"Linked Open Apps Ecosystem to open up innovation in smart cities"

Project Number: 297363

Deliverable:	**D6.1 Evaluation methodology of the project**
Version:	**1.3**
Delivery date:	**15/04/2013**
Dissemination level:	**PU**
Author:	**UOC**

Summary

This deliverable states the sociological methodology for developing the evaluation on the pilots, based on a social innovation approach

DOCUMENT HISTORY

Version	Date of issue	Status	Content and changes	Modified by
0.1	27/03/2013	Draft	Creation of the deliverable	UOC
0.2	10/04/2013	Draft	Modifications by peer reviewers	CTL, BCN, CDG
0.3	15/04/2013	Final	Final version of the deliverable	UOC

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Introduction

Comprehensive approach to the deliverable.

This deliverable contains the sociological evaluation methodology for the pilots created in Barcelona, Bologna, London and Genoa in the context of iCity project. This methodology is based on a social innovation approach, widely described in D2.3: “Comparative Analysis of the Co-creation Approaches”.

The two main criteria for the evaluation are both:

- How iCity project puts users in the centre of policy design.
- How, in doing so, iCity project establish a co-creation approach to social innovation.

In other words, to evaluate the change from planning-oriented policies —focusing on innovation inputs— towards more flexible, user-oriented policies —focusing on community knowledge-based developments. Therefore, innovation is understood as an interactive and open process. iCity project intends to develop this operational approach in order to allow user-driven open innovation ecosystems to co-create, deploy, operate and exploit internet-enabled public services or services of public interest in the public urban domain in smart cities.

Thanks to this assessment, it will be possible to extract conclusions and recommendations about several criteria such as relevance, adequacy, progress, efficiency, effectiveness, impact and evaluability, including feedback for the platform and apps development cycles.

The specific objectives of this deliverable are:

- To provide an explicit sociological evaluation methodology to assess pilots deployment.
- Using this methodology, to be able to evaluate the social impact of the project through the assessment of the achieved goals of service delivery and uses that the different stakeholders make of the platform.
- To evaluate the usefulness and outcomes of engaging user driven open innovation ecosystems.
- Together with the future D6.2: “Pilots technical evaluation report” and D6.6: “Pilots technical evaluation report - final”, to assess the global validity of the model.

There are three driving questions that define the structure of this deliverable:

- Do the user-driven open innovation ecosystems produce a meaningful and useful platform for those involved in the co-creation of services of public interest —that is, governments, citizens, developers, business, research centres, etc.?
- Does it create new forms of ICT-mediated governance?
- Do the platform and their new applications tackle efficiently the delivery of services of public interest and contribute to solve social problems in the city?

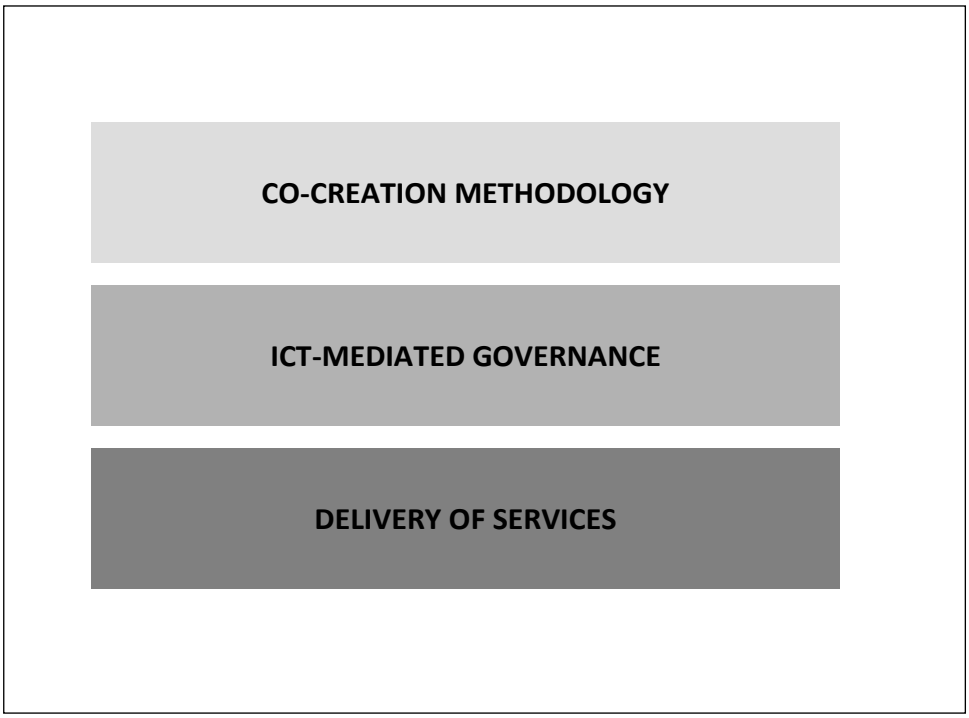
The first question focuses on the process of engagement of the several stakeholders which will get involved in the iCity project, the stage of co-creation of applications and the final results of these processes. All this, in order to assess the whole co-creation methodology described in D2.4: “iCity Methodology”.

The second question is about the generation of new forms of e-governance. From this dimension we will evaluate, on the one hand, the internal governance of the iCity project pilots and, on the other hand, how these innovations affect urban governance processes. In

particular, this will be done focusing on the improvements in the efficiency of the services delivered.

Finally, the third question deals with delivery of public services and services of public interest: this dimension focuses on the analysis of impacts and results of the project in achieving the delivery of new services. To do so, it will collect the opinion of end users, administrations and companies involved. In particular it will centre on analyzing the delivered services in order to assess the impact of the pilots in societal change.

Fig. 1: Main axes of the evaluation methodology



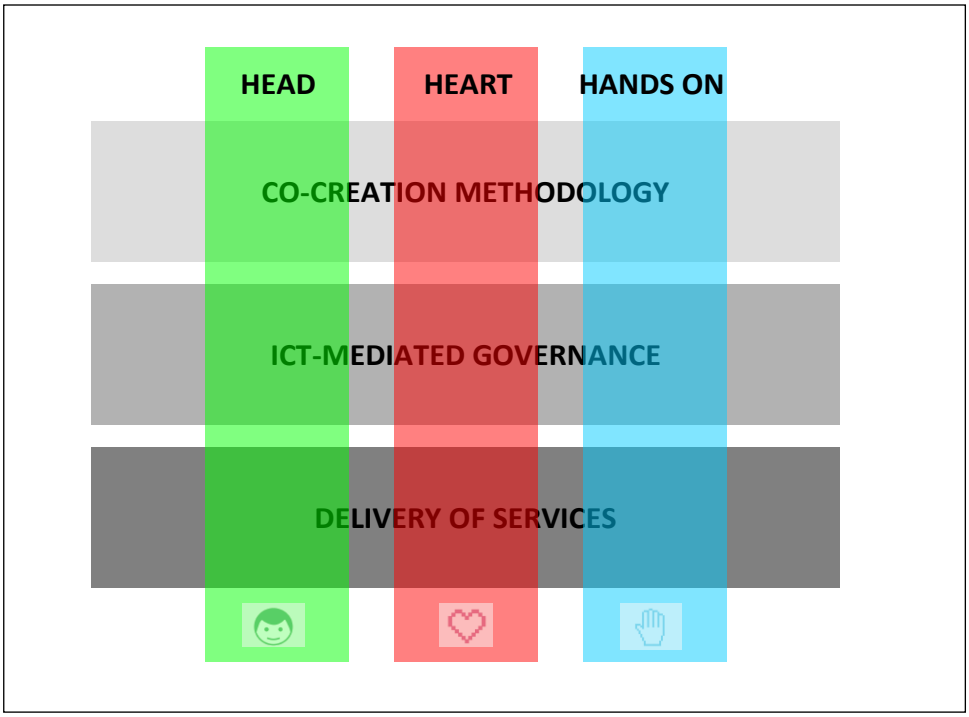
Source: own elaboration

These three axes are developed in three different chapters —which structure this deliverable— and generate three groups of evaluation indicators. At the same time, each axis cover most of the temporal stages in which the iCity project methodology is divided, so we work with a scheme in which two structures cross each other:

- Axes:
    - Co-creation methodology (engagement, process and results).
    - ICT-mediated governance (internal and external).
    - Delivery of public services or services of public interest.
- Time stages:
    - Head activity aims to identify/map the actors of cities innovation ecosystems and to provide protocols and tools to collect and understand which are their interests, needs and barriers in order to participate in the iCity project.
    - The Heart activities are those linked to the consolidation of relationships that are necessary to establish trust and commitment between public and private stakeholders. Its goal is to encourage stakeholders to overcome their barriers and to explore together common interest possibilities.

- Hands on deals with the submission of app proposals ideas, as well as developed apps. It provides different events to foster the development of apps in each territory following a coordinated strategy.

Fig. 2: Evaluative general scheme



Source: own elaboration

Thus, we will combine an analytical model by content areas with another one, interrelated, by consecutive stages.

Evaluation model proposal of iCity project.

There are multiple definitions of what is to evaluate. One of the definitions that better synthesises the main aims is Gómez Serra (2000: 87).

> Evaluation [...] is an applied and systematic social research form that intends to obtain significant information about planning, development and results of a determined service or program. Its aims are to assess the degree of adequacy to the initial forecast with the end to establish value assessments —based on the comparative analysis of what it has been produced and what was expected. These assessments have to facilitate the decision making on the evaluated program, having in mind their social utility, [that is,] their conclusions have to improve and optimise the service or program under evaluation.

This definition reflects the key characteristics that are present in any description of evaluation:

- Evaluation is a systematic and pre-established process integrated in the project's development.
- It pursues the obtaining of significant information that allows assessing the service or program.
- It is an instrument that allows logic and rational decision making.

- It allows improving and optimising and, at the same time, provides public information to guarantee the accountability and control of the evaluated project.

The iCity project aims to create a social innovation system to design and produce apps to satisfy services of public interest with the participation of diverse actors. Thus, the evaluation of the iCity project pilots needs both an external evaluation of the outputs but also of the internal functioning of its own co-creation methodology.

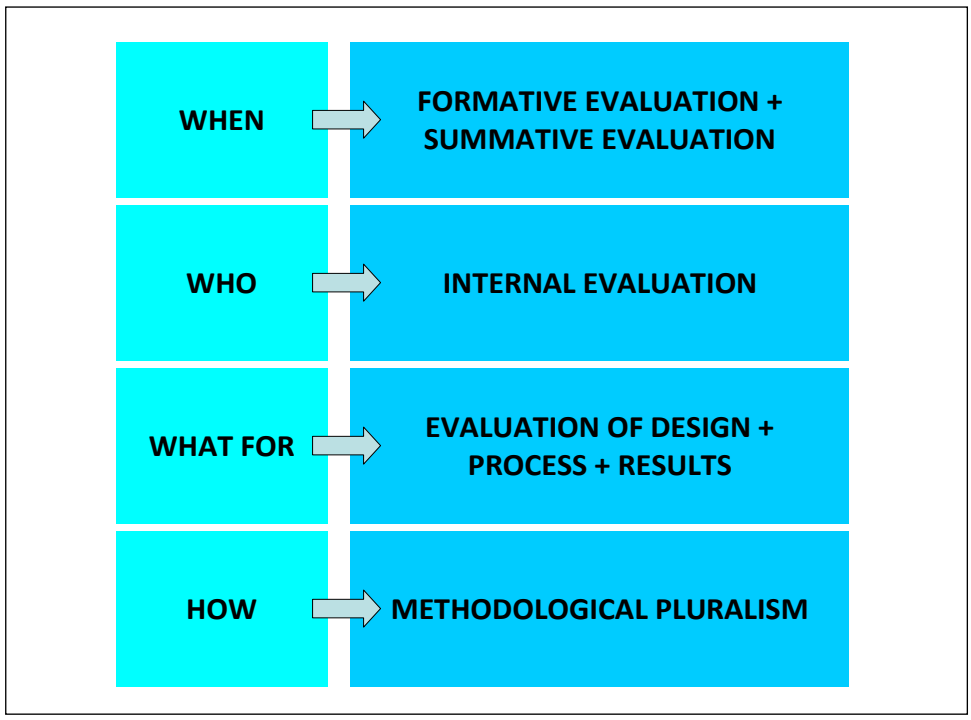
The pilots mix stakeholders is composed by governments, citizens, developers, business and research backgrounds. Each of them has different ways and strategies to generate and develop co-creation eco-systems. The complexity of this eco-system is reinforced when some of the actors are intermittent —i.e. they might appear and disappear during the co-creation process—, they can perform different roles during the process, and they might have limited information. All these characteristics might lead to the establishment of goals that are not consistent or clear. In relation to the activities' system, the profusion of programmed events, activities, meetings and actions makes the methodology of implementation of the projects complex.

Besides the evaluation of the content of the project, our evaluation model is designed in relation of four more criteria:

- Temporality (when): the evaluation will take place during the second and third year. This means that the evaluation is planned as both formative and summative:
    - It is formative because it analyses the process in a continuous way. It follows not only the last stage or results, but all the development stages of the pilots. It will contribute to the correct execution of the project. It will bring ideas, if necessary, to the improvement and feedback of the pilots and the social innovation methodology of iCity project.
    - It is summative because it will also analyse the results and impact. It will assess if the pilots have contributed to the expected results.
- Authorship (who): the team in charge of evaluating iCity belongs to the iCity project itself. This might lead a conflict of interests. However, FUOC guarantees that the evaluation will be carried objectively and with independence when assessing the project. It will we based on contrasted quantitative and qualitative indicators —see below.

  An internal evaluation has several advantages. It is the best option for facilitating a formative evaluation since it can minimizes stakeholder's negative reactions to evaluation and it can exercise a positive influence on the overall development of the project.
- Motives (what for): the evaluation will be designed to monitor the design, the process and the results, all of them proactively and reactively.
- Methodological design (how): having in mind the nature of the project, the design of engagement and co-creation phases and the typology of the final expected results, we think that the best way to get information is through what it is known as methodological pluralism, that includes different several techniques for data collection and analysis.

Fig. 3: Method of assessment



Source: own elaboration

1. Evaluating co-creation.

1.1. Introduction.

This section explains the methodology to evaluate co-creation process in iCity project pilots (WP5).

Co-creation as a tool for economic and social innovation is taking ground all over the world in the most groundbreaking institutions —from business, governments, developers, users, citizen communities. As it is generally a bottom-up collaborative process whose development has taken place in a multitude of contexts, with different goals and ends and due to its novelty, there are many ways on how co-creation has evolved and conceptualised. This has a direct impact on how co-creation must be evaluated. Therefore, before describing our own methodology to evaluate the project, it is necessary to define what we understand —as evaluators— for co-creation and what entails to assess it (section 1.2). Once set the general considerations, in section 1.3 we will contextualise co-creation within iCity project and, particularly, the co-creation methodology set in WP2 (see D2.4: "iCity Methodology"). In the final sections (1.4, 1.5 and 1.6) the evaluation team will describe the questions and indicators that will be used to evaluate the co-creation process.

1.2. Co-creation and evaluation: general considerations.

Effective co-creation processes of innovation, according to most studies and authors, entail the following key factors:

- Participation of users: users must have an active role, not merely passive or restricted to eventual consultation or test of pilots.
- Users are knowledgeable: users may have important and useful knowledge, relevant to the innovation process.
- Users should be empowered: any effective co-creation process must grant users the right, the capacity and the competence to deploy their views and incorporate them in the innovation process.
- Effective co-creation must create value: the touchstone of a successful co-creation process is the eventual creation of added value.

Therefore, co-creation processes should involve the following actions in relation to users:

- Dialogue with users.
- Mobilization of communities of users.
- Management of user diversity.
- Co-creation of personalized experiences with users.

From this perspective, there are four elements that it is necessary to take into account to evaluate positively any process of co-creation:

- Users —and other stakeholders— must be involved in all stages of the innovation process, not only in one of them —e.g. not only at the testing or implementation stage.
- Involvement has to mean active involvement, not only passive consultation. That means actual participation in decision making —basically on design.

- The set of actors involved in the innovation process has to be heterogeneous.
- Though different stakeholders may have different levels of expertise in different areas, no sharp distinctions must be made between expert / non-expert competence —in particular, technical issues should not be left only for technical experts.

1.3. Co-creation in iCity pilots.

In D2.4, co-creation is identified as the set of activities aimed at implementing, supporting and stimulating the deployment of services of public interest from the opening of infrastructures through iCity platform. That is, the methods used to stimulate the transfer and circulation of apps proposal and develop these apps in the different local ecosystems participating in the project —i.e. in the four cities. To achieve these goals, D2.4 sets a group of actions to fulfil a coordinated strategy in each ecosystem in accordance to their own local characteristics, and the working methodology to foster co-creation: the Quadruple Helix (4H). In contrast to more known Triple Helix models —which engage governments, business and research institutions—, the 4H incorporates a fourth agent, crucial for co-creation: users. This is central for determining that iCity project encourages co-creation as defined in the previous section: as cooperation between different agents to produce innovations. Therefore, our evaluation methodology can focus on assessing a cooperation model that creates a concrete innovation environment.

According to 4H, users category must be understood in a broad sense. In other words, it is not only the individual end consumer of a product or a service. Indeed, users' participation in the innovation process must be considered an important positive factor of co-creation. Thus, co-creation goes beyond the cooperation between private and public actors in traditional public-partnership models.

In the same way, there is not a single or unique 4H model. Its characteristics depends on what kind of innovation is pursued, who leads the innovation process, in which context the innovation is taking place, what goals are expected, what kind of users are involved and in what parts of the process are implicated. In particular, iCity project co-creation model has as its final aim the development of apps for a better provision of services of public interest cooperatively. In this sense, the assessment of the co-creation process needs to take into consideration:

- Co-creation must be carried in an effective collaboration platform.
- It must develop services that are relevant both for the public administration and for users —they provide solutions to identified and shared necessities.
- Implicated stakeholders must be representative of the local communities and innovation ecosystem.
- The process must be dynamic and open to the incorporation of new actors and new necessities.
- Working and developing groups' composition must be actually heterogeneous.
- Users must effectively participate in the innovation phases of conceptualization —ideas— and development.
- Public administration must support the effective implication of users.
- Information about the existing necessities of services of public interest provision and about the changes that are being produced in the users' profile of these services must be systematically collected.
- The created innovation ecosystem must be sustainable and its outputs, transferable.

- Developers and service providers must use the knowledge and experience of the rest of stakeholders in the design, development and use of innovations.
- Outputs generated must be relevant in terms of efficiency, effectiveness, innovation and / or social value.
- The result must satisfy the different actors implicated: knowledge and information must flow and the learning process must be shared.

With these considerations taken on board, the co-creation assessment will be carried through the three stages of co-creation in iCity project: engagement, process and results.

1.4. Engagement analysis.

The first aim is to know who is who in the local potential innovation ecosystem and how this ecosystem is constructed in iCity project. Therefore, it is important to map key actors and the different configurations of people and institutions that participate in the different activities in the three phases of co-creation (HEAD, HEART and HANDS ON). It is relevant to map actors and their relations not statically but dynamically and observe changes. To do so, indicators must answer to the following questions:

1.4.1. Mapping.

Who can participate?

Indicator C.E1	• **SELECTION CRITERIA** • This means not only collecting data from questionnaires but to interact with staff at four local administrations and their own evaluation of mapping tools.
Indicator C.E2	• **KNOWLEDGE OF PREVIOUS SMART CITY PROJECTS BY CITIZENSHIP** • This indicator will allow us to know about the previous level of knowledge of this kind of projects among surveyed individuals or associations.
Indicator C.E3	• **INVOLVEMENT IN ANY PREVIOUS SMART CITY PROJECT BY CITIZENSHIP** • Beyond knowledge, it is possible that some citizens are currently participating in projects or that they did it in the past. We need to know this previous background and, also, the thematic area covered by those projects: smart health, smart education, smart energy / environment, smart urbanism, smart administration / government or smart citizenship.
Indicator C.E4	• **PARTICIPATION IN PREVIOUS SMART CITY PROJECTS OR EXPERIENCE IN THEIR COORDINATION BY COMPANIES / GOVERNMENTS / ACADEMIC RESEARCHERS** • Experience in the field of smart city / ICT projects as participants or coordinators makes these stakeholders more desirable because they can report an added value. It will be also interesting to know in what thematic area these projects have been focused to encourage possible networks.

Indicator C.E5

- **MOTIVATION OF CITIZENSHIP ASSOCIATIONS / COMPANIES / GOVERNMENTS / ACADEMIC RESEARCHERS TO PARTICIPATE IN PREVIOUS SMART CITY PROJECTS RUN BY GOVERNMENTS / ACADEMIC RESEARCHERS** (8 possible combinations)
- Motivations to participate in smart city projects or to join future proposals can be very different according to organizing stakeholders and/or the type of involving stakeholders. Several reasons can be mentioned, such as looking for fundings, smart cities as a strategic work field, as an opportunity to apply existing researches to new fields, for its international impact, etc.

Indicator C.E6

- **MAIN BARRIERS FOUND BY CITIZENSHIP ASSOCIATIONS / COMPANIES / GOVERNMENTS / ACADEMIC RESEARCHERS TO PARTICIPATE IN PREVIOUS SMART CITY PROJECTS RUN BY GOVERNMENTS / ACADEMIC RESEARCHERS** (8 possible combinations)
- In order to be aware of possible barriers for these stakeholders to get involved in the projects, it is essential to know in advance which are the main ones that they already have faced. Some of them can be the complexity level of the smart cities research field, the lack of funding, to be out of scope for the research discipline or the difficulties to carry out interdisciplinary approaches.

These indicators will allow answering:

- Level of knowledge and previous implication of potential stakeholders in smart city activities.
- Map out declared motivations and interests for each group of potential participants.
- Obstacles to participation by each potential group of participants.

Who wants to participate?

Indicator C.E7

- **INTEREST OF CITIZENSHIP / COMPANIES / GOVERNMENTS / ACADEMIC RESEARCHERS IN BEING INVOLVED IN THE ICITY PROJECT BY RECEIVING INFORMATION / BY PARTICIPATING ON FUTURE ACTIVITIES** (8 possible combinations)
- Stakeholders can have different levels of interest for the iCity project and can desire different intensities for their involvement. Once detected and previous to the engagement stage, we need to know if they want to receive information —of co-creation and co-design, learning or information activities— and, more importantly, if they want to join in future activities.

This indicator will allow answering:

- Level of implication that participants want to achieve a priori.
- Who is interested in participating and who is not.

1.4.2. Stakeholder enrolment.

Who participates?

Indicator C.E8

- **NUMBER OF STAKEHOLDERS AND INDIVIDUALS MAPPED IN THE ECOSYSTEM**
- We have to track how many and what developers and organisations are mapped in the ecosystem. The goal is to create a database of potential participant stakeholders and individuals in the iCity project and, if they finally get involved, to be able to assess their continuity over time.

Indicator C.E9

- **TYPE OF STAKEHOLDERS AND INDIVIDUALS MAPPED IN THE ECOSYSTEM**
- We want to know whether these stakeholders are public or private, public-private partnerships, associations or individual citizens. Depending on the type of stakeholder, we will be able to customize certain actions in the future, facilitate interactions, transfers of information and networking contacts.

These indicators will allow answering:

- Characterisation of stakeholder typologies.
- Evolution of the process of recruitment from the signature of commitment letter.
- Future control between who commits and who is actually active in the Special Interest Groups.

Who drops out?

Indicator C.E10

- **REASONS FOR NON-INVOLVEMENT (IF ANY)**
- If a stakeholder decides not to get involved in the project, we need to know the reasons for this decision. This information will be useful to reformulate, if necessary, some engagements strategies and make them more effective.

This indicator will allow answering:

- Motives of the decision of not getting involved in the project and characterisation of those who are not getting involved.

Data collection (see annex 1)

- Questionnaires sent by iCity project in WP2 (see D2.4).
- Information collected in each engagement event —workshop feedback.
- Periodical contact with local staff in each city in charge of the engagement process.

→ FREQUENCY OF DATA COLLECTION: during the last month of each quarter —March, June, September and December.

1.5. Process analysis.

This analysis stage evaluates how Special Interests Groups will work and evolve in the design and development phases. In other words, how the innovation ecosystem has been constructed and evolves.

1.5.1. Final composition of the SIG.

Indicator C.P1

- **NUMBER OF STAKEHOLDERS INVOLVED IN THE ICITY PROJECT**
- With this indicator we will be able to analyse the extent of success of previous engagement stages, knowing how many of the initially mapped stakeholders have been finally involved in the project. Furthermore, we will need to track how many and what developers, individuals and organisations participate in each event. It is also an important indicator to evaluate the overall success of the iCity project in quantitative terms.

This indicator will allow answering:

- Characteristics of the actual stakeholders in the innovation ecosystem.
- Comparative analysis of the actual SIG with the potential innovation ecosystem mapped in early stages.
- How many people participate in the planned events, and if they are doing it occasionally or in a permanent basis.

1.5.2. Openness / permeability of the innovation ecosystem.

Indicator C.P2

- **ABILITY OF STAKEHOLDERS TO ENGAGE NEW ONES**
- It helps to evaluate the involvement of new stakeholders in the iCity project due to the necessity to create working teams to be able to generate the apps. The existence of communication and data exchange channels among developers and their previous social capital can facilitate the engagement of new stakeholders to the project.

This indicator will allow answering:

- What are the characteristics of these new actors.
- Through which channels of communication / interaction have been recruit.
- If the creation of development groups have been useful in recruiting new key actors.

1.5.3. Starting point of the process.

Indicator C.P3

• **DEMANDS FOR PUBLIC SERVICES / SERVICES OF PUBLIC INTEREST MADE BY CITIZENSHIP**
• Information about what kind of public services or services of public interest —such as refuse collection, educational centres, libraries, roads or water supply networks— citizens think that cities can implement in their communities. This information allows us to know which are underrepresented and, therefore, are more likely to be needed. Further action to engage stakeholders thatwork in these thematic areas can be designed.

Indicator C.P4

• **PUBLIC SERVICES / E-SERVICES / SERVICES OF PUBLIC INTEREST OFFERED BY COMPANIES / GOVERNMENTS** (6 possible combinations)
• This data and the potential transferability of these services to third parties will help us to evaluate the market conditions for the proposed apps.

These indicators will allow answering:

- What are the initial necessities detected by potential users.
- What expertise companies and administrations bring to the process.
- If the defined smart city areas are adjusted to the detected needs by SIG in accordance with what participants have declared in the questionnaires.

1.5.4. Expectations and initial goals.

Indicator C.P5

• **NUMBER OF PROPOSED APPS TO BE DEVELOPED**
• The number of presented apps indicates the potential productivity of each developer. These data can be crossed with the type of stakeholder to find out what type of groups are more productive and what are less, and redirect, if necessary, policies to attract new stakeholders for the benefit of the project.

Indicator C.P6	• **NATURE OF PUBLIC SERVICES OR SERVICES OF PUBLIC INTEREST PROVIDED THROUGH THE APPS** • Knowing the area covered by the service provided by each app is crucial to assess what areas are the most attractive for investors, what are the most covered, what have the greatest business investment for each type of stakeholder, etc.

These indicators will allow answering:

- What apps are proposed and in what fields.
- What services are providing and if they match initial expected needs.

1.5.5. Expected economic and social impacts.

Indicator C.P7	• **INITIAL ECONOMIC INVESTMENT** • Invested capital for the development of apps provides information on the magnitude of the initial planning of each project.
Indicator C.P8	• **EXPECTATION OF SOCIAL RETURN** • Since apps involved in the project must be of public interest, it is essential that they expect a social return. This social return can be evaluated from multiple parameters depending on the areas in which citizens obtain benefits. That is why it is necessary to collect not only quantified assessments, but discursive ones also.
Indicator C.P9	• **EXPECTATION OF ECONOMIC RETURN** • It refers to the economic viability of the projects, which is not necessarily linked to the social viability: a project can be socially viable but with high costs in economic terms, or viceversa. To find a balance between these kinds of viabilities is important for the project to succeed, because it is going to be difficult to implement a socially viable project if it is not economically profitable.

These indicators will allow answering:

- Expected investment for app development.
- Expected social output.
- Expected economic revenue.

1.5.6. Selection, nature and development of proposals.

Indicator C.P10

- **MATCH BETWEEN PROPOSALS AND PROJECTED APPS**
- This indicator will allow to see if there is correspondence between HANDS ON Call for Ideas, ideas emanating from surveys, the recognised necessities and the final developed apps.

Indicator C.P11

- **EVALUATION CRITERIA OF THE APPS PROJECTS AND MECHANISMS**
- This indicator will be useful to make a revision of the protocol of acceptance of apps development.

Indicator C.P12

- **CONSTITUTION AND COMPOSITION OF THE DEVELOPMENT GROUPS AND SCENARIO COMMISSIONS**
- It is necessary to know who is in each scenario commission to evaluate their composition using the same parameters as we will do with SIG.

These indicators will allow answering:

- Results of the second round of ideas and proposals.
- Success of the online call for apps, and the usefulness of the web for that purpose.
- The adequacy of potential apps with the needs pointed by citizens.
- The process of creation of a development group and how leadership is created.
- Heterogeneity of the groups.

Data collection (see annex 1)

- Questionnaires sent by iCity project in WP2 (see D2.4).
- Information collected in each engagement event —workshop feedback.
- Periodical contact with local staff in each city in charge of monitoring the co-creation process.

→ FREQUENCY OF DATA COLLECTION: during the last month of each quarter —March, June, September and December.

1.6. Results analysis.

In this chapter we provide the indicators to assess the results of the actions developed by the innovation ecosystem in terms of co-creation of apps of services of public interest. The indicators proposed are the following:

1.6.1. Ecosystem outputs.

Indicator C.R1

- **APPS DEPLOYED SUCCESSFULLY AND FEATURES**
- To know how many apps have been effectively deployed is one of the keys of the whole evaluation process. This is the main expression of success or failure of the iCity project. Its features are also important to know what thematic areas have been covered and how.

Indicator C.R2

- **APPS NOT DEPLOYED AND FEATURES**
- In the same way, having information about the amount of apps which failed in its deployment and its features is valuable for the project to be able, in the future, to solve the problems that have caused this failure.

Indicator C.R2a

- **RATE OF IMPLEMENTATION**
- The phase of the process in which stakeholders decide to abandon will provide information about what parts of the project have led to problems or have had information deficiencies. Identifying the moment in which the deployment fails within the overall development of the project is crucial to understand problematic stages in the methodology.

Indicator C.R2b

- **REASONS OF FAILURE**
- The reasons why there has been a failure in the deployment of the apps are necessary for the evaluation of the HANDS-ON stage. They indicate whether the responsibility lies mainly in the organization of the methodology of the iCity project or in external causes linked directly to stakeholders.

Indicator C.R3

- **APPLICABILITY IN OTHER LOCATIONS / CONTEXTS**
- The transferability of the deployed apps is another indicator of efficiency. Apps which can be applied to other cities or ICT contexts as problem solvers or demand satisfiers will increase the global value of the project.

These indicators will allow answering:

- How many of the expected apps have been developed.
- What thematic areas and which necessities have been covered and which not.
- What are the main causes of failed apps.
- What is the investment done (compared with the expected, indicator C.P7).
- What is the degree of transferability of the developed apps.

1.6.2. Co-creation tools.

Indicator C.R4

- **MEANING AND UTILITY OF THE PLATFORM**
- With qualitative information, we will evaluate if the new ecosystems have produced a meaningful and useful platform for those involved from the supply and demand side.

This indicator will allow answering:

- What are the usability and potential valuation that users do of the platform and SDK.

Data collection (see annex 1)

- Questionnaires for development groups.
- Periodical contact with local staff in each city in charge of monitoring the co-creation process.

→ FREQUENCY OF DATA COLLECTION: during the last month of each quarter —March, June, September and December.

2. Evaluating governance.

2.1. Introduction.

This section explains the methodology to evaluate the governance process in the iCity project pilots (WP5).

In the last decades, local administrations have changed the way they make decisions and implement policies. They have passed from being local govern*ments* to steer and implement local govern*ance*. Though what it means and how governance can be deployed is already well established, this section will start with a small conceptualisation of the term (section 2.2). In the following section (2.3), based on the previous conceptualisation of governance, implications for the evaluation of iCity project pilots are considered. Finally, in the last section (2.4), questions and indicators that will be used to evaluate the governance processes in iCity project will be described.

2.2. Governance evaluation, general considerations.

Governance can be defined as the public-private exercise of authority in the setting and management of the administrative, economic and political processes in the city. For governance processes we understand:

- To foster and make public the processes of decision making involving all implicated actors and taking into account their considerations.
- To empower cities with actions through an analysis of the present and future societal needs.
- To act with clear values attached to good governance such as participation, legality, transparency, responsibility, consensus, equity, effectiveness and efficiency.

Thus, in governance processes there are different agents acting and several factors interrelated:

- Mechanisms, processes and institutions that allow citizens and other groups to articulate their interests, to exercise their rights, abide with their duties and resolve their differences.
- The processes of openness of local government to non-public actors and accountability are bringing a bigger role of the private sector to the decision making and implementation of policies. Thus, local politics and policies are being transformed and transforming the role of citizen's participation.

Therefore, a governance process can be defined in relation to the following aspects:

- A horizontal and relatively stable articulation between interdependent actors, yet they are operationally autonomous.
- Different forms of interaction, negotiation, deliberation and power struggles.
- All of that set in a relative institutionalised framework of rules, regulations, knowledge and social imaginaries, which are contingently articulated.
- Self-regulated within established limits.

- Contributing to the production of a public character aim within a broad set of visions, ideas, plans and regulations.

2.3. How to evaluate iCity project pilots governance.

With these concerns taken into account, the iCity pilots governance must be evaluated through all the planned phases of the project —HEAD, HEART and HANDS ON— and on results. Therefore, we understand governance as transversal process that affects not only the initial moment of searching stakeholders but also the design of services or products and the development and evaluation of them. Thus, in many respects, the governance evaluation will overlap with the co-creation and results assessments, using in some cases the same indicators. However, the focus of the evaluation will be different, therefore, complementing rather than repeating analyses and conclusions.

First, we will analyse the configuration of the relational framework between all informal and formal actors in the process of co-creation. In this regard, the fundamental point is to create responsive, flexible and effective protocols. They must allow each potential stakeholder to participate and bring as much value added as possible. Also, the governance protocols must give maximum information about services, data and infrastructure that will be open to participants.

This open participation framework requires clear rules on the rights to use information, assets and public infrastructures and the limitations in the use of information and on the duties that are derived from them —e.g. data protection, apps validation, etc. In the same way, it is necessary to establish what are the exploitation rights of services created and of the knowledge generated as output of the co-creation, and their legal, technological, economic and temporal limits.

In this sense, governance is a process of decision making in relation to the own process of co-creating. In other words, on how are articulated the relations between different stakeholders, the election and development of apps, and which characteristics of them are activated. Therefore, the governance analysis must focus in formal and informal actors involved in the processes of decision making, their implementation and in the formal and informal structures that are produced to implement these decisions on products and services. Once this framework is set, it is necessary to establish criteria and indicators to monitor and assess the governance process and results.

2.4. Governance process analysis.

To evaluate the governance process we consider four criteria: transparency, adaptability, inclusivity / equity and deliberation.

2.4.1. Transparency.

Indicator G.1

- **STAKEHOLDER AGGLUTINATIVE CAPACITY**
- This indicator intends to answer how the access to participation is articulated and how information flows.

Indicator G.2

- **AWARENESS OF THE OPENING OF THE CO-CREATION PROCESS AND THEIR GOALS**
- The aim is to know how aware are citizens and stakeholders of the opening and development of the HEART stage of the iCity methodology.

Indicator G.3

- **AWARENESS OF THE RESULTS OF CO-CREATION PROCESS**
- It measures the degree of knowledge of the apps resulting from co-creation process.

These indicators will allow answering:

- How stakeholders have been effectively engaged in the process through their knowledge of the available information.
- Their awareness of the running of the HEART stage of the iCity project methodology.

2.4.2. Adaptability.

Indicator G.4

- **CONFLICT TYPOLOGY AND RESOLUTION**
- Designed to know the conflicts generated in the different phases of the project —e.g. conditions of participation, decision making, appropriation of results. The iCity project evaluation methodology is interested in both how these conflicts emerge and what are the mechanisms of resolution.

This indicator will allow answering:

- How the iCity project manages internal conflicts and other aspects that interfere in the co-creation governance.

2.4.3. Inclusivity and equity.

Indicator G.5

- **AREAS OF EXPERTISE**
- This indicator will be useful to asses the diversity of the thematic areas of co-creation of services and their matching with the concerns of the participants.

Indicator G.6

- **GENERATION OF LEADERSHIP(S) DURING CO-CREATION PROCESS**
- To monitor who is taking the leadership in different stages is key to understand the project governance. We need to evaluate why some actors have a predominant role over others during design and development of apps and its consequences.

Indicator G.7

- **SUITABILITY OF THE DISTRIBUTION OF RESPONSABILITIES**
- It measures how responsabilities are distributed among stakeholders during the process and how they affect the optimal achievement of results.

These indicators will allow answering:

- How heterogeneous participants are, and how many different interest groups are represented.
- Power relations among different stakeholders and possible emerging conflicts.

2.4.4. Deliberation.

Indicator G.8

- **SUITABILITY OF PHYSICAL DISCUSSION SPACES**
- The planned group activities to be held in the cities venues will take place in physical spaces. One of the aspects on which iCity project internal governance has to pay attention is the features of these spaces, to be able to assess if they are prepared to encourage deliberation processes, if they create hierarchies which potentially favor or limit dialogue, etc.

Indicator G.9

- **DEGREE OF CONSENSUS**
- This indicator will give information about relational forms between the different actors to reach consensus in decision making.

These indicators will allow answering:

- How deliberation spaces encourage or inhibit decision making and consensus.
- How deliberation and consensus are reached.

Data collection (see annex 2)

- Questionnaires sent by iCity project in WP2 (see D2.4).
- Information collected in each engagement event —workshop feedback.
- Periodical contact with local staff in charge of the whole co-creation process in each city.

→ FREQUENCY OF DATA COLLECTION: during the last month of each quarter —March, June, September and December.

3. Evaluating delivery of services.

3.1. Introduction.

The last axis to be evaluated will be the delivery of services of public interest through the launching of the co-created apps.

If the previous sections —co-creation and governance evaluations— have focused on the internal functioning of the pilots, in this section the centre of interest will be:

- The social and economic impact of the pilots related to the provision of services of public interest in the four cities participating in the project.
- The potential organizational changes in urban governance that might be consequence of the pilots.

Therefore, the indicators detailed in this section will allow reaching two of the goals set at the beginning of the document: to be able to evaluate the impact of the project through the assessment of the achieved goals of service delivery, and to assess the global validity of the model.

In sum, the evaluation of the platform and apps' potentiality to tackle efficiently the delivery of services of public interest will lead us to foresee a first glance of the medium and long term effects in using these services. Indeed, giving that some of the evaluation cannot be properly assessed until pilots have been working for a substantial amount of time, their impact is impossible to be measured accurately within the time-span of the project. It is likely that some of the apps created during the co-creation process will not be operational within this time frame. Or, on the other hand, most of the apps that will be launched before the end of the project will be accessible towards the finalisation of the pilots phase. In this respect, the real success or failure of the pilots will be the sustainability and expansion of both the iCity project platform and continuous processes of co-creation of apps beyond the end of the project. Thus, the evaluation of the processes under the epigraph of delivery will be tackle partially given the restrictions expressed above.

In this context, we will differentiate between two sets of indicators:

- Those focused on the socio-economic and organizational impact of the project that are related —but go beyond— the previous co-creation and governance assessments. Here, rather than evaluate the evolution of the project, we will analyse results. In this regard, data for these indicators will be collected at the very end of the project in order to have the wider temporal perspective over the generated effects.
- Those that are also part of the indicators set in the DoW to track and measure in order to follow the progress of the project and the achievement of the targeted goals —follow-up indicators. In contrast with the previous ones, these indicators allow to follow the evolution of the project through time.

3.2. Co-creation and governance ex post results indicators.

3.2.1. About the developed apps.

Indicator D.R1

- **LEVEL OF SUCCESS OF PLATFORM AND APPS IN DELIVERING SERVICES**
- The opinion of end users, administrations and companies involved will be collected, analysing quality, readiness, extension, utility, performance, frequency and simplicity of the delivered services to assess the impact in societal change.

Indicator D.R2

- **FULFILMENT OF SOCIAL RETURN GOALS**
- One of the indicators in previous stages was the expectation of social return to citizenship —indicator C.P8. Now we will evaluate the performance of the expectation, knowing whether it was lower, higher or the same as the finally reached.

Indicator D.R3

- **FULFILMENT OF ECONOMIC RETURN GOALS**
- The performance of economic return has the same logic as the social one. Comparison between initial expectations —indicator C.P9— and final fulfilments will give information in terms of work efficiency.

These indicators will allow answering:

- If economic profitability has been achieved.
- If social results have been achieved.

3.2.2. About the governance of the project.

Indicator D.R4

- **FULFILMENT OF STRATEGIC PLANS OF THE DEVELOPMENT GROUPS**
- To evaluate the different strategic plans of each development group: degree of fulfilment, level of participation, real and expected calendar of implementation, interaction, etc.

Indicator D.R5

- **PARTICIPANTS' SATISFACTION**
- Degree of global satisfaction of participants in relation to each phase of the pilots and to the final results. Reasons and consequences of this level of satisfaction.

Indicator D.R6

- **LEGITIMATION OF RESULTS**
- To assess the degree in which the delivery of apps has been legitimised by most of the participants taking part in the events.

Indicator D.R7

- **EMERGENCE OF NEW CO-CREATION ENVIRONMENTS**
- We need to evaluate how many new co-creation environments have emerged thanks to the developers' involvement, the features of these new environments and its potential going forward. It will give answers to questions such as what is its expected duration, how many new private agents have been involved in public policies, what new synergies have been consolidated, what internal organizational changes in administrations have been introduced, etc.

These indicators will allow answering:

- The valuation of each implicated group —users, administration, business, developers and research centres— on innovation, quality, utility and service.
- The level of satisfaction of participants in the co-creation process.
- The global functioning of the project's internal governance, stressing building-consensus process by stakeholders. Can we talk of social innovation in its own right?
- Contrasting perceptions of satisfaction with material tangible results.
- If pilots have created an actual innovation ecosystem sustained in co-creation.
- If this ecosystem fills the criteria of openness, durability, interaction, heterogeneity, effective participation, etc.
- How innovations arisen from the iCity project affect urban governance processes in the four participant cities.

3.2.3. Conclusion process.

As a synthesis and revision of the evaluation results, the assessment will end with a SWOT analysis —strengths, weaknesses, opportunities and threats—, a qualitative approach to summarize contributions in the project. Thus, the final indicator will be:

Indicator D.R8

- **POSITIVE AND NEGATIVE INTERNAL AND EXTERNAL FACTORS TO ACHIEVE GOALS**
- Strengths: internal characteristics of the project that give an advantage to it over others.
- Weaknesses: internal features that place the project at a disadvantage in relation to others.
- Opportunities: external elements that the project could exploit to its advantage.
- Threats: external elements in the environment that could cause troubles to the project.

This indicator will allow answering:

- The creation of a community able to create and share.
- The creation of a platform to facilitate participation and place to personalise experiences.
- The achievement of a permanent and qualitative interaction between stakeholders.
- The openness towards new actors and initiatives —iteration and openness.
- The generation of an added value to all participants: to get the most of collective intelligence.
- The identification of problems and resolution as shared experience.

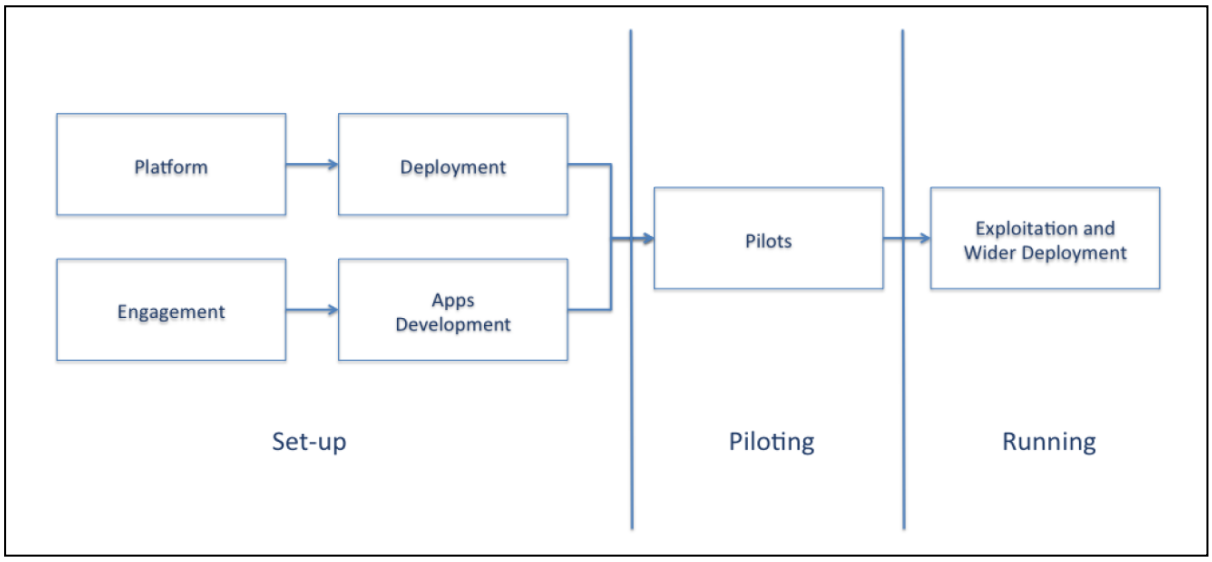
Data collection (see annex 3)

- Questionnaires sent by iCity project in WP2 (see D2.4).
- Information collected in each engagement event —workshop feedback.
- Periodical contact with local staff in each city in charge of the engagement process.
- Final questionnaire.
- SWOT analysis.

→ FREQUENCY OF DATA COLLECTION: mainly during the third year of the project.

3.3. Follow-up indicators.

As described in the work plan of DoW, "iCity project is organized along a number of phases clustered in 3 stages: set-up, piloting and running" (p. 110).



In each of these stages are set some indicators to track and measure in order to follow the progress of the project and the achievement of the targeted goals. The five indicators of the piloting and running phases are useful to complement the evaluation of delivery:

Indicator No.	Relating to which project objective / project phases	Indicator	Method of measurement	Expected Progress[29]		
				M12	M24	M36
8	Obj-5: Pilots running Phase: Pilots	Downloads from iCity Apps store	Enumeration of Downloads by using logs	n.a	7.500	40.000
9	Obj-5: Pilots running Phase: Pilots	Applications utilized by users	Enumeration of evidence of use by using platform logs	n.a	50	200
10	Obj-5: Pilots running Phase: Pilots	Users involved in testing and use of applications	Number of users (from logs of the platform)	n.a.	15.000	43.000
11	Obj-6: Validation Phase: Running	Social Media visibility	Enumeration of users awareness (by logs)	100	1.000	10.000
12	Obj-6: Validation Phase: Running	Additional interested Cities	Enumeration of additional municipalities	4	7	10

3.4. Final recommendation.

It is recommendable that the four cities make a continuous evaluation of the most relevant indicators set in this deliverable as means of monitoring. This control has the goal to measure the accumulative effect through time of the social innovation policies emerged in the pilots. The range of quantitative and qualitative techniques that can be followed is broad. We strongly suggest the use of the following three methodological tools:

- Citizens' satisfaction surveys on the delivered services.
- SWOT analysis that mix participants typologies —those described in the 4H framework.
- Panels, with observations and measures of the main indicators over multiple time periods for the same companies, business, research centres, administrations or individual citizens.

Annexes.

There are three main sources of information for the different indicators gathered in this deliverable:

- The four questionnaires to stakeholders —to government, companies, research and citizens— mentioned in the D2.4. In this section we refer to them as Q1 —government—, Q2 —companies—, Q3 —research— and Q4 —citizens.
- A specific questionnaire —to be designed— for participants in development groups —QDG, Questionnaire for Development Groups.
- Information requested to the local project staff of each city on feedback about activities —iteration meetings, calls for ideas, calls for apps, apps developed, etc.

Besides those, individual interviews to a selection of participants in the different development groups could also be scheduled.

What follows is a list of all indicators with the relevant source of information.

Annex 1.

Engagement.

- C.E1. Source: local project staff of each city. Information about selection criteria for sampling questionnaire addresses.
- C.E2. Source: Q4.
- C.E3. Source: Q4.
- C.E4. Source: Q1, Q2, Q3.
- C.E5. Source: Q1, Q2, Q3, Q4.
- C.E6. Source: Q1, Q2, Q3, Q4.
- C.E7. Source: Q1, Q2, Q3, Q4.
- C.E8. Source: SIG in collaboration with local project staff of each city.
- C.E9. Source: SIG in collaboration with local project staff of each city, iCity forums.
- C.E10. Source: SIG in collaboration with local project staff of each city.

Process.

- C.P1. Source: local project staff of each city, developers questionnaires.
- C.P2. Source: local project staff of each city.

- C.P3. Source: Q4.
- C.P4. Source: Q1, Q2.
- C.P5. Source: local project staff of each city.
- C.P6. Source: local project staff of each city.
- C.P7. Source: local project staff of each city. Information about specific apps.
- C.P8. Source: local project staff of each city. Information about specific apps.
- C.P9. Source: local project staff of each city. Information about specific apps.
- C.P10. Source: local project staff of each city. Information about:
    - iCity Day (Hands on call for ideas).
    - Calls for ideas.
    - Calls for apps.
    - On-line call for apps.
- C.P11. Source: local project staff of each city. Information about evaluation criteria.
- C.P12. Source: local project staff of each city. Information about development groups and Scenario-Commissions composition.

Results.

- C.R1. Source: local project staff of each city.
- C.R2. Source: local project staff of each city.
    - C.R2a. Source: local project staff of each city.
    - C.R2b. Source: local project staff of each city.
- C.R3. Source: local project staff of each city.
- C.R4. Source: QDG.

Annex 2.

Governance.

- G.1. Source: local project staff of each city.
- G.2. Source: Q1, Q2, Q3, Q4, local project staff of each city.
- G.3. Source: QDG.

- G.4. Source: local project staff of each city.
- G.5. Source: Q1, Q2, Q3, Q4, local project staff of each city.
- G.6. Source: local project staff of each city, QDG.
- G.7. Source: local project staff of each city, QDG.
- G.8. Source: QDG.
- G.9. Source: local project staff of each city, QDG.

Annex 3.

Co-creation and governance ex post results indicators.

- D.R1. Source: local project staff of each city, QDG.
- D.R2. Source: QDG.
- D.R3. Source: QDG.
- D.R4. Source: local project staff of each city, QDG.
- D.R5. Source: QDG.
- D.R6. Source: local project staff of each city, QDG.
- D.R7. Source: local project staff of each city, QDG.
- D.R8. SWOT analysis.

Follow-up indicators.

- All of them: DoW.