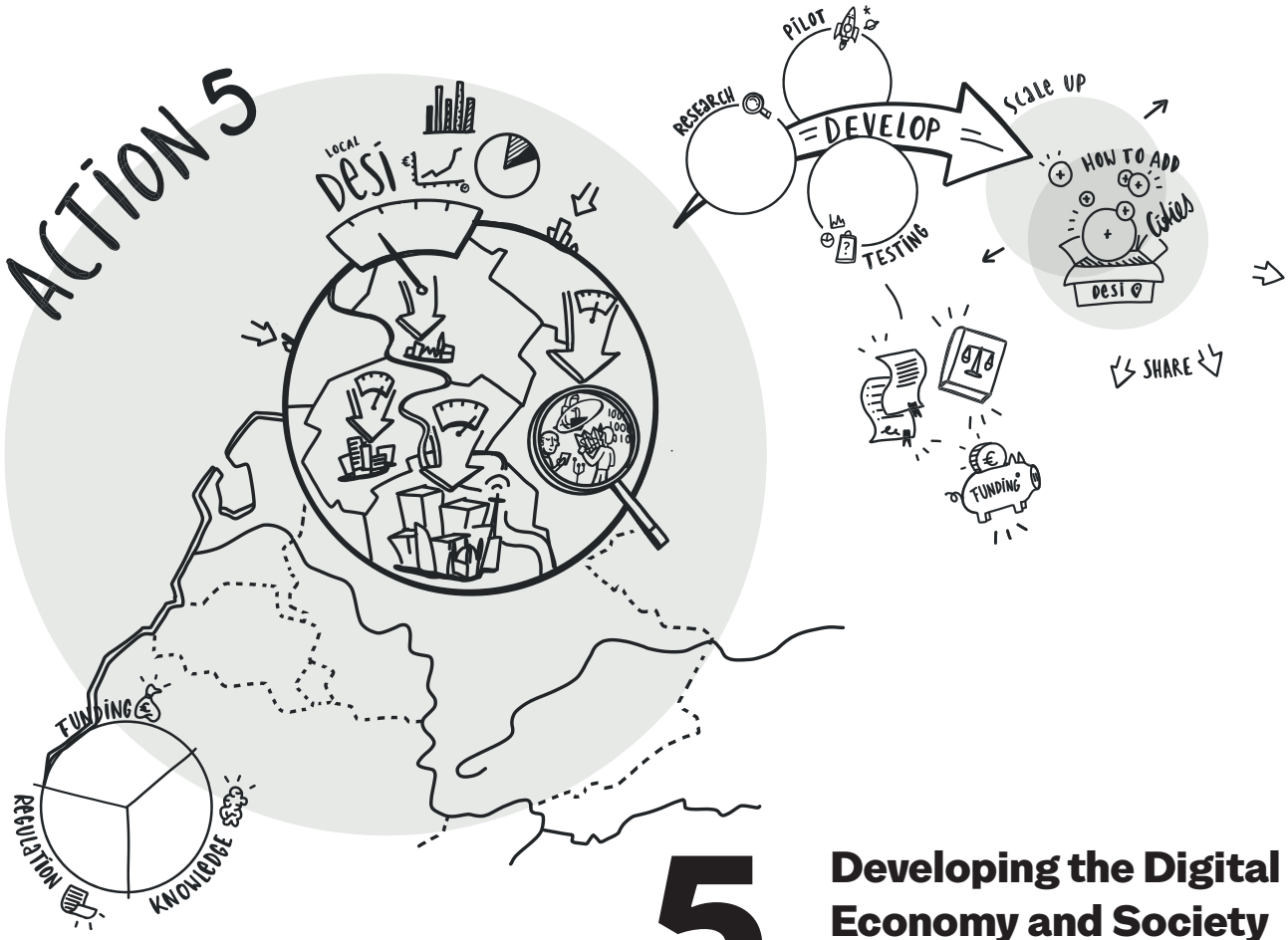
a. Strategic Building Blocks (knowledge): the building blocks contain a collection of good practises, perspectives and existing documentation from a number of EU Member States and municipalities that have worked on digital transition. These can be used to check for aspects that might be of help in your local context.

b. Digital Survey (insight): the survey helps you to determine your starting point for developing your local digital strategy. In the process of filling out the survey, you will also gain awareness of your current state of affairs.

c. Dynamic Roadmap Tool (applicability): the roadmap tool uses the results of your digital survey to analyse which elements within the building blocks are your strengths and which can be further developed. For details, please refer to the questions and answers relating to the roadmap tool below.

d. References to good practises (kickstart): building-block elements are presented in combination with a number of implementation steps. These can be accompanied by references to good practises, available technology and/or possible funding programmes, to help kickstart local initiatives using existing knowledge (currently under development).

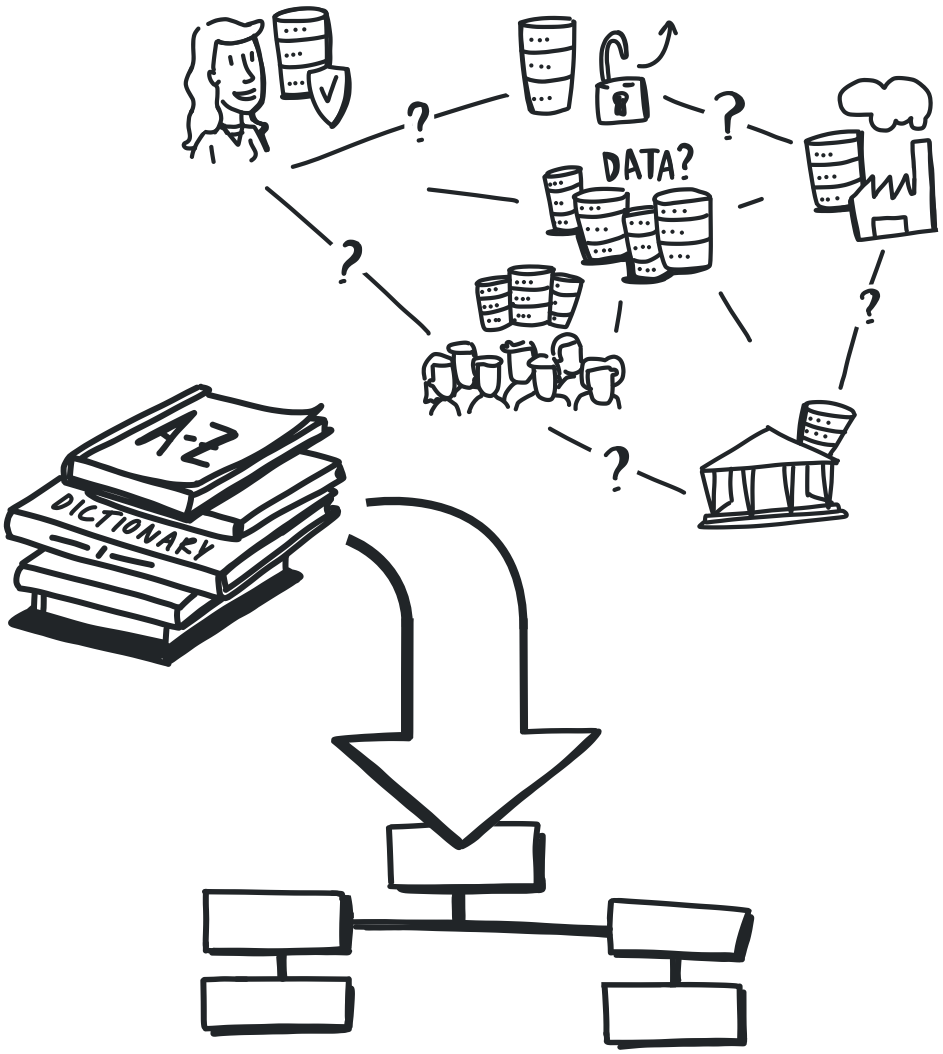
The proof-of-concept validation of the toolkit with several municipalities has been completed. At present, funding opportunities for upgrading and preparing the toolkit, or specific components as part of it, for release to production are being explored. During this process, the proof-of-concept has been archived offline, to avoid potential security issues until further development and maintenance of the toolkit has been arranged. The toolkit will be made available again under *www.digitalservicesfor.eu* and availability will be communicated through relevant channels.



5. Developing the Digital Economy and Society Index (DESI) at local level ("DESI local")

Currently, the level and progress of Europe's digital performance is regularly measured only at the Member State level by the Digital Economy and Society Index (DESI). DESI index does not capture digitalisation at the regional and local levels where citizens would feel its benefits directly. Universal instruments to measure how digital your city is, and benchmark it with other European cities, have not been available so far. Measuring digitalisation at city level has been mostly subject to short project-based approaches. Therefore, it is difficult to correctly assess the overall digital performance and competitiveness of European cities and urban areas.

The partnership analysed the implications of bringing the national DESI index down to the local level to allow for a universally applicable index throughout the EU, which could be implemented via national statistical offices. This approach would allow the cities to benchmark themselves uniformly not only to other cities of Europe, but also to their national average digitalisation level. National comparison would give crucial information on how each city is positioned inside their own country. This could serve as a catalyst for speeding up digitalisation, or used as a basis for distributing national digital infrastructure investments.



The partnership analysed possible data sources for DESI local, based on the national DESI index, and assessed the estimated costs of collecting data for DESI index at the municipal level.

DESI components are based on the sample survey. Sample sizes in local units are too small for reliable estimates. The analysis showed that there are two solutions for DESI local:

1. to increase sample size for small local units;
2. to apply statistical modelling or alternative data sources.

First solution is easier to explain to data users. National and local indicators are consistent. On the other hand, the solution is costly, because interviewing is the most expensive data collection method. Increased sample size may also influence the response rates.

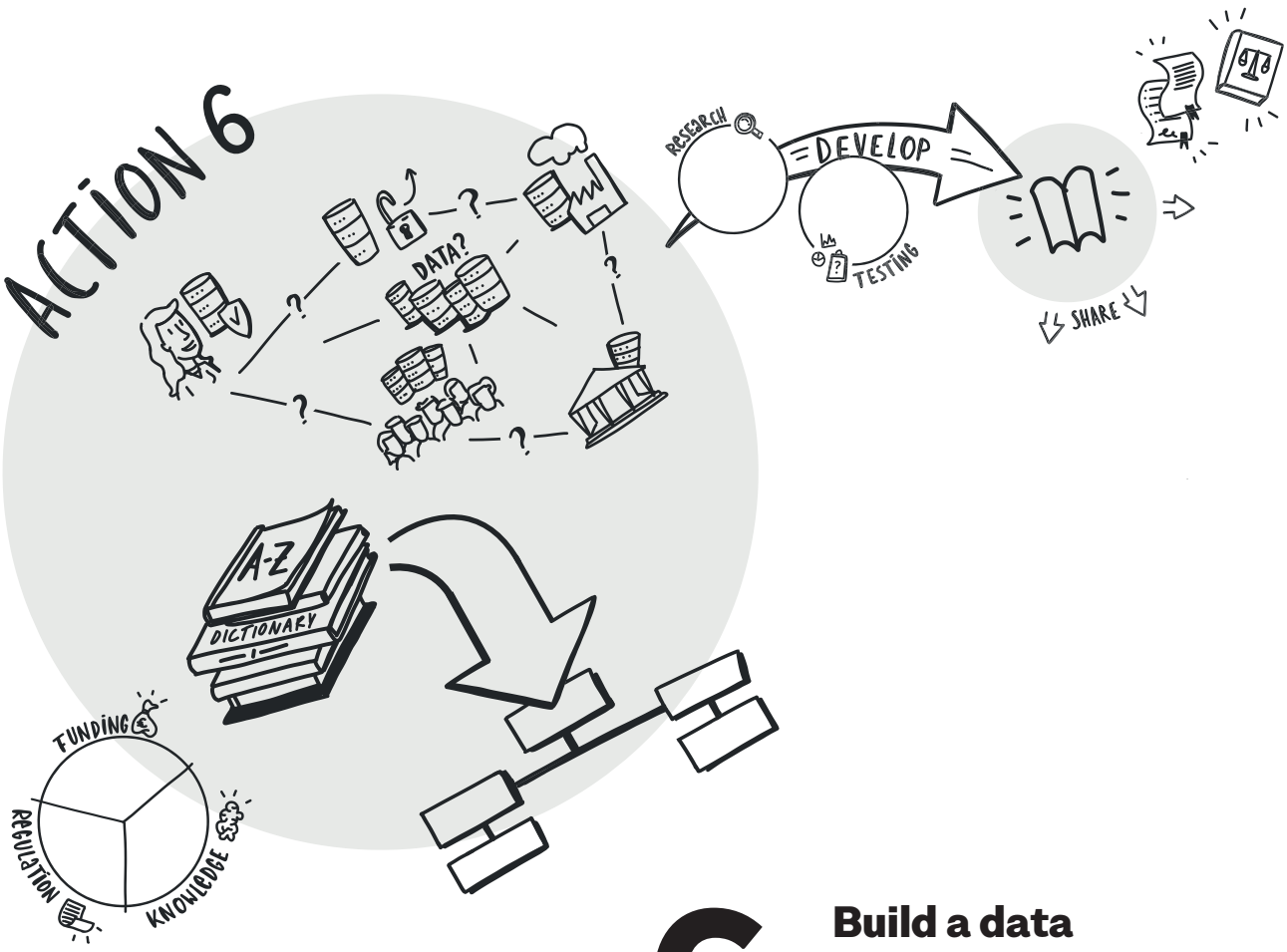
Second solution requires availability of the comprehensive administrative register data and a possibility to link register and survey data. Developing and implementing the methodology for the first time is time consuming. Later the models need updating over some years.

Based on the study, it can be recommended to prefer small area estimation methods for local DESI if administrative register data or/and some alternative data sources are available for statistical purposes. Increase of sample size is the second best option, in case of poor register data.

The partnership asked its partner Committee of the Regions (CoR) to include the need to elaborate and implement local DESI index to its official policy position with the aim to gain European Commission's support to the topic and possible financing for collecting digitalisation data at the local level. After the opinion was issued, the Committee of the Regions together with the ESPON programme jointly launched the process of elaboration of a set of indicators to create a monitoring framework to measure digital transformation at regional and local levels (LORDI). This set of indicators is unrelated to the national DESI index and would allow collecting data directly from local and regional authorities, making the process less costly and more flexible.

List of outputs:

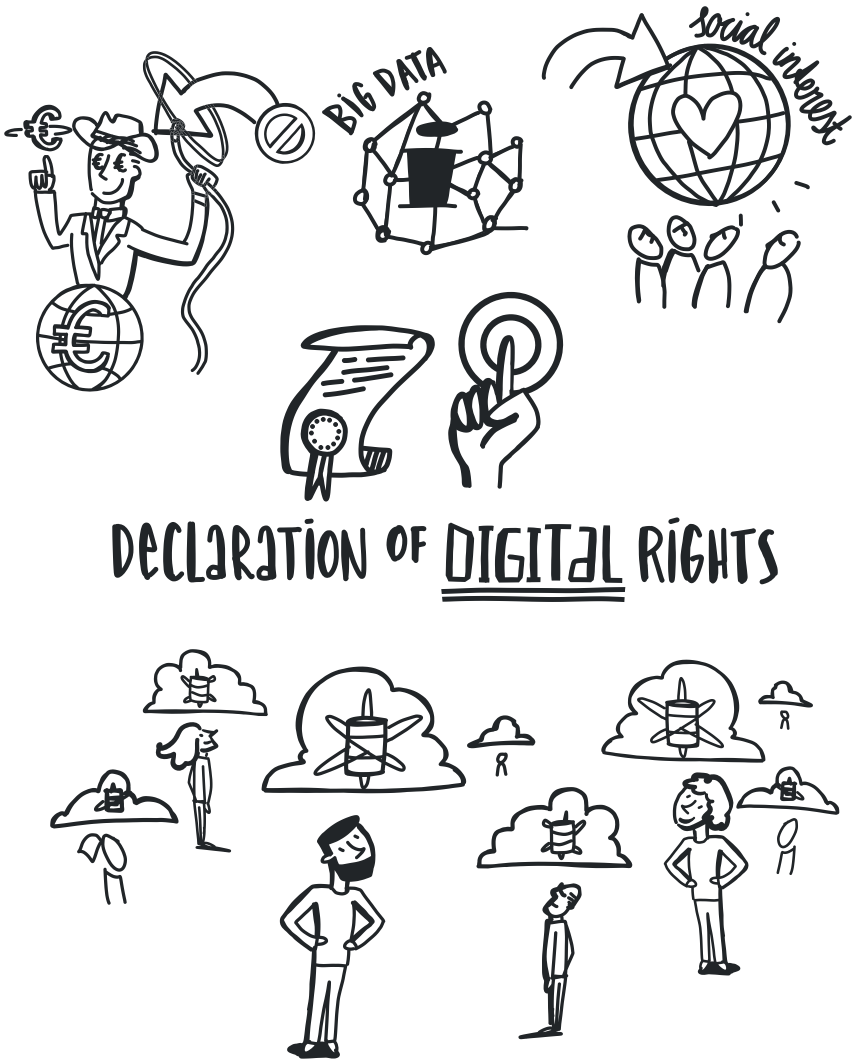
A5.1. *Analysis of Developing the Digital Economy and Society Index (DESI) at local level.*



6. Build a data taxonomy at a European level

There is an on-going discussion as to how to make the taxonomy of data (as a normalised classification) available to and endorsed by all cities in Europe. On the EU level, the Commission is revising the Public-Sector Information (PSI) Directive. When adopted in June 2019, the Directive was renamed as the Open Data and Public Sector Information Directive and will make public sector and publicly funded data re-usable. There was also a call for proposals (H2020) to develop tools to make use of large datasets that will be made available through the European Cloud Infrastructure. In addition, DG CNECT is looking at championing local administrations to provide them with the necessary tools to be able to analyse big data. This work was used as a basis for data taxonomy action.

There are a number of various terms related to data that are in use in the EU legal and regulatory framework and documentation dealing with data management. To ensure the consistent application of laws and effective free flow of data, the relationship between the different terms needs to be understood and clear distinction should be drawn. While many terms may appear synonymous and interchangeable, they have distinct legal meanings that aim to capture various aspects of data management.



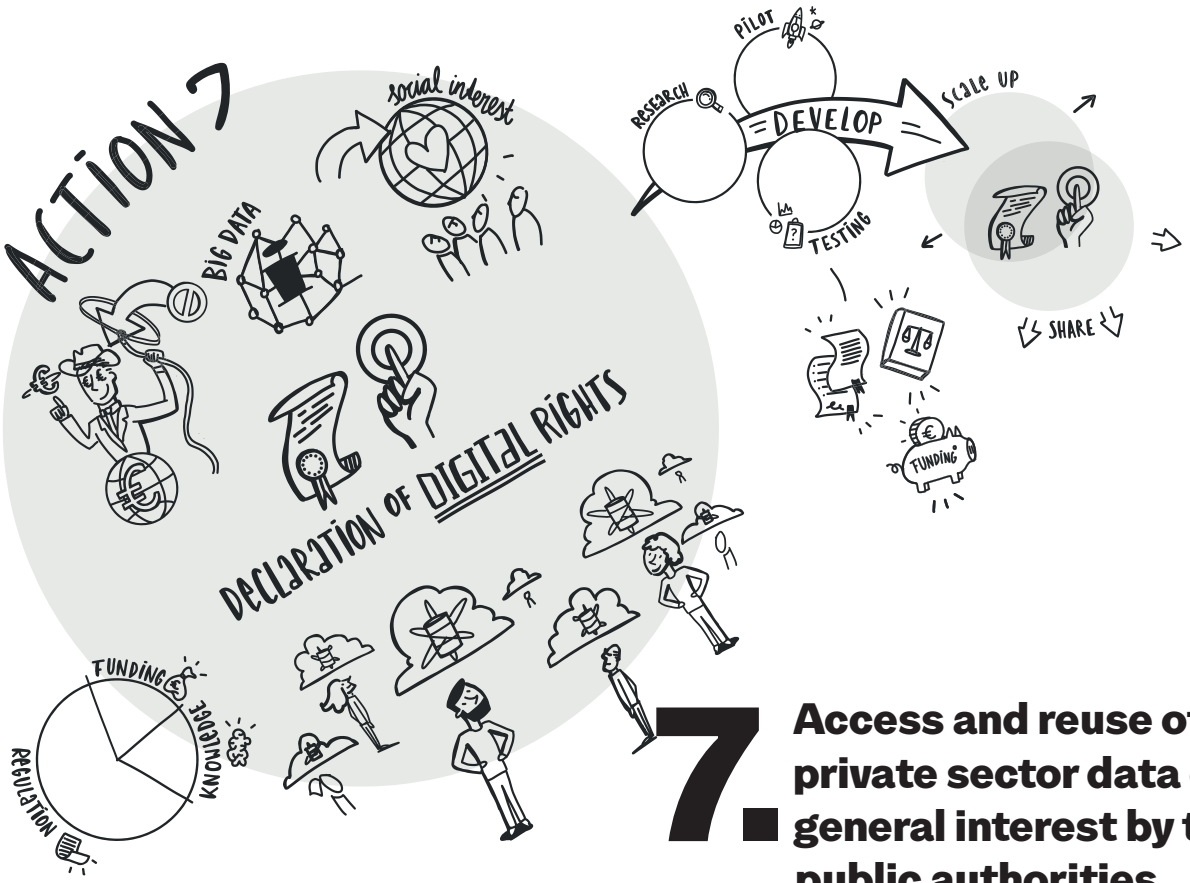
Therefore, a uniform data taxonomy needs to be compiled in the EU. A data taxonomy is a hierarchical classification of the data based on shared characteristics. The main goal is to have shared definitions for all types of data in the EU.

The partnership elaborated an expert report to support the classification work as an output of the action. On the other hand, the action is still very valid and work will have to continue until a uniform data taxonomy is available.

List of outputs:

A6.1. *Report on data concepts*

A6.2. *Grid on data definitions*

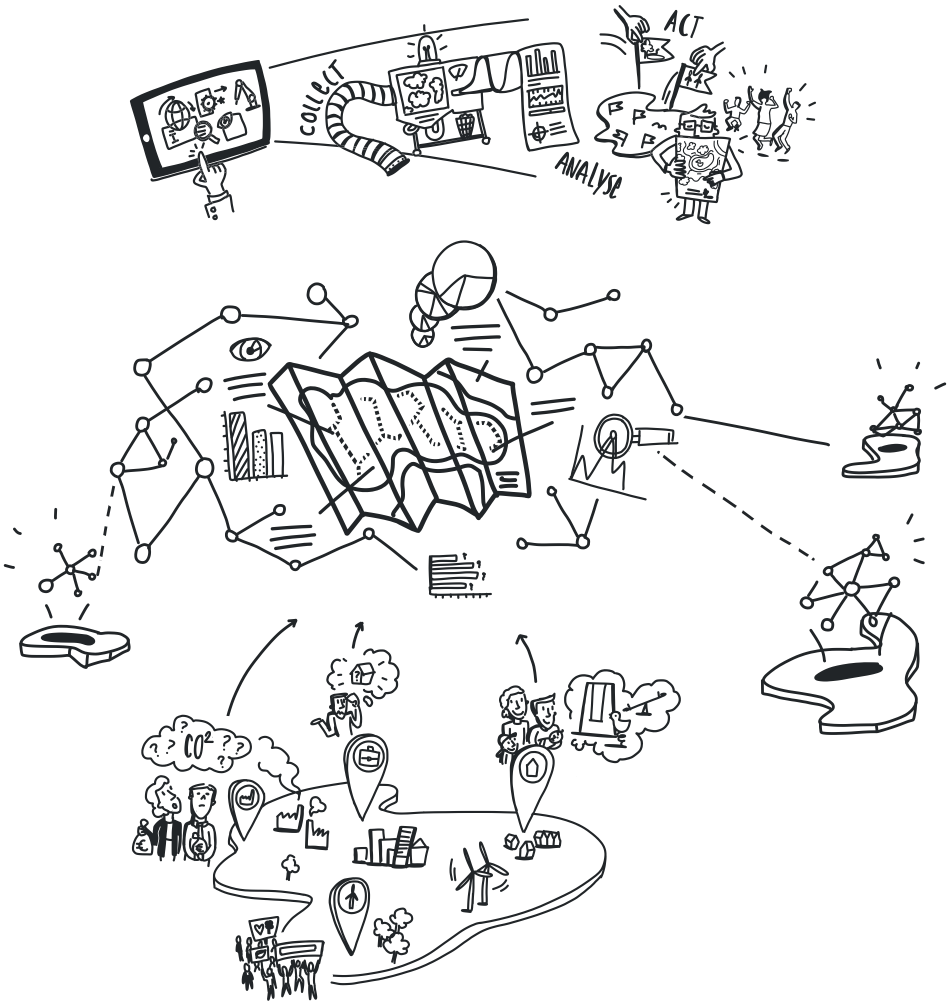


7. Access and reuse of private sector data of general interest by the public authorities

Every day in cities, a growing number of non-personal data is generated through Internet of Things (IoT) and machine to machine (M2M) solutions. This data is strategic for the daily management of the city as well as for the development of new and innovative services and solutions to citizens. Businesses produce private data of general interest. This data presents an opportunity for public administrations in terms of improvement of their public policies and service delivery. City authorities often externalise the management of public spaces and services to private companies. These services rely on the collection and use of data. Data collected in public spaces can be crucial for preventive measures supporting public health and safety, improving urban planning, traffic management and managing energy supply. It supports local authorities' decision-making processes and the provision of essential services to citizens.

This action aimed at guaranteeing the development of a harmonised EU regulatory framework based on fair, reasonable and non-discriminatory terms to provide public authorities, public agencies and bodies, citizens and local businesses access to and re-use of data collected in public spaces for the development of new services and solutions for and in cities.

The partnership organised various activities in the form of meetings, workshops, and knowledge sharing events on the topic. Also, publications and policy statements have been elaborated to advocate cities' perspective on the topic



towards the EU. Partnership member Eurocities led the implementation of the action, and various policy statements on the topic were published in the name of Eurocities.

The development and implementation of a harmonised EU regulatory framework to foster access and re-use of non-personal data is a long process. In 2018, the European Commission set up an expert group on Business-to-Government data, launching a dialogue with many stakeholders both from the private and public sector - at national, regional and local level to discuss challenges and develop possible solutions to guarantee better access, exchange and re-use of non-personal data in Europe. The European Strategy for data, launched in 2018 together with the EC communication 'towards a European common data space,' and recent EC legislative proposals such as the Digital Services Act package, the Data Governance Act and the future data Act also take a step forward to regulating non-personal data access and re-use.

List of outputs:

A7.1. Eurocities citizen *data principles*, March 2019.

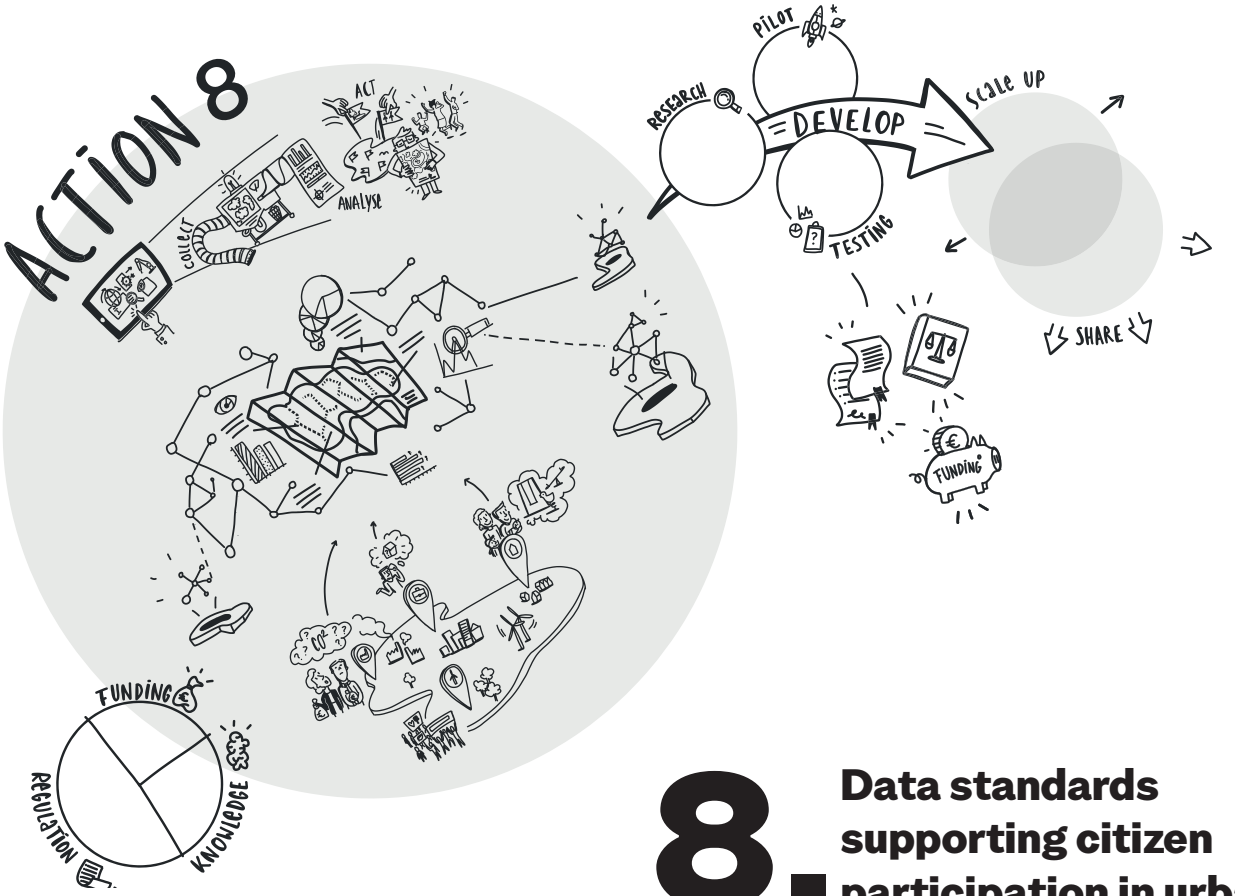
A7.2. Data, people, cities - Eurocities citizen data principles in action (*publication*) October 2019.

A7.3. Principles included in the final *report* of the expert group on B2G data.

A7.4. - A7.8. Eurocities policy papers and statements: *data economy* (2017), *smart cities* (2019), *Artificial intelligence* (2020), *5G* (2020), *Digital Services Act* (2020).

Knowledge sharing and exchanges in several meetings of the knowledge society forum and data WG of Eurocities, with more than 50 cities representatives all over Europe (2018-2020).

City mayors' meeting with executive *vice-President Vestager* (September 2020).



8. Data standards supporting citizen participation in urban planning

Today citizen participation – in informal and formal processes with different degrees of detail and intensity – is an integral part of spatial planning processes in Europe. Participation process enhances the transparency, supports the identification of problems especially at the early stage of planning and helps to raise acceptance of the resulting projects among citizens. While participation in most cases still requires the presence of the public, the rapid development of modern technology has opened up new possibilities for arranging the process in more modernised and innovative ways. In many cities online participation is now becoming normal. Although the use of digital tools provides one of the key factors for increasing citizen participation, cities are still faced with various challenges in effectively accessing and using the participatory data. The large amount of datasets, their time span and spatial distribution pose difficulties in analysing work, different data structures that are incompatible to each other – to name just a few.

Facing this situation, the Action aimed to support citizen centric planning with a standardised data specification. Once adopted, a standard would facilitate the exchange and processing of participatory data, thus bringing benefits to all parties involved in a participatory process. Built upon an analysis of existing participatory data and practical experience from working on citizen participatory projects, the

partnership developed the Participatory Data Specification (PDS) which should satisfy most common requirements for data collection during participatory projects.

As the final phase of the Action, the city of Hamburg carried out a reference implementation of the PDS with its open source digital participation tool DIPAS as a test bed, for which an API was programmed and implemented for the exchange of participatory data based on the PDS. The source code of DIPAS was released in February 2021 under the GPL licence.

As initially set out in the Action Plan, this action had two goals: to define a standard for participatory data, and to analyse the existing framework of INSPIRE-Planned-Land-Use regarding its suitability for comparing land use regulation in a detailed level between European cities. However, the latter task had to be given up due to limited resources and capacity. Nevertheless, we still see the relevance of this unfinished part of the Action and would hope to be able to pick the topic up in the future.

This Action and its outputs are only the first steps to fully embrace the benefits of digitalisation in urban planning. In order to achieve that goal a holistic approach should be taken on to optimise the whole chain of planning and building.

List of outputs:

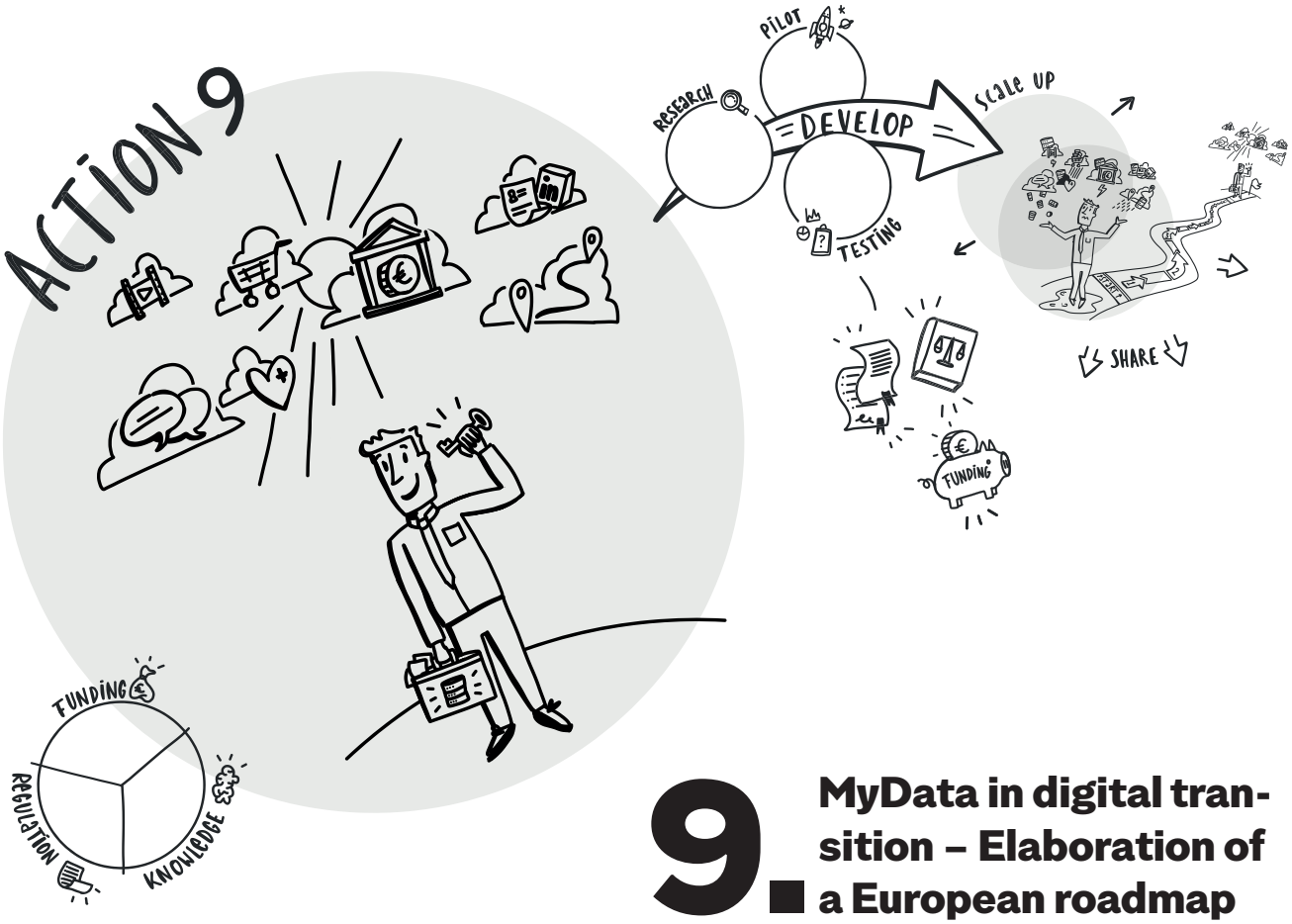
A8.1. Final *report* on the Action

A8.2. *UML Model* (Enterprise Architect Model) and specification of PDS

A8.3. *Documentation* of the PDS-API

A8.4. *Evaluation* of the preliminary results by experts

A8.5. *Programming codes* of the PDS-API as part of the DIPAS Open Code

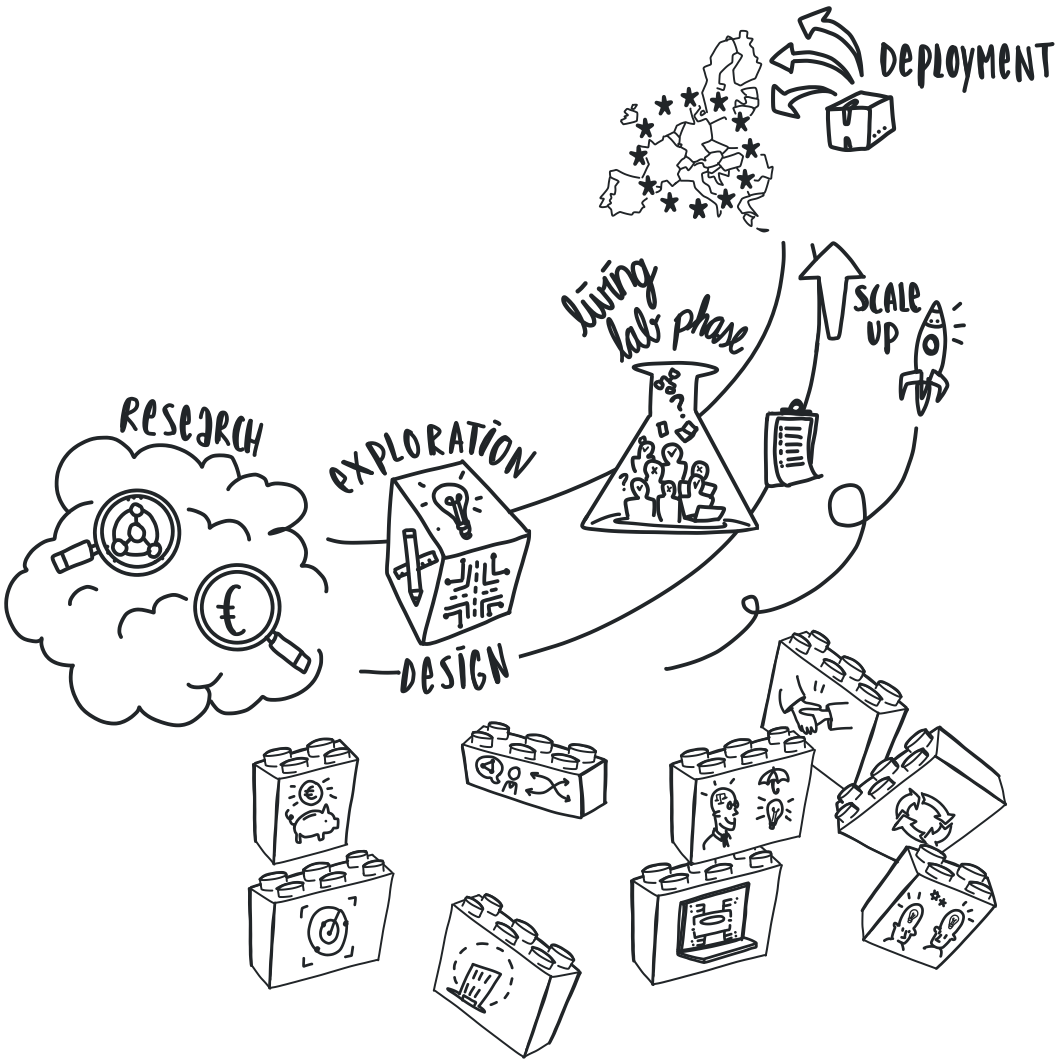


9. MyData in digital transition – Elaboration of a European roadmap on "mydata"

The national and municipal governments collect data to fulfil their various duties. Public services are collecting more and more personal data from their citizens due to digital service platforms. The data collection is also based on novel digital technologies, sensors and personal devices, which people are carrying with them every day. The data generated by people can also be a powerful tool for urban planning, but the knowledge of exploiting the citizen generated data is very poor in the public sector. In addition, people do not understand the power of their personal data in service development and the possibility to co-design new services with the public authorities.

As the importance of personal data in society continues to expand, it becomes increasingly urgent to ensure that individuals are in a position to know and control their personal data. In the EU, the General Data Protection Regulation (GDPR) came into application in May 2018, which significantly strengthened the rights of individuals. The MyData model is aligned with the GDPR and will, in fact, support the implementation of GDPR.

The partnership organised internal workshops in several participating cities to map their MyData scenarios. The results were presented in My Data conference in Helsinki on September 25–27, 2019.



This action seeked to promote a human-centred approach to personal data. The outputs of this action are a common understanding of the usage of personal data in combination with concrete practises in personal data usage, such as templates for the terms of use and conditions in sharing data, or models on how personal data is used.

Work on MyData is continuing in various forums beyond this action.

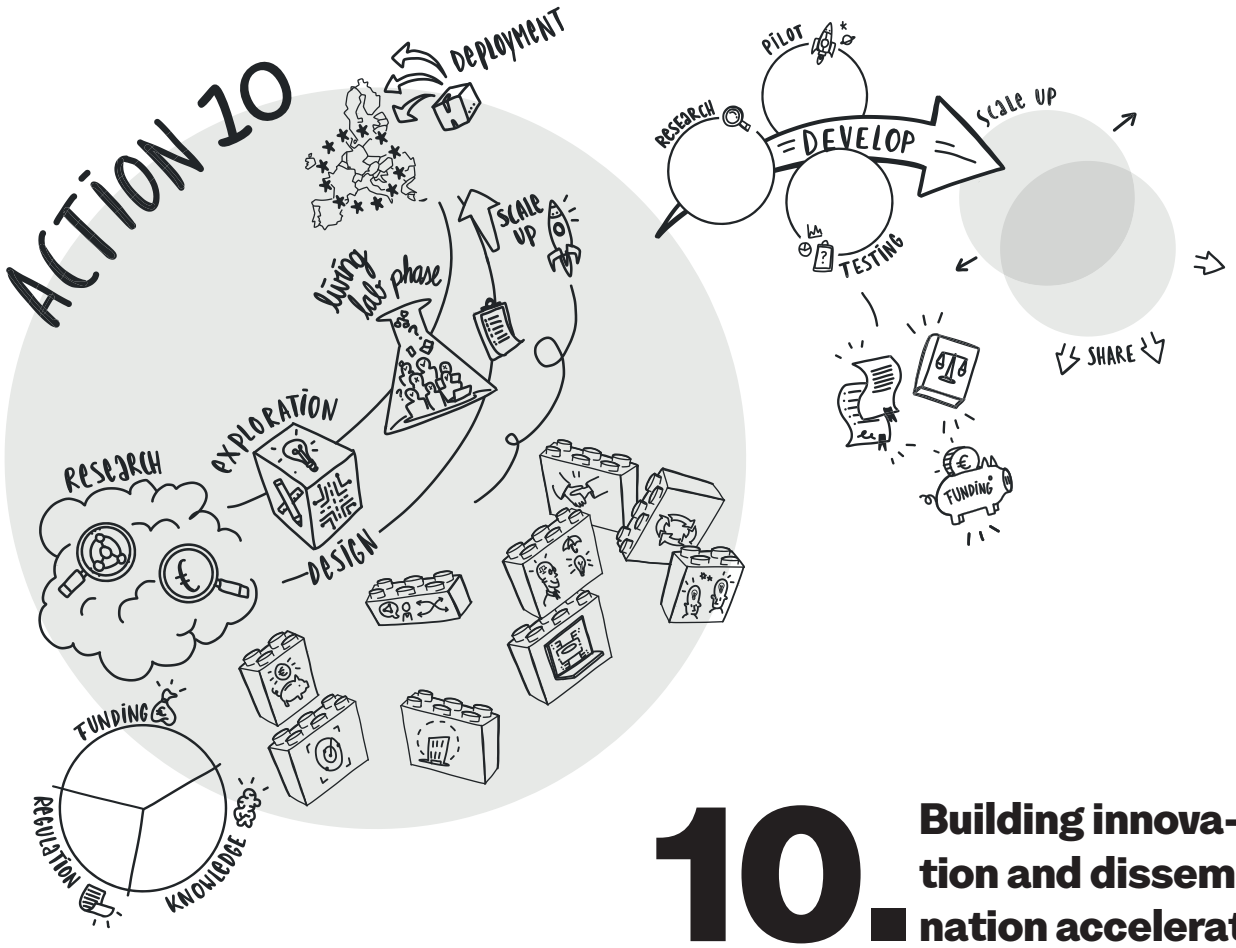
List of outputs:

A9.1. SWOT template for analysing MyData in cities *MyData for Cities - SWOT*

A9.2. *6 filled city cases on MyData*

A9.3. Presentations in MyData conferences by Herve Groleas: *DTP action 9 in Oulu 191209 by Hervé Groléas*

A9.4. *Roadmap for mydata in selected cities.*

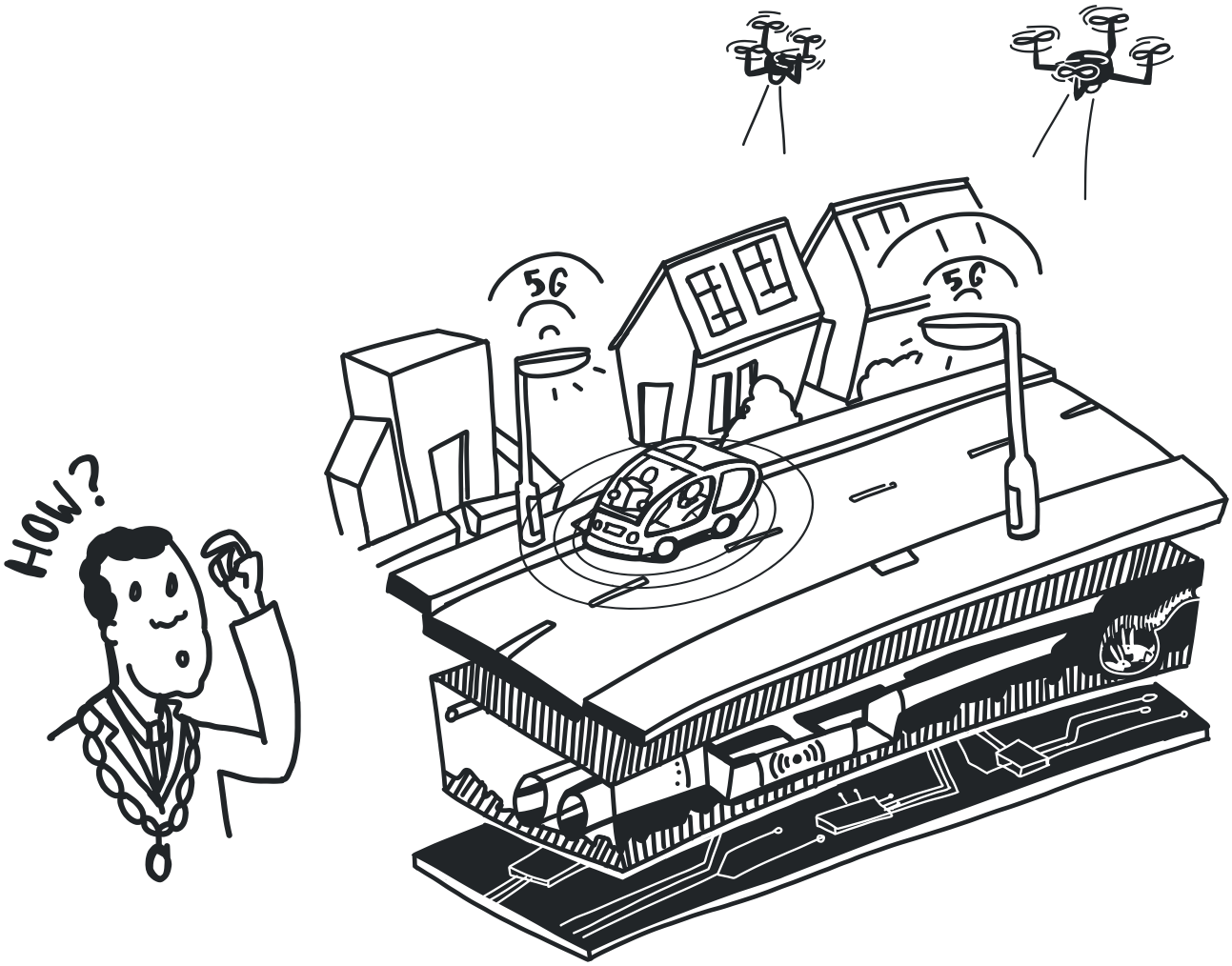


10. Building innovation and dissemination accelerator

As cities and countries, we need to learn how we can be innovative and innovate. This implies a different way of working, a multilayered approach. To accelerate urban development innovations within cities in Europe, it should build on regional strengths. Every region has its own focus specialisation themes and strengths for digital transition. These regional differences should be embraced and utilised as a basis for collaboration and learning.

The aim of this action was to set up an innovation acceleration platform which would work as an instrument for cities to disseminate practises and share experiences on the development and application of various digital solutions, ask for advice and find examples and success stories from cities that have taken leaps in digital transition. While cities could utilise the accelerator for sharing knowledge about various practical solutions, this action focused on providing tools for cities to organise themselves and build their own innovation ecosystems.

The partnership conducted a comprehensive research study under this action. The goal of the study was to develop a typology, which gives a better understanding of what kind of archetypes of European innovation ecosystems exist. Additionally, the study also developed a set of fixed and flex-



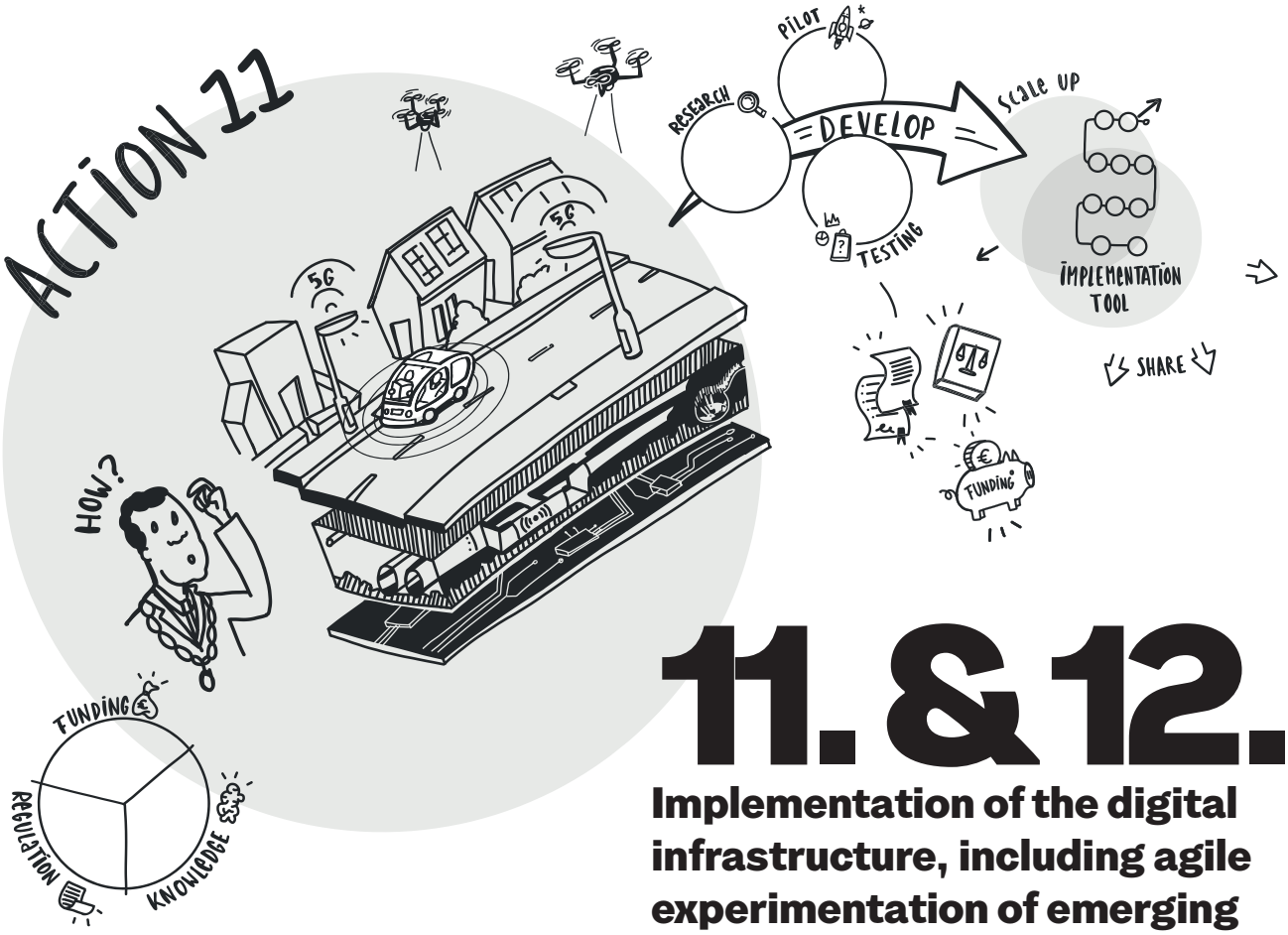
ible criteria for the archetypes, which can be used by cities to classify themselves and develop the best strategies to enhance their innovation ecosystems.

The study showed how different types of cities will have different possibilities and approaches for their innovation ecosystem management. Partly because of this, also the development of digital solutions and tools for cities to manage the development won't share common structure or platform or even targets. This will not support the development of one common innovation and dissemination accelerator platform that was the original objective for this action. Instead, the research study is providing the key elements to lead and build local innovation ecosystems in cities.

The findings are the starting point to create a first outline of an innovation ecosystem index, which can be used to create a concrete tool set that supports cities in Europe.

List of outputs:

A10.1. *Innovation* Ecosystems in Europe. First Outline of Innovation Ecosystem Index.



11. & 12.

Implementation of the digital infrastructure, including agile experimentation of emerging digital technologies

11. Support agile experimentation of emerging digital technologies (combined with Action 12).

12. Implementing the digital framework for emerging technologies within the digital infrastructure (combined with Action 11).

Cities need to define how to exploit the potential of digitalisation and new technologies in their internal processes and in serving their citizens. There are several emerging technologies (e.g. virtual reality, augmented reality, 5G, machine learning) which cities could benefit from in facing their future challenges. Cities need to study existing laws and regulations, think about the ethics (what kind of city do you want to be?) as well as their own activities and roles in a whole new way. Next to this, the data transformation could provide opportunities to explore new business models where citizens start to profit from the full value of their personal data.

New technologies will force cities to think about how to implement these technologies to reach their full potential and safeguard the public interest at the same time.

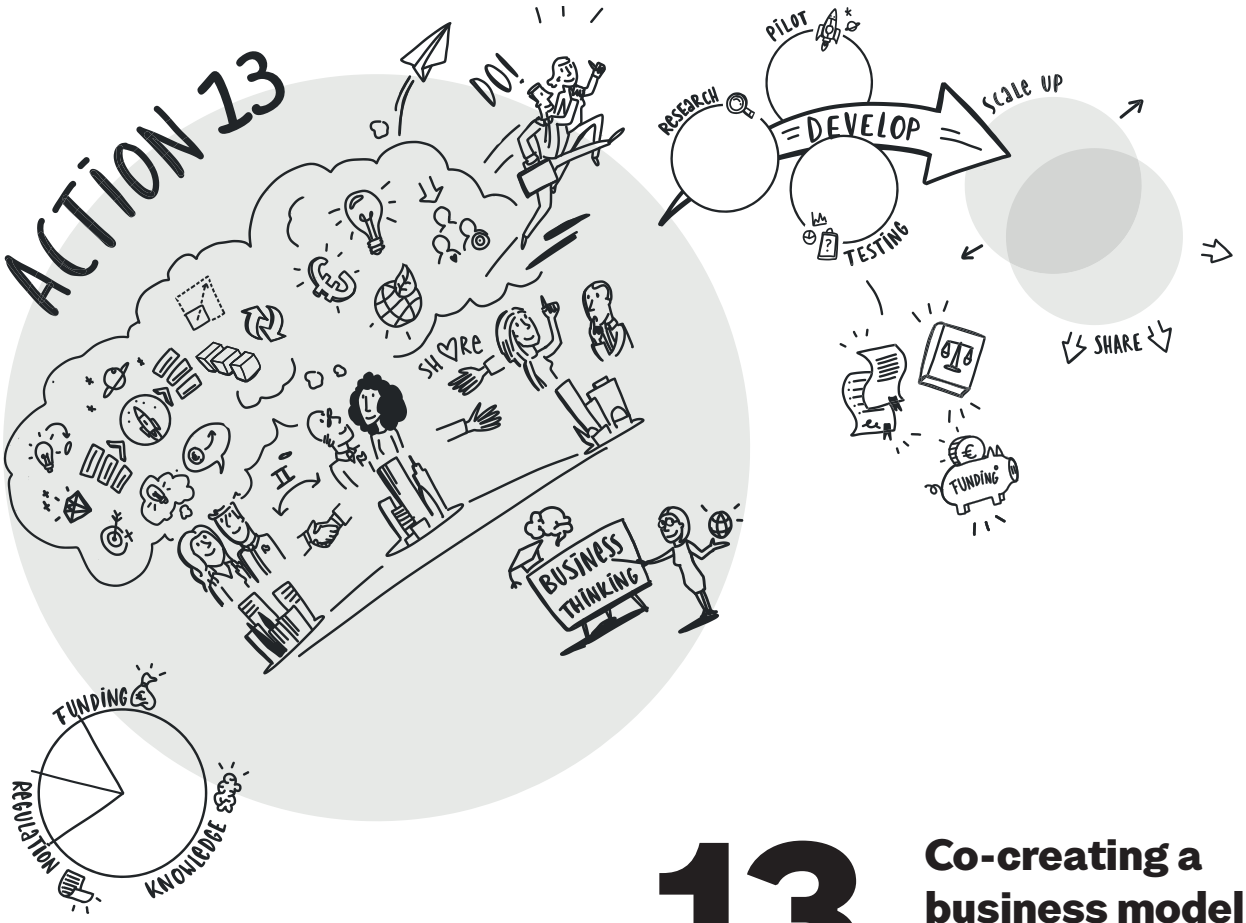
There are two main challenges to solve:

1. What do cities need to do (and invest) to create an adaptive digital infrastructure?
2. How can cities exploit new technologies as part of their digital infrastructure?

The participating cities implemented the action 11&12 objectives by their own device. The partners implemented 5G and IoT related living lab activities which are linked and connected at EU level. Next generation communication services were offered to test new smart city use case concepts and digital service pilots. Also, remote test locations, which provide unique experimentation possibilities for different kinds of service concepts utilizing also other new technologies such as artificial intelligence and virtual/augmented reality in realistic operational environments, were offered. Dedicated testing facilities were prepared to be deployed also for other emerging technologies. In parallel with the deployment of living lab infrastructures and services, new funding and support mechanisms specifically tailored towards rapid development and ad hoc experimentation projects were piloted.

List of outputs:

A11-12.1. *Report on the outcomes of Action 11 & 12*.



13. Co-creating a business model approach for cities

There is an increasing need for innovative ways to explore and exploit opportunities for digital transition in the urban context. Digital transition challenges are existing related to city services, processes, structures, policies and regulations. For cities, the business model approach could be a way to perceive, design and execute actions regarding their digital services. Urban digital transition involves continuous provision and utilisation of digital services for citizens and other stakeholders with appropriate business models that are scalable, replicable and sustainable.

The Partnership's goal was to help cities to bring business model thinking to their digitalization work by providing knowledge of what business model thinking is and how cities could benefit from it in practice. Also, a business model framework for cities for evaluating, comparing, selecting and improving digital services was to be elaborated.

The partnership interviewed city stakeholders from different European cities, three questionnaire rounds were made for European city stakeholders. The first version of a practical online tool for cities was created. The online tool aims to help cities to identify, map, and rank: a. their needs and opportunities for developing digital services; b. new digital services' value creation, value capture and value sharing potential and mechanisms to increase the efficiency and quality of

these services; c. current and to-be -developed competitive advantages for building scalable, replicable and sustainable "smarter city" digital services. Also, several conference and journal articles were written.

Thus, during the partnership, we were able to create the first theoretical model for smart city business models. In the future we wish to test the model in practice.

List of outputs:

A13.1. Practical online tool on business model approach for cities

A13.2. Toward Smart City Business Model. Perätalo, S. & Ahokangas, P. (2018). Journal of Business Models, Vol. 6, No. 2, pp. 65-70.

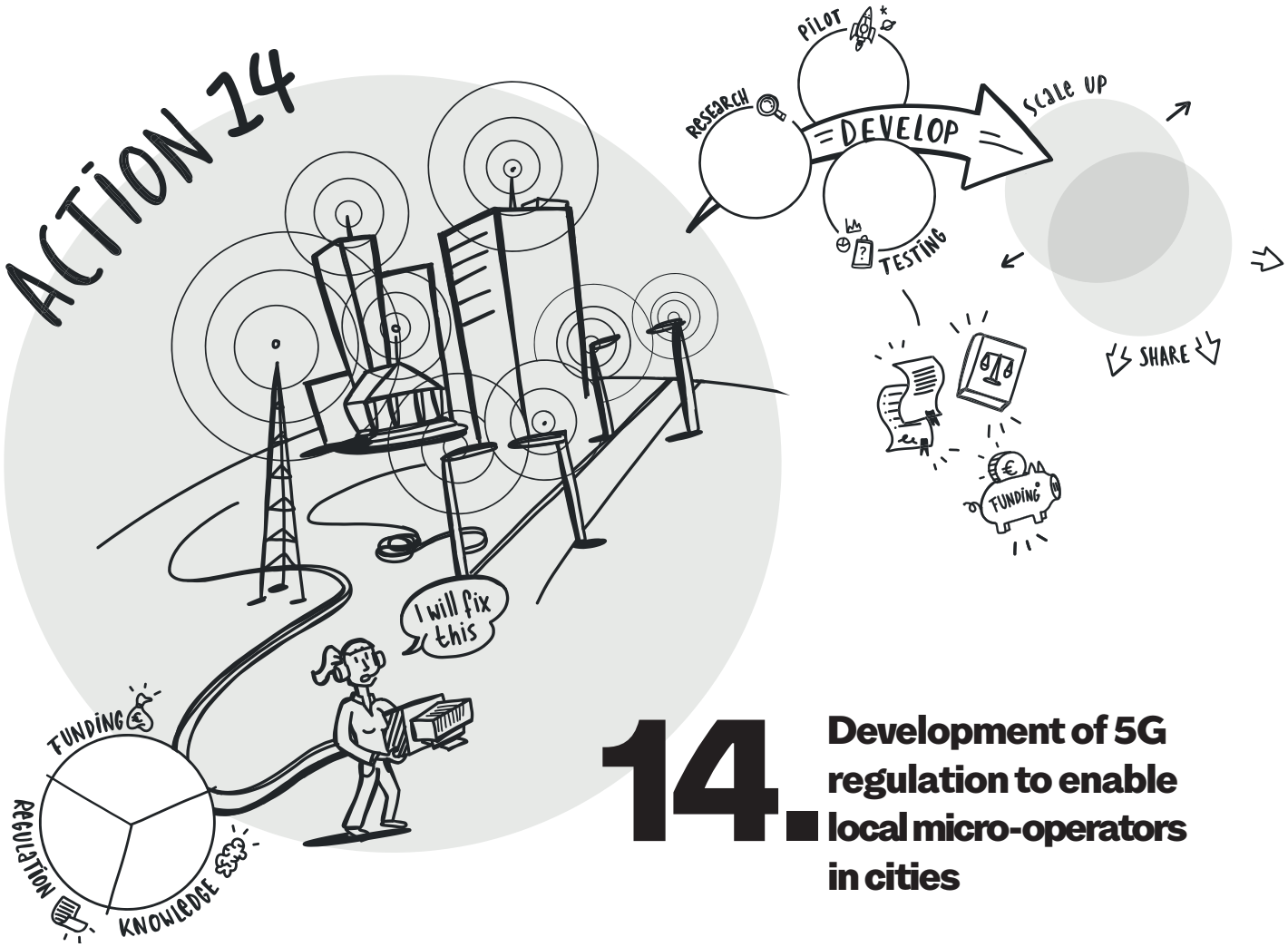
A13.3. *Value* creation and capture in Smart City Platform Business Models. Perätalo, S. & Ahokangas, P. (2019). 3rd Business Model Conference in New York. Ahokangas, P. (2020). Business Model Conference in Copenhagen.

A13.4. *Opportunities*, values and advantages: Smart Cities as Platforms. Perätalo, S.

A13.5. *Smart City and Simplicity?* Modular Business Models for Smart Cities. Perätalo, S., Ahokangas, P. & Pekkarinen, S. (2020). Business Model Conference in Copenhagen.

A13.6. *New Business Models in the Data Economy*. Iivari, M. (27.-28.11.2017). CITIES Forum, Rotterdam.

A13.7. Urban Agenda Partnership on Digital Transition, Ahokangas, P. (25.11.2019) ESPON.



14. Development of 5G regulation to enable local micro-operators in cities

The promotion of locally deployed 5G networks is a key for Europe to speed up innovation and delivery of new high demand local services. While national regulations are in the key role of adoption of 5G networks, European level best practises of locally deployed networks will help prevent market fragmentation.

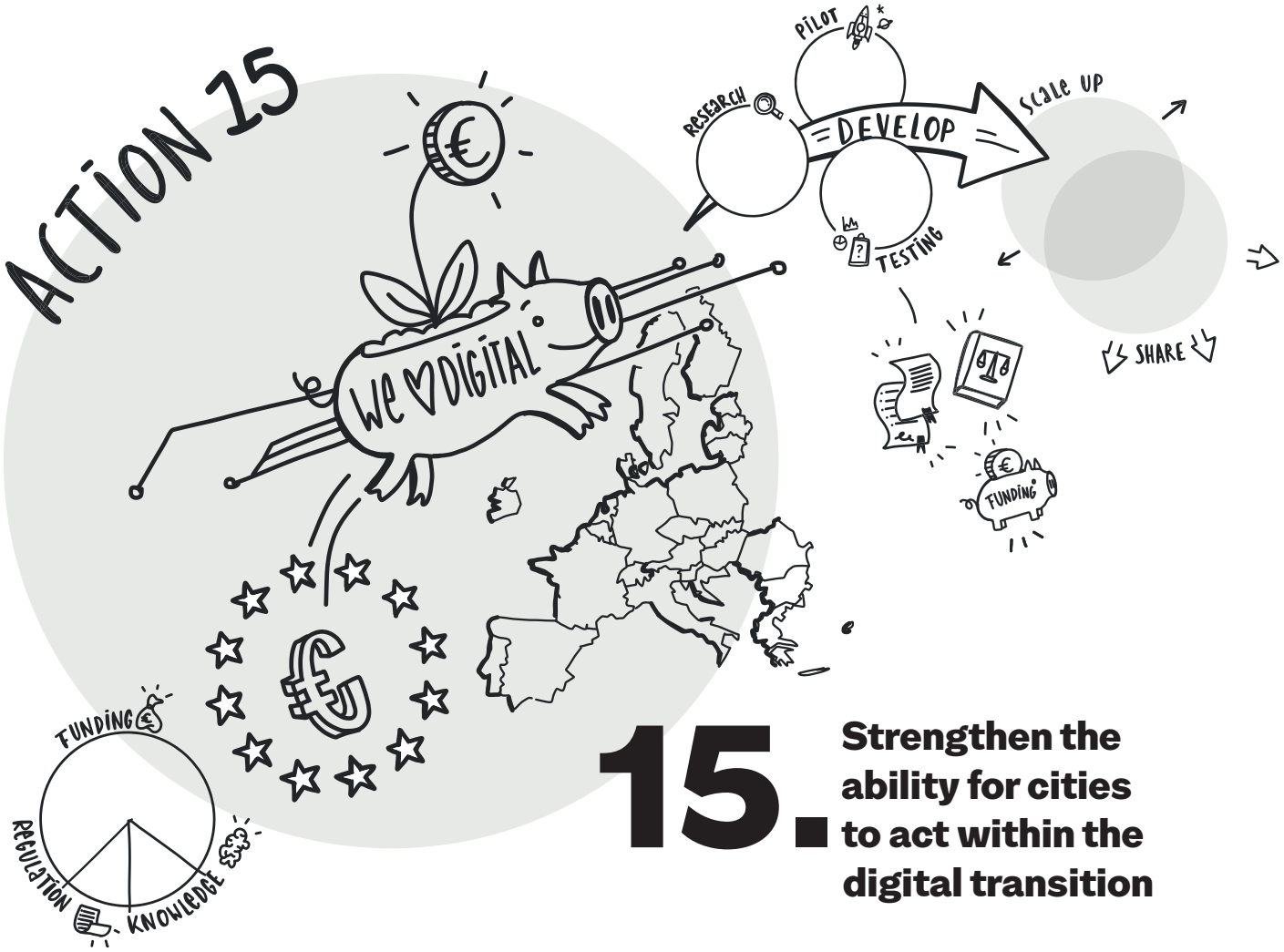
Development of circumstances and related regulations that enable businesses and cities to take local operator roles in cities is a key priority and should take into account the specifics of the cities on the national level while still providing European wide harmonisation of best practises. Initially, a dialogue needs to be started with the national regulator in each participating member state for information exchange on needs. Then, the boundary conditions from the European Electronic Communications Code (EECA) which presents the new EU regulatory framework for electronic communications, including the regulation of broadband access infrastructures, need to be carefully reviewed from the micro operator perspective, including guidelines for national regulators to implement it in practice. Finally, the national level discussions need to be fed back to the European level for information exchange on best practises to allow cities to welcome a wide variety of local micro operators.

The partnership elaborated the 5G micro operator concept to allow businesses to deploy their own local 5G networks. The partners promoted the idea of local spectrum licensing to national regulators for their 5G spectrum awarding decisions. Discussions were held with regulators from different countries. As a result, several European countries have adopted the local 5G micro operator model and opened the market for local 5G spectrum licences in Nov–Dec 2019 (e.g. UK, Germany). The partnership also evaluated the national 5G spectrum decisions from the local operator perspective.

List of outputs:

A14.1. *Guidance* published for spectrum regulators to promote local 5G networks through assigning local spectrum micro licence: M. Matinmikko, M. Latva-aho, P. Ahokangas, and V. Seppänen. "On regulations for 5G: Micro licensing for locally operated networks". Telecommunications Policy, vol. 42, no. 8, pp. 622–635, Sept. 2018.

A14.2. *Evaluation* published on national 5G spectrum decisions from the viewpoint of local 5G networks: M. Matinmikko-Blue, S. Yrjölä, V. Seppänen, P. Ahokangas, H. Hämmäinen and M. Latva-Aho. "Analysis of Spectrum Valuation Elements for Local 5G Networks: Case Study of 3.5-GHz Band". IEEE Transactions on Cognitive Communications and Networking, vol. 5, no. 3, pp. 741–753, Sept. 2019.



15. Strengthen the ability for cities to act within the digital transition

Digital transition revolutionises the European urban landscape. Cities and communities are looking to digital solutions to tackle a growing range of interconnected challenges. These efforts must be boosted through a 'European Way' where digital solutions help to create places where people enjoy living and working.

Through co-creation with citizens, it is possible to bring the economic and social benefits of digital transition to all local communities and implement an inclusive digital Europe. The promise of digital transition is a combination of powerful, accessible, human-centered digital services, digital technologies and infrastructures as well as digital skills. The goal of the action was to speed up the digitalisation process and create sufficient budgets for the digital transition processes.

The partnership initiated a process of identifying the need for multi-level collaboration and sufficient funding for digital transition activities. As the main result of the action there is now a broad network of actors who are committed to joining forces to boost sustainable digital transformation in cities and communities in the EU. There are now more than 100 representatives of public administrations at local, regional, national or European level, who have signed the ´Declaration

on joining forces to boost sustainable digital transformation in cities and communities in the EU'. This movement is continuing the work of the action, committed together to work on financial, technical, legal, education/capacity building, and monitoring actions, to speed up human-centred digital transition. A multi-level steering board has been set up to follow the progress and ensure that results are delivered by 2025. This steering board is also used to join forces and resources, and to improve stakeholder dialogue and collaboration in order to boost the sustainable digital transformation of cities and communities.

List of outputs:

A15.1. *Common statement* of UAEU Digital Transition Partnership, EUROCITIES, OASC, CEMR: "Cities need strong support for digital transition in the next long-term budget".

A15.2. *Declaration* on joining forces to boost sustainable digital transformation in cities and communities in the EU.

A15.3. *The community* for promoting the European way of digital transformation in cities and communities.

Recommendation: Cities should avoid vendor lock-ins with municipality ICT systems' interfaces

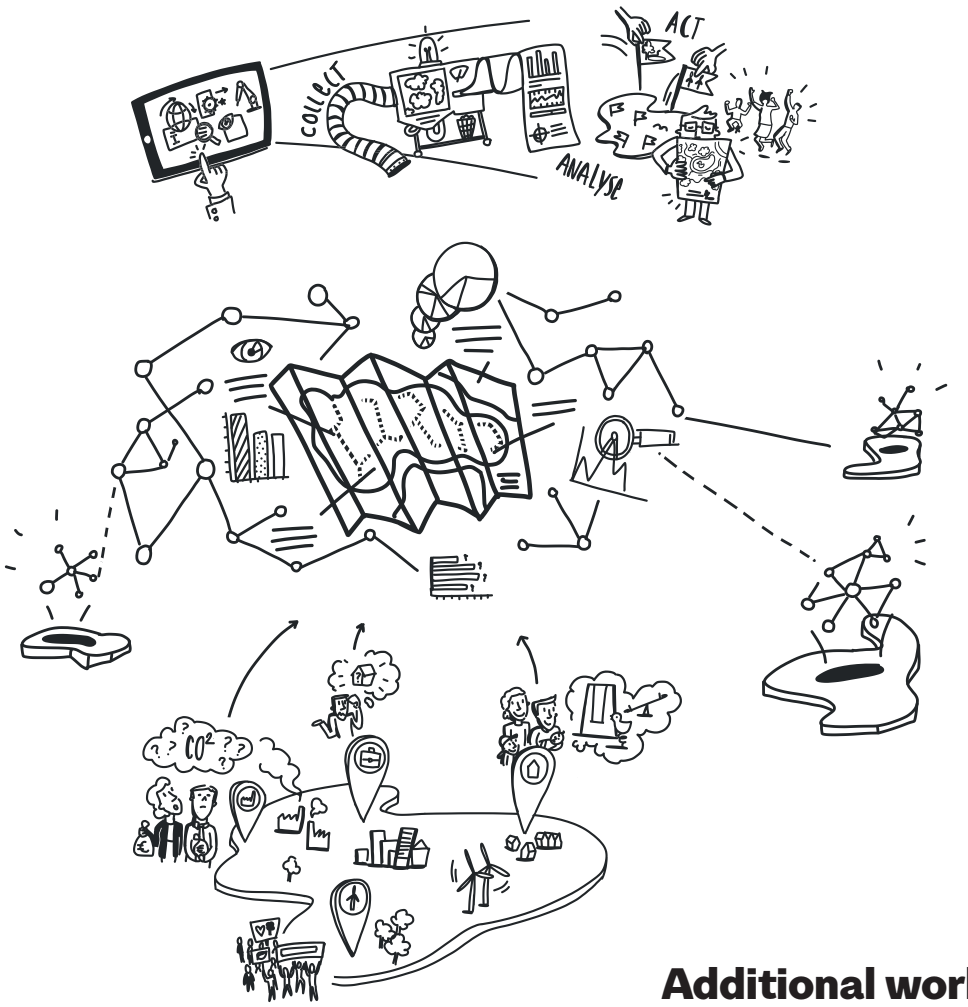
The partnership identified that the vendor lock-in is a very widely spread problem with municipalities in the EU, keeping them locked in with specific ICT systems and solutions, consequently having a negative effect on the speed of their digitalisation. Vendor lock-in occurs when a municipality has purchased an IT system or a solution with contractual conditions which force it to continue using a product or service, because switching to a different vendor has been made difficult without substantial costs, legal constraints, or technical incompatibilities. This makes a city dependent on a specific vendor, hampering its possibilities to switch quickly to e.g. a newer technology or a cutting-edge solution. The vendor lock-in experience is rampant in the EU.

In the future, municipalities and cities should own the definitions of the interfaces of their ICT systems. Obviously, municipalities need third parties to maintain definitions and ensure that interfaces match definitions. The system can still be owned by the system vendor, as well as the technical implementation of the interfaces, but the municipalities should own the specifications and take care of them together with other municipalities. In this way, the municipalities would gain more control over the interfaces and make it easier to coordinate integrations of the systems. This is especially a problem with municipalities' "old" systems which are still widely in use.

Currently, when municipalities are purchasing “new” systems, system vendors make open interfaces for their own systems and interfaces. The interfaces are technologically conforming to a standard, but the interface content, technology, and documentation are often freely decoded by the supplier.

It is important for cities to start purchasing ICT services smartly, with future ownership issues (municipality rather than the operator as the owner) clarified in the contractual phase, or the contracts re-negotiated once possibility of the vendor lock-in is detected.

The use of open standards and alternative options makes systems tolerant of change. Vendor lock-in does the opposite: it makes it difficult to move from one solution to another.



Additional work and outputs

The partnership worked on other areas where digitalisation is a strong instrument for change such as digital health and digitalisation of urban planning. Even though these areas were not included in the final Action plan or were transformed- in the case of urban planning the partners put a focus on citizen's participation in spatial planning , there are materials that are useful for future work on these topics.

1. Digital Health

In the early stages, the partnership investigated the e-health topic thoroughly. Digitalisation of healthcare was identified as crucial for citizens to gain direct benefits from digitalisation. The topic was eventually left out of the action plan because the responsibilities are shared between the municipality and the state. However, the partnership applied for a targeted analysis on the future of e-health in the EU from the ESPON programme, and the proposal was selected for implementation. The partnership also steered the research via the project Steering Committee, where partnership members participated.

The results of the analysis are published *here*.

AD1.1. *Executive Summary*

AD1.2. *Synthesis Report*

AD1.3. *Final Report*

AD1.4. *Scientific annexes*

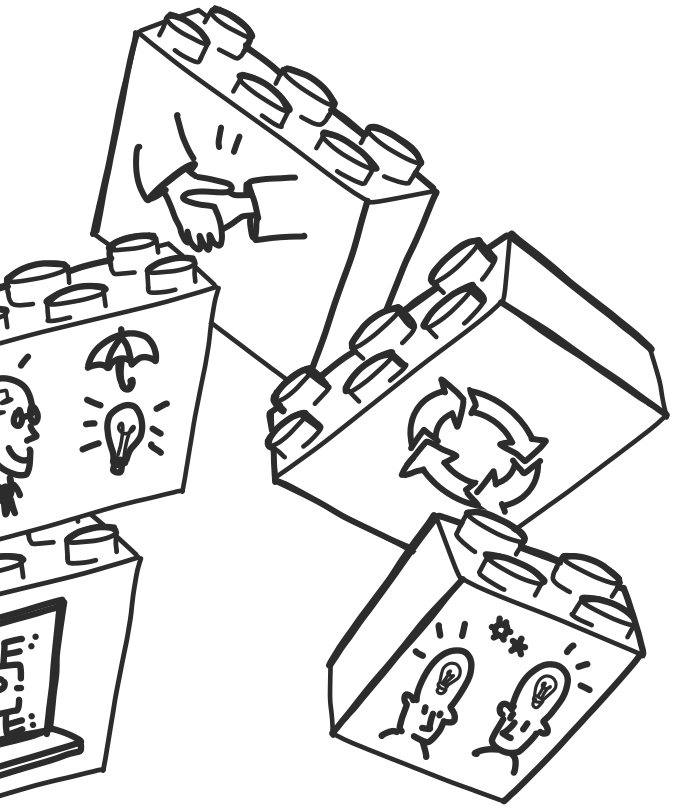
2. Digitalisation of urban planning

Reevaluating the process of urban planning in order to make it more democratic and also taking full advantage of the vast quantity of relevant data collected by different stakeholders and entities is a huge part in building and sustaining a modern smart city. The partnership worked on gathering data and analysing the possibilities and different models that cities are implementing. The initial research of existing regulations and best practises are compiled in two reports of the Partnership from November 2017.

Based on these reports and the expertise from the members of the Partnership, Action 8 was developed and implemented proposing data standards for participatory urban planning. For more information, please refer to action 8, p. 13-14.

AD2.1. *Report* on Digitalisation of urban planning.

AD2.2. *Overview* of relevant initiatives and data sources for urban planning.



Conclusion

In order to achieve a fully functional digital society European cities and regions have an important role to play.

The level of digitalisation varies widely based on infrastructure, different organisational structures, levels of available expertise, legislative framework or lack of it, access to resources for digitalisation. There is a visible disparity in functioning of innovative ecosystems and availability of digital services in Europe.

Digital Transition Partnership aimed at identifying key areas for intervention to facilitate successful transformation of cities and regions and make them fit for the digital age.

The partnership proposed variety of actions to be undertaken on European, national and local level to expanding the knowledge, competence and digital skills of EU citizens and administration at all levels; enabling and encouraging citizen-centric e-government; fair access and use of data; accelerated adoption of digital emerging technologies; and adopting business model thinking in cities in order to achieve sustainable level of digitalisation.

Expanding the competences and skills of citizens and administration requires significant funding specifically dedicated to the task and use of agile models and existing tools. Due to the scale of this challenge, local governments cannot tackle it by themselves without the support of financial instruments either on national or EU level. Without that critical component successful digital transformation is not possible.

Building relevant data and measuring the progress at local level is a crucial tool for targeted investment and adequate strategic planning of the process of digitalisation. The existing approach of collecting and comparing data on national level does not provide local stakeholders with sufficient relevant information to create and monitor localized digitalisation strategies. Developing a standardised index that keeps track of progress at local level will benefit not only the local administrations but also national and European institutions in measuring the impact of their policy and investments.

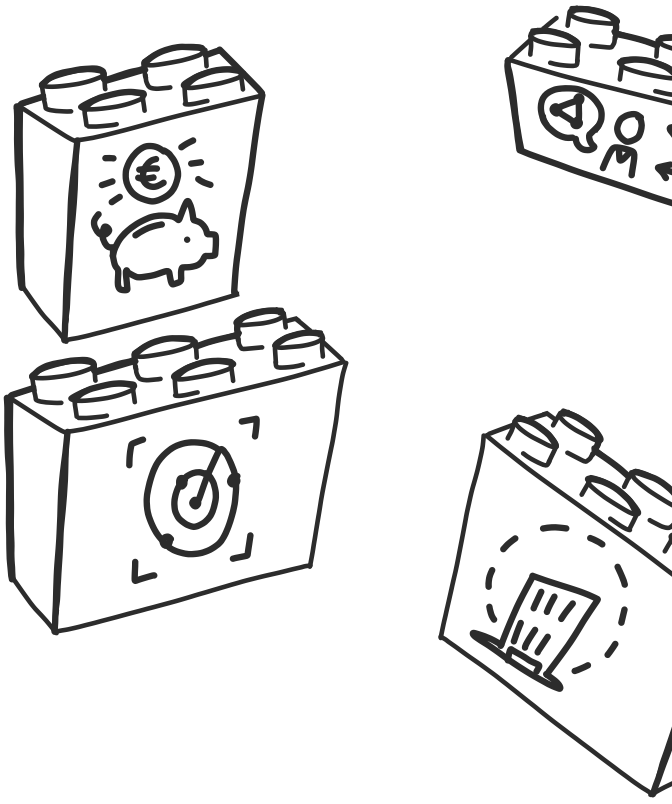
Enabling of citizen-centric eGovernment depends on the proper use of existing technology, knowledge and formulated principles in order to safeguard the public interest and provide adequate services available to everyone. The practical toolkit that was developed by members of the partnership is a serious step towards a working and scalable approach to modern and efficient eGovernment.

The necessity of balancing the free flow of data to provide citizens and businesses with better services, the opportunities for better strategic planning and meaningful participation and the need for data protection as well as monetization of these data has many aspects. The need for additional regulation at European and not national level is clear. The impact of GDPR in not only protecting personal data but also creating a new paradigm in provision of services is a clear example of the importance of expanding EU legislation in previously unregulated fields. Building a data taxonomy at EU level, expanding data standards and putting into practise principle approaches such as "MyData" principles while allowing public entities to reuse privately owned data for the purposes of better planning and new services are the challenges that need to be put forward without delay. The process requires inclusion of different stakeholders at an equal footing.

The existence and strength of innovation ecosystems is important not only for the economic development of the area but also provide cities with more opportunities to exploit the potential of digitalisation and new technologies in their processes and how they serve their citizens. The partnership dedicated significant resources in exploring the possible roles of cities within functioning innovation ecosystems, developing new business models with which they can engage and support the local ecosystem. DTP started long term initiatives for co-creation of digital solutions as a model to promote the up-scaling of successful solutions and make the investment in technology more effective and efficient for the cities.

The importance of digitalisation is not in question. However, successful digital transformation of cities and society remains dependent on meaningful intervention in key areas from different level stakeholders.

Digital Transition Partnership brought forward these issues and took steps to compile existing knowledge and build on it, create tools and move forward both organisational and legislative processes that are crucial for a successful transformation. Involvement of cities and regions as important stakeholders in the design of digital policies on the EU level remains important and ensures cohesion and relevance in the digital transformation of Europe.



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