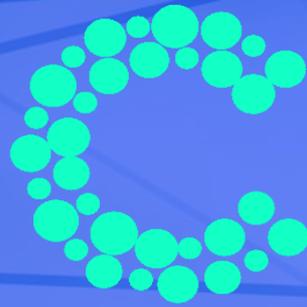


# CO3 PROJECT - POLICY BRIEF III



# co3project

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## Digitally Augmented Co-production of Services Lesson learnt from the CO3 project

December 2021

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## Dissemination Level

PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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## Acronyms

AR	Augmented Reality	GaaP	Governance as a Platform
ACA	Augmented Commoning Area	GDPR	General Data Protection Regulation
DESI	Digital Economy and Society Index	PA	Public Administration

## 0. Introduction

The CO3 aimed at developing and testing a set of disruptive technologies (Augmented Reality, Blockchain, Interactive Democracy, Geolocated Civic Social Networks) and methods (Gamification) in the context of the co-production of public services.

The project addressed three main challenges. Two of them are related to *transforming the public services and their co-production process, and to boosting the engagement of the citizens, by taking advantage of the technological affordances.*

The three CO3 Policy Briefs aim to raise the policy makers' awareness on the core decisions on design and implementation that must be faced in these processes of public services transformation.

[Policy Brief I](#) addressed the design phase of services delivery, and the **Co-Design** pillar of the CO3 concept. It provides some hints for an effective application of participatory methodologies when digital and disruptive technologies are in place.

[Policy Brief II](#) focused on the **Technology** pillar of CO3, highlighting the disruptive features of the five technologies addressed, that affected the decision to adopt them. It is also focused on the perceptions declared by the stakeholders, and provides hints on the very initial phases of introduction of newest technologies to the wider public.

This Policy Brief addresses the **Co-Production** and **Co-Management** phases of the service delivery, and offers general recommendations of the benefits, costs, success factors and risks of this kind of innovation, on the basis of the evaluation data collected throughout the project.

A third challenge of the project regarded the *contrast to the economic crisis affecting social welfare*. This challenge became even more relevant and complex with the Covid-19 pandemic emergency, which impacted strongly not only on the project implementation, but also on the way in which the relationship between citizenship and digital technologies is conceived nowadays.

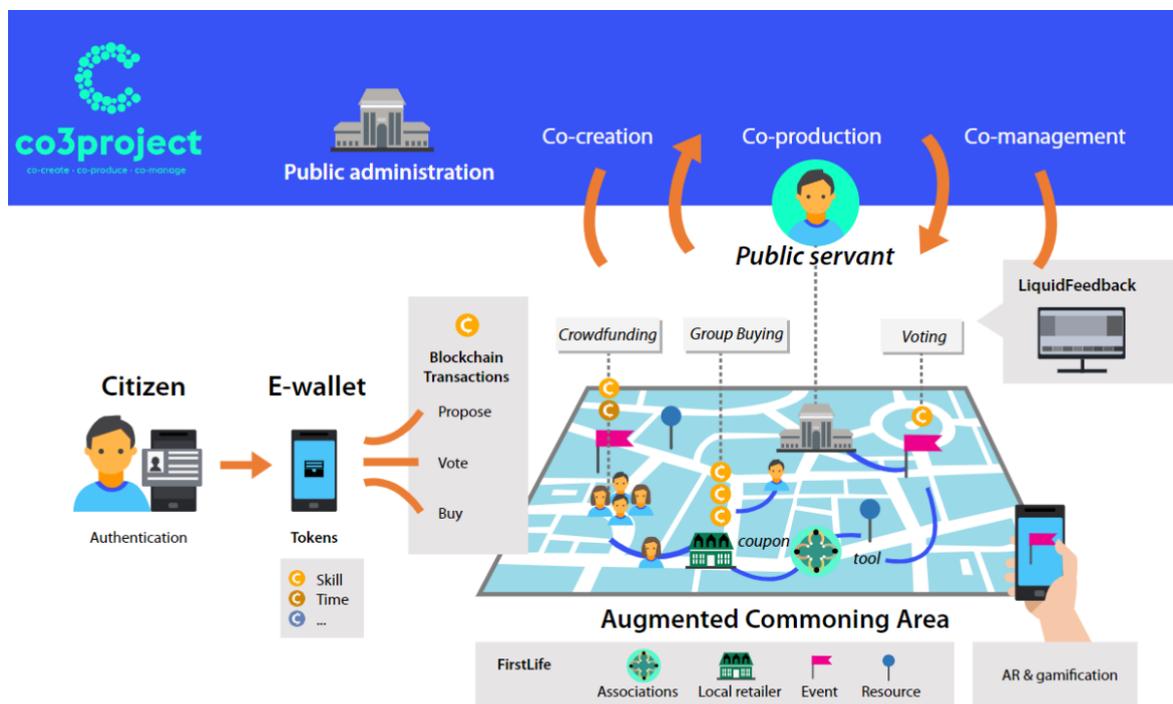
Section 1 of this document recalls the CO3 project main concepts and aims. Sections 2 and 3 reflect on how the peculiarities of the CO3 approach have been challenged and evolved during the project implementation, based on the project evaluations and impact assessments. The core dimensions of the CO3 experimentations are addressed: augmented urban spaces, technologies, PA-citizens collaboration, institutional change. Section 4 and 5 provides policy recommendations, in the framework of the related European strategies.

# 1. The CO3 Approach

The CO3 model for PA and Citizens collaboration is based on the concept of **Augmented Commoning Area (ACA)**, intended as a *phygital* public space of engagement of public, private and collective actors in co-production processes. When an actor is physically present in a public space where an ACA has been established, he/she can *access the different disruptive technologies* that compose the CO3 ecosystem, thus *enhancing his/her possibilities of interactions* with other actors.

Different combination of technologies open up new possibilities for interaction and exchanges:

- of intangible resources (creativity, information and knowledge, including opinions and feedbacks), through *Civic Social Networking* and *Interactive Democracy* tools.
- of tangible resources (time, work, objects, values) through their digital representation as tokens transferred in the *Blockchain wallets*.
- *Augmented Reality* and *Gamification* act as a channel to access, and as a rewarding mechanism to incentives, the above mentioned interactions.



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The concept of ACA was elaborated on the basis of the following remarks:

1. **AUGMENTED URBAN SPACES** can be designed, where disruptive technologies go beyond the innovations brought by the interactive technologies (e.g., social media, online collaboration platforms), by re-evaluating spatially-intermediated interactions through geolocated proximity.
2. **DISRUPTIVE TECHNOLOGIES** can be exploited for collaborative purposes in the public and citizens realm, and can impact even more if integrated in an **ECOSYSTEM**. Their potential for supporting collaborative processes is still to be explored in depth.
3. **CO-PRODUCTION** and processes can be enhanced by technologies that at the same time support new forms of citizen engagement, and the role of the PA as an enabler.

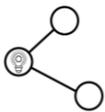
The ACA concept can be implemented in different **service scenarios**. The CO3 project addressed three areas of application:



Socio-economic networking and augmented commoning: the technology are expected to augment the possibilities for replying to economic, educational and social needs; and the way in which citizens, social workers and volunteers discuss and cooperate for co-managing shared spaces and social activities;



Digital urbanism, for augmenting the way citizens discover resources in their city (empty spaces or building), imagine, debates and decide on possible uses;



Knowledge sharing, where technologies support contributory models of knowledge exchange and service production.

The original concept and model has been challenged not only by the pilot-specific local conditions (economic contingency, stakeholders involved, policy priorities), but also by the consequences of the Covid-19 pandemic, which played a relevant role in rethinking and refining the model.

*Following this experience, and other suggestions and inspirations coming from the current trends in digitally-enabled co-production, we advance some reformulations of the aforementioned remarks.*

## 2. Digital Technologies in the Urban Contexts

The evaluation of the outcomes<sup>1</sup> of the CO3 pilots, and the assessment of their socio-cultural and economic territorial impacts<sup>2</sup>, brought useful considerations not only on specific technologies and service scenarios, but also on how to reconsider some of the basic concepts of the project: augmented urban spaces, technology disruptiveness (addressed in this section), participatory approach to the co-production of services. Here we provide some general reflections on their relevance and effectiveness in order to achieve the general objective of improving public service provision through the capabilities afforded by disruptive technologies and co-design.

### The physical, digital and virtual interactions in the city.

With the possibility of physical encounters limited by the social distancing measures, the **balance between online/offline and at distance/in presence** activities is confirmed as an extremely relevant issue for social relationships in the (post)-pandemic cities.

In-presence (augmented) interactions were privileged in the original ACA concept, with the aim of re-evaluating physical interactions and avoiding that these are crowded out by the digital ones.

Transactions at distance have then been retrieved in the CO3 app functionalities, pushed by the pandemic constraints. However, it is important to notice that the stakeholders **did not consider as an effective option to come back to digital-only exchanges**, neither in the engagement nor in the implementation phases of the co-production process. As regards the latter, the locally rooted nature of the experimentations, and the complexity of the technologies, require a careful introduction of the tools to the public, which appears to be more effective when done in presence.

At the same time, **more nuanced conceptions of an ACA** can be further elaborated and researched: for instance, connecting people that visit the same place on different timetables. **Digital interactions can be designed for enhancing and encouraging, rather than crowding out, the physical ones.** In addition, disruptive technologies, being often in an initial usage phase, can foresee by design a **double in-presence/at-distance mode of use**. What modality is set as the default one, can depend on the purpose, whether it is to encourage citizens' physical interaction, or to avoid that the (forced) distance interrupts any relationship (e.g., tokens transfer etc).

However, it is worth mentioning that the original place-based approach to digital technologies advanced by CO3 (augmenting the connections of people in the same place) is still a novel notion to many people, who are more used to digital technologies with the purpose of overcoming the geographical distance. Any introduction of such an approach in local contexts must **explore in depth people's understanding and expectations** of these "augmented" affordances, through iterative co-design of the commoning areas and digital supports.

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<sup>1</sup> See [Deliverable 4.3, Final Evaluation Report](#).

<sup>2</sup> See [Deliverable 5.3, Socio-economic and cultural assessment](#).

## Technology Disruptiveness

Disruptive technologies are expected to bring radical changes in communication, organizational and productive dynamics, and also to enable us to address new societal challenges in radically new ways.

The CO3 pilots showed clearly that, when social needs and public services are at stake, disruptiveness cannot be understood in a narrow sense, as regards both its scope and its temporal dimension.

Firstly, **the introduction of disruptive technologies requires processes that are not only technical**. Technologies alone do not guarantee that transformative changes happen, if they are not conceived as part of *broader process of innovations* which set the social, cultural, economic, legal framework conditions for the technologies to explicate their potentials. Some of these *preconditions* are not yet in place on a widespread basis (e.g., or knowledge on interactive and liquid democracy, availability of mobile devices with advanced features, legal frameworks regulating the blockchain token economy). Moreover, even before working on these preconditions, innovation initiatives must start from the *local stakeholders' needs and their expectations* (including on the effort they would dedicate to use digital tools, and to the performance they expect). A “technology first” approach seems unable to make significant breakthroughs not only in satisfying the needs, but can be counterproductive for the technology adoption itself.

Secondly, **social dynamics such as participation, commoning, active citizenship, usually require longer processes and incremental changes**. Conversely, the concept of disruptiveness is often associated with immediacy and rapidity of changes, as it happens for the quick pace of innovation in the digital realm. The introduction of disruptive technologies in collaborative public services, as said before, is not only a technical matter. As such, disruptive technologies can accelerate changes, but the time needed for legal frameworks, skills, attitudes, to change cannot be overlooked.

Indeed, disruptive technologies can **trigger processes of change**, for the very fact that they are radically new. Their novelty often intrigues people, can stimulate reflections on the social and economical models they support, and therefore the exploration of social alternatives. A relevant interest has been observed from specific target groups (e.g., youngsters), for specific technologies that can substantiate community-based models of socio-economic interactions that attract activists and innovators (e.g., the Blockchain potentialities for actuating systems of complementary currencies, etc), or for co-production processes where the expectations of citizens for participation are higher (e.g., Urban Modeling).

## 3. The Processes of Co-production and Co-Management

This section adopts both a theoretical and an operational perspective. It reflects on the evolution of the approaches to digitally enabled co-production of services, and on the viability of the introduction of disruptive digital technologies from the Public Administration perspective.

### How does digitally enabled co-production change with disruptive technologies?

The literature on digitally enabled co-production of public services (Linders, 2012; Allen et al., 2020; Clifton et al., 2020) has focused on how technologies enable more active participation in co-production, considering:

- a) the different phases of the service delivery cycle (design, day to day execution and monitoring), and different citizen/government relationships and roles;
- b) the type of technologies, the relationship between their affordances and the specific purpose of their use in co-production;
- c) open questions on whether digital technologies enable or discourage co-production, and on the facilitating factors or obstacles to their adoption.

Taking these dimensions as a guide, we can make some considerations on the CO3 model.

- a) The model by definition is focused on the *Design* and *Execution* phase of the service delivery cycle, with some technologies addressing more directly the former (FirstLife, LiquidFeedback) and others the latter (Blockchain, AR). The monitoring phase can be addressed by the technologies that are on participatory communication and opinion formation (FirstLife, LiquidFeedback and token-based voting).  
As regards the relationship between citizens and government, most of the technologies can be used for both *citizen-to-government* or *government-to-citizens* provision of information and resources. Potentially, all of them can be used in *citizen-to-citizen* self-organization practices.
- b) The peculiar affordances of these technologies<sup>3</sup> address the constitutive elements and purposes of the co-production relations: *engagement and motivation* (AR, Gamification), *information collection and sharing* (FirstLife, AR), *decision making* (Liquid Feedback), *exchange of resources* (Blockchain wallet), *cooperative organization* (FirstLife, Blockchain wallet).
- c) What are the *conditions* for an effective introduction of these technologies, and their effects, have been extensively addressed by the CO3 evaluation activities<sup>4</sup>.

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<sup>3</sup> See [Policy Brief II](#).

<sup>4</sup> See [D.4.3 Evaluation Report](#).

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The platform as a whole, and the approach to the *government-to-citizens relations*, can be considered a case of **Government As a Platform**: a “*reorganization of the work of governments around a network of digital components (...), so that civil servants, businesses and others can deliver radically better services to the public, more safely, efficiently and accountably*”. The engagement of the citizens is bigger than in e-Government: the government becomes a “*convener and an enabler rather than the first mover of civic action*” (O’Reilly, 2010) The government makes its IT infrastructure available to the public, helping citizens to improve their day to day productivity, decision making and wellbeing (Linders, 2012).

The CO3 project aimed at leveraging on new and disruptive technologies in order to cover **new functionalities**, not extensively covered either by well established ICTs (Social media and the Web 2.0), nor by other advanced technologies that favor multilateral interactivity and ubiquitous communication (e.g. sensors). These are **transactions of values** (meant as not only monetary); **tokenized decision making**; **augmented localization of information** and new forms of interaction arising from it. The purpose is not automated co-production, but stimulating aware and punctual contributions on the side of the citizen.

A platform including different technologies also allows the mutual enhancement or facilitation: methods such as the Gamification have the purpose to introduce and incentivize the use of newest technologies. The more known mapping functionalities (provided by FirstLife) can be useful for introducing the Augmented Reality interactions with the physical world in a neighborhood.

## Where do disruptive technologies make the difference?

Following the Governance as a Platform approach (above), the Public Administration is an enabler of the co-production of services and of civic action more generally. Therefore, if a PA wants to introduce disruptive technologies to support its role as an enabler of civic action, what service areas are more suitable? Conversely, in what activities the enabler role is best supported by more traditional tools, which however can be digital, or models?

Among the service scenarios addressed by the CO3 project, we can advance the following examples, being aware that they are context-specific, and do not aim to generalize.

### *FirstLife and Augmented Reality as educational technologies.*

The use of the Civic Social Network FirstLife and Augmented Reality in the Urban Modeling scenario proved that there is a need in the **pedagogical/educational field** for new digital technologies that open the possibilities for **transdisciplinarity**, as well as for new ways for **understanding, modeling and living in urban territories**.

FirstLife as a geolocalized and transdisciplinary repository has been used for storing data, documents and pictures. This helped students to discover their territory that is generally socially and economically fragmented and sometimes insecure, hence hardly discoverable at ease for local populations. Knowing where the other schools are, the kind of project they worked on, seeing pictures of their peers in other schools on FL, helped to reshape the prejudices and ideas that students have inherited from previous generations because of the social conflicts that have characterized the Seine-Saint-Denis territory so far. The interest in

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the use of AR is directly linked with the possibility of creating and modifying one's own 3D model, to place it somewhere and then use QR codes or markers in order to share the content with his or her peers. Youngsters expressed preferences for the mobile app over desktop apps/software, given that their experience of digital technology almost always passes through the use of smartphones and tablets instead of PCs. These technologies have been celebrated by local politicians as “participative/contributive tools” that PAs normally do not have.

*Augmented Commoning through AR and Blockchain.*

The variety of pilot scenarios within the socio-cultural hubs represented by the “Neighbourhood Houses” in Turin have been heavily resized by the Covid-pandemic restrictions. However, the necessity to rethink the pilots further stimulated the **awareness** of public officers and houses' staff members on the **actual potentialities and limits** of the technologies towards different aims: the **economic sustainability of social enterprises**, the **social communication and engagement** of citizens, the **management of complex participatory processes**.

The Blockchain wallet has been designed for local coins for fidelizing users of the socio-economic activities within the Houses. The local PA appreciated the opportunity of a local economic system where the financial value is not the only one, and where social and economic incentives mutually support and can be a counter-cyclical measure during crises. However, the implementation of a token economy is one of the fields where the administrative and legal framework has to be clearly and efficiently set up in advance. Otherwise, in the very short term the Blockchain risks bringing costs, instead of advantages, in terms of management efficiency. Augmented Reality has been designed for enhancing both communication and engagement of citizens on the one side, and volunteers' management on the other. Provided that it clearly emerges that having the mobile devices supporting the AR functionalities is a longer process, the first application (communication and engagement) seems more adapted to youngsters. As regards the second one (management of collaborative activities), as an alternative option an interest emerged among public officers and the Houses managers for the Blockchain as a tracking and rewarding tool for volunteering, to get civic activities officially recognized and to give value to intangible assets.

Further speculations were made on possible other sectors where these technologies could help: culture and tourism could benefit from a currency for the cultural services, for instance promoting minor attractions or creating synergies between different cultural institutions in the City. Policies for youth and social care could benefit from the tracking and recognition of voluntary activities, helping young people to enrich their curriculum.

The application of disruptive technologies to services addressing basic needs (such as the provision of fresh food in Athens) or difficult socio-sanitary conditions (such as the Clinique Contributive in Paris) seemed more difficult. Both the facilitating pre-conditions mentioned above (socio-cultural, legal, economic) and the pandemic contingency had a role in this. Longer co-design processes are needed in this field to assess whether and how disruptive technologies can support.

## Pathways for the Public Administration.

From the CO3 experimentations different lessons were drawn on how local Public Administration can work for **introducing disruptive technologies** in co-production. It emerged that digital technologies can be a facilitator or accelerator of citizens participation, but at the same time these processes require **public authorities to demonstrate willingness to change, meaning setting up the pre-conditions** for technology adoption and effectiveness, mentioned above. These are economic in nature (allocating budgets that are flexible enough for open ended experimentation process, guaranteeing access to devices), legal (facilitating the conciliation with existing fiscal and administrative norms and procedures), technical (ensuring resources for continuous technical management), social and cultural (formulating the conditions for citizens engagement, and accompanying co-design and training processes), institutional (on-boarding relevant stakeholders).

On a practical level, the *CO3 Business Model* helps identifying the necessary **material and immaterial resources**<sup>5</sup>, and related cost drivers to plan in order to start the introduction:

- *Technological platform*: set up, customization (of Open Source tools and of Gamification methods), maintenance. Provision of adequate hardware.
- *Co-Design and engagement*: times, skills and places (with an attention to physical meetings) to facilitate the process.
- *Training and support for the use of the technologies*: online courses, in presence demonstrations, a “*digital facilitator*” profile for continuous support to public officers and citizens.
- *Study of the legal framework*: procedures for adaptation to local norms on accountancy, taxation, shared management of commons, etc.
- *Financial resources*, to be allocated also considering co-funding schemes.

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<sup>5</sup> [D.5.4 Business Plan for CO3 Sustainability](#). For each of these categories of resources, the CO3 project made available to the public technologies, methodologies, training materials and guidelines (see Section 3.2 of the Business Plan, and the project website [www.projectco3.eu](http://www.projectco3.eu)).

## 4. Policy Implications

Within the CO3 experimentation, a general interest and openness to experiment radically new technologies has been observed among citizens in the pilot contexts. However, very practical factors such as the availability of up to date devices, the ease of use and the performance of the tools are crucial in determining the willingness to keep being engaged and actively participating.

Local Public Authorities were interested in the potential changes that disruptive technologies bring in the way public services are produced, with the PA as an enabler of collaborative production. However, the disruptive nature of the innovation can be triggered and enhanced by the technologies, but is not guaranteed by technical factors alone. The institutional, organizational and cultural changes required are longer processes, since different enabling factors need to be in place for an effective implementation and adoption of the technologies.

The following recommendations aim at supporting the PAs in the identification of these enabling factors, in order to introduce integrated digital platforms such as the one experimented by the CO3 project. They complete the preliminary recommendations presented in the two previous Policy Briefs.

### Co-Design and Engagement

- **Local stakeholders and their needs** must be the starting point for collaborative public services provision. The most suited technology(ies) can then be identified among a **set of available digital tools**. This implies being ready for open-ended experimentations, with flexibles and sufficient budget.
- **Co-design** activities have to **start early**, and to be **iteratively repeated** at least with the core stakeholders, in order to avoid that the technical solutions provide inflexible answers to ever-changing social needs.
- **Open source tools**, and technologies that are customizable in their functionalities, allow participation of the citizens not only for designing the service as a whole, but also for designing the digital tool itself.
- **Gamification** methods help to motivate people and to keep them engaged. Collaborative rewarding mechanisms, instead of competitive ones, have to be applied in civic cooperation. Likewise the digital tools, also gamification schemes have to be tailored to the local contexts.
- When **researchers** are involved, a long-term commitment with local communities is required in order to create trust, and in case to act as mediators between the citizens and the PA.
- Co-design operations **shouldn't be too influenced by existing processes**. Disruptive technologies are characterized by new paradigms that often cannot be adapted to existing processes, that have settled over the years within public administrations.

### Capacity Building

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- Ease of use is essential for a wide adoption of digital tools. The novelty of the technologies considered requires a proper introduction. **Walkthroughs and tutorials** help to introduce the technological platforms to both public officers and citizens.
- The initial training must be followed by **continuous support**. New professional profiles such as “**experts in augmented services**” or “**digital facilitators**” can bridge between technicians, service designers and managers, and citizens. Their ideal skills are both digital and social.
- Liaising with **initiatives for improving digital skills** of public officers and citizens is an asset, in order to ensure a wide inclusion. The DESI index<sup>6</sup> and its specific indicators on Human Capital are a useful guide to identify areas of improvement. Addressing gender gaps in digital skills and jobs should be a cross-cutting priority.

### Co-production and Co-management in complex systems

Co-production and co-management of public services are complex systems, in that they involve interactions between different stakeholders, and with existing administrative and organizational procedures of both public and private actors.

- It's necessary to consider whether and how the disruptive technologies affect or are affected by the **national and local regulations on accounting, taxation, voting, privacy**. Sometimes, ad hoc procedures have to be elaborated since specific regulations are not there yet, as for the case of the Blockchain token economy. For instance, local currencies can imply different budgetary rules for different administrations. Different actors involved can be subject to different incentives or charges, and the legal framework changes accordingly.
- Even when integrated tools, such as the CO3 platform, are proposed, additional requirements can arise from the users, as regards the need for **interaction or complementarity with external applications**, digital tools, or devices already used (the coopboxes API in Athens, Minetest in Paris, link to websites and shared online tools in Turin). Interoperability and open standards are a core requirement.
- The design of a digital platform for multiple services must also consider the different **roles** that citizens, coordinators, and other active contributors play in collaborative processes, and that can differ from more hierarchical ways of services provision. Roles and accesses to the platforms have to balance openness with smooth management of collaborative actions.

### Public Administration as an enabler

- The establishment of co-production models is a long process of transformation. Digital and disruptive technologies can facilitate and accelerate the processes, but they have in turn to be supported and introduced by a set of **socio-economic, organizational, material and technical, cultural preconditions**. These include, on the side of the Public Administration, a **more decentralized conception of urban governance**, and

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<sup>6</sup> Digital Economy and Society Index of the European Union <https://digital-strategy.ec.europa.eu/en/policies/desi>

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a strategy for networking with diversified stakeholders in order to ensure the cultural, economic, and technological sustainability of digital co-production.

- In the short period, disruptive technologies alone cannot change institutional processes, but they are capable of **creating the conditions for future transformation**. Their novelty can stimulate people to **explore social and economic alternatives**. Civic Social Networks and Interactive Democracy tools could be used to **map a field of interest** or needs and produce invaluable urban data, to create a collective platform for citizens' proposals, or to designate through dialogue the problematic aspects of public institutions and possible directions for improvement.

### Accessibility

- In order to ensure the widest possible engagement, accessibility of the technologies should be one of the core design principles. It attains technical factors (availability of modern devices, minimum functionalities required) and human factors (digital skills, physical capabilities). **Different levels of technological performance and alternative functionalities** can be set up. Functionalities should be **adapted to the devices** that are actually used in the local context and respond to the needs of different types of users.
- As an example: Augmented Reality at present shows a trade-off between augmentation and accessibility: visual augmentation requires modern smartphones to have camera based 3D augmentation (not all the smartphone on the market at present support this), and people to have several physical capabilities, in particular good eye-sight as well as a high level of mobility and coordination. The CO3 platform provided 2D views using maps as an alternative to 3D augmented views, but also the simplest option of showing text content which is relevant to the surrounding. In this way, the individual user can select the type of user interface that best suits her or his interaction needs.

### Diversity and Inclusion

- The co-design phase should also identify the **different categories of stakeholders** involved in using the technologies, and ensure their **representativeness**, in order to provide proper **answers to specific needs**, and to **valorize the assets** they can bring. People with a high inclination to innovate (e.g. youngsters), or interested in improving their operational methodologies (e.g. professionals, social workers), can be strategic promoters of innovative tools. Conversely, other people can either resist the adoption, due to worries about being overwhelmed by new procedures, or consider it not as a priority. Different concerns and needs have to be properly addressed, for the technology to be perceived as a resource to invest on.
- It is important to be aware of specific target groups for whom the technologies can be practically not accessible, or not desirable. Examples from the project are students younger than 16 in France are restricted on app usage; parents with some addictions followed by the social services in Paris, for whom some mechanisms of gamification have been excluded.

### Other technical features

- The **balance between online/offline and at distance/in presence activities** is confirmed as an extremely relevant issue for the (post)pandemic cities. The “digital only” option has not been considered a good one for an effective introduction of disruptive technologies in local social dynamics, not even during the pandemic period. Conversely, the usage of digital tools for augmenting in presence interactions is still novel to many people. Disruptive technologies, being often in an initial usage phase, can foresee by design a **double in-presence/at-distance mode of use**. What modality is set as the default one, can depend on the purpose, whether it is to encourage citizens physical interaction, or to avoid that the (forced) distance interrupts any relationship (e.g. tokens transferetc).
- **Free/Open source** technologies are the best option to comply with principles of participation and adaptation to the local contexts. Digital services need to be easily **maintainable** by the local community, and local stakeholders able to take care of the technical maintenance have to be identified in advance. **Open standards**, not covered by patents, contribute to sustainability by increasing the maintainability.
- The initial investment in **technological skills** required by public administrations should not be underestimated: the identification and training of technical personnel must take place as soon as possible, together with the correct estimation of the necessary technical infrastructures.
- The user interfaces of the applications made available to citizens should **mimic** as much as possible **existing metaphors** used everyday, in order to facilitate the adoption of disruptive technologies. The simplicity and transparency of the user interfaces is very important, as well, in order to enhance users’ trust in the technology. For instance, in the CO3 platform, the adoption of the gamification service is coupled with the possibility that the user has to check her/his gamification profile and the history of actions that has led to the rewards attributed to her/him.

### Data Protection

- The design choices made for the CO3 platform are an example of how to follow the **privacy by design** principle in a multi-component platform for civic purposes, in compliance with the Regulation (EU) 2016/679 (GDPR). Data are used only for the purposes of the platform itself, after the user consent. Besides this, merging data from third-party sources or using unnoticed tracking methods should be excluded.
- For the local organizations to **fully control the data flow**, all components should be designed in such a way to be completely operated by the organization using the platform, either by an internal IT department or with the help of external partners.
- **No references to persons should be stored in the Blockchain**, as this technology –by principle– comes with certain limitations in terms of erasability. In the CO3 platform, the connection of Blockchain activities to persons is stored only in the CO3UUM component, so that these references can be deleted whenever needed by the operating organization.

## 5. The European policy framework

Many ongoing or proposed initiatives are giving substance to the European Digital Strategy. Proposed declarations (the Declaration on digital rights and principles), policy programs (the Pact to the Digital Decade)<sup>7</sup>, and funding schemes in place (the Digital Europe Program<sup>8</sup>) widely address core leverages to implement the digital transition. These can be summarized with the four points of the European Digital Compass<sup>9</sup>: digital skills, infrastructure, and businesses, and digitized public services.

Within this framework, the topic of the **digital participation** of citizens in policy making, decision making, co-creation and co-delivery of services is still quite recent and in definition, and even more so if **disruptive technologies** are considered.

Indeed, it deserves **more experimentation and validation in order to provide an evidence basis for dedicated focus areas within the Digital Decade**, due to its two-sided complexity. The latter attains both the introduction of disruptive technologies, as widely addressed by the CO3 project, and the co-production dimension in itself, that requires relevant changes in the way governance and service provision are envisaged.

The topic has recently been specifically addressed in preparatory actions such as the call “Smart Local Administration” (CNECT/2020/3855995). Furthermore, the introduction of digital innovations transversally recurs in funding programs focused on citizenship or creativity (CERV, CREA), besides specific calls for research and innovation on political participation and democracy (e.g. Reshaping democracies HORIZON-CL2-2022-DEMOCRACY-01). Under the priority “Wide use of digital technologies across the economy and society”, the Digital Europe Program addresses specific themes that the CO3 project explored, such as the access of the PAs to state-of-the-art digital technologies (such as blockchain), and the need for building trust in the digital transformation. Also in the calls dedicated or contributing to the New Bauhaus Initiative the digital topic recurs either as a transversal leverage, or as the core theme, such as in DIGITAL-2021-DEPLOY-01-BAUHAUS.

These and other forthcoming research and innovation initiatives on the topic could benefit from:

- Addressing explicitly this dimension in the **Digital Economy and Society Index (DESI) index**<sup>10</sup>. Among the key areas that compose the Index<sup>11</sup>, “Human capital” mostly encompasses the individual dimension; “Digital public services” mostly addresses the government-to-citizens provision of services. Considering also digitally-enabled processes of multi-stakeholders governance, citizens-government and civil society collaboration, requires the development of new indicators. These can build on

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<sup>7</sup> <https://digital-strategy.ec.europa.eu/en/policies/europes-digital-decade>

<sup>8</sup> <https://digital-strategy.ec.europa.eu/en/activities/digital-programme>

<sup>9</sup> <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52021DC0118>

<sup>10</sup> <https://digital-strategy.ec.europa.eu/en/policies/desi>

<sup>11</sup> The other dimensions are Connectivity, Integration of digital technologies, R&D in ICT.

► **CO3 Project** co-create • co-produce • co-manage

the existing metrics of the DESI on the one hand, and on existing indicators on sectorial dimensions of participation<sup>12</sup>, premising a shared and solid definitions, among the many in the policy analysis literature, of concepts such as *co-creation of services*, *civic participation*, *digitally-enabled co-production*.

- Setting up **long run initiatives**, through mechanisms such as follow-ups, chaining of projects, patient capitals, at both the European and local (regional and municipal) levels. As explained above in Section 2 and 3 of this document, the introduction of disruptive technologies in public-private co-production process have to entail an accurate and iterative co-design of both services and digital tools, and have to keep into account that enhancing citizens participation is often a long term change, that go beyond the 2-3 years timeframes of many research projects.
- **Transdisciplinary research** with experts from software engineering, human-computer interaction and design, economics, sociology, social and political geography and policy analysis. There is a need for developers and designers to consider from the beginning the societal implications of the technologies developed, and for the social scientists to be aware of the technical and functional properties of the technology considered. Furthermore, **Citizen-sciences** methodologies seem to be particularly relevant in this field.

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<sup>12</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistical\\_themes](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistical_themes) (search for "Participation").

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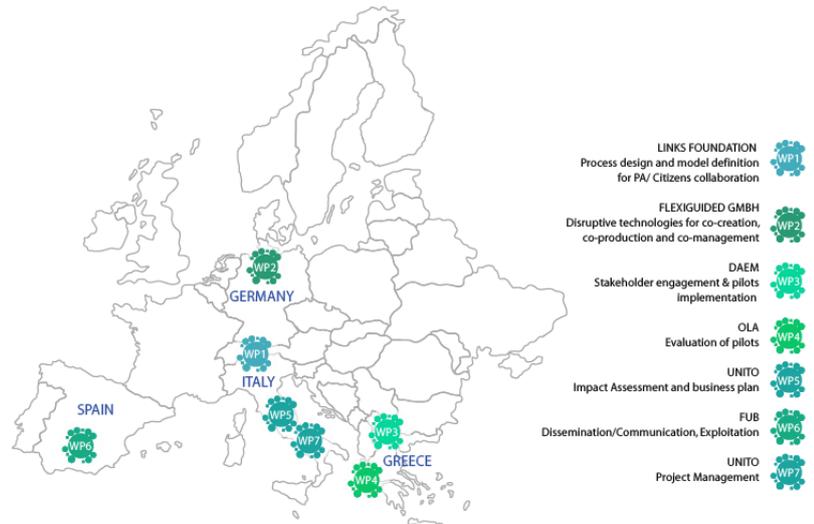
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