



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

Project Number: 297363

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### **Summary**

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.

## DOCUMENT HISTORY

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## ABBREVIATIONS AND ACRONYMS

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

## 1 Introduction<sup>1</sup>

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, 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 start 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 in continuous improving and will integrate existing open shared technology platform. The shared 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 Information Systems 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.

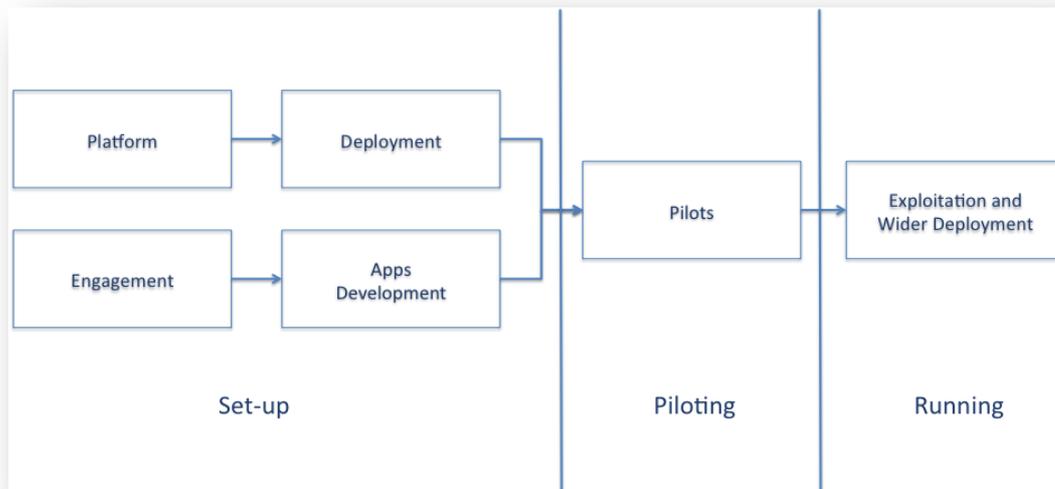
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<sup>1</sup> Part of this section has been extracted from the DoW

## 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 2.1: Phases of the iCity Project<sup>2</sup>**

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 analyze the current situation at month 42 of the iCity Project in terms of pilot's development.

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<sup>2</sup> Figure extracted from the DoW

### 3 Pilot's Development Report at Month 42

During this reporting period, as was planned and exposed in previous versions of this document, WP5 has been involved in several engagement activities in order to promote the use of iCity platform. This activity allowed obtaining the development of Apps, as well as creating a contact network with developers, universities and enterprises.

In this chapter, the engagement activities, the developed Apps and the status of the project indicators are exposed and discussed.

#### 3.1 iCity Platform

Status	Up and Running. Link to access the API: <a href="http://icity-devp.icityproject.com/">http://icity-devp.icityproject.com/</a>
Functionalities	This platform version allows developers create APPs using the API iCity (REST)
Open Infrastructures integrated	<ul style="list-style-type: none"> <li>• BCN: Barcelona Sensor Platform (BSP)</li> <li>• BCN: Smart Citizen Platform</li> <li>• BCN: IRIS (Barcelona citizen complains system)</li> <li>• BCN: Agenda</li> <li>• BCN: Facilities of the city</li> <li>• GLA: Transport For London (TFL) - Journey Planner</li> <li>• GLA: Air quality sensor</li> <li>• GLA: Alert me</li> <li>• CDG: Weather Station</li> <li>• CDG: Citizen's Desk</li> <li>• CDG: Traffic Webcam System</li> <li>• CDG: WiFi Hotspots</li> <li>• CDG: Tourism Webcams</li> <li>• <u>CDG: Air Sensors</u></li> <li>• COBO: TPER-QueryHelloBus</li> <li>• COBO: TPER-QueryHellobus4ivr</li> <li>• COBO: TPER-QueryResale</li> <li>• COBO: CISIUM EVENTS</li> <li>• COBO: CISIUM TRAFFIC</li> <li>• COBO: CISIUM PARKING</li> <li>• COBO: Cineteca – Catalogue</li> <li>• COBO: Cineteca – Events</li> </ul>

	<ul style="list-style-type: none"> <li>• COBO: Air Quality</li> <li>• COBO: WiFi Location and Monitoring</li> <li>• LAM: suggestion and complaints</li> <li>• ZAR: suggestion and complaints</li> <li>• COR: agenda</li> <li>• ABT: Urbiotica sensors</li> <li>• ABT: Parkare sensors</li> </ul>
API iCity	Request service and registration service.
API Open Data	Search, catalogue and publish
SDK	Expands the API REST iCity providing developers with more documentation.
Additional information	<p>Front-end with users will be constituted by:</p> <ul style="list-style-type: none"> <li>• Public portal (providing public information related to iCity Project)</li> </ul> <p>The link is <a href="http://www.icityproject.eu">www.icityproject.eu</a></p> <ul style="list-style-type: none"> <li>• Allowing access the API REST to developers under registration.</li> </ul> <p>The link is <a href="http://icity-devp.icityproject.com/">http://icity-devp.icityproject.com/</a></p>

### 3.2 Pilot Project Deployment

In this chapter, a summary of the iCity Information System status is presented, including: available Information System, integrated but not available Information System and planned integrations. Also, all Apps developed using iCity platform are presented.

#### 3.2.1 Open municipal infrastructures

##### PREVIOUSLY INTEGRATED INFRASTRUCTURES (Until M36, reported on D5.6)

Infrastructure	Weather Station
City	Genoa
Description	<p>Genoa has a network of weather stations that provide information about temperature, humidity and wind speed from many providers.</p> <p>These infrastructures allow developing applications that show real time information about local weather.</p> <p>These data are used by citizens but it's also among the information used by our local Civil Protection.</p>
State	Integrated to the iCity Platform
API	API available
Additional information	<p>This infrastructure must be used to this way:</p> <p>Only iCity platform can access directly.</p>

Availability	Available.
Work plan	Implemented.

Infrastructure	BSP (Barcelona Sensors Platform)
City	Barcelona
Description	<p>Barcelona City Council offers a platform to access to sensors data which are distributed around the city.</p> <ul style="list-style-type: none"> <li>▪ This BSP includes these kind of sensors:</li> <li>▪ Environmental sensors (temperature, NO2, CO2, noise).</li> <li>▪ Sustainability (level of capacity of the container waste)</li> <li>▪ Traffic management (parking sensors). Walkers flows (number of pedestrian).</li> <li>▪ Irrigation control (ground humidity, wind, rain, temperature)</li> <li>▪ Building energy management sensors (electricity and gas)</li> </ul>
State	Integrated to the iCity Platform
API	API available
Additional information	<p>Service limitation: Number of actions per unit time is restricted to 10 queries per second.</p> <p>Cost: Free (analysis of the possibility charge a fee in the future)</p>
Availability	Available.
Work plan	Implemented.

Infrastructure	Smart Citizen Platform
City	Barcelona
Description	<p>Smart Citizen is a platform to generate participatory processes of people in the cities. Connecting data, people and knowledge, the objective of the platform is to serve as a node for building productive and open indicators, and distributed tools, and thereafter the collective construction of the city for its own inhabitants.</p> <p>The Smart Citizen project is based on geolocation, Internet and free hardware and software for data collection and sharing, and (in a second phase) the production of objects; it connects people with their environment and their city to create more effective and optimized relationships between resources, technology, communities, services and events</p>

	in the urban environment. Currently it is being deployed worldwide. <a href="http://www.smartcitizen.me/">http://www.smartcitizen.me/</a>
State	Integrated to the iCity Platform
API	API available
Additional information	test.smartcitizen.me/pages/terms
Availability	Available.
Work plan	Implemented

Infrastructure	Air Quality Sensor
City	London
Description	London has a network of weather stations that provide information about temperature, humidity and wind speed from many providers. This infrastructure allows 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 local Civil Protection.
State	Integrated to the iCity Platform
API	API available
Additional information	Pending to include this information
Availability	Available.
Work plan	Implemented.

Infrastructure	Citizen's Desk
City	Genoa
Description	This infrastructure is mainly based on the information stored on a database and managed through web and mobile applications. Through this system citizens may request information about department or work processes, receive documentation or forms by mail or fax, check the opening hours of the offices. There is also information about tourist and cultural points of interest, or security and public health structures (police stations, hospitals, embassies, etc.). The system is managed and used by various offices spread on the municipal territory but it will be expanded and will also supply information of other surrounding areas in an integrated way. The structure is already designed for distributed gathering of information from different sources.
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	Available.

Work plan	Implemented.
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Infrastructure	TPER—QueryHellobus
City	Bologna
Description	Public transportation arrival time information management service. Expected arrival time of a bus of the specified line to a bus stop
State	Integrated to the iCity Platform
API	API available.
Additional information	This infrastructure has not any restrictions.
Availability	Implemented.
Work plan	Available.

Infrastructure	TPER— QueryHellobus4ivr
City	Bologna
Description	Similar to QueryHello. Expected arrival time of a bus of the specified line to a bus stop in IVR-compliant format.
State	Integrated to the iCity Platform
API	API available.
Additional information	This infrastructure has not any restrictions.
Availability	Implemented.
Work plan	Available.

Infrastructure	TPER— QueryResale
City	Bologna
Description	The service provides the list of resellers of Bus tickets allocated in the nerby of a specific bus stop.
State	Integrated to the iCity Platform
API	API available.
Additional information	This infrastructure has not any restrictions.
Availability	Implemented.
Work plan	Available.

Infrastructure	Transport For London (TFL) - Journey Planner
City	London
Description	Journey Planner provides customers with a desktop and mobile browser based journey planning solution. This facility will enable application developers to freely access the same journey solutions that are available to TfL customers on the TfL website and mobile site. Further details of the Journey Planner API are available here:

	<a href="http://www.tfl.gov.uk/businessandpartners/syndication/default.aspx">http://www.tfl.gov.uk/businessandpartners/syndication/default.aspx</a>
State	Integrated to the iCity Platform.
API	Implemented.
Additional information	<p>Access is by pre-registration – including agreement to terms and conditions. Developers will be approved by TfL and for purposes of the iCity Pilot have to be agreed with GLA iCity team first.</p> <p><a href="http://www.tfl.gov.uk/businessandpartners/syndication/16492.aspx">http://www.tfl.gov.uk/businessandpartners/syndication/16492.aspx</a></p> <p>In order to provide the public with the most accurate information possible, feeds must be obtained and displayed in a timely fashion. In each TfL Online Standard XML feed, we provide the information necessary to do this appropriately according to the feed content, as follows (all dates and times are UTC).</p> <ul style="list-style-type: none"> <li>▪ Feeds must be grabbed and displayed with the same frequency as that in the &lt;RefreshRate&gt; tag.</li> <li>▪ Feeds should be grabbed and displayed in synchronicity with the &lt;Schedule&gt; tag. For example, if the publishing schedule is "Every quarter", please grab the feed a short time after that.</li> </ul> <p>Feeds must be displayed within a certain period after being grabbed, represented by the &lt;Max_Latency&gt; tag.</p>
Availability	Implemented.
Work plan	Available.

Infrastructure	Abertis Smart Zone - Urbiotica Sensors
City / Company Owner	Abertis Telecom
Description	Urbiotica offers a platform to access to sensors data distributed in Abertis Smartzone nearby Abertis offices.
State	Integrated to the iCity Platform
API	API available.
Additional information	Number of actions per unit time is restricted to 10 queries/second..
Availability	Implemented.
Work plan	Available.

Infrastructure	Abertis Smart Zone - Parkare Sensors
City / Company Owner	Abertis Telecom
Description	<i>Parkare offers a platform to access to parking meters data distributed in Abertis Smartzone nearby Abertis offices and</i>

	<i>other ones distributed in other areas of testing.</i>
State	Integrated to the iCity Platform
API	API available.
Additional information	Number of actions per unit time is restricted to 10 queries/second..
Availability	Implemented.
Work plan	Available.

### **NEW INTEGRATED INFRASTRUCTURES (After M36)**

Infrastructure	Agenda
City	Barcelona
Description	<i>Agenda Barcelona contains the leisure activities taking place in the city, with information about dates, places and prices. This information system contains very useful information that can provide a richest experience of the city to locals and tourists.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Facilities
City	Barcelona
Description	<i>Facilities of Barcelona contain the inventory of facilities of the city, including public and private, that offer services to the citizens and tourists. This list includes information about hospitals, hotels, sport centers, taxi stations, etc. This information system contains very useful information that can provide a richest experience of the city to locals and tourists.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	CISIUM Events
City	Bologna
Description	<i>This infrastructure is related to events that could affect vehicular transportation. It offers the list of events</i>

	<i>including accidents and workings that may impact on transportation.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	To request for information, please use the property urn:cisium:event in the request call.
Availability	Implemented.
Work plan	Available.

Infrastructure	CISIUM Metropolitan Traffic
City	Bologna
Description	<i>This infrastructure is related to the traffic level of the major streets. It offers the level of measured traffic on the main metropolitan streets. Data are sampled every 5 minutes.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	To request for information, please use the property urn:cisium:traffic in the request call.
Availability	Implemented.
Work plan	Available.

Infrastructure	CISIUM Parking
City	Bologna
Description	<i>This infrastructure is related to the parking areas of the city. It offers the list of available parkings and the number of free spots and also additional information like opening hours and telephone number.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	CINETECA - Catalogue
City	Bologna
Description	<i>This infrastructure offers the possibility to query the database of their DVDs and VHSs available for viewing and/or loaning.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	To request for information, please use the property urn:cineteca:films in the request call
Availability	Implemented.
Work plan	Available.

Infrastructure	CINETECA – Events
City	Bologna
Description	<i>This infrastructure allows you to query Cineteca di Bologna's projections and events program.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	To request for information, please use the property urn:cineteca:events in the request call.
Availability	Implemented.
Work plan	Available.

Infrastructure	Air Quality
City	Bologna
Description	<i>In the Emilia-Romagna (the italian region where the city of Bologna belongs) there is a network of stations that measure and register the value of some physical properties to monitor the air quality; it is maintained by ARPA (Regional Environmental Protection Agency).</i>  <i>This infrastructure allow developing applications that show the trend of air quality along the time for the available locations.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	<a href="http://www.arpa.emr.it/">http://www.arpa.emr.it/</a> .
Availability	Implemented.
Work plan	Available.

Infrastructure	Wifi Location & Live Monitoring
City	Bologna
Description	<i>Iperbole Wireless is the main wireless infrastructure provided by the Municipality of Bologna. This infrastructures, developed under the iCity project, allows both location and live monitoring of the number of accesses throughout the whole Iperbole Wireless Network. It was chosen to allow users to live monitor the "traffic" connected to each access point and to allow third parties to develop related mobile apps or services.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	<a href="http://wifilocation.comune.bologna.it/">http://wifilocation.comune.bologna.it/</a> .
Availability	Implemented.
Work plan	Available.

Infrastructure	Agenda Cornellà
City	Cornellà
Description	<i>The agenda is a webservice that offers very valuable information about events of Cornellà for its citizens and visitors. The Cornellà de Llobregat City council has developed this service to promote that third parties to use this daily information in their apps. There's already an app that uses it.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Traffic Webcam System
City	Genoa
Description	<i>The Traffic Webcam System is composed by about 25 Webcams, located on the municipality territory. They have a resolution equal to 352 × 288. This infrastructure will be integrated with new webcams during the next years. This infrastructure offers images obtained from these traffic cameras.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Wifi Hotspots
City	Genoa
Description	<i>FreeWiFiGenova is the name of the project of the Municipality of Genoa for the free internet navigation via wi-fi network. Among the objectives of the service there is an increased accessibility of information for citizens and tourists. The service is available in the main city squares, libraries and museums with over 130 hot-spots that allow free navigation for 300 MB per day (no time limits) on the Internet</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Tourism Webcams
City	Genoa
Description	<i>The Tourism Webcam System is composed by a few Webcams, located on the municipality territory. They have a resolution equal to 1024 × 768.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Air Sensors
City	Genoa
Description	<i>In our city and Province, we have a network of air sensors that provide information about various data regarding different pollutants. These data are reported in conjunction with the Province of Genova.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Issue Reporting
City	Lamia
Description	<i>Issue reporting is a basic need to every local community. Citizens need to interact with authorities not only using phone but using mobiles, tablets, etc. Citizens can submit issues regarding city's infrastructure such as potholes, graffiti removal, etc.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	
Availability	Implemented.
Work plan	Available.

Infrastructure	Alert ME
City	London
Description	<i>This infrastructure data is a Smart Home platform. In this case, we will have an instance of "AlertMe Smart Energy" (see <a href="http://www.alertme.com">www.alertme.com</a>) in the home of each triallist based in London. The primary data is live and historical whole-house</i>

	<i>electricity use. This could be used in many ways. e.g. to compare homes with each other, or mix it with national grid carbon mix data to deduce the homes' carbon footprint, etc.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	www.alertme.com
Availability	Implemented.
Work plan	Available.

Infrastructure	Complaints & Suggestions
City	Zaragoza
Description	<i>Complaints and suggestions, which according to different administrative categories, citizens send to the Zaragoza City Council authorizing their publication.</i>
State	Integrated to the iCity Platform.
API	Implemented
Additional information	<a href="http://www.zaragoza.es/ciudad/risp/open311.htm">http://www.zaragoza.es/ciudad/risp/open311.htm</a>
Availability	Implemented.
Work plan	Available.

### **INTEGRATED INFRASTRUCTURES (but not yet accessible from iCity API)**

Infrastructure	IRIS (Complaints and Suggestions System)
City	Barcelona
Description	<p>Barcelona City Council offers different attention channels aimed to citizens (telematics, telephonic and face-to-face channel) with the purpose to allow citizens communicating incidences, complaints and suggestions about municipal services or city functioning. Furthermore, it is possible to consult the petition status by means of the three possible channels as well as claim it.</p> <p>To ensure the fastest resolution of each request, it is essential to classify correctly the requests.</p>
State	Integrated to the iCity Platform.
API	Work in progress. A new API is being developed based on model 311.
Additional information	<p>Number of actions per unit time: Not applicable</p> <p>However, it is important emphasize that the system detects SPAM. Hence, the access to an application which permits SPAM from its service will be blocked.</p> <p>Themes: All Incidences themes (extension of IRIS to mobile devices where just there are some themes). It is essential to collect 3 information required levels area-</p>

	element-detail)
Availability	Available.
Work plan	Implemented.

### **INFRASTRUCTURES TO BE OPENED WITHIN THE NEXT 4 MONTHS**

Besides the aforementioned IS, there are several others that cities has made available and, therefore, they are ready to be integrated. However, due the high number of IS, the management team had to define priorities according to the most urgent needs for the project. Also, it is important to notice that the required amount of IS for the project will be exceeded. The queue of IS pending to be integrated are:

- Bologna: WIFI Live Monitoring
- Bologna: Geocoding
- Barcelona: WorldSensing FastPrk
- Barcelona: MSE Service (information about the WiFi network to approach density of people in an area and flows of people around the city)
- Genova: Hydrometers
- Genova: Troponym search

### **3.2.2 Report of applications and services released**

The following table shows the Apps that have been developed using the iCity platform.

Name	Description	Information Systems used	Cities
<b>uCitizens</b>	<ul style="list-style-type: none"> <li>- uCitizens is a platform that allows the user to share any valuable information relevant to the city.</li> <li>- Stores geo-localized information shown in Google Maps. Current address automatically detected.</li> <li>- Four categories: Commerce, City Council, Mobility and Leisure &amp; Culture.</li> <li>- Each event contains: title, desc., category, subcategory, location, date and duration.</li> <li>- Search directly on map. Allows filtering info.</li> </ul>	Agenda COR	COR
<b>Ouner</b>	<p>The Internet Lost &amp; Found Platform.</p> <ul style="list-style-type: none"> <li>- Register all your belongings into a personal inventory.</li> <li>- Add pictures, invoices or serial numbers by scanning its barcode.</li> <li>- If you lost your phone you can show a message at your lock screen.</li> <li>- Search through our lost and found map.</li> </ul>	IRIS BCN Incidencias ZGZ	BCN ZGZ

<b>RunCity</b>	<ul style="list-style-type: none"> <li>- RunCity provides real time environmental information of the city of London to the user devoted to determine if it is suitable to practice outdoor exercise.</li> <li>- Parameters: temperature, wind speed, humidity, Nitrogen Dioxide, Ozone, Suspended Particles and Sulfur Dioxide.</li> <li>- Automatic detection of the user's position provides the information from the nearest sensor.</li> </ul>	Air Quality	LND
<b>Eco City</b>	<ul style="list-style-type: none"> <li>- Monitors and scores your recycling and waste management habits and establishes a set of goals for you in order to improve your recycling practices as well as reducing the amount of waste generated.</li> <li>- Establishes a comparison of your results with respect to the average habits of your neighbourhood or city, as a motivational element to improve your performance.</li> </ul>	Sentilo IRIS	BCN
<b>uSpot</b>	<ul style="list-style-type: none"> <li>- Allows finding recommended places near to user's position.</li> <li>- Check how far they are from your current location and ask for the shortest path to get there.</li> <li>- Gives you information about which of this spots are ready and adapted for people with mobility disabilities.</li> <li>- Share the most beloved places with everyone from your mobile phone.</li> </ul>	IRIS	BCN
<b>Mobiliy 4all</b>	<ul style="list-style-type: none"> <li>- Supports people with reduced mobility (PRM) to move around the city avoiding architectonic obstacles.</li> <li>- Users (both citizens and city workers) may report about obstacles and their repair.</li> <li>- Allows planning point-to-point obstacle-aware city routes, both by public transportation and by car, and supports the citizen in real-time once s/he informs about the start of the route.</li> </ul>	Incidencias ZGZ, IRIS, Citizen's Desk & Issue Reporting LAM	BCN ZGZ LAM
<b>Hydrocube</b>	APP to release - hydroponic modular system, that allow to all an access to easy plantation, also with an App. Through App is possible to create a market place where exchange and buy vegetables and fruits in order to reduce waste of food	weather station, air quality sensors, statistic opendata	CDG
<b>Goair</b>	APP to release – it aims to integrate the different systems to monitoring the air quality. Data are elaborated and integrated with information coming from a wearable detector and from fixed low cost control units sited on the territory. This integration allow a creation of an index that express the air quality in the city districts, also giving real time quality air readings to people who can move themselves from one place to another	weather station, air quality sensors, statistic opendata	CDG

**Table 3-1 Apps using iCity. The short names in the cities column stands for Cornellà (COR), Barcelona (BCN), Genova (CDG), Zaragoza (ZGZ), London (LND) and Lamia (LAM).**

### 3.3 iCity Indicators

The following table summarizes the status of the indicators considered in this project.

#	Related obj.	Indicator	Measurement method	Current (M41)	Target (M45)
1	Obj-1	Adoption of Open Infrastructures & Data charter	Enumeration of platform integration elements	28	30
2	Obj-3	Open innovation stakeholders identified and contacted	Enumeration of organizations (by SIG registration and iCity Portal registration)	622	300
3	Obj-3	Youth Engagement in development of apps	Enumeration of students and young developers (by iCity Portal registration)	92-176	400
4	Obj-4	Applications released	Enumeration of applications (by iCity Portal status)	8	60
5	Obj-3	Requests for proposal of apps	Number of requests for proposal apps, (this is the same number of #tokens)	227	750
6	Obj-4	Open innovation stakeholders identified developing applications	Enumeration of organizations (by iCity Portal registration)	363	250
7	Obj-6	Social Media visibility	$\sum_{M=Jan}^{Dec} (A_M + B_M + C_M + D_M + E_M + F_M)$	203.879	95.000
8	Obj-6	Additional interested infrastructure provider	Enumeration of additional infrastructure providers that are interested (by letters)	17	18
9	Obj-6	Integrated Infrastructures providers	Number of providers with infrastructures opened by iCity Platform	9	12
10	Obj-3	Developers	Enumeration of all developers (by iCity Portal registration)	367	600
11	Obj-5	Apps success	Percentage of Apps with activity (by iCity Platform logs) (week average)	50%	60%

**Figure 3-1. Project indicator's table**

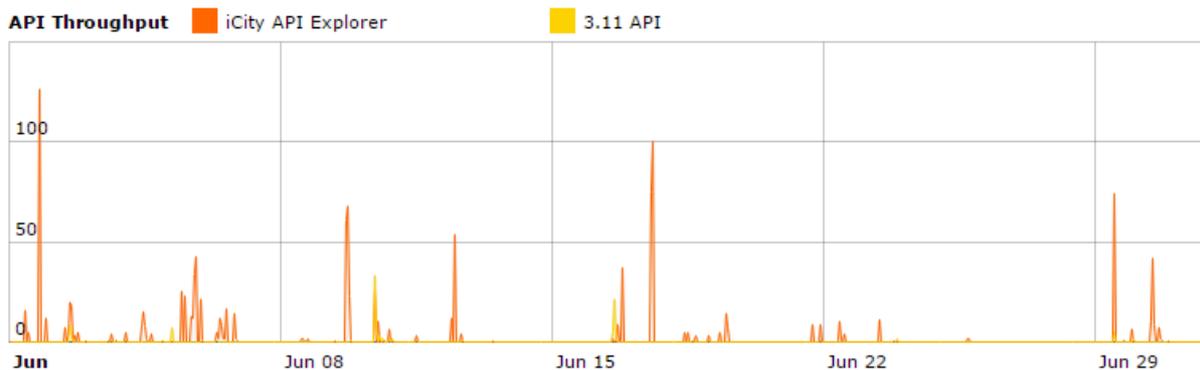
As can be observed on the table above, several indicators are already completed, while other ones are near to be achieved and it is expected to complete them during the remaining time of the project. However, several indicators (3, 4, 5 and 10) are not likely to be completed at the end of the project. The causes and lessons learned from this will be discussed on the final report.

### 3.4 API Usage

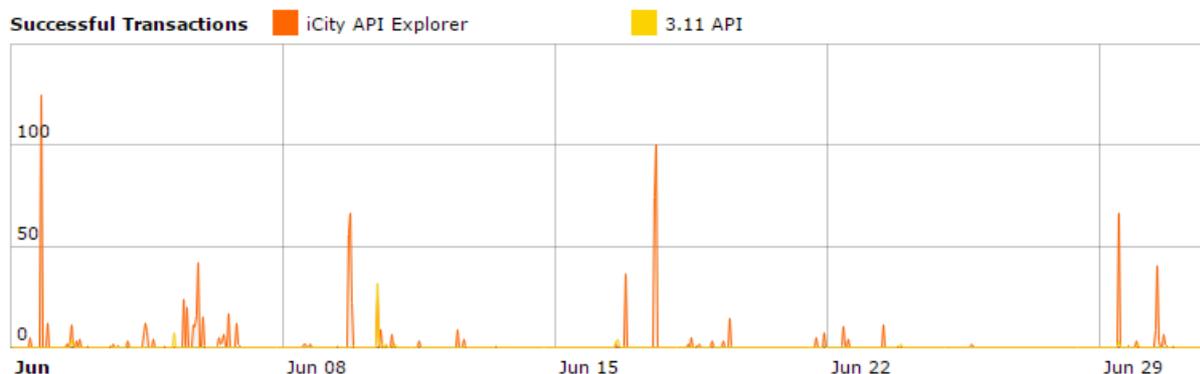
Using the iCity developer’s portal, administrators can monitor the usage of the APIs, as well as the activity of each App.

Although this information will be very useful when measuring the performance of the platform under stress conditions, it is also being used to monitor the volume of traffic that the platform supports nowadays, as well as to verify that all the Apps developed by third parties are really accessing the iCity platform.

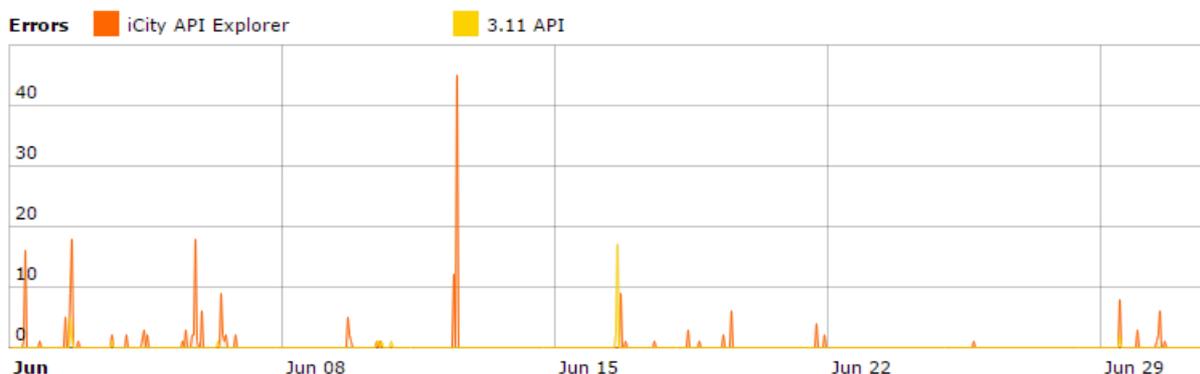
The following graphs show the Throughput, the successful transactions and the errors registered on the platform in the last 30 days.



**Figure 3-2. API Throughput**



**Figure 3-3. Successful transactions**



**Figure 3-4. Errors on transactions**

### 3.5 iCity Contest

In 14<sup>th</sup> and 15<sup>th</sup> November 2014 took place the iCity Camp event in Barcelona, as reported in the previous version of this deliverable (D5.6). The iCity Camp was created as an event to join different actors related to the iCity Project but also with the main goal of promote the creation of new applications based on the iCity Platform.

#### 3.5.1 Introduction

During the iCity Camp was presented and launched the iCity App Contest, a competition devoted to promote the use of iCity platform, which finished on March 2015 and is, therefore, inside the reporting period of this deliverable.

The contest was composed of two phases. The first phase of the competition was dedicated to get and evaluate the best app proposals from a conceptual approach. The aim of the second phase of the contest was to encourage the development of applications. Each phase had its corresponding winners, who received the prizes in an award ceremony held at the IMI offices on March 17<sup>th</sup> 2015. All the awards of the contest were offered by CISCO.



Figure 3-5. Winners at the award ceremony of iCity Contest

#### 3.5.2 Evaluation criteria

The evaluation criteria for the contest were established as follows:

- 40% Impact in area.
- 40% Public interest.
- 10% Number of information systems used.
- 10% Number of cities where the app works.

### 3.5.3 Prizes

During the first phase of the contest, the candidates presented their proposals according to three categories: “Citizenship”, “Mobility & Transport” and “Environment”. The objective was a conceptualization of the App, while the development was not required in this phase. The following table contains the winners of this Phase 1.

Category	Pos.	App	Authors / Org.	Prize
<b>Citizenship</b>	1 <sup>st</sup>	Ouner	Ouner	500 EUR
	2 <sup>nd</sup>	uCitizens	uCitizens	250 EUR
<b>Mobility and transport</b>	1 <sup>st</sup>	Mobility4all	UPC	500 EUR
	2 <sup>nd</sup>	KidsPlan	UPC	250 EUR
<b>Environment</b>	1 <sup>st</sup>	ecoCity	UPC	500 EUR
	2 <sup>nd</sup>	FitRun	UPC	250 EUR

For the second phase, there were just three prizes, without differentiation between categories. In this case, was required for the application to work properly on mobile devices (Android and/or iOS), and they were tested before being admitted for the second phase of the contest. The participation on the first phase was not required to take part on the second phase. The following table summarizes the results of this Phase 2.

Pos.	App	Authors / Org.	Prize
1 <sup>st</sup>	Mobility4all	UPC	3.000 EUR
2 <sup>nd</sup>	ecoCity	UPC	1.500 EUR
3 <sup>rd</sup>	RunCity	Exoglás	750 EUR

### 3.5.4 Results and conclusions

This chapter is intended to expose the results of the iCity Contest and evaluate it from the iCity project’s point of view.

In terms of the number of Apps developed, which was the primary goal of the contest, this has been the most successful action in the project, obtaining a total of six Apps.

In order to achieve it, it has been very useful to have an event specifically devoted to iCity platform, with important monetary prizes and strong communication campaign.

Moreover, this engagement activity allowed the project to establish a good cooperation environment with the developers. In this way, there have been several meetings with professors and students from UPC, as well as the members of the enterprise Exoglas, in order to explore further ways of cooperation.

However, there has been identified some difficulties on this engagement process which has limited the results:

- Because of the calendar, it is been impossible to establish further cooperation with UPC. Professors from the university expressed their interest on continue collaborating with the project, using the iCity platform for the final project of some students. However, they required the project to be active for the next two or three semester, that is, until December 2016.
- Due to the low maturity level of the platform, it is difficult to attract professional developers and SMEs. This is because the platform does not provide enough reliability to export the Apps beyond the contest.
- The infrastructures available on the platform are quite different for each city, limiting the reusability of an App for several cities which was considered a very attractive point for developers.

Therefore, the final conclusion that can be extracted is that it has been a useful event, but there have been several drawbacks which has limited its effectiveness.

### 3.6 Apps4Citizens

Apps4Citizens was a working day organized by Hackers Barcelona, held on the Estrella Damm's old beer factory in Barcelona on June 19th.

#### 3.6.1 Introduction

The event was devoted to the innovation and inspiration on political and social actions, from a connected and involved citizen point of view. It was composed of two parts: the hackapp, where the developers worked to design and develop their app; and the fesivalapp, which included the award ceremony, keynote speakers and networking.

The main goal of the event was to create apps that allow using the citizen as a sensor, in order to generate data about what happens on the city that can be used by journalists.

In this case, iCity project was involved offering and promoting the use of the iCity platform, which became one of the options for the developers, together with open source data. Also, several members of the project were involved as speakers, mentors and jury.



Figure 3-6. Marc Garriga, WP5 Leader, presenting the iCity platform to the developers.

#### 3.6.2 Prizes

The prizes offered in this context were:

- First prize: 3.000 EUR
- Second prize: 2.000 EUR
- Third prize: Weekend at Vall de Núria for two persons (sponsored by FGC and Vall de Núria)

- Special prize: winners will have the opportunity to work at the innovation space for entrepreneurs of Impact Hub Barcelona, with a discount of 30% (sponsored by Impact Hub Barcelona and Coperfield).

### **3.6.3 Results and conclusions**

In the context of the hackathon, none of the groups decided to use the iCity platform.

This is probably due to the fact that the event was limited to a unique session of 8h., which is a handicap to develop an App with iCity platform, because it is required a registration process and explore the potential of the platform.

As developers had several options, and most of them didn't know yet the iCity platform, the majority preferred to rely on well-known open data portals.

However, it is thought that the presence of iCity in this kind of event is useful for the dissemination of the platform. Moreover, iCity project members are in contact with two developers who expressed interest on the platform beyond the hackathon.

### 3.7 Smart City App Hack

The Smart City App Hack (SCAH) is a contest that is taking place at the moment of the elaboration of the present document. It started on April 18<sup>th</sup> 2015, and will end up at November 19<sup>th</sup> 2015 with an award ceremony into the Smart City Expo.

#### 3.7.1 Introduction

The SCAH wants to connect cities worldwide to help local app makers create apps for a better life in the city. These cities use to share similar challenges and the will to empower citizens to become app makers and create app solutions for the city.

The competition is organized in five main areas, named challenges, which are: Urban Mobility, Energy & Emission, Culture & Tourism, Shopping & Retail and Collaborative City. The objective is to set together participants from different backgrounds, including designers, experts and citizens, in order to merge their different knowledge and experiences.

The event organization propose the participants to use the data provided on Open Data portals of the cities, as well as the API of FiWare and Mastercard, which are the main sponsors of the event.

From the iCity project, we have agreed with the organization to offer also our platform to be used by the developers. Because of that, project members from WP4 and WP5 are being involved in several functional and technical presentations.

Also, in this event, App Makers get free mentorship for building their smart city app. Members of iCity project has been enrolled as mentors, in order to help participants to develop their idea, and provide support specifically to those who decide to use the iCity platform.



Figure 3-7. Participants of the SCAH event.

#### 3.7.2 Prizes

The prizes offered in this contest are the following:

- MASTERCARD SPECIAL PRIZE: Spot in the Grand Finale of the MasterCard Masters of Code in Silicon Valley + airfare + accommodation + the chance to win more great prizes!
- 5 x BEST APP PRIZES: 5.000€ cash prizes for the Best App in each of the five categories of the challenge.
- BEST FIWARE APP PRIZE: 10.000€ for the app best using the FIWARE GEs + be part of GSMA showcase during the 2016 Mobile World Congress!

### **3.7.3 Results and conclusions**

As this contest is still ongoing, it is not possible to obtain the results and conclusions yet.

### 3.8 Global Urban Datafest

On 20th-22nd of February was celebrated the Smart City Hackathon Barcelona held at UPC Barcelona North.

#### 3.8.1 Introduction

The Hackathon was a Global Urban Datafest event opened to developers, students, researchers, business thinkers, policy analysts, journalists, designers, community organizers or urban planners who have the interest in solving the biggest urban challenges that cities are handling in our days.

Main objectives of the event were: create multidisciplinary work groups, develop Applications that provide public interest services, interact with Opened City's Information Systems.

Topics such as data acquisition and actuation, monitoring and management, Security, Transport and Mobility, e-Government, Environment, Tourism and culture, Sustainability were debated during the event.



**Figure 3-8. The iCity project leader, Jordi Cirera, presenting the iCity project at the Global Urban Datafest.**

In this hackaton, developers were allowed to choose between four different platforms to use as information source and/or access to information systems, being iCity one of them.

The event started with the presentation of iCity project, which was done by the project leader Jordi Cirera, and continued with a technical presentation of the platform carried out by the leader of WP4 Alejandro Sala. Moreover, Raluca Ciungu, from WP1, took part on the jury.

There were also presentations about Urbiotica APIs as well as development tools available such as IBM Bluemix and Wolfram Universal Deployment System. A total of 8 projects were

developed during the event, as: Bike Sense, eWays, City Flow, Healthy Running, Sync City, S-treet, BCitizen, Smart Libraries and QJumper.

Four projects out of eight were built using the data provided by iCity Platform:

- Bike sense: application that collects data level of pollution, noise, etc. , during the bike ride of a user. The data is uploaded in cloud and mapped.
- eWays: application that provides information on the temperature , traffic people , free parking around the destination desired by a user.
- City Flow: application that provides data on the most active areas of Barcelona.
- S-treet: application that executes the traffic management and load balancing.

However, most of the projects were prototypes, and none of these became a functional App.

### **3.8.2 Prizes**

The two winning teams will go on during maximum two weeks to compete globally against contestants from 27 cities around the world participating in the Global Urban Datafest.

### **3.8.3 Results and Conclusions**

The event was useful for networking and promotion of the platform. However, the limited number of data available on the platform was a handicap for the developers to choose to work using iCity platform.

### 3.9 Next City – Talent Garden Genoa

The event Next City was organized in the Talent Garden Genoa, and took place from 5th to 7th June in the city of Genoa.

#### 3.9.1 Introduction

City of Genoa decided to organize the contest in the same framework of Next City event, in order to have big visibility and to reach a huge number of people. Together with the organizer, Talent Garden Genoa, the company IBM and one of the most important newspaper in Italy, La Repubblica, were also present at the event.

At this three days event have participated 51 people (66 have submitted the inscription): 19 business, 7 designers, 8 developers and 17 students (of which 2 not professional developers and 1 professional developer).

All the working groups have made access to iCity platform, iCity Opendata portal and local Opendata Portal to obtain the data.



**Figure 3-9. Genoa's iCity team presented the iCity platform on the NextCity event.**

The projects of the Apps called Goair and Hydrocube used the iCity platform. Duve L'è has explored the platform but there are not API to data of its interest.

The winning App was Hydrocube. It is a hydroponic modular system that allow to all an access to easy plantation, also with an App. Through App is possible to create a market place where exchange and buy vegetables and fruits in order to reduce waste of food.

Goair has obtained also the Special award of the Municipality of Genoa. The App aims to integrate the different systems to monitoring the air quality. Data are elaborated and integrated with information coming from a wearable detector and from fixed low cost control

units sited on the territory. This integration allow a creation of an index that express the air quality in the city districts, also giving real time quality air readings to people who can move themselves from one place to another.



**Figure 3-10 Goair team**



**Figure 3-11 Hydrocube team**

Other Apps proposed are listed in the table below, not all of them use iCity platform at the moment, but at the end of the Hackaton 10 app proposal use iCity platform.

The other App proposal potentially could have been ready to use iCity platform, if services needed would have been uploaded, this represent a possible foreseen topic to achieve for the Municipality of Genoa.

APP	Description	iCity use
Tripcut	Tripcut will put in contact local tourists' guide with actual tourists, lowering prices and bypassing tour operators.	Yes
Goaway	Portable tour operator which will enable tourists to plan their trips by themselves, taking advantage of thematic itineraries. It uses filters like mode of transportation and thematic itineraries allowing the plan the day depending on the available time and opportunities.	Yes
Cipensoio!	An app which makes available useful social services to elderly people and other disadvantaged categories.	No
Safecity	An app for timely video monitorage of approaching calamities, natural and otherwise.	Yes
Duve l'è	An app which gathers on a single map all the offices and services by the public administration, stating their activities and functions. funzioni. For example, the shortest way to reach them based on the traffic, opening and closing times, reservations and online tickets, waiting times/queues, necessary paperwork). It will also be possible to interact directly with the office.	Yes

Pantarei	An app that allows obtaining virtual credit by waste recycling, credit expendable in several city location.	No
Real time app	Geolocalized data in the real time for tourists.	Yes
Differenziata?	An app map-tracking missed waste recycling, overflowing dusts bins and abandoned objects.	No
Parliamone	An app which allows the creation of (live) discussion groups on any imaginable topic, organized by tags.	No
Tram-up	An app supporting the 'Ecotram Genova' Project supplying services like online ticket buying and travel time statistics.	No
Flessibile	An app dedicated to slashing food waste in restaurants through advance reservation of the desired courses	No
Genova Play	Information about city events by geolocalized city range.	Yes
Shopping	Geolocalized infos about discount in the participant shops.	No
Near-ge	Geolocalized tourists' info, particularly special offers and promotions.	Yes
Nonni in affitto	An app putting together grandfathers and grandmothers with families in need of babysitting services.	No
Spesiamo	An app geared to the creation of purchasing groups. People put together their purchasing lists and when the minimum quantity is reached the order is made.	No
Ti porto io	An app putting together people who look for and people who offer a motorcycle hike.	No

### 3.9.2 Prizes

The prize consists of three free four months of working services and location available to four people at the Talent Garden, in order to develop and improve the application they had presented at the contest. In the next months, the awarded teams will work together to be more structured and to try to launch some new start-up. Moreover they will be able to use the TAG Network and will meet periodically the Municipality for monitoring their progress and facilitating their path into the SME world.

The three winners of the contest are summarized in the following table:

Pos.	App	Prize
1 <sup>st</sup>	Hydrocube	3 months at Talent Garden
2 <sup>nd</sup>	Goband	-
3 <sup>rd</sup>	Goair	-

### **3.9.3 Results and Conclusions**

To organize the contest, Genoa's team has started to work in March and in April when was held the first contacts with the Talent Garden. This cooperation was fruitful, as the App that has received the award was among those that have used the services more than other.

This gave more visibility to the iCity project among groups of interest in Genoa and through all the Institutional Communication channel and those of "La Repubblica – National Newspaper". Also, it is expected that the awarded projects continue evolving their Apps using iCity platform, providing more mature and reliable Apps working with iCity.

The appeal of the Contest was really appreciated, both from technician to non-technician too. The good management of the event, the new services and open data requested, gave to people intervenes the right perception of the iCity project aims.

### 3.10 Spaghetti Open Data 2015

On 27-29 March, Bologna hosted the annual meeting of the Spaghetti Open Data (SOD) association.

#### 3.10.1 Introduction

Spaghetti Open Data (SOD) is a group of Italian citizens interested in the release of public data in open format, so as to make it easy to access and reuse them (open data).

SOD organized its annual meeting in Bologna, which lasted a total of three days, although the hackathon took place only on 28 March. The first day was devoted to a conference to discuss the state of the art of open data initiatives and projects in Italy, while the last day was dedicated to the divulgation and education about open data initiatives.



**Figure 3-12. Participants of the SOD15 in Bologna.**

This event had the participation of 120 developers, who had the opportunity to exchange ideas with others participants with different backgrounds, such as journalists, activists, lawyers and public employees.

### **3.10.2 Results and Conclusions**

In a similar manner to other events of this kind, the participation of iCity team was successful in terms of networking and visibility of the platform, although no functioning App was obtained.

## 4 Conclusions

This document has presented the status of the indicators of the project at M42, as well as a summary of the engagement activities carried on in order to achieve the established goals for those indicators. The main focus of this document is the status of pilot development (indicator #4). Observing the data presented above it is possible to conclude that the objective has not been achieved, although many positive results and useful lessons learned have been gained. These results are discussed in this section.

First, an important limitation for achieving the established goals has been the lack of maturity of the iCity ecosystem. This low maturity is observed in several factors: low number of similar IS from different cities, low degree of standardization of the information retrieved, and bad quality of the data coming from some information sources. This, together with the delay on the release of the platform, has limited the capacity to attract a bigger number of developers.

Also, depending on the engagement strategy, there has been obtained different results. The strategy of organizing an individual event focused exclusively –or, at least, with an important participation- on iCity, with a strong communication campaign and good prizes has been the most successful way to engage developers. This is the case, for example, of iCity Camp held in Barcelona, from where up to eight Apps were obtained. In a similar manner, the Next City event in Genoa was very fruitful. Although it was not exclusively focused on iCity, there was a strong implication of the iCity team, which reached to have two developed Apps using iCity, being one of them the winner of the contest. Also, the Smart City App Hack that is currently ongoing in Barcelona and has duration of several months is a promising event in order to obtain more Apps developed for the project.

On the other hand, the participation on one-day hackathons, organized by third parties and including different options of information sources, has not yield the expected results. This was the case of the Spaghetti Open Data hackathon in Bologna or the apps4citizens hackathon in Barcelona. Although this is the most common type of activities in most of the cities, and it uses to be inexpensive to take part on it, there are several limitations that have been identified:

- These one-day-hackathons are usually devoted to solve a specific necessity of one city, while one of the attractive points of iCity platform is the possibility to function in different European cities.
- The use of iCity platform requires a registration process that, even if it is quite fast, developers tend to avoid it as they are very limited by time.
- Usually developers are more familiar with other information sources, such as Open Data portals.

Nonetheless, the participation on such kind of events is not useless. It is rather the opposite, as it can be an opportunity for promoting the platform, do networking, and eventually establish different ways of collaborations beyond a specific hackathon.

Another approach has been to establish direct cooperation agreements with specific companies. This is the case of the cooperation project established with Seat (Volkswagen

Group), which is expected to finish by the end of the project. This kind of cooperation may be very useful, as there is a possibility to clearly explain to the company the potential of the platform, which tends to be quite difficult to explain to a one-day hackathon audience.

In general, regardless the engagement strategy, it has been found that the concept of open IS proposed in this project is not well known among developers. In a similar manner to what happened with the concept of open data some years ago, it is not easy to transmit the benefits of the open IS, and why it is worth to make the effort to try to understand how the platform works rather than relying on the common open data sources. Even so, the sales pitch has been improved during the project, and it has been very helpful to use examples to illustrate the benefits of iCity, such as the possibility not only to read the value of a certain bollard on the street, but also to open and close it from an external application.

It is also necessary to take into account the difficulty of the administrative processes in order to define the exploitation plan which has been agreed by the end of July. The delay on the definition of a clear and reliable business model to exploit the platform beyond the EU fund-supported period, made very difficult to convince SMEs to engage with the platform on the long term.

All in all, it is possible to conclude that, even if the specific objective about the number of pilots will not be achieved by the end of the project, the feedback received on engagement events and the interest of big companies such as Seat shows that this kind of platform is needed for the future of smart cities and it deserves further investment.