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

Project Number: 297363

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Authors:	Míriam Alvarado, Marc Garriga (IMI)

Summary

The delivery of the iCity Urban Platform is a crucial milestone for the iCity Project and marks the point where several parallel pilots will be run by each of the four involved major cities. The iCity Platform is deployed with the purpose that each city will develop pilots for various applications which focus on improving efficiencies and communities in transportation and mobility, social care and ageing, environment, citizen's participation enhancing the inclusion of persons with disabilities and other relevant fields.

This document is to report the status of the pilot's deployment as well as setting out the iCity milestones, and measurement indicators, with the aim of monitoring and controlling progress at different stages in the project life.

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Document contributors

Partner	Contributor
GLA	Nick Bromley and John Rands

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ABBREVIATIONS AND ACRONYMS

Acronym	Description
App	Application
PU	Public
DoW	Document of Work
SMEs	Small and Medium Enterprises
API	Application Programming Interface

1   Introduction[1]

The iCity Project will develop and deploy an Urban Platform and operational processes to enable user-driven open innovation ecosystems in which to co-create, deploy, operate and exploit Internet enabled public services or services of public interest in smart cities.

This project is organized as a joint effort carried out by a cross-border alliance of 'Smart Cities' (Barcelona, London, Genoa and Bologna) with the involvement of third parties (companies, SMEs and third sector) contributing to create a rewarding environment within the iCity Project.

With the delivery of the iCity Urban Platform, a milestone is reached where the iCity Project can commence with a series of pilots in parallel to run by each of the four involved major cities. The city project pilots will be based on the iCity platform currently under construction and will integrate existing open shared technology platform. The shared Urban iCity Platform will provide an integrated vision of a city and its infrastructures and all integrated components, building the basis of digital information and communication to foster a user-driven open innovation ecosystem.

The integration of municipal Open infrastructures in the iCity Platform originates the possibility to interact with these infrastructures allowing the development of applications and services by these third parties. The general concept of the pilot is to develop applications and services by third parties using open municipal infrastructures integrated in the iCity Platform.

The iCity Platform is deployed with the purpose that each city will develop pilots in different sectors. These set of key thematic areas are well aligned with the Digital Agenda for Europe flagship initiative: improving transportation efficiency and mobility, social care and ageing, environment, citizen's participation, enhancing the inclusion of persons with disabilities and other relevant fields.

Areas of interest	Mobility, transport	Environment	Social Services	Health	Gaming	Culture	Crime
Barcelona	X	X	X				
London	X	X		X		X	
Genoa		X	X			X	X
Bologna	X		X				

Table 1: Areas of interest in each city

The approach will be to identify ways of exploiting synergies and best practices by the specification, integration and piloting of a common Urban Platform and service delivery across all four of the cities.

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[1] Part of this section has been extracted from the DoW

2   Purpose of this document

The iCity Project is split into a number of phases, this helps the management and deployment of resources and capabilities so the iCity platform is gradually developed and introduced to the local software development community and user public.

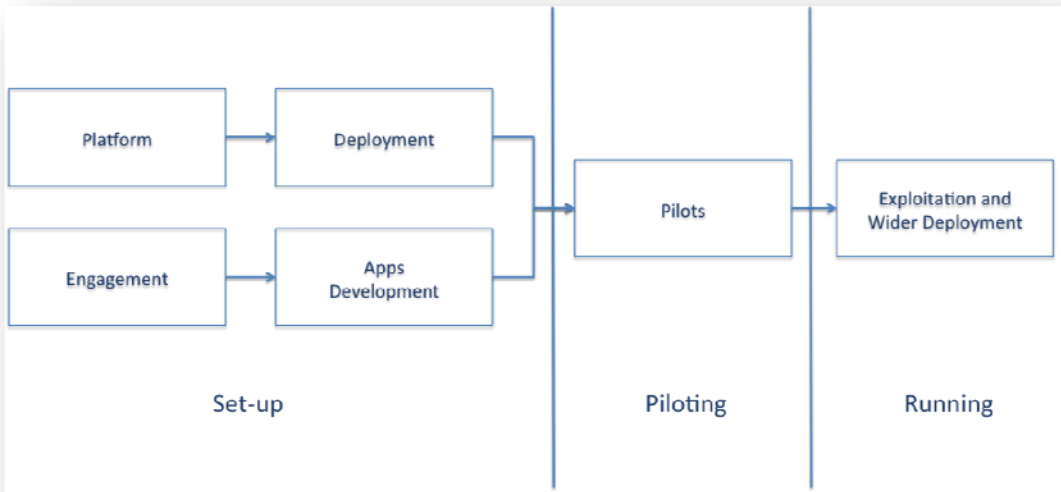Evolution of the iCity Project phases is outlined as follows:

Figure 1: Phases of the iCity Project[2]

Please, note that Set-up phase is a critical dependency that must be completed ahead of the second phase Piloting. The platform development and deployment as well as the software developer engagement and consequently Apps development are requirements to carry out a successful Piloting phase. The purpose of Piloting is to deploy the first pilots under the iCity Project as well as to collect information about their performance.

Advances carried out during this phase will be explained in this document with the purpose to analyse the current situation at month 18 of the iCity Project in terms of pilot's development.

Please note the Piloting phase implies a process that is in progress and gradually maturing. There are expected the delivery of three additional versions of this document in the future, with the same structure which will detail the work tasks until the concluding phase.

Pilot's Development Report is structured in two parts. The first part will explain the status of the pilot deployment; it will include the technical evolution of the iCity Platform as well as an outline of the open municipal infrastructures integrated to the iCity platform by each city up to that point. The second part is focused on analysing and evaluating the iCity indicators. These indicators, that are related with the phases of the iCity Project and associated objectives, will be tracked and measured in order to follow the progress of overall project and the individual city pilot projects, and their achievement against the targets and goals -a set of specific and quantified indicators aimed at monitoring progress at different stages in the project life.

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[2] Figure extracted from the DoW

3 Template of this document

The iCity Project integrates the different municipal infrastructures of the European cities - Barcelona, Bologna, Genoa and London.

The purpose of this section is to give you an idea about the structure of this document, detailing the number of parts and the content of each one of them. Consequently, we are going to provide a template for the elaboration of this document and future versions, which will be structured in the same way.

Pilot's Development Report is composed by three sections. The first section called iCity Platform (3.1) pretends to illustrate the status of the iCity Platform explaining its technical situation. The second section called Pilot Project Deployment (3.2) is divided on three different parts, all of them related to infrastructural issues:

- 3.2.1 Open municipal infrastructures to be integrated: It describes the status of each open municipal infrastructure regarding to integration within iCity Platform.

- 3.2.2 Report of requests for approval of applications and services. List and detail.

- 3.2.3 Report of applications and services released. List and detail.

Finally, the third section called iCity Indicators (3.3) is focused on providing relevant numbers in terms of iCity indicators. A table will include the progress in numbers. Furthermore, it includes a report of evolution of applications in each open municipal infrastructure.

3.1 iCity Platform

Status	*[Up / Running…]*
Functionalities	*[Brief description about available functionalities]*
Open Municipal Infrastructures connected	*[Names]*
API iCity	*[Information about API iCity]*
API Open Data	*[Information about API Open Data]*
SDK	*[Information about SDK]*
Additional information	*[Extra information regarding to the iCity portal]*

3.2 Pilot Project Deployment

3.2.1 Open municipal infrastructures to be integrated

Infrastructure	*[Name]*
City	*[City]*
Description	*[Brief description about infrastructure]*
State	*[Integrated/Not integrated/Ready/Working…]*
API	*[Information about API]*
Additional information	*[Information about functionalities polices and rules….]*
Availability	*[Information about maintenance days, or when the infrastructure is out of service…]*
Work plan	*[Schedule regarding to integration within iCity Platform]*

3.2.2 Report of requests for approval of applications and services

Report listing the applications and services proposed by developers which are pending to approve by each city.

Name	*[Name application proposal]*
Developer	*[Developer's name or company]*
Description	*[Brief description about app proposal]*
Location	*[Infrastructures involved/Cities involved]*
Schedule	*[When it was received, when it will be accepted…]*

Please, note that the process to validate and approve an App proposal is still to be defined.

Reference: D5.2 MoU: Rules and Conditions

3.2.3 Report of applications and services released

Report about applications and services developed by third parties currently operating.

Name	*[Name application]*
Developer	*[Developer's name or company]*
Description	*[Brief description about app]*
Location	*[Infrastructures involved/Cities involved]*
Date	*[Running since XX/XX/XXXX]*
Downloads	*[Number of downloads]*
Accounting	*[Number of accesses to an infrastructure by means of this app obtained thanks to iCity Platform accounting]*

3.3   iCity Indicators[3]

The supervision of iCity Project includes a set of specific and quantified indicators aimed at monitoring progress at different stages in the project life. The data collected in the pilots will be analysed with emphasis to detect strengths and weakness so it is essential to quantify the impact in numbers. This feedback amongst the different pilots will allow improving possible partial deficiencies of some of them and maximizing the global results of the project.

The indicators specified in table 2, which are related with the phases and associated objectives, must be monitored and measured in order to follow the progress of the project and the achievement of the targeted goals:

Ind.	Relating to which project objective /project phases	Indicator	Method of measurement	Expected Progress[4]		
				M12	M24	M36
1	Obj-1: Urban City Platform Phase: Setup	Adoption of Open Infrastructures & Data charter	Enumeration of Platform integration elements	5	15	30
2	Obj-2 Platform Deployment Phase: Setup	Deployment of the platform in the involved cities	Enumeration of deployed platforms	n.a.	4	4
3	Obj-3 Engagement of SMEs Phase: Setup	Open innovation stakeholders identified and contacted	Enumeration of organizations (by reports)	50	100	200
4	Obj-3 Engagement of SMEs Phase: Setup	Youth Engagement in development of apps	Enumeration of students and young developers (by reports)	n.a.	25	50
5	Obj-4: Cocreation of apps Phase: Setup	Applications released	Enumeration of applications	n.a.	75	300
6	Obj-4 Cocreation of apps Phase: Setup	Requests for approval of apps	Enumeration of organizations (by reports)	n.a.	85	330
7	Obj-4 Cocreation of apps Phase: Setup	Open innovation Stakeholders identified developing applications	Enumeration of organizations (by reports)	30	75	150
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

[3] Part of this section has been extracted from the DoW

[4] Cumulative Data

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

Table 2 The iCity Project Indicators

The previous table details all the relevant indicators proposed by the DoW in order to give the proper focus to progress of the iCity Project. Please, note the expected numbers are not city specific numbers, they are global numbers for the entire project, computing all the cities involved in the iCity Project. You can observe in the DoW that the iCity indicators are not divided and specified by each city.

Regarding to the deliverable at hand D5.3, it does not contain and detail all of indicators proposed by the Dow. So, it has been highlighted in table 2 the indicators which will be reported in this document because they correspond to the matter at hand, pilot's development.

The success of the iCity Project depends on the development of a rich set of applications and services by third party developers. The purpose is to allow citizens to access open municipal infrastructures through iCity Platform using downloaded App services previously developed by third party developers. Citizens will be able to interact with the city and the iCity environment.

The main evaluation criteria will be the number of API's, the number of Apps developed and the numbers of users.

The report will therefore include the following indicators such as they are defined by the DoW:

- ✓ Indicator 1: It is focused on quantifying the Platform integration elements.

- ✓ Indicator 5: It is focused on quantifying the number of applications released.

- ✓ Indicator 6: It is focused on quantifying the number of requests for approval of apps.

- ✓ Indicator 8: It is focused on quantifying the number of downloads from the iCity Apps Store.

- ✓ Indicator 9: It is focused on quantifying the number of applications utilized by users.

- ✓ Indicator 10: It is focused on quantifying the users involved in testing and use of the applications.

Note that the numbers represented in Expected Progress (Table 2) correspond to cumulative data. Please keep in mind, during the first year of the iCity project the Pilot phase was not initiated according to the programme work plan shown in the iCity Gantt chart. The Pilots phase was started in year 2 of the iCity project - the expectation is to achieve during the Pilot development phase until project conclusion the Work Package tasks and activities represented in table 2.
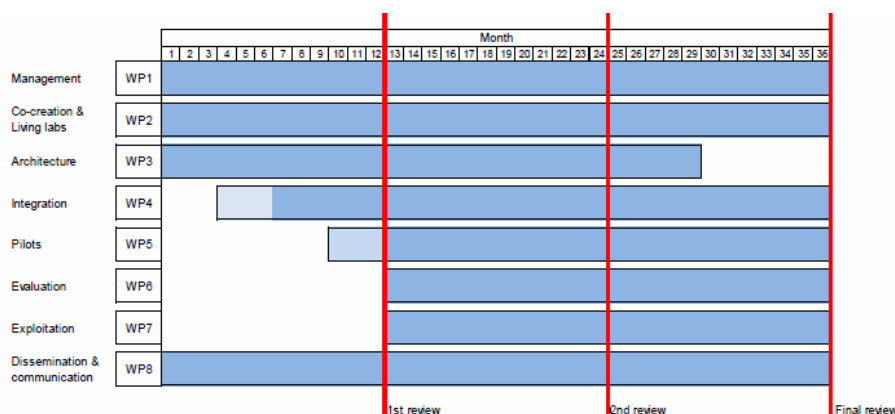
Figure 2 iCity Gantt chart

Performance measurement results and evaluation (indicators and their values) will be part of the progress reporting to the Commission, so there are collected below some of them regarding to pilot's development:

Ind.	Description	Method of measurement	Results	Expected Progress		
				M12	M24	M36
1	Adoption of Open Infrastructures & Data charter	Enumeration of Platform integration elements		5	15	30
5	Applications released	Enumeration of applications		n.a.	75	300
6	Requests for approval of apps	Enumeration of organizations (by reports)		n.a.	85	330
8	Downloads from iCity Apps store	Enumeration of Downloads by using logs		n.a	7.500	40.000
9	Applications utilized by users	Enumeration of evidence of use by using platform logs		n.a	50	200
10	Users involved in testing and use of applications	Number of users (from logs of the platform)		n.a.	15.000	43.000

3.3.1 Evolution of applications in each open municipal infrastructure

Report about open municipal infrastructures integrated to iCity Platform in terms of quantifying the success.

Barcelona's Open Municipal Infrastructures	[Name Infrastructure]	[Name Infrastructure]	(…)
Number of apps released	[Number of apps which use this infrastructure]		
Downloads	[Number of downloads from apps which use this infrastructure]		

Accounting	[Number of accesses to this infrastructure obtained thanks to accounting iCity platform]
Number of app proposals pending to accept	[Number of app proposals which will use this infrastructure]

Bologna's Open Municipal Infrastructures	[Name Infrastructure]	[Name Infrastructure]	(…)
Number of apps released	[Number of apps which use this infrastructure]		
Downloads	[Number of downloads from apps which use this infrastructure]		
Accounting	[Number of accesses to this infrastructure obtained thanks to accounting iCity platform]		
Number of app proposals pending to accept	[Number of app proposals which will use this infrastructure]		

Genoa's Open Municipal Infrastructures	[Name Infrastructure]	[Name Infrastructure]	(…)
Number of apps released	[Number of apps which use this infrastructure]		
Downloads	[Number of downloads from apps which use this infrastructure]		
Accounting	[Number of accesses to this infrastructure obtained thanks to accounting iCity platform]		

Number of app proposals pending to accept	[Number of app proposals which will use this infrastructure]

London's Open Municipal Infrastructures	[Name Infrastructure]	[Name Infrastructure]	(…)
Number of apps released	[Number of apps which use this infrastructure]		
Downloads	[Number of downloads from apps which use this infrastructure]		
Accounting	[Number of accesses to this infrastructure obtained thanks to accounting iCity platform]		
Number of app proposals pending to accept	[Number of app proposals which will use this infrastructure]		

4   Pilot's Development Report at Month 18

Due to delays with the iCity Platform development and deployment, engagement also has experienced delays. Given that Set-up phase is a requirement to initialize the Piloting phase and it has been delayed, now, at month 18 we can not provide all the results and reports expected but it is necessary to elaborate this document because it was agreed in the DoW.

4.1   iCity Platform

Status	Up and Running. Link to access the API: api.icityproject.eu
Functionalities	This platform version allows developers create APPs using the API iCity (REST)
Open Infrastructures connected	• Air Quality Sensor (London) • Weather Station (Genoa)
API iCity	Request service and subscription service
API Open Data	Search, catalog and publish
SDK	Expands the API REST iCity providing more documentation to developers.
Additional information	Front-end with users will be constituted by: • Public portal (providing public information related to iCity Project) The link is icityproject.eu • Allowing access the API REST to developers under registration. The link is api.icityproject.eu

4.2   Pilot Project Deployment

4.2.1   Open municipal infrastructures

Infrastructure	Air Quality Sensor
City	London
Description	Pending to include this information
State	Integrated to the iCity Platform

API	API available
Additional information	Pending to include this information
Availability	This information is not available yet. Work in progress.
Work plan	Integration date since: M14

Infrastructure	Weather Station
City	Genoa
Description	In our city, we have a network of weather stations that provide information about temperature, humidity and wind speed from many providers. These infrastructures allow developing applications that show real time information about local weather. These data are used by citizens but it's also among the information used by our local Civil protection. We have chosen it because we have many available, normalized and centralized data accessible through a single interface.
State	Integrated to the iCity Platform
API	API available
Additional information	This infrastructure must be used to this way: Only iCity platform can access directly.
Availability	This information is not available yet. Work in progress.
Work plan	Integration date since: M19

Infrastructure	BSP (Barcelona Sensors Platform)
City	Barcelona
Description	Barcelona City Council offers a platform to access to sensors data which are distributed around the city.
State	The infrastructure is ready to be integrated within the iCity Platform.
API	API information available
Additional information	Functionalities, policies and rules defined.
Availability	This information is not available yet. Work in progress.

Work plan	Expected integration date: M20

Infrastructure	TPER—QueryHellobus
City	Bologna
Description	Public transportation arrival time information management service.
State	Not integrated to the iCity Platform.
API	Documented and available API.
Additional information	Functionalities defined.
Availability	This information is not available yet. Work in progress.
Work plan	Expected integration date: M21

Infrastructure	Transport For London (TFL)
City	London
Description	Pending to include this information.
State	Not integrated to the iCity Platform
API	API available
Additional information	Pending to include this information.
Availability	This information is not available yet. Work in progress.
Work plan	Expected integration date: M21

List of expected Open Municipal Infrastructures by M22:

- BCN: Smart Citizen Platform

- BCN: ByTaxi Platform

- CDG: Citizen's Desk

- CDG: Level of Pollution

- COBO: TPER-QueryHellobus4ivr

- COBO: TPER-QueryResale

- GLA: Cycle Alert (Safety Security & Planning)

4.2.2 Report of requests for approval of applications and services

Work in progress. It would be included in the next deliverable, D5.4 Pilot's Development Report-rev1.

4.2.3 Report of applications and services released

Work in progress. It would be included in the next deliverable, D5.4 Pilot's Development Report-rev1.

4.3 iCity Indicators

This document has been elaborated during the month 18, just 6 months later than the pilots phase started so currently it has not been possible to collect data about the first developed pilots because just beginning the deployment of the iCity Platform.

Ind.	Description	Method of measurement	Results (M18)	Expected Progress		
				M12	M24	M36
1	Adoption of Open Infrastructures & Data charter	Enumeration of Platform integration elements	2	5	15	30
5	Applications released	Enumeration of applications	0	n.a.	75	300
6	Requests for approval of apps	Enumeration of organizations (by reports)	0	n.a.	85	330
8	Downloads from iCity Apps store	Enumeration of Downloads by using logs	0	n.a	7.500	40.000
9	Applications utilized by users	Enumeration of evidence of use by using platform logs	0	n.a	50	200
10	Users involved in testing and use of applications	Number of users (from logs of the platform)	0	n.a.	15.000	43.000

4.3.1 Evolution of applications in each open municipal infrastructure

Report about open municipal infrastructures integrated to iCity Platform in terms of quantifying the success would be included in the next deliverable, D5.4 Pilot's Development Report-rev1.