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From the DoA

This deliverable describes the best practices and lessons, taking into account the experience in the entire Open4Citizens project.

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1. Executive Summary

The main ambition of Open4Citizens (O4C) has been to empower citizens to seize the opportunities offered by the availability of open data in order to address needs related to social sustainability. Differently put, O4C has aimed to enable citizens to work with data as a first step to create new public services based on meaningful use of open data.

Within this context, the project has addressed two fundamental gaps that frame this problem:

- Today, most public services provided by governments and local authorities are designed from a top-down perspective (focusing on organisational aspects) instead of being created with the citizens or by citizens in a bottom-up manner where there is a focus on the citizens' everyday lives.
- Much of the available open data is theoretically accessible by anyone, however most citizens do not have the technical knowledge and skills to access and use this data. This means that citizens without data-related expertise are unable to identify and utilize, the possibilities offered by open data in a way that is meaningful to them.

In order to bridge these gaps, the O4C project has investigated a “hands on”, participatory innovation approach inspired by maker culture and “hackathons”, as a strategy for empowering citizens to use open data to improve their cities. Unlike the focus of most other CAPS projects, that generally aim to deliver civic technology solutions to specific social problems, the O4C project has aimed to scrutinize and address the social issues underlying these problems. As a result, the project has prioritised to deliver a set of methods, tools, and approaches enabling the generation of solutions with the active participation of citizens, who have an important lived experience of these problems and are best placed to develop truly valuable, implementable and sustainable solutions.

In the current deliverable, we look back at the entire O4C project and consolidate a range of “best practices” that have been identified through the implementation of the multi-faceted O4C approach across five European cities. These so-called best practices have been selected in order to demonstrate the diversity of outputs and process dynamics that are possible under the umbrella of a unified vision. We aim to cover the multiple dimensions as identified in the O4C approach. Due to the variety in the contexts of the five O4C pilots and the resulting configurations of the emerging OpenDataLabs (ODLs), there are multiple routes to navigating through these dimensions.

The main concepts, which have been guiding principles throughout the project, have been defined in deliverable D1.5 Concept Definition (Final). Figure 1 shows the O4C ecosystem. As a reminder, the fact that OpenDataLabs are locally embedded and the triad of “people”, “data”, and “challenges” have been further contextualised for the construction of the OpenDataLab.

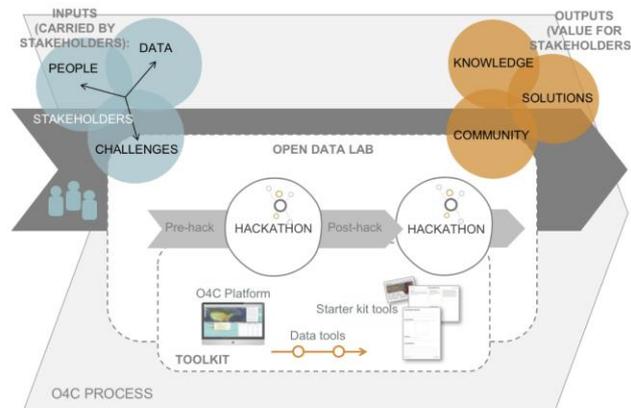


Figure 1: The O4C ecosystem.

The structure of this document is devised to capture diversity in unity among the five pilot cities. The first three sections are organised by the core aspects of supporting the use of open-data in the O4C project: *People* (System of Engagement), *Data* (System of Record) and *Challenges* (System of Insight), inspired by Kapoor et al. (2015). We consider these three aspects as interlinked sub-systems which together are essential components for service delivery. In order for reaching the desired impact, attention needs to be paid to each of these three components of the overarching system. They need to be strengthened individually in order to support overall, systemic improvements. After that we further build on the idea of interlinked sub-systems contributing to innovation. We present how the above three core elements are manifested in, on the one hand, *Process* (System of Support), which refers to the O4C approach enabling a new way of co-creating urban services including its tools and strategies, and, on the other hand, *Infrastructure* (System of Innovation), which refers to the resulting O4C hackathon campaign that defines the challenges for hackathon events, ensures participation (of people), and aggregates datasets that can be used as the raw material for the co-creation process. The specific *Process*, the O4C approach, that has been developed, tested, and improved through the O4C project, supports the improvement of the *Infrastructure*, and shows the results of the incremental and linked improvements in the other systems. Throughout the O4C project, we have identified a range of best practices, with a shared framework, that have been tailored to specific contexts exemplified by the five O4C pilots. The concluding section discusses how these best practices can be consolidated into a local, public innovation setting, the OpenDataLab, as well as the potential for networking these local OpenDataLabs on a global scale (NOODL.eu).

As further elaborated in D1.5, in order for local innovation in public service to be supported and improved through the interlinked systems described above, the best practices need to be understood and translated with respect to the local context in which they are being applied. In other words, each OpenDataLab needs to appropriate the best practices that are feasible and effective within the local ecosystem and local conditions of the lab. One size and structure does not necessarily fit all. Sharing and learning through a network builds capacity locally and globally to improve services, while making the best possible use of available resources.

1 People – system of engagement

Starting from the project's plea for open data to be *Open for Citizens*, and seen from the perspective of the Open4Citizens' (O4C) pilot cities –Barcelona, Copenhagen, Karlstad, Milan, and Rotterdam— every participant in the local events and the campaigns is a citizen of, or at least a visitor to, that particular city. And in that sense, the locally organised O4C events and the campaigns have been open for anyone to participate in. Relevant to O4C is the concept of citizens interpreted as people in any way being owner of the challenge or being interested in the response to the challenge in the city. This is strictly related to the '*right to the city*' concept that widens the meaning of the term citizens towards any city makers or city contributors without any reference to formal or institutional citizenship (e.g., Foth et al., 2015).

The configurations and contexts around the activities hosted in each pilot vary considerably, as does the types of people each pilot managed to involve. For example, some had a richer participation of students with interests or skills related to the local pilot team's main expertise or to the themes of the local O4C activities; some primarily engaged with activists; while others welcomed city makers or employees within healthcare arenas as 'citizens' motivated to make better health services available for other citizens. Yet, citizens are in no way a homogenous group to engage with. As such, any attempt to classify people that did participate is bound to be a reduction of their unique identities and motivations for engaging with the O4C project's pilots. With that in mind, across our pilots and practices, we have nevertheless found it useful to distinguish among several distinct types of citizens based on the roles they have played in the pilot cases, and based on the recurrent types of expertise introduced by them into the process of innovating with open data.

1.1 Diversity of engaged people - some profiles

All O4C pilots have engaged and welcomed a broad range of interest and disciplines and have demonstrated a richness in the profiles (further details are in O4C deliverable D4.2 Data Collection and Interpretation (M29, May 2018)) of engaged people. The following profiles have been identified across O4C pilots, while hardly any pilot welcomed a complete set of profiles. Engaged people may be distinguished from each other with respect to their roles, competences, and affiliations.

Focussing on **roles**, profiles may be related to:

- owners of the challenge being addressed through O4C activities (any people experiencing, or in any way related to, the challenge)
- data owners (or brokers, i.e. people that own the data, could be citizens who are collecting data or civil servants providing access to governmental data)
- implementers (developers and designers able and willing to (further) develop the solutions of the process, i.e. possible service providers)
- decision makers (people with the power to make the solution developed in the context of the O4C project into a new urban service or to change an existing service by the adoption of the provided solution)
- mediators/facilitators (any person who is able to guarantee the productive and creative interaction between different participants and stakeholders motivations, background, experiences, languages, skill sets etc.)
- activists (people whose willingness to change can ignite challenge identification and adoption)

- strategists (people with a vision of how to implement the outcomes from O4C activities beyond the hackathon (or other related) event. This could be a person with authority, representatives of public institutions, civil servants, politicians or social initiative, area committee representatives, i.e., a decision-maker from the local municipality)

Focussing on **competences**, profiles may be distinguished in:

- designers (people with wide design competences such as service designers, interaction designers, policy designers, etc.)
- coders (any people able to work on coding the new service or to innovate by re-coding an existing one)
- data curators (people that support data articulations to collect appropriate data to be used for innovation)
- data analysts (people able to deal with raw data in a variety of ways such as challenge setting, data utilization in the solution, data integration etc.)
- domain experts (any person from disciplines that relate to the challenge domain, e.g., tourism, migration, health and wellbeing etc. - where the application of open data and/or creative processes can generate a new service or innovate an existing one)
- testers (people available to adopt the solution in a testing environment by creating this environment and making it available to designated users)

Focussing on **affiliations**, we could have:

- institutional officers (those belonging to institutions having a relation to the challenge or potentially interested in the adoption of the solution)
- representative of local associations (having a role in challenge solution or being active in challenge identification)
- public officers (technical or managerial officer of the public administration who are potentially able to give a “urban” value to the provided solution)
- representative of private companies (any representative of the private sector in the perspective of a PPP partnership in the innovation process activated by the hackathon campaign)
- unaffiliated people (these people can be those traditionally identified as ordinary ‘citizens’, representing their own particular interest as motivation for participating. They can also be considered affiliated to the challenge or affiliated to the willingness to change).

The above profiles have often overlapped, with one involved participant usually belonging to several categories and bringing these different parts into play within the context of engaging with an O4C pilot. For example, an unaffiliated person might at the same time be a domain expert and an activist. To some extent, the above profiles also correlated with citizens’ affiliation. For example, a local government representative would be a domain expert relating to his or her function in the municipality, but could also be an inhabitant of the involved geographic area. A passionate coder/programmer might also be a keen hobby-angler or refugee activist.

Furthermore, some of the profiles were defined through a process of discovery, as individuals engaged with each other and with the O4C process. Of particular interest, we have seen that individuals whom we consider to be data brokers do not necessarily all regard themselves as such at the start of a collaboration with an O4C pilot. They need some time to realize the potential of ‘their data’ in contributing to service innovation.

Finally, people may have evolving roles throughout the hackathon process. In addition, engagement with hackathon participants and others interested in the O4C approach can be enriched if, instead of

focusing narrowly on the pressure-cooker setting of the hackathon event, we consider roles in relation to the three phases of the hackathon process; pre-hack, hack and post-hack

Identification of the wide differentiation of profiles allows us to distinguish areas of expertise brought by people into the process. At the same time, and more importantly, it also shows gaps in expertise and background, when considered in relation to what is needed in order to create viable solutions to the challenges being addressed in O4C pilots. This reveals the need to combine areas of expertise by ensuring the representation of people with diverse roles and affiliations. Reflecting on the activities in the O4C project where this “aggregation” of people has been achieved, i.e. in the various pilots’ events and activities, we can see that simply ensuring diverse representation is no guarantee that the knowledge or skills add up to a team of people able to bring their individual skills into play to work well together. On the contrary, this diversity can easily lead to misunderstandings and communication problems among people. For example, a coder might not understand the social problem described by a local activist and an activist, in turn, may not be able to see the value of the coder’s expertise in relation to a social problem. The outcome of the particular alchemy we see when different people come together can always play out in different directions - productive to an innovation process or obstructing it.

1.2 Enhancing participation - opening up for a variety of people

The rich variety in participants’ roles, competences, and affiliations is on the one hand stimulated by the O4C project’s focus on meaningful solutions and the themed ‘sustainability and social innovation’ challenges (see the ‘Challenges’ section) which are further localised in the pilot events (Described in deliverables D1.1 and D1.2, the first two iterations of the O4C Domain and theme definition). The challenge relevance is a key motivator for participation. It, however, does not guarantee the participation of people in the local area of the O4C pilot. In particular, people with a more activist profile are likely to participate when challenges dealt with in the O4C process align with their own (activist) agenda. Again, we have seen that significant activist participation does not guarantee a collaborative mind-set in the entire process and in the local events. In fact, the participation of active citizens seems to hinder the participation of less active citizens, who may not initially be able to see what they can contribute and gain from engaging with O4C.

A mechanism which proved effective in boosting engagement was to reach out to “challenge owners” in the pre-hack phase; that is a group of people who were already working on tackling the hackathon challenge as part of their everyday activities. They could be for instance a local non-governmental entity, a group of researchers from a university, or a few employees from the same office in a local public administration. In these instances, a hackathon team would cluster around a nucleus composed by such a pre-existing group, and add profiles which complement their skills (i.e., designers, coders, business analysts). These core “challenge owners” would be the driving force behind the hackathon campaign, being able to sustain their drive beyond the hack phase and into the post-hack phase to deliver working prototypes of their digital open-data-based innovations.

In other words, we have seen that the motivation of many participants in the O4C process and also of some ‘challenge owners’ is strongly related to their interest in the topic under exploration. Open data is seen by them as a means to an end; sometimes as an eye-opener to the innovation

possibilities it holds in relation to the participants' main interests, i.e., the topic or theme that is in focus. Working with open data is not necessarily an end in itself for the majority of participants.

Interestingly, for some of those participants we have engaged, both the area of open data and innovation, design, and co-creation practices were new. They were therefore facing steep learning curves on two terrains within a relatively short period of time. This influences the degree of refinement one might expect at the end of the O4C process or at the end of the hackathon event itself - as well as how the facilitation is best done. Each step has to be carefully tailor-made and adjusted to fit the needs of various crowds.

1.3 Sub-conclusions - system of engagement

It can be concluded that a well-balanced variety in participant profiles does contribute to the quality of data articulation and idea generation, and to the corresponding quality of the outcomes; both the participants' learning process as well as the value of the urban service generated for those who deliver or use it. Diversity in participant profiles is therefore a necessary precondition to enhance learning among participants throughout the hackathon campaign at the different scales of the engagement: at the scale of the ecosystem of engaged people and organisations that the hackathon campaign creates, at the scale of the teams created during the hackathon event, at the scale of the individual participant as each enriches his/her own new perspective by considering the data resource within the production of a new, innovative solution or service. We have distinguished two aspects of learning occurring within a group of people with mixed profiles working with data during O4C hackathons. On one hand, individuals further developed specific areas of expertise, such as data interpretation and manipulation skills or in app concept development. On the other hand, we have encountered a need to "align" their expertise with each other. Such alignment has involved the development of a shared language, a shared understanding of the problem at hand and the recognition of each other's expertise areas. This process has also implied the need for a better personal understanding by each participant of their contribution and expertise in a multidisciplinary context.

The gap between data-experts and less data-literate citizens in terms of understanding and using open data has been bridged to a great extent. However, another gap has been made explicit. The so-called participation divide seems to be enhanced when (already) active citizens have better access to the OpenDataLab infrastructure and services. This better access is a result of the fact that they are more visible in the local arena as groups or as outspoken individuals who can be approached by representatives of an OpenDataLab. In addition, they are likely to be more active in reaching out to initiatives such as O4C and to have pre-existing skills and capacity to both initiate and sustain this engagement. We therefore need to carefully consider how OpenDataLabs can have a great(er) value for the local community. In order to open up for all citizens, inclusive participation is key. OpenDataLabs need a proper support infrastructure for communication with and alignment across people with different interests and areas of expertise, before, during, and after local events, i.e., in a sustained way. In order to ensure long term engagement and a dedicated community approach for inclusive engagement of citizens, infrastructure, in the form of commitment from a range of experts, governments, commercial and non-commercial organisations needs to be in place.

From experiences in the O4C pilots as emerging OpenDataLabs, we see that a “system of engagement” should be:

- inclusive (engaging with people with as many different roles, competences and affiliations as possible)
- sustained (keeping people both motivated and enrolled throughout the campaign, by embracing and supporting people’s growth over the course of a campaign, which may include acquisition of new knowledge and expertise, and change of the roles in which particular citizens are involved)
- meaningful (people should be intrinsically motivated to participate - not necessarily in open data at first; but in shifting topics).

2 Data – system of record

Data is a very broad term, with myriad interpretations informed by different contexts, different professions, contemporary culture and the ways in which the media refers to data. In the O4C pilots, these differences have become apparent in practices surrounding data. In the project, as a whole, we have set out to find techniques, processes and methods that better allow for "open data" to be available as *a true commons*; that is, a resource actually used by people through relevant understandings and actual practices. However, through the O4C pilots' engagements, we have learned that, from the perspective of many citizens and differently situated stakeholders, notions of 'data' become much more entangled in practice. When aiming to improve data literacy and digital citizenship - it becomes less relevant to insist on narrowly "employing techniques for *open* data", such as was the initial intention in the O4C project. The data field is broader and more entwined, which is why we have worked with multiple data sources.

These reflections on data relate to all stakeholders involved in the O4C process and in emerging OpenDataLabs; there is a need for a system of record that is tailored to the needs of all the people involved in the system of engagement to create the best basis for social innovation. High quality data needs to be made available to fit the needs of citizens, facilitators, and data-owners, amongst others. In addition, the data literacy of everyone involved in the O4C process needs to be improved. In this way, an understanding of data becomes the common language around which engagement can take place.

2.1 Working with open data

2.1.1 Availability and quality

Finding effective ways to access data has been a primary challenge throughout the pilots. On one hand, accessing data can be easy, once the pilot finds a data broker, who is able to provide and allow open access to datasets that are considered necessary in order to address a specific challenge. However, we have learned that defining what data to access was just as important. Whilst a civic activist may have a naive wish to have access to all possible data in regards to her interest, a civil servant handling open data access requests is unable to fulfil such a request. Sometimes, the civil servant needs to find project officers and data experts that can provide such access, and this involves more work than just filtering requests. In some cases, there might be a willingness inside public administration to make openly available data within given areas for re-use in new contexts, but at the same time there can be a lack of clarity in terms of the straightforward gains of investing resources and time in the concrete data-handling, preparation and upload/update. We have identified the need for a 'sparring partner', 'ambassador' or 'intermediary', whose remit is to support continued motivation to make data openly available and to illustrate the concrete gains and benefits of prioritizing this effort locally, regionally and/or nationally.

In cases when the data of interest is not open data, but is data made public on the internet (e.g., on social media, but also data published without due attention to its quality with respect to facilitating its use by others), a lack of technical skills for accessing and working with this data appear as barriers to understanding and using it. Anything that a web browser can open can somehow be downloaded

and transformed into a dataset, but this workflow (of scraping, cleaning, transforming data) requires specific technical skills.

Considering the availability of data as a resource, what we have learned is that it requires a kind of active “translation work” or digestion of available data, before it can be brought into play by curious ‘data-rookies’ through events that last 1-2-3 days, as hackathons do. Academic partners effectively explored multiple topics – be it migration, tourism, volunteering – through students’ project briefs. These topics have been explored from a data perspective; considering topics in relation to existing datasets, their status and which challenges could be addressed with those data.

It is clear that data availability strongly influences the challenge definition in the pre-hack step of the hackathon campaign. It represents one of the drivers for the creation of the hackathon ecosystem towards the service creation and adoption making the service strictly related to a manifested need of data.

2.1.2 Literacy

A lot of uninformed expectations, buzz, hype and magical thinking play out around data, and with the recent introduction of the European Union’s GDPR (General Data Protection Regulation) and similar practices, European policy-makers are taking actions to improve the situation. However, in the context of innovating with data, higher levels of data literacy are needed than is the case for people’s everyday navigation in the data waters.

Citizens require a fundamental ability to be able to open and read data. Beyond this, we have learned that, in order to use open data to increase the agency of bottom-up projects in the local political arenas, critical thinking needs to be applied in a data context. This starts from knowing how to apply analytical methods to the data (e.g., manipulating it, visualizing it), as well as basic statistical knowledge to make sense of numbers. In addition, it is necessary to recognize biases involved in interpretation (through applying an analytical method), what are the possible ways to misinterpret the data (i.e., telling a story from the data to support a specific argument), and to characterize the possible ways the data was collected and whether that was ethical, biased, or compromised in other ways. At the very least, understanding the context and constraints of a particular data source is necessary for a meaningful actual ‘re-use’.

In the O4C process, we have observed that many participants did not perceive a clear conceptual break between open data and other kinds of open digital assets. During the data validation phase it was common to observe participants trying to figure out if open source platforms (i.e. data crowdsourcing), software (i.e., visualization) and/or hardware (i.e., sensors) could also be useful elements for their solutions. This pattern was more marked among non-expert users of data. In many instances, the O4C hackathon facilitators did not have any arguments to encourage the participant teams to artificially disregard these elements which, strictly speaking, are beyond the scope of open data, since they actually added value to the solutions each team was crafting.

The data validation phase, with its concurrent processes of exploration, validation and analysis, was the locus of the data literacy-building process. The O4C pilot teams consistently witnessed participants who entered the hackathon event as complete novices, and left with a basic but solid understanding of the possibilities of open data, and the minimum skill set required to use a dataset to answer simple, real-life questions. This fact can be documented by comparing the responses in the

non-anonymised questionnaires that hackathon participants were asked to complete before and after the hackathon events, indicating their level of understanding of open data.

Data literacy also relates to a general ability to access data; meaning that you know they exist and who owns them; you are aware of your right to have them accessible and usable; you know agencies making them readable, understandable and usable. Data literacy is not only about the actual technical skills needed, it also entails a shift in mind-set or culture. This involves a diffusion of the ability to recognise and pin down a possible data set of relevance when it occurs inside an organisation or external to it - or in the formulation of a request for data. It is about making data figure as an active element in the everyday lives of many different categories of people.

2.2 Data-driven citizenship

People are immersed in growing computational environments. The O4C hackathon campaign makes them more aware of this, while demonstrating to them the relevance of available data. Through their engagements in the hackathon campaigns, we have seen that the participants who joined these O4C campaigns have developed a richer understanding of what value (published) open data could provide and how it could be beneficial in supporting their activism or, more generally, their active citizenship. The O4C processes were inherently centred around data, while the consortium's facilitation approach was centred around service innovation and (co-)design methodologies. From these two perspectives, we saw the synthesis of data competencies intertwined with generic design competencies. For some actors, only one of these practices was new, for others both design methodologies and working with data was a new experiment to engage with. This synthesis indicates that collaborations among the different types of citizens are a necessary condition to have a minimal set of competencies and skills in the 'O4C hackathon event team,' working on bringing data into play in order to solve a specific challenge; even though, not all roles in the O4C hack teams referred to a 'classical hackathon skillset', these other roles however, did relate to operating and interpreting data; from strategic thinking towards societal added value to actual analysis and working with data (this variety of roles was shown in the diversity of participant profiles in the 'People' section, too). Our lessons nevertheless show that it requires an attentive way of facilitation that acknowledges learning and collaboration, especially towards interdisciplinary expertise (not only technical ones!) coming to play to generate value out of data, and providing a path of learning and realization. This perspective opens the dialogue about data to non-technical people. The involvement of software developers, data curators and analysts is cornerstone for successful hackathon campaigns, but the strategic value creation with data requires other stakeholders who take benefit of the strategic value of data, as well as involved in the hackathon campaign in pre-hack arrangements or in the 'O4C hack teams'.

2.3 Sub-Conclusions – system of record

It can be concluded that to enable future ecosystems around the use of open data and using data for empowering citizens, specifically, new practices are required around data *beyond* organizing hackathon campaigns. Such practices should support both co-creation and individual initiatives.

At the level of co-creation initiatives, a collaboratively orchestrated and inclusive innovation process inspired by the pre-hack, hackathon and post-hackathon model (the *hackathon campaign*) works as a

gathering point; an occasion of networking and experimenting together in practice along new intersections; although this is a trickier output directly to measure.

At the individual level, tools and procedures should be introduced that inspire individual work, propose ways to analyse, organise or curate data and support individuals to include open data in the design of new products or services.

Innovating with data requires actual technical skills for handling data and analysing it, but it goes further. People involved in this process need to be able to think strategically about data, from the practice of acquiring a dataset to assessing its value for addressing a certain challenge. To achieve this, the O4C consortium has curated and developed a set of tools to support people to incorporate data in the social innovation process (encapsulated in the Citizen Data Toolkit, presented in deliverable D2.5). Beyond creating tools, we need to reduce technical divides, and make sure that the future generations will be empowered by technology (and thus, by data), and that they learn to leverage technology to actively participate in creating preferred futures, rather than being passive receivers of technology dreams imposed by technology conglomerates. OpenDataLabs will provide tools and know-how to guide this, by incorporating relevant elements from the fields of data science as well as those of social science and service innovation. We see an added value for a supplementary and motivational 'entity' to keep inviting experiments to play out at shifting fields of application; creating safe arenas of collaboration between data-owners of various kinds and students, groups of engaged citizens, NGOs or the like. The extended hackathon (encompassing the pre-hack, hackathon and post-hack phases) figures as one of the many possible ways of approaching this.

Considering data used in the O4C pilots as a system of record, we have identified some aspects of this system which deserve particular attention in order to create the necessary infrastructure to make the right data available as an input for generating viable solution to societal challenges.

From experiences in the O4C pilots as emerging OpenDataLabs, we see that a system of record should:

- Define data broadly (Open data should not be considered in isolation, but brought into play in relation to other types of data and technologies)
- Incorporate both qualitative and quantitative data
- Be curated by individuals or organisations with a range of skills relating to data (preparation, interpretation etc.)

3 Challenges – system of engagement

O4C pilots have been initiated by O4C partners in their five respective cities by defining a theme which was timely and rooted in the needs of local citizens (See Table 1, and for further details: O4C Deliverables D1.1, D1.2). These themes were addressing societal challenges rather than technology-driven issues. Next, within identified themes, local citizens and other stakeholders were involved in detailing and framing more specific challenges within each theme. In this process, O4C partners also took measures to raise local awareness of the theme and challenge, while recruiting participants for the hackathons towards more inclusive processes. This stresses that co-creation is at the heart of the O4C approach. This involves engagement with local citizens around their needs being carried out from the early framing of the challenges to be focused on, through further specifying and exploring these needs, creating solutions and bringing these solutions into use.

City	Hackathon cycles	Challenge summary
Aalborg/ Copenhagen	1st cycle	Refugees, immigration & integration under a call to “Hack Integration”
Aalborg/ Copenhagen	year 2nd cycle	‘Smartening up’ the promotion of outdoor tourism opportunities in the (peripheral) region of North Denmark “Hack the Outdoors”
Barcelona	1st/2nd cycles	Urban public health, neighbourhood services, access to local culture
Karlstad	1st/2nd cycles	Healthy living in Kronoparken district
Milan	1st cycle	Transparency on urban transformations and city making
Milan	2nd cycle	Access to services for immigrants
Rotterdam	1st/2nd cycles	Self-management of parks

Table 1 Challenges dealt with in O4C cases covered a range of current societal issues, of immediate relevance to involved citizens.

Throughout the project timespan we have experimented across consortium pilot teams to ‘attack open data’ from multiple thematic entry points. Below, we pin down some of our experiences in terms of which data-people-challenges configurations turn out the more interesting and effective - which have turned out the more ‘hackathonable’.

3.1 Dealing with situatedness of Societal Challenges

Problems experienced by people becomes challenges when there is a relevant number of people who experience them and when this experience resonates with wider societal challenges. In this perspective, addressing the specific/situated problem would possibly contribute to address a wider and shared problem. The *situatedness* of a societal challenge is the most important driver for the problem to gain attention and the interest of several actors in the context as well as to activate an

interactive ecosystem towards the creation and adoption of the solution throughout a hackathon campaign.

Situatedness of a societal challenge becomes active when there is:

1. existence of local group/s of people sharing an issue, a problem in their daily and local lives and having a manifested intention to solve it
2. existence of local actors potentially interested in giving an institutional value to the solution of the identified problem who may play an important role in making the solution to that problem a “urban” service
3. awareness that the tackled problem is a local evidence of a wider, bigger and more complex societal challenge which may benefit of a situated learning processes towards a scalable and transferable solution.

The situatedness is relevant to the chance for the hackathon campaign to develop a co-designed solution which is owned by the context where it is produced so that the solution itself, eventually scaled up, is able to embed the capacity to relate to the context and to activate situated learning processes.

3.2 Data-related challenges

Not all challenges can be dealt with using (open) data and not all challenges can be dealt with using available (open) data. In the O4C project the relation between data and challenges is strictly interdependent and this creates a data-related challenge concept.

Many problems experienced by citizens in urban contexts (as those we tried to deal with in the O4C project) may need solutions which are not depending on data. Social segregation, poverty, or unemployment are problems whose solution is not depending on data, although data can be supportive of problem setting activities or of activities of creation of policy measures

Differently put, when challenges have a strict data-relation there could be two different situations:

1. data is the challenge target: lack of data or problematic data access can be the core component of the challenge;
2. data can improve quality: data can represent the support to a better solution to the challenge.

In the first case, data availability and access is a constraining condition of challenge definition and becomes the core focus of the pre-hackathon phase; the challenge definition towards the hackathon event is more the output of an alignment work between the exploration of data availability and the disclosure of existing data.

In the second case the challenge definition is carried out and finalized highlighting its potential and increasing quality in terms of data utilization; (open) data does not represent a condition for the challenge to be solvable rather an opportunity for the solution to be of high quality.

3.3 “Hackathonable” challenges¹

Not all the challenges are “hackathonable”. Keeping a strict interpretation of the hackathon concept, even in the perspective of the hackathon campaign, not all challenges can find a solution throughout a hackathon process. This is true if the hackathon concept is strictly referred to the involvement of coders in ideating, prototyping and developing Information Communication Technology (ICT) based solutions to an identified problem. Not all problems have ICT based solutions.

When the hackathon concept is extended up to the hackathon campaign and the challenge has potential solutions to be identified in the ICT domain, the pre-hack phase can represent the opportunity to refine the challenge towards a problem space the most hackathonable as possible.

Recently, the hackathon concept has been widened and emancipated from a strict ICT perspective by people in a number of non-technological domains. The hackathon is more and more seen as a process for creativity to develop and prototype solutions to a wide range of problems (look at the Seed SolarDecathlon initiative where a hackathon event has been carried out for building and architectural solutions independent of the ICT integration). This perspective aims to reduce the issue of hackathon ability towards a more general approach to problems and challenges.

Within the O4C perspective, a stricter interpretation can be maintained with respect to the aim for the hackathon to be productive of solutions, which are data centred and, therefore needing a certain degree of ICT adoption.

In a moment in time where data pops up everywhere in society, many small companies, organisations and interest groups feel a pressure to ‘smarten up’ their practices and routines in order not to ‘fall off the digital edge’. In this sense their involvement in the O4C innovation process has offered them a safe arena to try out ideas, get new inspiration and to think and do things differently, while leading conversations along new intersections. The conceptual applications resulting from the O4C-style hackathon is just one outcome of such interactions. The most valuable outcomes for a range of stakeholders are the networks built and the conceptual as well as practical connections made to new ways of working and incorporating ‘smartness’ into their work. The campaigns we have led in the O4C pilots have created public awareness in a novel way - as well as paved the way for new locally-situated projects and initiatives.

3.4 Sub-Conclusions – system of insight

The system of insight involves ensuring that the challenges being worked on are relevant to the people who will be impacted by and contribute to the solutions developed. In order to make the most of data as a resource, a consideration of the aspects discussed in the ‘Data’ section need to be taken into account as well. For all three systems discussed so far, there is a close interconnection in ensuring that they are sufficiently developed to have a positive effect on the overarching “system of innovation”. They can be dealt with and improved individually in many respects, but ultimately there is a need to view them together to ensure that they provide the necessary inputs for effective solution generation, facilitated by the “system of support”.

¹ This issue was raised by a participant of the DSI 2017 conference (Rome) during the presentation of the O4C project.

From experiences in the O4C pilots as emerging OpenDataLabs, we see that a “system of insight” should:

- always start from citizens’ needs and motivations, incorporating a range of citizen perspectives in defining a challenge
- not prioritize civic technology as a solution but be open to and support non-technological solutions
- ideally have clear buy-in from an organisation wishing to develop the solution emerging from work on the hackathon process (e.g., the data owner, municipal organisation responsible for the current solution that needs improvement, a group of citizens wanting to create a solution to a currently unmet need)
- support formulation and re-formulation of challenges of the city and citizens in a way supported by open data.
- articulate and share insights about the city in the citizen community through challenges
- be grounded in open data
- lead to concrete actions taken to address these challenges - evaluating and assessing their impact and devising course of new action.

4 Process and Infrastructure – Systems of support and innovation

In the current chapter, we take stock of how the three core elements: people, data, and challenges, have been manifested in Systems of Support and Innovations.

The *process* refers to the O4C approach enabling a new way of co-creating urban services including its tools and strategies.

The *infrastructure* refers to the resulting O4C hackathon campaign that define the challenges for hackathon events, ensures participation (of people) and aggregates datasets that can be used as the raw material for the co-creation process.

4.1 O4C Hackathon as a multi-thread process

O4C hackathons have been the key events organised across the five O4C project pilots. These hackathons were inspired by coding hackathons. The key characteristic of a coding hackathon is that it involves teams of people with varying, yet typically software-related, expertise working intensely over a predefined period of time (typically 2-3 days). The teams may be formed beforehand, or ad-hoc at the event. The work of each team is aimed to devise a solution to a prescribed problem or challenge, and to create a prototype of that solution. Due to time-constraints, the prototypes are built by “hacking” together pieces of pre-written code, parts of past projects, various software libraries, platforms and other elements forming a solution. The best prototypes of the hackathon are typically rewarded with prizes. However, the prototype tends not to be the most important outcome for participants of a hackathon. Learning new skills, making new professional contacts and verifying and showing off own capabilities are among the main reasons for an individual to participate (Briscoe, 2014; Nandi & Mandernach, 2016).

In O4C hackathons, the hackathon format was adapted to include participants with non-coding skills in the process, and to extend the range of “hacking” repertoire from software to all other forms of making. The overarching goal was to “hack the city” and transform it to answer the differing hackathon challenges posed. Figure 2: While O4C hackathons followed a funnel model towards prototypes of open data-driven solution, they key benefits for event participants lied in obtaining new knowledge (skills or insights) and forming a community. Figure 2 shows that the “hacked” prototype of a solution to the challenge has been the central end-goal of the O4C hackathon process. Yet, at the same time, it indicates that the knowledge that participants obtain during the hackathon, and the new community they formed were other important outputs of the process. Depending on the particular situatedness of the case, i.e., the specific thematic challenges in a specific O4C pilots, emphasis and expectations of hackathon outputs varied. However, in all cases, not only open data driven solutions were presented, but also increased knowledge gained as well as stronger community formation.

Although O4C Hackathons are not restricted to software coding, or, in some cases did not involve any coding at all, they share the hands-on ethos with coding hackathons. The formation of a community and learning new skills happens around the activities of developing a creative and working solution to a given challenge.

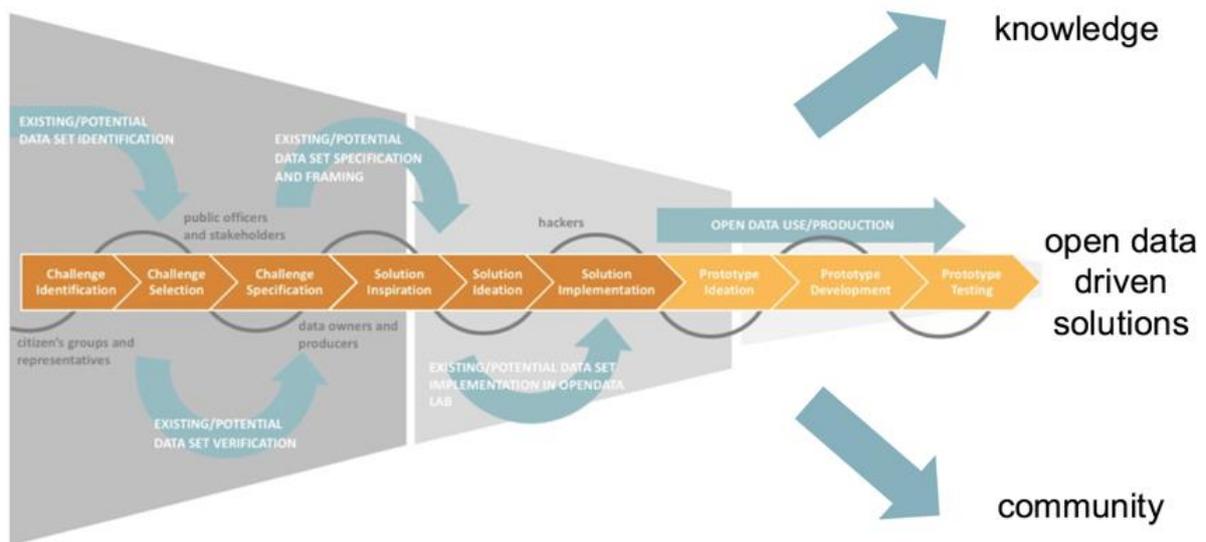


Figure 2: While O4C hackathons followed a funnel model towards prototypes of open data-driven solution, they key benefits for event participants lied in obtaining new knowledge (skills or insights) and forming a community.

In this sense the O4C extension of the hackathon format follows a recent evolution of the format that goes beyond the narrow focus of creating digital artefacts and a simplistic celebration of the technology entrepreneur as someone able to demonstrate quick and forceful action (Porter, Bopp, Gerber, & Volda, 2017). Instead, some of the more immaterial and abstract outcomes - such as learning, networks and identity- should be highlighted. In the 'multi-thread' process elaborated in the O4C project, we are somewhat in tune with what D'Ignazio and colleagues at MIT (Massachusetts Institute of Technology) have labelled 'a feminist hackathon approach'. We have attacked the problem space ecologically, ensuring to value learning as much as invention, while prioritizing listening as much as ideating. We have also valued the production of social relations over the production of objects - and in many ways, have kept an eye for addressing some of the limitations of the hackathon format. One example of a limitation we have identified is the creation of unrealistic expectations of what can be produced in a short period of time - and how one might risk proposing purely technical solutions to complex socio-technical problems.

4.2 O4C Hackathon process facilitation

The organisation and facilitation of the O4C Hackathons was performed by local O4C consortium members in collaboration with local stakeholders, including, among others, citizen groups, local governments, non-governmental organisations and universities. The general guidelines for the O4C citizen hackathons were predefined by the O4C consortium members and provided to individual pilot organisers in the "hackathon organisation handbook" (See deliverable D3.1 Hackathon organization handbook).

In the pre-hack phase of the O4C process, facilitation is mainly referred to the challenge definition and its alignment with the available data. In this phase, the facilitation need is mainly related to the creation of a relevant ecosystem, which later becomes the governance of the specific hackathon campaign, i.e., a process related to a specific challenge domain. In such ecosystem:

1. the challenge is owned by a variety of stakeholders and the identification of institutional adopters of the solution is carried out
2. the “urban dimension” of the potential solution is clarified
3. the testing is planned in relation to the challenge as a whole and not specific to the solution
4. data availability is produced
5. data owners become interested in the solution and its production.

The citizen hackathon event was in synthesis preceded by a “pre-hack” phase where, among other activities, the theme for each hackathon was co-defined, participants were recruited, and relevant datasets were collected and prepared. Each hackathon was superseded by a “post-hack” phase, where various forms of support were given to hackathon participants to continue developing solutions initiated in the hackathon and to sustain the community established throughout the pre-hack phase and the hackathon event.

The organisational setup of the actual hackathon event has been inspired by IDEO’s inspiration-ideation-implementation process (Brown, 2005), as summarised in Figure 3. The event was envisioned to last between two and three days. Its steps included open data introduction, sharing inspiration, articulating needs to be addressed, brainstorming, data validation, exploration of data using a dedicated platform and toolkit, scenario design, prototype planning and pitching emerging and final ideas among participants and to external guests. For each of the steps, process facilitation tools were prepared, and a prototype of a data exploration and -analysis platform was accessible across the whole process. At the same time, the process was facilitated in a “soft” and flexible manner, allowing individual hackathon organisers to adjust it to local specificities and to the interests and prior skills of participants.

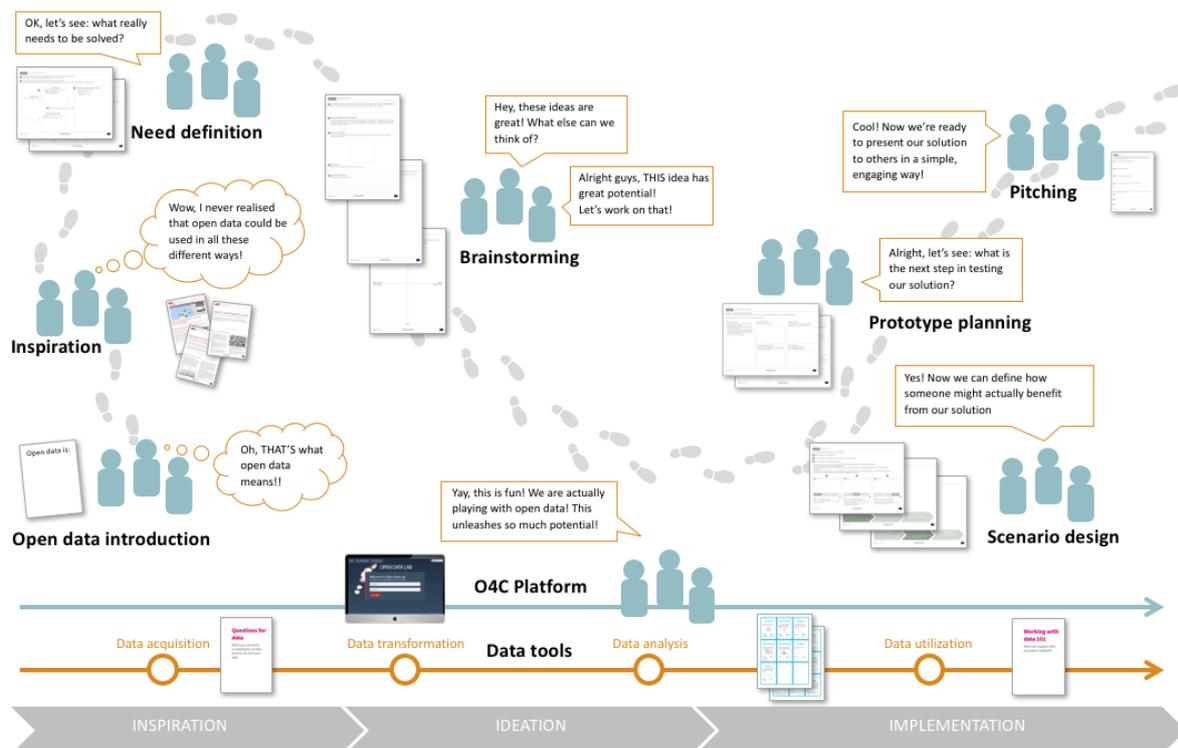


Figure 3: The citizen hackathons loosely followed the inspiration, ideation, implementation steps, while being supported by dedicated process facilitation tools and an online platform for accessing and working with data.

The implementation and testing phase (the post-hack phase) required facilitation in terms of:

1. keeping the eco-system motivated around the adoption of the solution and therefore following and monitoring the implementation through pre-testing
2. assuring the completion of data disclosure in cases where data have been made available exclusively for the hackathon event and require institutional or organizational change or decisions in order to be completed
3. assuring intense dissemination of the solution under development
4. designing the testing environment as a learning process across multiple scales, able to embed the solution in real urban life.

4.3 Social learning with data

One thread of the hackathon process is the learning of its participants, part of the process of empowering them to understand open data and hackathon processes, but also involving more diffuse learning that nevertheless contributes to their empowerment with respect to co-creating solutions to societal challenges. The learning process was observed and analysed across O4C pilot projects, leading to framing its key characteristics. Figure 4 illustrates various aspects of individual learning happening in this context. An individual may enhance his or her core expertise, gain or deepen a new or secondary expertise, or obtain an overview and understanding of how different expertise's relate to one another.



Figure 4: The knowledge profile of a citizen hackathon participant can be represented as an extended T-profile, which allows to indicate three types of knowledge gains that participants experienced independently of their prior expertise.

At the same time, individual learning processes mutually reinforce each other, as shown in Figure 5. An expert in one area teaches team members hands-on skills, while obtaining hands-on skills from them in other areas or deepening own expertise further. We refer to this process as “specialisation”. At the same time, team members obtain an overview of each other’s skills and abilities, develop a shared language and routines of working together, increasing their ability to operate as a team, and collaborate with others. We refer to this process as “collaborative learning alignment”.



Figure 5: Juxtaposition of participant profiles indicates the coexistence of two distinct types of collective learning, being collaborative learning alignment and specialisation, both of which are catalysed by joint prototyping activities.

Both specialisation and collaborative learning alignment complement each other in the process. At the same time being able to understand where learning takes place for both individuals and teams allows to better steer and facilitate this process.

4.4 Knowledge generation through making with data

The social learning process involves obtaining established knowledge and skills, but can also lead to the generation of new knowledge. This knowledge can take the form of know-how obtained by the participants. Such know-how may relate to all domains involved in the process. Know-how related to open data has been prominent in the O4C hackathons, but participants of hackathons also learned other skills by performing activities in the making process. Some of many examples include learning to make paper-prototypes, visualising ideas, creative communication or pitching. On numerous occasions, new ways of performing, for example, data scraping, or paper prototyping of data visualisations were invented in the process.

The other type of knowledge obtained and generated by participants were “insights”. Insights are not associated with particular skills, but are the understanding of how citizens see the world. For example, participants have gained insights into the budgets of the municipality, into the demographics of their neighbourhood or into the inner workings of certain data repositories. Working with open data from different courses allowed to obtain new kinds of insights, like spotting a correlation between number of parks in a neighbourhood and healthcare costs. On the other hand, lack of skills in data analysis and statistics also led some participants to making “flawed” insights, as one participant intentionally pinpointed “there is a correlation between health and whether there is a fast-food joint present in the area, does it mean we need more fast food joints to be healthy?” The resulting ability to go to the source data and make own interpretation of facts can be a valuable countermeasure to the loss of trust in media driven by phenomena such as “fake news” and populist demagogy. At the same time, the fact that data can be misinterpreted places urgency on open data lab to strive for excellence in data analysis support, so that, perhaps with good intentions, Open Data Lab wouldn’t become a source of misinformation.

Lastly, the hackathons also led participants to come up with many new ideas - initial speculations into how the problems of their city can be solved. Such ideas, grounded in facts, but not having yet evidence to support them can also be form as a form of knowledge, a result of an abductive reasoning process, which requires further verification and testing.

4.5 Community generation through making with data

Alongside collaborative learning alignment, team members develop routines of working together, as well as articulate and align on their core values in relationship to the challenge they're working on. Through this process personal relationships are also forged. Whereas people do present ideas to other teams, as well as they work in various teams throughout different events, larger communities come to being. People in the respective communities may be connected by shared values, goals, skills, or place of residence. The ambition of the O4C project has been to support formation and sustaining of these communities, while maintaining the focus on open data application throughout.

4.6 Diversity in solution outputs

The development of solution concepts and prototypes was the central thread of each hackathon process. Yet, also here there was much variety in how these solutions were interpreted and in the emphasis placed by the O4C pilots' teams and facilitators on the importance of technological solutions.

Apps and services were initially expected by the O4C consortium to be the main type of solutions generated in the O4C Hackathons, by analogy to regular hackathons. Indeed, multiple teams converged on an app and service concept and prototype as a result. At the same time, many other hackathons lead to a variety of other results, either complimentary to or in place of the apps and services, this included, for example an information service to calculate the economic costs of existing natural resources (e.g. the cost of each neighbourhood tree in Rotterdam), to learn about the history of a place (a stretch of coastline near Aalborg), or to understand the procedure for immigrants to get legal documentation (Milano) or visualisation interfaces to be installed on city bikes (Rotterdam)

Interestingly, the developed solution concepts and prototypes were not always experienced as an end. Instead, a means towards a more appreciated end. As was the case when prototype services made the need for new policies explicit. Moreover, the participatory prototyping enhanced the community network and was helpful in better framing the initiatives' ambitions.

4.6.1 Community tools (civic technology)

The solutions devised in the hackathons had often a very abstract format, resulting from citizens discovering new insights about how city operates and devising strategic ideas for reorganising the city. Some of these ideas were translated into service concepts. An example of such concept is a tool supporting citizen initiative leaders in making sustainable business plans for their initiatives. This idea followed an insight by a participating initiative leader in Rotterdam, that every initiative needs to be seen as a start-up, and that the municipality needs help in understanding how to sustainably fund such an initiative. As a result, the designed tool would help to measure and visualise gain that the initiative brings to the city by using open-data from the municipality. It would also use budgetary municipal data to find out-of-the-box funding opportunities.

4.7 Conclusions (systems of support and innovation)

These best practices from the O4C approach, described above, are supported by a set of tools and strategies, which are described in detail in other deliverables, including deliverable D2.5 Citizen Data Toolkit and D3.5 Hackathon report (final). See Annex A for a descriptive list of these essential, fit-for-purpose tools and strategies. The discussion above shows how intricately linked the systems of support and innovation are. Both systems form the basis of current efforts to consolidate OpenDataLabs in the five pilots and beyond, to further develop these OpenDataLabs and connect them into a Network of OpenDataLabs (NOODL.eu). The further discussion and conclusions are therefore addressed in the next chapter.

5 Discussion and Conclusions

Studying the process of an O4C Hackathon and experimenting with its multiple possible variations has revealed both the richness and complexity of “the system of innovation” that hackathons, and eventually OpenDataLabs are expected to support and catalyse. We have identified three key threads in this process: generation of a) communities, b) knowledge and c) solutions. We have also developed a thorough understanding of what phenomena take place within those threads. At the same time, the three threads are impossible to separate. They are tightly intertwined. While they are innately driven by the development of “hacked” together prototypes, these prototypes require innovative ideas, which need to be derived from insights enabled by open data, and require combined skills of different community members to perform. In addition, in order to be truly implementable and valuable for citizens, the “hacked”-together solutions cannot stand alone, without engaging with the other parts of the system that the O4C project has been instrumental in developing. The sustainability of solutions means that they are not always conceived of as technological prototypes, but can involve solutions to social aspects of challenges that do not purely rely on technology. The entwinement of the various aspects might also play out through other formats and processes than that of the ‘hackathon’; extended workshops, sprints and jams or other terms might draw on a similar repertoire of tools and strategies, incorporating the systems of record, insight and engagement.

From experiences in the O4C pilots as emerging OpenDataLabs, we see that a “system of support” should:

- support both individuals and organisations across a range of sectors and participant profiles;
- provide tool and strategies that allow for inclusiveness. Not only data-experts, but also active citizens should not be better supported than ‘regular people’ (open for all citizens);
- enable a new way of co-creating urban services including its tools and strategies;
- be adaptable to the specific local challenges and situatedness.

Finally, the process of co-creation, as well as all the activities based in an OpenDataLab, need to be supported by a **variety of participant profiles** and a proper **toolbox**, consisting of a citizens’ data toolkit and tools for citizens to analyse, visualise and work with data.

From experiences in the O4C pilots as emerging OpenDataLabs, we see that a “system of innovation” should:

- promote O4C hackathon campaign and raise community awareness;
- allow for collaboratively defining local challenges ;
- define the challenges for hackathon events, ensure participation (of people) and aggregate datasets that can be used as the raw material for the co-creation process.
- stimulate reflection on activities: mobilising, inspiring (understanding), ideating, implementing, acting (changing the city); from personal perspective
- stimulate reflection on: Infrastructure, knowledge practices, community (from personal perspective).

Hence, the OpenDataLab is much more than a technical support system. It is the community around that makes the innovation system meaningful.

We are continuing to learn from and further define the ‘system of innovation’, which has been experimented with in the Open4Citizen project. We see the best practices described above as the key lessons to support the improvement of this system at the local, OpenDataLab level. This

improvement must necessarily take a range of elements of the local context into account, tailoring the lab to the specific needs of citizens in the area. It must also engage specifically with the data, people and challenges, i.e., the locally-defined systems of record, engagement and insight.

These best practices are currently consolidated in the OpenDataLabs as a means to support citizen-centred service innovation with (open) data. OpenDataLabs are inclusive innovation hubs that connect differently skilled citizens, IT-experts, hackers, makers, public authorities and entrepreneurs. They support flexible data intermediaries that promote, enable and generate social value with open data. In other words, OpenDataLabs do contribute to meaningful use of data through methods, mind-sets, and approaches. Interestingly, the implementation plans of the OpenDataLabs have raised interest in other cities as well and spurred the generation of a European Network of OpenDataLabs (NOODL.EU), which will bridge local communities around local OpenDataLabs and enables the transition to sustainable practices beyond the Open4Citizens funded-project period (see Annex B).

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Annex A - Tools and Strategies

This annex reports a synthesis of the main tools and strategies developed during the O4C project. Such tools are described in D2.4 and D2.5

Inspiration cards describe relevant case studies that inspire citizens by showing concrete examples of how open data can be used, what social benefits this can create and who in particular might possibly gain from these benefits. They are a description of the 'gold in our hands', i.e. the social, data and expertise-related resources out in the world that are already used in existing services. On the front side, there is an illustration and a question that inspires the citizen to think about new possibilities. On the reverse side of the card there is a description of the case study with more detailed information.

Data Cards can be used by individuals or in hackathon events, to support people finding, visualising and interpreting data.

Basic data cards provide a quick overview of the basic types of data and the most common techniques that can be applied on datasets. They can be used as a reminder of alternative options, as well as a quick reference to navigate through a dataset.

The data techniques cards describe the most typical techniques to apply on a dataset, in order to extract further meaningful information out of the data. An example of a typical data technique is map visualization, which can easily be done when there are GPS coordinates in the dataset.

The "Questions for Data" booklet provides guidance for the users of the method to get them unstuck. The booklet is based on the insight that at first, it is daunting to open a new dataset without knowing its content. The booklet contains triggering questions that can hint towards a successful strategy when daring the first steps of processing a dataset.

The "Working with Data" booklet is a practical quick-start guide from opening a comma-separated value (CSV) file for doing more advanced data operations on it. The booklet covers various tips and tricks for the most typical data operations one may face in the beginning.

Visualisation tools are provided for citizens to learn how to collect, transform and explore data, while analysing and reaching new insights from iteratively manipulating them.

Facilitation tools:

The hackathon event needs to be accurately planned and diligently tailor-made to each context and topic. For this reason, a facilitation toolkit is available to hackathon organisers. The toolkit suggests a process for innovation and co-creation, but invites adjustments fit for specific contexts, events or audiences in which they will be used in order to be relevant and effective. The toolkit includes a hackathon tools map - a guide through the co-creation process - inspiration cards and templates for need definition, concept definition and scenario building.

Annex B - Global platform - a network of OpenDataLabs (NOODL)

The Open4Citizens pilots in Barcelona, Karlstad, Milan, Copenhagen and Rotterdam are meant to be the proof of concepts for the generation of a European Network of OpenDataLabs (NOODL.EU), which will bridge local communities around local OpenDataLabs. The network is meant to create a set of shared practices, that promote data as a common asset in community building that supports local initiatives.

The Network would be the *legacy* of the Open4Citizens project, as it would continue promoting the activation and reutilisation of open data. In order to support such initiatives

- A letter of intent, for organisations that did not participate to the COST action
- A COST Action application
- A website: Noodl.eu

The **letter of intent** was the first attempt to put all the initiatives on open data into a network, having the European Network of Living Labs as a model. The letter of intent has been proposed in January 2018 and promoted on several occasions, such as the CAPSSI meeting in Brussels (February 2018) and the DSI Fair 2018 in Rome (June 2018). At present the initiative has not collected a large number of committed participants, although a large number of institutions have expressed their interest for this initiative.

The **COST action** proposal is aggregating 28 institutions from 19 EU countries (7 ITC countries). If approved, this proposal will provide a good ground for networking knowledge about Open Data. In particular, the action will include three working groups:

- Data awareness and understanding the value of open data
- Designing with data and developing practices for open data re-use
- Open Data policies: strategies for infrastructuring a culture of open data

The COST application has been lodged on the 27 April and the results is still unknown

Finally, to ensure a digital instantiation of the network of OpenDataLabs - beyond the specific funding period of the Open4Citizens project, the **Noodl.EU Website** is made available and will include information material that will support both those who will sign the letter of intent and the members of the COST action. The NOODL.EU website will include information material, tools and extracts from relevant deliverables from the Open4Citizens project, including this report, the policy recommendation report (D4.8) and the Scenario report (D4.4)