



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

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Summary

This document is an extension of the previous Evaluation of Co-creation bootstrapping of efforts to animate and sustain an organic ecosystem based on physical, virtual, academic and enterprises activities conducted during the 2013-2014. This will be highlighted how the methodology have been adapted in order to respond to the project demand. Tracking elements will be meddled to support D.2.4 iCity methodology.

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Executive summary

This document is the continuation of the iCity evaluation report of co-creation bootstrapping which main aim was to describe how the engagement methodology has been applied in the four participant cities: Genoa, London, Bologna and Barcelona. The previous document was not able to describe the bootstrapping of all the methods presented by the D2.1 iCity methodology, so in this document WP2 intends to describe how the methodology has been adapted to the needs of the project in order to dynamize their innovation ecosystems.

Furthermore, the document provides recommendations on how city teams can dynamize their ecosystems linked to the iCity Project during the current stage. Due to the iCity platform stabilization process dealt by WP4-WP5 that have been active from M24 until M35 most of the engagement actions for developers were delayed, therefore WP2 has faced a strong difficulty to apply a methodology based on living lab and user driven innovation.

The linked open apps ecosystem to develop services of public interest depends on the infrastructures released by cities. It is extremely difficult to open those infrastructures both at a legal and operative levels. Therefore WP2 had to deal with the difficulties cities are finding once they try to open them and also the difficulties in promoting the engagement process among stakeholders over a platform and resources still to be defined.

The 3H (Head, Heart, Hands) methodology that has been co-designed for the iCity project by its partners. WP2 has selected and adapted a set of tools and approaches that have been refined in order to maximize the impact and therefore amending deviations. The 3H engagement methodology applied has been described. This methodology uses a human metaphor.

	<p>Head describes the rational process. During that stage the cities had to search their innovation ecosystem. Once done that, they had to identify the relevant actors within it. And ultimately they had to understand their motivations and background regarding smart cities, service providing and co-creation processes. The action is described on the deliverable “Stakeholders requirement”, which will be refined and delivered during the second year.</p>
	<p>The Heart stage describes current activities carried out for the actual involvement of stakeholders. Every city has its own context that must be dynamized with effective activity. This activity will use the cities existing networking tools and platforms to extend the <i>iCity</i> network. The iCity project is currently on this stage, which is crucial.</p>
	<p>The Hands on activity refers to the practical co-creation. Both parts have agreed in collaborate to develop services of public interest based on provided infrastructure by the <i>iCity</i> platform.</p>

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Abbreviations and Acronyms

Acronym	Description
CTL	Citilab
IS	Information Systems
CDG	Comune di Genoa
WP	Work Package

1. General *iCity* Methodology Bootstrapping

1.1. Summary and overview on the bootstrapping methodology .

This document aims to present the WP2 activities for the identification, motivation and engagement of stakeholders that has taken place from the M12 to the M36. The document includes a refined overview of the bootstrapping methodology, as well as the *iCity* 3H engagement methodology from the rational to the motivational stage.

WP2 has been put under the direction of WP5 that has focused its efforts in the involvement of new Cities and Information systems at European level. The engagement activity have been adapted to the project situation under the strategy defined by WP5.

In one hand, at the moment, *iCity* has identified and contacted 15 new cities and 50 new information systems from the one to one approach developed by WP5. In the other hand, *iCity* has identified and contacted, 1 to 1, around 50 stakeholders from a limited number of events for promoting the *iCity* project.

So far, *iCity* project has participated in over 30 events involving municipalities, stakeholders, developers that have taken place during 2013-2014.

The main focus of WP2 has been to get the feedback from the stakeholders in order to contribute into the stabilization of the platform by WP5-WP4 and to adapt and refine the methodology in order to suit the needs of all participant cities innovation ecosystems as well as the project strategy.

In the following document we will present the refinement of the methodology and its first bootstrapping iteration covering how the project has fixed the actions that didn't worked in the first place. The document will cover how the methodology has concentrate the 3H methods to be able to deliver as more results as possible of each co-creation and engagement action.

2.1.1. Overview of the engagement methodology

During the first year of the project it was identified an important constraint in terms of engagement and co-creation. As a first stage, cities need to understand how their local ecosystem, its stakeholders and to identify the potential information systems to open. As a lesson learnt from the following period M12-36, *iCity* has learn that previous to encourage the innovation ecosystem into the development of public interest services what *iCity* project should provide is a fully operative platform. This includes, the information systems that should be enough and interesting to provide different development scenarios and an operative developer portal with an API that works in a standard and homogeneous way and that is well documented.

Therefore, the problematic to apply the *iCity* user driven methodology has still been linked to the need to open information systems and an operative platform that includes the developer portal, the documentation and the API. That is the explanation why the pilots have not centred all the effort in the engagement actions to promote the co-creation of services by thirds parties during this period but to stabilize the platform as a whole.

If during the first year the main focus was to understand and map the innovation ecosystems of the participant cities, during the M12-M30 year of the project, the main efforts have been to into the "one to one" actions to engage new cities and to get new information systems.

This was necessary as a previous requirement to get developers and third parties engaged.

The other main activity of the project during this period has been to provide an operative developer portal where developers can use the *iCity API* to develop their applications.

During this period, WP2 has contributed to adapt and to apply at least once each of the methods described at the *iCity* methodology. Therefore, the main goal of this new document is to describe how the project have adapted and tested the methods proposed in the *iCity* methodology from M12- M36. For that reason, the methods an approach during the first year are not covered in this document but in the previous version of the **D2.2. Co-creation bootstrapping**.

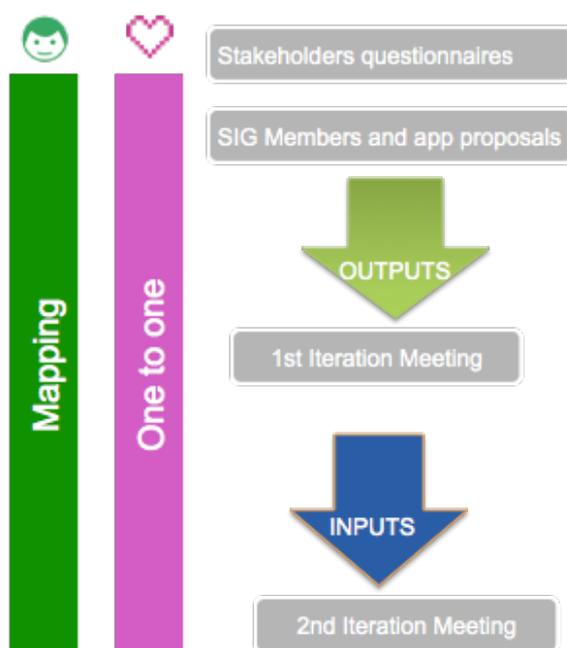
This document is going to describe how the project has bootstrap the engagement methods covered by the Head (mapping and understanding the innovation ecosystems) Heart (engagement) and hands on (development and co-creation) sections are a further adaptation of the **D2. iCity methodology** from the *iCity* consortium needs.

As the project has design and apply a new strategy in order to solve different blocking situation in order to approach the pilots with exit, it is important to explain how WP2 has adapted some of the methods to the new situation. WP2 has not been able to distribute its activity but it has been forced to concentrate it. For that reason in most of the engagement events it had been applied a combination of Head, Heart and Hands on methods

During the second year, *iCity* project have centered its strategy to address the need of having an operational platform as well as much information systems as possible. The above-mentioned circumstance means that the events related to *iCity* have been lower than initially planned.

Head, Heart, Hands on methodology stages redesign

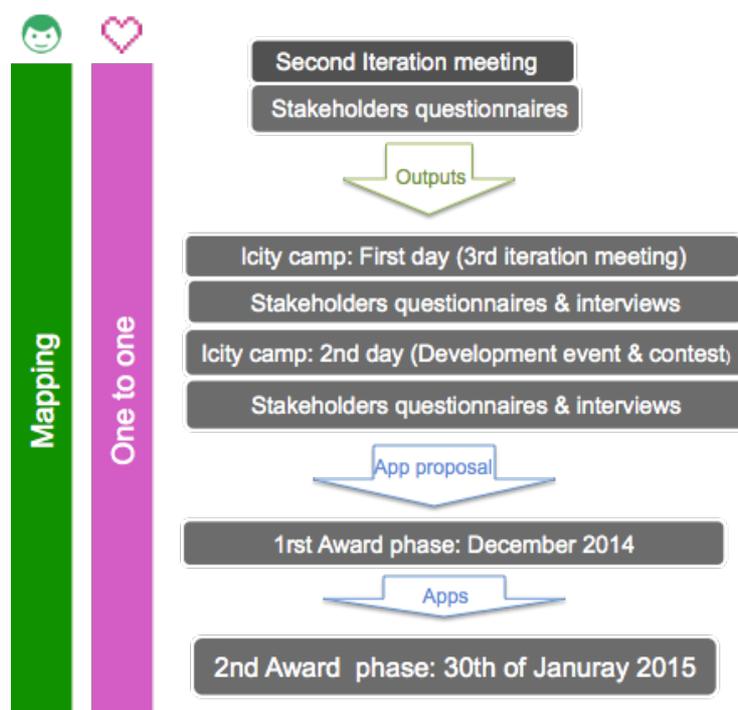
As it has been explained in the previous co-creation bootstrapping documents, HHH is the *iCity* engagement methodology. It divides the co-creation process into three main types of activities and it uses a human metaphor, naming each type of activity as Head, Heart or Hands on type.



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Then it provided a set of recommended engagement approach and methods that are guiding *iCities* through the processes required in order to foster the co-creation of smart services of public interest with third parties.

The *iCity* methodology was co-designed with *iCity* partners and locally adapted with each piloting city Barcelona, Bologna, Genoa and London and it guides the engagement process during the interaction with each city open innovation ecosystems during the first year of the project. From the experiences and new project requirements it has been refined and adapted in order in order to support WP1-WP5-WP4 strategy during M12-M30 period.



For that reason, while in the previous approach there was a planning of different methods distributed in different moments during the year, the new approach has been to concentrate the different 3H methods in each event open to the innovation community and stakeholders.

First, WP2 approach tackled the refinement of Head methods, which goal is to understand, identify and map the potential open innovation ecosystems. Moreover the HHH methodology (*Head, Heart, Hands*) was refined for a better dynamic of the *iCity* ecosystem. Then, WP2-WP6 decided to unify and to simplify the four questionnaires type to get stakeholders requirements at the end of each engagement or co-creation event.

The next important decision was to combine *Heart* activities which aim is to engage stakeholders with Hands-on activities which goal is to promote the development of public interest services. In this document WP2 describes how and why *Heart and Hands on*

activities have been combined in order to maximize the contact time with *iCity* main target stakeholders.

- A. From the previous period of the project WP8 made a special effort to get the recommendations provided in the **D.2.2.2 Evaluation reports and Co-creation bootstrapping revised** and from the experience of the project and addressed a set of changes that will be covered in the next session.
- B. Then WP2 will describe how the *One to one* activity have been adapted once the project team understood that developers demanded more and more interesting information systems to consider iCity platform good enough to start the app development. One of the tasks planned to achieve this objective was to focus WP5 work to get new cities and new Information systems in order to configure at least three different scenarios that would be enough interesting for third parties to develop an application. Therefore WP2 in coordination with WP5 decided to focus all the engagement activity following the one to one approach to achieve new cities and new information systems.
- C. The combination of the heart and hands on activity to refine the second iteration meeting
 - a) First iteration meetings learning
 - b) Second iteration meetings re-design
- D. Then, from the celebration of second iteration meetings, *iCity* team understood another lesson from participant developers. Even the project had an operative Developer portal, the project did not deliver enough information systems to make it attractive. There was also the need to improve the API and its documentation.
 - b) The design of the iCity Camp
- E. Hands on special tools: In the previous version of the deliverable D2.2 Evaluation reports of *Co-creation bootstrapping* the focus was to understand the differences of each city innovation ecosystems but in this new version, WP2 proposes an unified approach over all the different requirements that will suit all the partner cities during the WP5 activity.

During the stakeholders engagement process and project consolidation WP2 foresees different stages whose success is key to the further development of the project.

2.1.2. Head, re-design and its bootstrapping

The first attempt to assess the ecosystems of the iCities faced a strong barrier to get feedback from the proposed questionnaires. Cities exposed that it was very difficult to get quality and quantitative answers from potential stakeholders before involving them in the project. Another problem about the questionnaires was related to its complexity. Therefore WP2-WP4 decided to redesign both the questionnaires and the process to collect the feedback.

Iteration meetings new questionnaires

The new feedback gathering process addressed in a different way the 4 groups defined by the project as potential stakeholders by the theory of quadruple helix (governments, companies, researchers and citizens). Firstly, WP2-WP6 designed a new type of questionnaires (**see annex**): those that collect the assessments made by the participants of the iteration meetings organized by the cities involved in the *iCity* Project.

These questionnaires were anonymous and specifically designed to gather information from this kind of events, but they were also used, indirectly, to cover information that could not be properly collected through the first questionnaires. Secondly, WP2-WP6 did 9 semi-structured interviews to members of the four groups of potential stakeholders. The definition of the questionnaires and the process is described below:

The main goals of these questionnaires are:

1. To obtain primary data of this type of events to make a diachronic and synchronic assessment of all project development stages.
2. To be able to compare the iteration meetings organized by all the cities involved in the *iCity* Project.

So iteration meetings questionnaires were created ad hoc and adapted taking into account the three different types of iteration meetings:

1. Engagement of new stakeholders (1st iteration meetings)
2. Engagement and new apps development (2nd iteration meetings)
3. Engagement, development and co-creation (*iCity Camp*).

The three types of questionnaires share a first part from which basic data of the people who fill them up was gathered: type of participant, area of expertise and how did they heard about the *iCity Project*, as well as information about the date of the event and the city. The idea is that this information can be crossed with the rest of the questionnaire responses, so that information can be segmented into several profiles of participants and topics of expertise.

The second block of questions is what differentiates the questionnaires prepared for each type of iteration meeting. All are *Likert* scales ranging from “strongly disagree” to “strongly agree” with three intermediate levels: “disagree”, “neither agree nor disagree” and “agree”.

Participants are asked to indicate the level of agreement with the given statements. These statements corresponded to some of the indicators collected in the deliverable D6.1 “Evaluation methodology of the project”, classified into three axes: co-creation methodology, ICT-mediated governance and delivery of services of public interest.

Thus, the 3 types of questionnaires included the following items:

- Information about the *iCity* project provided before the meeting/camp was relevant.
- Information about the *iCity* project provided during the meeting/camp met my expectations and needs.

The training with dummy data/demo with *iCity API* was useful to understand the *iCity* platform processes and technical operation.

The *iCity* project team should encourage feedback, debate and questions from the attendees and provided adequate answers.

The following statements, focused on development, were only included in the questionnaires distributed in the 1st and 2nd iteration meetings:

- I experienced difficulties in understanding the technical details.
- The feedback was useful to move forward.
- My participation in the event/camp was useful to improve my knowledge and skills.
- The *iCity* Platform is appropriate and helpful for designing and developing apps in the near future.

And finally, only in *iCity Camp* questionnaires WP2-WP6 asked for the following item:

Of the following concepts, which one defines *iCity* Project better?

The last block was shared among all types of questionnaires, as the first one. Questions were specially focused on assessments on several aspects of the meeting/camp:

- Did you set up professional new networking during the *iCity Camp* in order to collaborate with other participants in the framework of the *iCity* project?

Ratings:

- Structure
- Technical resources
- Usefulness
- Overall rating of the meeting/camp
- Overall rating of *iCity* Project
- Improvement proposals (only for *iCity Camp* questionnaires)
- Interest in following events
- Main reason for no (if applicable).

Before doing the innovation ecosystem of each city survey at the iteration meetings, WP2-WP6 facilitates the questionnaires templates to the meeting organizers.

Then, during the meetings, WP2-WP6 circulated the questionnaires among participants before starting community building and feedback and an explanation about how to fill them up was given. In the questionnaire presentation, participants are told that their opinions would be treated confidentially and anonymously, and the *iCity* Project team would only use the data. Questionnaires are responded in approximately 10 minutes.

The session leaders (*iCity* Staff) clarified doubts and helped those participants that needed additional information to answer the questions.

Throughout the whole length of the project cities have held 8 iteration meetings and 125 questionnaires have been answered.

IM type	City	Wave	Date	# questionnaires
1	Genoa	1	26/09/2013	6
1	Barcelona	1	30/09/2013	6
1	Bologna	1	01/10/2013	21
2	Barcelona	1	18/12/2013	32
1	Genoa	2	19/12/2013	10
2	Barcelona	2	13/02/2014	12
2	Barcelona	3	25/02/2014	12
iCity camp	Barcelona	1	14-15/11/2014	26

2.2. Heart and hands on methods redesign and its bootstrapping:

In this section it will be described the approach of WP2 to redefine the design of the Heart and Hands on methodology and to adapt it to the requirements of the project during its bootstrapping. Taking into account the lessons learned and the feedback received from stakeholders during the engagement activity, WP2 redesigned the methods to concentrate the activity with the developers and stakeholders.

Moreover, the planning of all the engagement and co-creation activities was redistributed and aligned with WP5-WP4 strategy where the consortium decided to delay the engagement of developers and companies until iCity could be able to ensure a more attractive platform (developer portal, APIs, Information systems) for third parties.

The previous mentioned situation lead WP2 to refine the distribution of the methods and engagement activity planning proposed in the iCity methodology.

2.2.1 Communication plan

The new version of the communication strategies applied to support the engagement activities gathers a description of the main actions taken to involve still more participants to the *iCity* project. The new strategy was complementary to the actions detailed in the first version of the current document. Those actions, at least the main ones, were:

- A heavy use of social networks to reach as many people as possible.
- A content supply chain between participant cities to synchronize messages.
- Several recommendations for web content creation on the participant cities websites.
- Several recommendations for the *iCity* website.

Most of these recommendations, regarding social networks and the *iCity* project website, have been assimilated by WP8. Others, such as content supply chain and web content creation on City Council websites have been changed or not applied due to the evolution of the project itself.

The communication strategy for M12-M36 has been aligned with the engagement methods applied during this stage of the project where Cities have done *One to one* actions to engage new cities and to get new information systems connected to iCity Platform.

Another priority for the 2nd and 3rd year of project has been to have an operative and visible developer portal. Thus, actions to improve the user experience on the website and the engagement strategies on social networks have been of key importance.

Three main vectors have guided the engagement and communication strategies: to disseminate the Project, to have more participants in the project events, to have more developers registered in the platform and to have more platform users. Find below a description of the different communication strategies put into action for these purposes and its results.

Key messages

After the first year experiencing the project dissemination and communication, the project realized how important was to apply a content oriented strategy with key messages regarding the platform spreading concepts and messages focused on the following ideas:

- *iCity* project is about co-creation of public interest services.
- *iCity* project will provide access to municipal infrastructures.
- *iCity* project is a collaborative project expandable to other cities.
- *iCity* project is an opportunity for developers, small and medium enterprises.
- *iCity* project will be a new boost to the economy of applications.
- *iCity* project will be a key platform to disseminate developed apps.

All these key messages have been shared during meetings and events in order to familiarize both participants and people who had first contact with the project. The messages have been also the key vectors for the publication of content in the available channels: website, press releases, social networks (*Twitter, Facebook, LinkedIn, G+*) and newsletters.

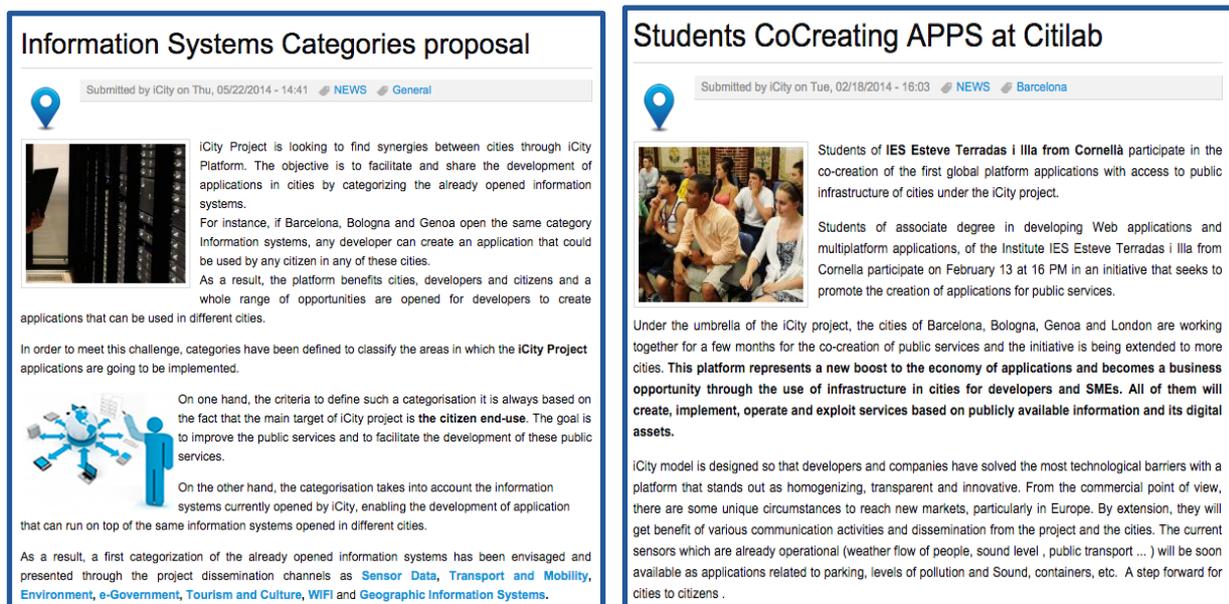


Fig. 1 News on how the platform works. Fig. 2 News on how students have co-created apps.

The goal has also been to customize the content for each target group:

- SIG (companies, universities, public institutions, others) cities
- IT Members (developers, SME's, Big Companies, Social Innovators)
- Infrastructure providers
- Citizens
- Mass Media

Press releases

At the beginning of 2014 the project's 2nd press release had as purpose to attract more cities and infrastructures to the project. The key messages were about benefits of becoming part a project focused on public interest services. The channels were specialized and technological. The users addressed were cities, institutions and providers.

A second press release had institutions and developers as a target with the message of getting involved the municipal responsible of each city. The channels were: general, technological and institutional. The users: institutions and developers.

It is forecasted a third one addressed to Citizens + Services + Institutions with the message: spread the project to society and channels: general, social, technological, economical, entrepreneurship. The main aim will be to get apps downloads and Users (Especially citizens) involved in the project.

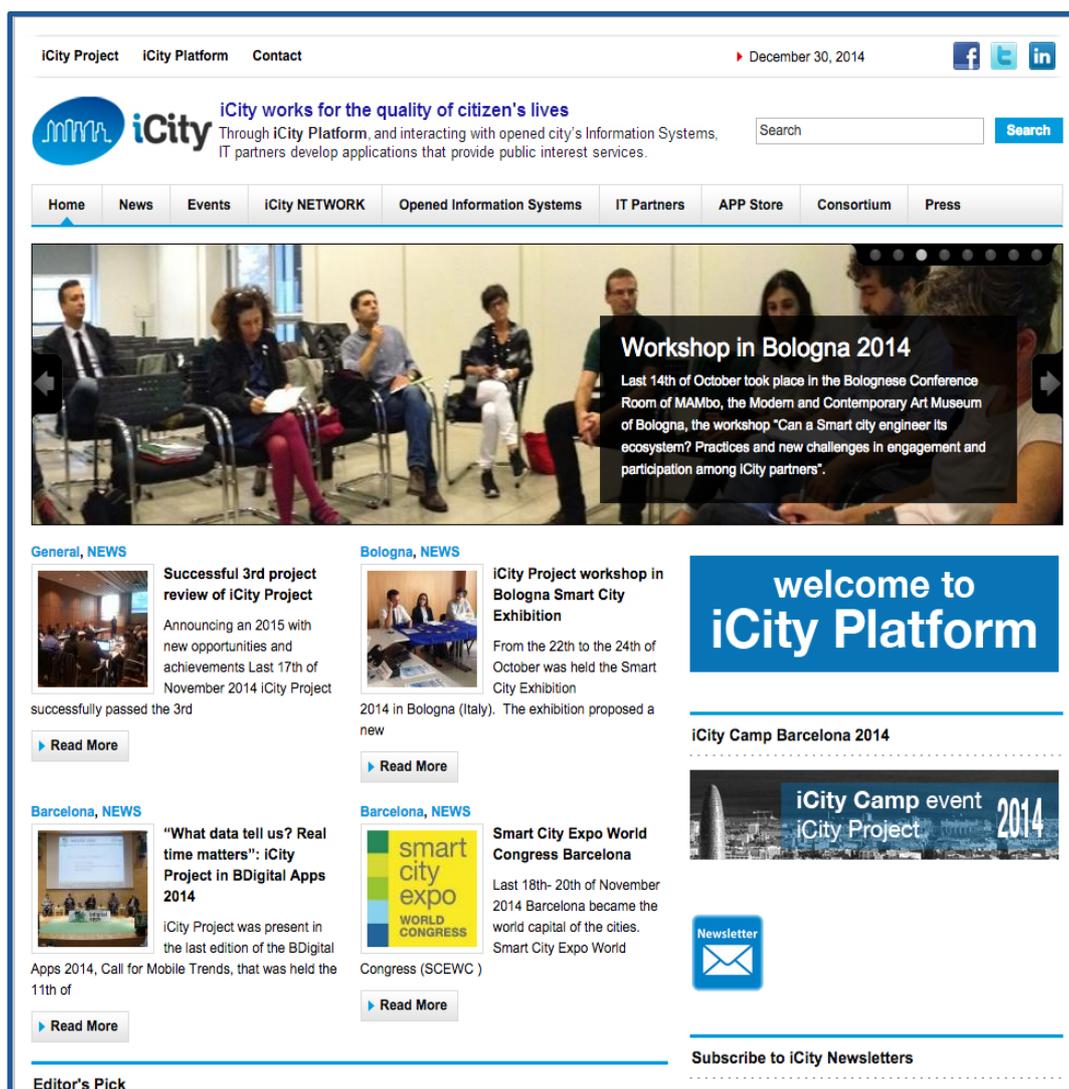
New website and .eu domain

During the M12-M36 the project has also worked on the brand awareness with the .eu domain on a new website. As the First version of the bootstrapping methodology method states: "Today the web is one, if not the main, channel of access to the public administration for citizens."

WP2 considers that the engagement strategy for *iCity* will be extremely effective and will reach many people if it is web based and uses the social networks of the four participant cities with relevant, attractive and engaging content The *iCity* Project website is one of the main gates to access *iCity* project information. It is though as an important one because for online users it will be the first contact with the project.

The 1st version of the project website wasn't so attractive. Content was missing and the frequency of the updates was low.

In the beginning of the 3rd year of project, a new website with much more content and a different



layout has been released¹. WP8 has been in charge of the new website design and features. The main purpose of the release were: to obtain a more content-oriented website, more oriented to social networks with easy editable contents.

Figure 3. Screenshot of the new website's homepage

The new website intends also to bring the content closer to citizens and more understandable as well as open the edition tools to all the partners.

The main features are: a new news section with content updated more regularly, a calendar for events section; the display of different membership categories (consortium, SIG, Piloting Group); the publication of Infrastructures information systems of each city with a table displaying the available opened information systems; a consortium members area; and a better display of the iCity Platform access (unifying the developers portal in one portal).

¹ www.icityproject.eu.

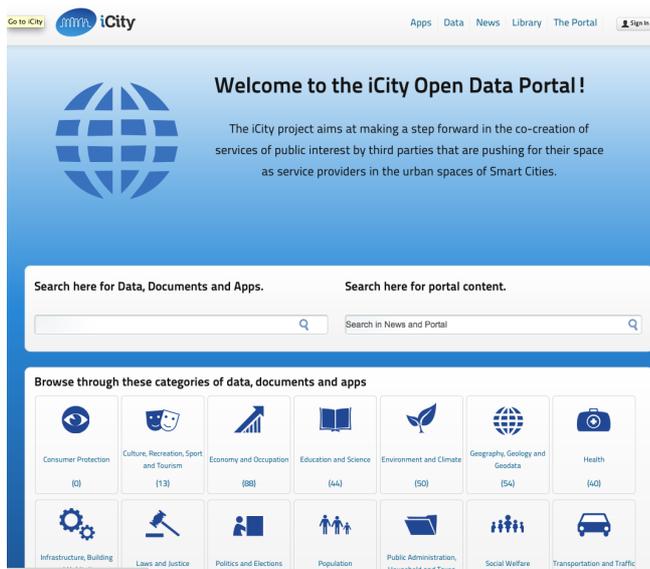


Figure 5. Screenshot of the iCity Developers Portal.

Here are described some of the benefits of the new website release:

- Increasing sessions and users, increasing number of visited pages.
- Bounce has decreased, that shows the quality of users and visits.
- Increasing total, direct and referral sessions. That means the good SEO and branding on the web.
- Increasing social sessions. That means a good link building by social networks, especially Twitter, Facebook and LinkedIn.
- The number of saw pages has increased.
- Most visited page are increasing

According to Google Analytics, the top website visits by country are Spain, Italy, UK, Brazil and France.

The progress of visits to the website has been increasing steadily: From 1.909 visits in M22, to 2.793 in M25. Last month with data available (M35) registered 4.304 visits, almost four times the visits in M25.

Social networks

The D2.2 Evaluation reports of Co-creation Bootstrapping first version dealt also with social networks as a powerful tool to get engagement from people. Several recommendations were made but the principal was to gain audience, an objective accomplished. Below is presented a description of the M12-M36 main accomplishments regarding social networks divided by channel.

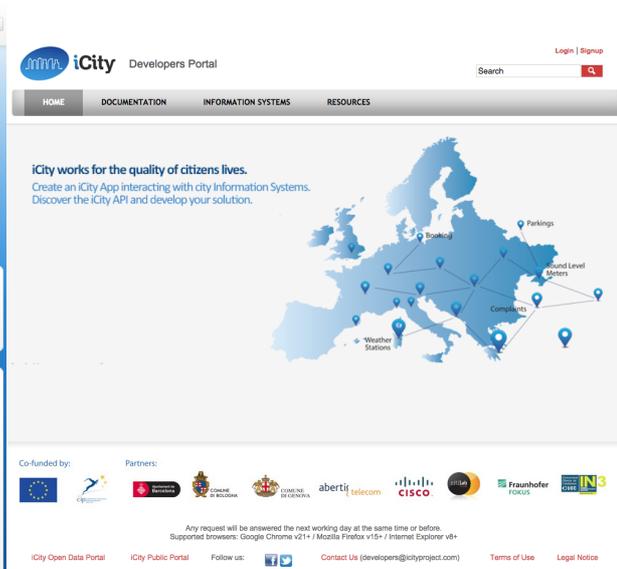


Figure 4. Screenshot of the iCity Open Data Portal

Twitter



Figure 6. Screenshot of the *iCity* Twitter

Twitter efforts have been focused on the promotion of different hash tags for each smart city event, which was also published on the website calendar. The account has followed and mentioned other accounts involved in the project. (IT partners, city agents, organizations, institutions, etc.) There have been re-tweets about information related to the project or of interest for the *iCity* Project involved community such as information on smart cities, IT Partners, App development, etc. The Twitter account has been very active when the project was

participating in different events. From 289 followers in M22 the incremental evolution has been steady but significant: 324 (M23), 442 (M25) and the current one reaching 861 at M36. See annex for Twitter metrics from M22 to M25.

Facebook

On Facebook efforts have been made to engage IT Partners community, creating and participating in the discussion of events related to the app creation to give them a window of opportunity, as well as locate pages from their communities.

It has been active on the communication of the contest for applications design. The Likes on Facebook have grown significantly and can be checked on the Annex. The *likes* progress was 169 on M22 to 190 on M25 with the current 242 (M36). See annex for Facebook metrics from M22 to M25.



Figure 7. Screenshot of the *iCity* Facebook.

LinkedIn

On LinkedIn the strategy has been to create and participate on several group discussions about smart cities, IT Partners, App development, etc. with experts involved in the project.

Discussions have generated interesting information and the community growing and engagement to the project.

Google+

Although this social network is not updated on a regular basis a global message regarding the project has been published for SEO reasons.

Youtube

On *Youtube* the project has made an update of the corporate video.

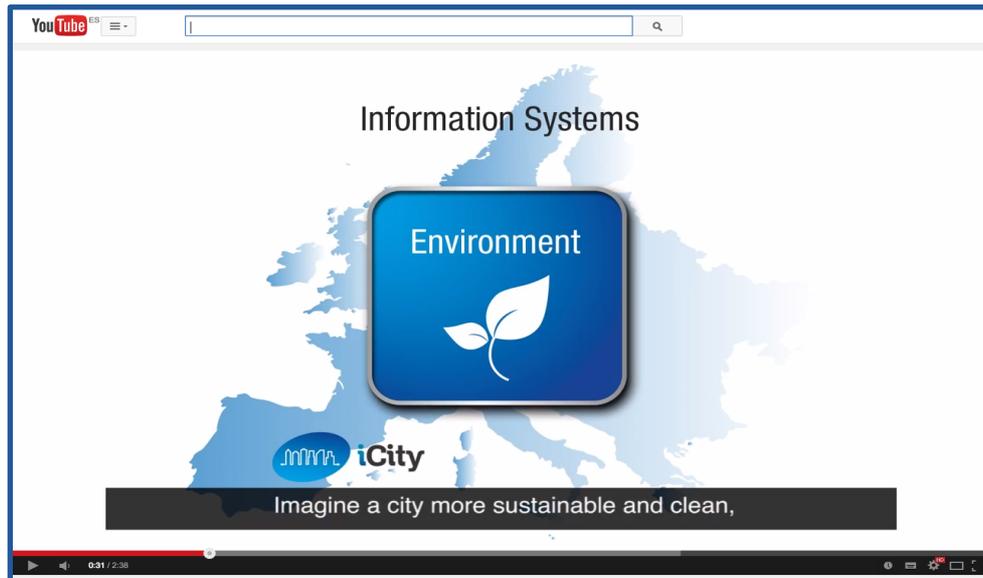


Figure 8. Screenshot of the iCity YouTube

Metrics

The communication strategy during M12-M36 has also improved the measure of impacts both on the websites and social networks in order to have a better picture of the user experience with the project. Every month the impact in social networks has been calculated with a document of total indicators (below presented).

The metrics are considered the monthly impacts following this formula:

Channel	New formula
<i>Twitter:</i>	(Monthly tweets x All followers) /3+ Mentions + Re-tweets
Website: icityproject.eu	Month Visitors x (Page/Visitor)
<i>LinkedIn:</i>	(Monthly post x All likers) + (Older pots x Monthly New likers)
<i>Facebook:</i>	(Monthly post x All likers) + (Older pots x Monthly new likers)
<i>Youtube:</i>	Monthly reproductions of all <i>iCity</i> related videos
Newsletter:	Monthly Openings

* Monthly Calculation: by simply adding all the result values

* Year Calculation: adding all the monthly values

Network	Indicator	M 12	M 17	M 18	M 19	M 20	M 21	M 22	M 23
		Dc 12	My13	Jn13	Jl13	Ag 13	St 13	Ot 13	Nv 13
WEB	Visits Dev portal							295	330
	Pages/visit Dev Portal							13,75	13,11
	Visits	390	735	908	1078	1148	1405	1909	2332
	Pages/visit	2,79	2,02	1,87	1,75	1,71	1,61	1,49	1,44
Facebook	Likes	71	92	119	127	131	158	169	178
	Post	5	18	23	25	25	26	28	30
Twitter	Tweets	26	70	85	94	94	100	120	143
	Followers	106	178	209	234	243	255	289	324
	Mentions	31	60	73	86	86	111	123	151
Youtube	Retweets	61	62	63	63	63	68	81	133
	Reproductions	300	491	561	698	773	932	1125	1319
Newsletter	Clicks	0					43	52	62
LinkedIn	Followers	0	104	146	193	204	235	240	243
	Posts	0	8	14	20	22	22	23	24

Fig. 9 Table displaying web and social network metrics from M12 to M25

Custom leaflets printed

The communication has also worked on the offline field printing custom leaflets for the event participation.

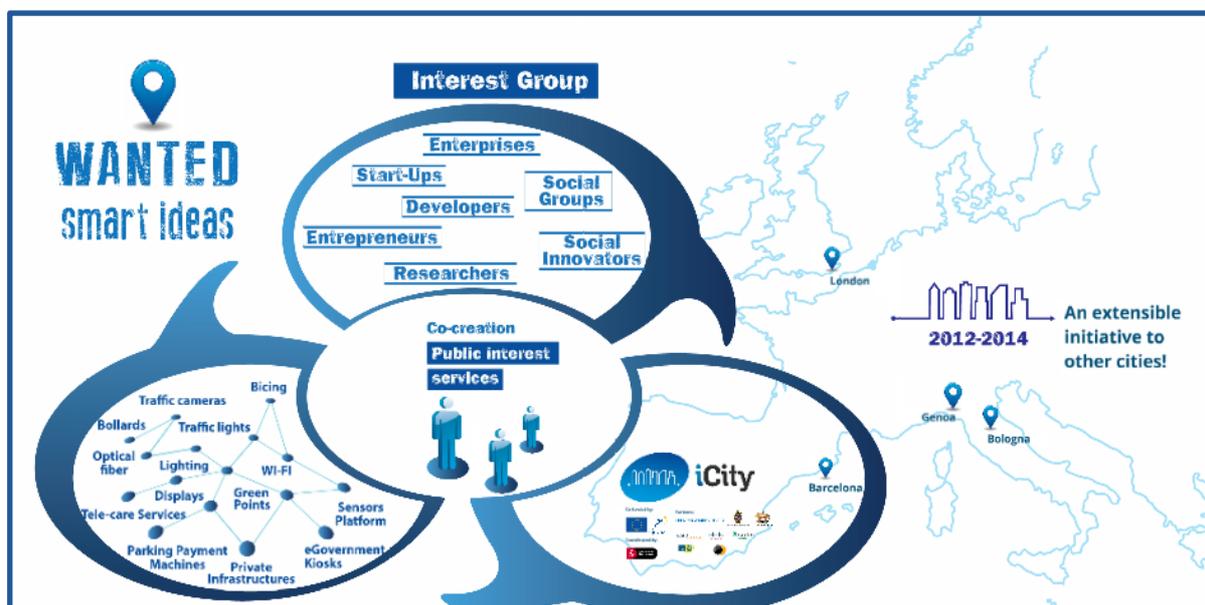


Fig. 10 leaflet released for engagement purposes

Participation in events

For communications purposes, iCity has participated actively in over 30 events during the M24 and M36 period. That was one of the prescription recommended in the D2.2 Evaluation reports of Co-creation Bootstrapping and has been fully accomplished. Find below a detailed list of the events:

17-19 January	Hackathon	Rome (Italy);
14-15 February	I Congreso Nacional sobre nuevos modelos de ciudad. El reto 2020: la ciudad sostenible.	Barakaldo (Spain),
17-19 February	Data Days	Brussels (Belgium).
6-13-19 March,	La ciudad del futuro. La ingeniería y las ciencias	Madrid (Spain),

	de la ciudad.,	
13-14 March,	Ciudades Digitales. La tecnología aplicada a un nuevo concepto de sociedad.	Arona – Tenerife (Spain),
12 March,	Govern Obert. Afers Públics, Activisme i Gestió del Coneixement.	Barcelona (Spain),
10-11 March,	Innovation Convention 2014	Brussels (Belgium),
24-25 March	EuroCPR 2014	Brussels (Belgium),
8-20 March	Future Internet Assembly (FIA)	Athens (Greece),
19-20 March,	European Data Forum 2014 (EDF),	Athens (Greece),
12-13 March,	Gartner Enterprise Information & Master Data Management Summit,	London (UK),
27 March,	Barcelona <i>iCity</i> : Open & Social Innovation's Ecosystems,	Barcelona (Spain),
25 March,	Oportunidades de negocio y empleo en las ciudades inteligentes,	Valladolid (Spain),
27-29 March,	Spaghetti Open Data Bologna,	Bologna (Italy),
23-24 April	III Smart Energy Congress. Eficiencia Energética en Espacios y Edificios Conectados.	Madrid (Spain),
3-4 April	Sabadell Smart Congress 2014, Congrés Internacional de Ciutats Intel·ligents	Sabadell (Spain),
9 April	Internet of things Day	Barcelona (Spain),
2-3 April,	1st European Conference on the Future Internet (ECFI),	Brussels (Belgium),
29-30 April	<i>Smart to Future Cities 2014</i>	London (UK),
13-14 May,	<i>Smart City Event</i> ,	Amsterdam (Netherlands),
14-15 May	<i>Big Data Innovation Summit</i>	London (UK),
27-29 May	<i>Bdigital Global Congress 2014</i> . The Big Digital Bang	Barcelona (Spain),
27-29 May	<i>FORUM PA 2014</i>	Rome (Italy),
29-30 May	<i>APIdays Mediterranea - The sunny side of APIs</i>	Barcelona (Spain),
5-11 May	<i>Big Data Week Barcelona</i> . BDW14	Barcelona (Spain),
5-11 May	<i>Big Data Week London</i> . BDW14	London (UK),
5-7 May	<i>ICT2014 - International Conference on Communications. Telecomunicaciones: Cooperation for a United World</i>	Lisbon (Portugal)
29-30 May	<i>APIdays Mediterranea - The sunny side of APIs</i>	Barcelona (Spain)

	29-30 May	
6-8 May	<i>XIV Congreso Español sobre Sistemas Inteligentes de Transporte</i>	Madrid (Spain)
7-8 May	<i>Smart Lighting 2014</i>	Barcelona (Spain)
10-11 June	<i>Smarter Cities 2014</i>	Santander (Spain)
11-13 June	<i>TECMA, Feria Internacional de Urbanismo y Medio Ambiente</i>	Madrid (Spain)
12-13 June	5th European Summit on the Future Internet	Luxembourg
13-14 June	<i>IV Jornadas CIDES: Ciudades y Desarrollo Sostenible</i>	Bilbao (Spain)
16-20 June	<i>Smart Week</i>	Genova (Italy)
16-20 June	IoT week 2014	London
12 June	<i>Eurocities</i>	Tallin (Estonia)
7-9 August	<i>Scratch@MIT</i>	Boston (USA)
24-25 September	<i>2ª Expoconferencia Ibérica de Espacios Urbanos Inteligentes. Smarturban</i>	Badajoz (Spain)
2-5 September	<i>ENoLL 5th Summer School 2014 (Living Labs)</i>	Amsterdam
17-20 September	<i>IV Campus Party in Quito: The future of Internet</i>	Quito (Ecuador)
2-3 October	Greencities & Sostenibilidad, Inteligencia Aplicada a la Sostenibilidad Urbana + Foro <i>TIKAL</i> América Latina	Málaga (Spain)
15-16 October	5ª Congreso Nacional <i>Centac</i> de Tecnologías de la Accesibilidad. Tecnologías accesibles, motor económico, motor social	Málaga (Spain)
22 October	<i>III Congreso Mediterráneo. Eficiencia Energética y Smart Green Cities</i>	Tarragona (Spain)
6-9 October	<i>Open Days- 12th European Week of Regions and Cities</i>	Brussels
22-24 October	<i>Smart City Exhibition 2014</i>	Bologna (Italy)
14 October	Workshop in Bologna: Can a Smart city engineer its ecosystem?	Bologna (Italy)
14-15 October	<i>Abu Dhabi's Smart Cities for Sustainable Development. European and GCC Perspectives & Horizon 2020</i>	Abu Dhabi
7 October	<i>Homer Project</i>	Brussels
18-20	<i>Smart City Expo World Congress 2014</i>	Barcelona (Spain)

November		
11-12 November	<i>Bdigital</i> Call for Mobile Trends	Barcelona (Spain)
7 November	<i>Smash Tech</i>	Barcelona (Spain)

Newsletter

The newsletter shipment has been bimonthly since M30 and addressed to two-distribution list: Special Interest Group (SIG) and *iCity* members (*iCity* Team members) delivering some of the most important and relevant news regarding the project. The database has increased from over 200 subscribers in M30 to over 400 in M36. The average open rate stands between 35% and 40%, way above industry average.

Successful 2nd iCity Project annual Review
The second annual review of the iCity Project was held on Thursday, 19th February 2014 at the premises of the European Commission in Brussels. The meeting brought together the project leaders of the different Word Packages and cities involved in the project. [Read More>>](#)

Information Systems Categories Proposal
iCity Project is looking to find synergies between cities through iCity Platform. The objective is to facilitate and share the development of applications in cities by categorizing the already opened infrastructures. [Read more>>](#)

iCity activities
Eurocities, 12th June in Tallinn. [Read more>>](#)
Eurocities, 3rd - 4th April in Barcelona. [Read more>>](#)
Future Internet Assembly (FIA), 18th - 20th March in Athens. [Read more>>](#)
Sabadell Smart Congress, 3rd - 4th April in Sabadell. [Read more>>](#)

Upcoming Events
Smartweek 2014 in Genoa, 16th - 20th June in Genoa. [Read more>>](#)

New cities engagement
Manchester

NEW CONCEPT OF PLATFORM
The first one able to interact with city Information Systems. iCity is a secure, stable and standardised platform that makes possible to access to Information Systems in order to create new services. It is the first one able not only to read data, but to interact with information systems. That's what makes it different, pioneer and attractive, specially, for their users: developers and information Systems providers. [Read more >>](#)

From the beginning of this year on, iCity Project has been working to find new pilot cities to be involved in the project. It has been a shift of focus in the strategy of the project mainly to cities and information systems. The aim is to bring a new concept of opening information systems not only addressed to European cities, but to the information systems owners that can create new business opportunities and services for public interest. Engaging new cities and implementing new information systems is the primary objective now. For the moment, cities are responding very well to engagement actions, so there are good expectations from now on, in the iCity strategy of growth. [Read More>>](#)

Fig. 10 & 11 June newsletter

Global Apps, global world
Imagine a unique fusion mobile app, for example, that can be used at the same time in Genova, Barcelona and Bologna, with a side front interface for all the cities. Imagine that this app could be technically available for information systems owners (cities and companies) that are connected with iCity Platform. This is a step forward in homogenising the data provided by cities stakeholders and public administration and iCity Project turns this challenge into reality. [Read More>>](#)

Spaghetti OpenData
iCity Project was present at the *Sabadell OpenData* Community meeting, held on 20th March in Sabadell with a workshop. It has been one of the most important events related to the iCity engagement strategy in the Sabadell city. [Read More>>](#)

The future of iCity Project
On 19th and 20th of June was held in Genova the 6th City Project Consortium Meeting. During the first day took place the TMT meeting (Technical Management Team meeting). During the second day, the focus of the PMIC meeting (Project Management Committee meeting) turned to the strategy and project continuity. [Read More>>](#)

Genova Smart Week & iCity
From 16th to 20th of June 2014, Genova (Italy) hosted the *Genova Smart Week*. During this event more than 15 European Projects were presented, as well as the *European smart assembly* (European Federation of Agencies and Regions for Energy and the Environment) and the forum of *EU (International Communication Union)* on the subject "The city we want: smart and sustainable". [Read More and view the videos.](#)

Fig. 12 July's 2014 newsletter

Join the iCity Camp 2014 event & don't miss the iCity Contest!
Save the dates! iCity Camp is an event that will be held on **today, 4 November**, from 8:30 to 17:00, in **Genova de Sant'Agostino (Borghetto)** and **Monday, 18 November**, from 10:00 to 17:00, in **Genova Cornice di Lidojorno**. These are going to be two days of talks, discussion, networking, ideas and the **iCity App Contest** around iCity Project.

iCity Project bets for electric cars
Genova City Council shows a promising potential collaboration and pattern use case with the electric vehicles industry. In Barcelona the electric vehicles are now being introduced on the market and Barcelona the City Council is working on developing the charging station network. The city has already 200 charging stations already implemented in the metropolitan area of Barcelona and plans are running to extend the network offering better coverage and flexible better service supply. In this context Barcelona City Council has invited discussions with the electric vehicles market players.

SEAT signs a letter of interest with iCity Project
This week SEAT has signed a letter of interest with iCity Project. This confirms the interest for the company and other companies for the project as a potential replicator of the iCity solution, whose innovative approach proved to be consistent with the IT strategy. This letter has been signed after SEAT has been informed about the iCity project. [Read More>>](#)

Fig. 13 October and November 2014 newsletter

Media appearance

The communication strategy has worked also on the media coverage field trying to reach offline audiences on the technological-smart city fields. The following magazines have published reports on the *iCity* Project Actual Smart City (September 2014 issue), November 2014 issue, Web October 2014, Dapper December 2014.



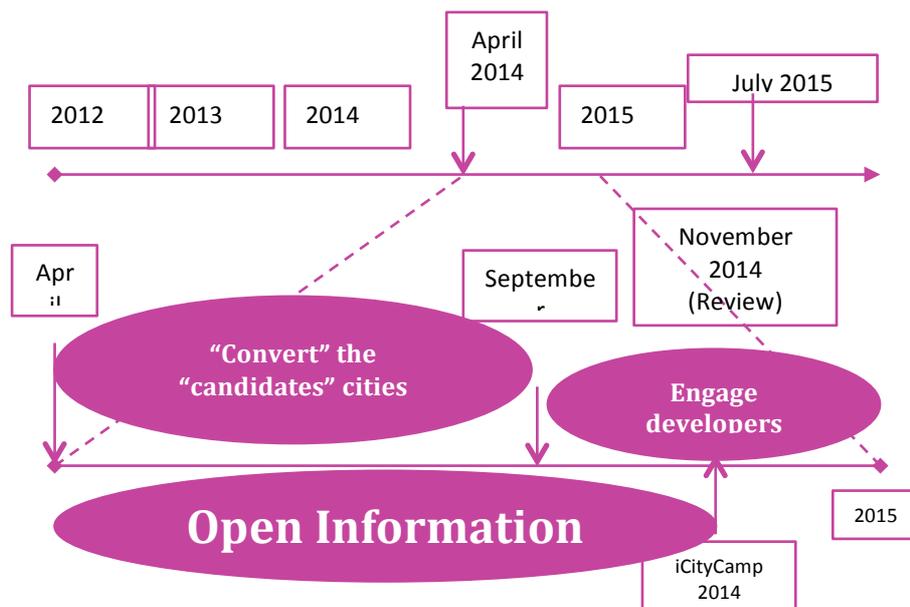
Fig. 14, 15 & 16 Actual Magazine issue and Dapper cover.

2.2.2 One to one engagement

During 2013-2014 all the engagement activity was translated from WP2 to WP5. At this point WP2 started to work within the WP5 to help with the engagement strategy bootstrapping. At the beginning of 2014, WP5 decided to adjust the *iCity* engagement strategy in order to achieve the most important indicators of the project:

- Number of cities involved (that provide at least an information system).
- Number of information systems opened by *iCity* Platform.
- Number of developers using *iCity* Platform.
- Number of applications generated using *iCity* Platform.

In order to increase the values of the previously mentioned indicators; WP2-WP5 teams designed the following engagement strategy:



The key idea of this approach was to focus the WP5 engagement effort in the opening of more information systems. The approach to achieve it was to engage new cities to join the

project and provide information systems API. Therefore the main goal was to engage new cities to adhere to the project before summer 2014 and to work on opening new information systems API through new cities joining the project.

After summer, and until the end of the project, September 2015, WP5 goal is focused on the engagement of developers (freelancers or developers from companies).

Cities engagement

WP5 first actions – regarding this engagement strategy – were to engage cities that already signed a letter of interest, during the first year of project and to engage new European Cities through participating to European events dedicated for cities.

In this regard, the cities of the *iCity* Consortium, at that moment, Barcelona, Bologna, Genoa and London, had as objective to engage cities from their surroundings as for example:

- Barcelona: Barcelona Metropolitan Area and the rest of Spain.
- Bologna: Bologna Metropolitan Area and the right part of the north of Italia.
- Genoa: Genoa Metropolitan Area and the left part of the north of Italia.
- London: London Metropolitan Area and the rest of UK.

Moreover WP5 Leadership (with the help of WP1) dealt with the rest of Europe through different engagement activities: one to one engagement, attendance to European cities events and through synergies with other European Projects (only in clear opportunities, for instance, Lamia city, in Greece).

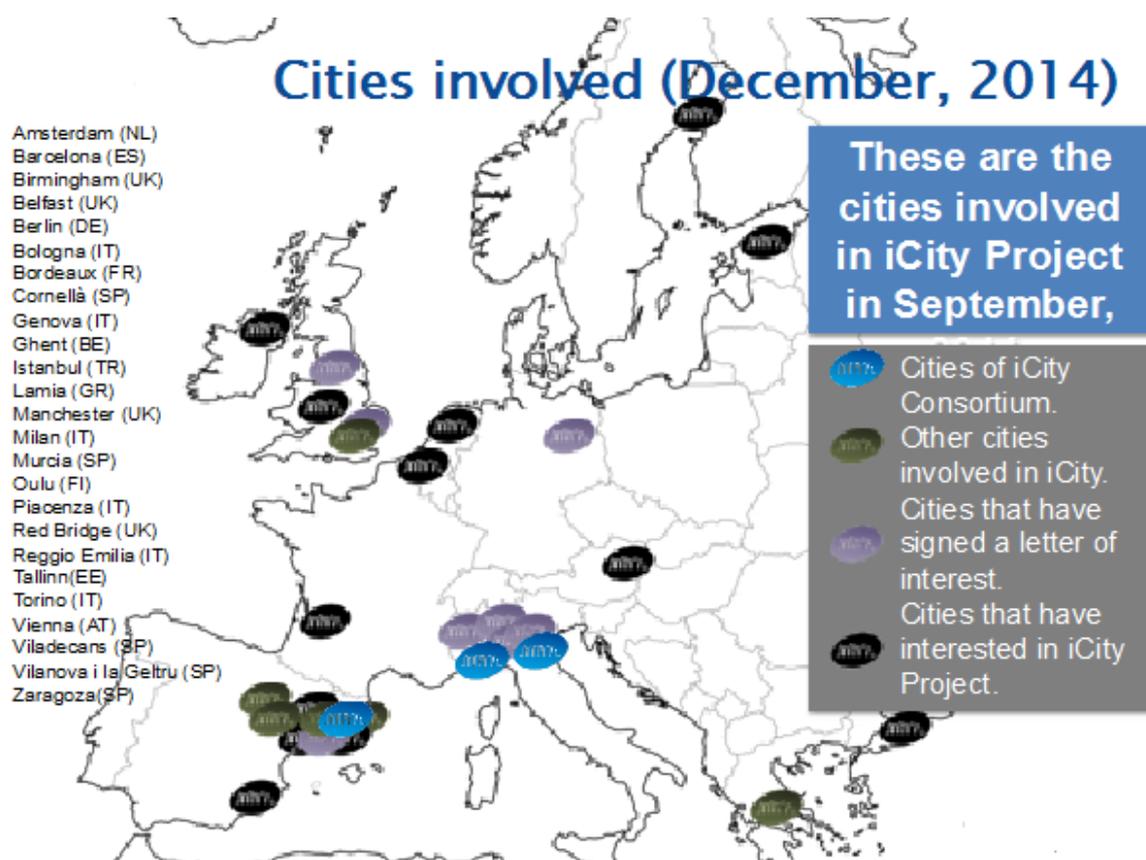
The idea was clear: to convince new cities (in fact, new Governments) to open, at least, an information system API via *iCity*.

Below are presented the conclusions of the cities engagement:

- Cities' interest (even if was very high) does not necessarily convert automatically into readiness. It's a hard and slow process. Sometimes it was a matter of year due to the low development of technological maturity of the city.
- Cities' strategies for public services need a certain level of maturity. Some cities were interested to adopt the *iCity* Platform but they hadn't well defined the city information systems API's architecture.
- On the other side Cities' asked for more time to start being involved in the project due to political implications. The technological concept of platforms for cities information systems data is starting to take shape and cities are witnesses of a need to take decisions on best platform that fits for their city offering a scaled business plan.
- Cities' need resources devoted to work on technical API's implementation.
- Cities' public information systems have different levels of complexity, in most of the cases a very low level of maturity. Opening them up requires specific analysis and in many cases significant redesign.

Therefore, engaging new cities to use *iCity* Platform it's not easy, but WP5 achieved some of them.

At the end of 2014 WP5 had information systems from 10 organizations (9 governments, 1 private company). In addition, 8 other cities signed a letter of interest with *iCity* Project.



2.2.3 Co-creation and iCity ecosystem building

The co-creation ecosystem building methods described below are applied to fortify the relation among stakeholders and their commitment to the project. The methods demand the stakeholder's active participation. The activities include an *iCity Day* as a *1st Iteration Meeting*, App Development Groups as a *2nd Iteration Meeting*. A 3rd Iteration Meeting for an App Co-Creation plan is also programmed. These activities, organized to foster co-creation among the innovation ecosystem, are developed in parallel with the *One to One activity* engagement. Below we explain how those methods work:

1st iteration meetings

Barcelona, Bologna, Genoa and London celebrated their first iteration meeting. The objective of this type of meetings is to get in touch with the created ecosystem and starting the relation with its members. The objective was to go beyond the mapping of the ecosystem and activate a community of users.

In this stage of the process the project had a prototype of the platform as a portal, its API, as well as a road map of the information systems to open.

Each city shared with participants the scenarios that they were working to identify information systems and the ones that they were opening. The participants were positive to the project and the service. They gave relevant feedback but there was clear that they were making important requirements in order to be able to adopt it.

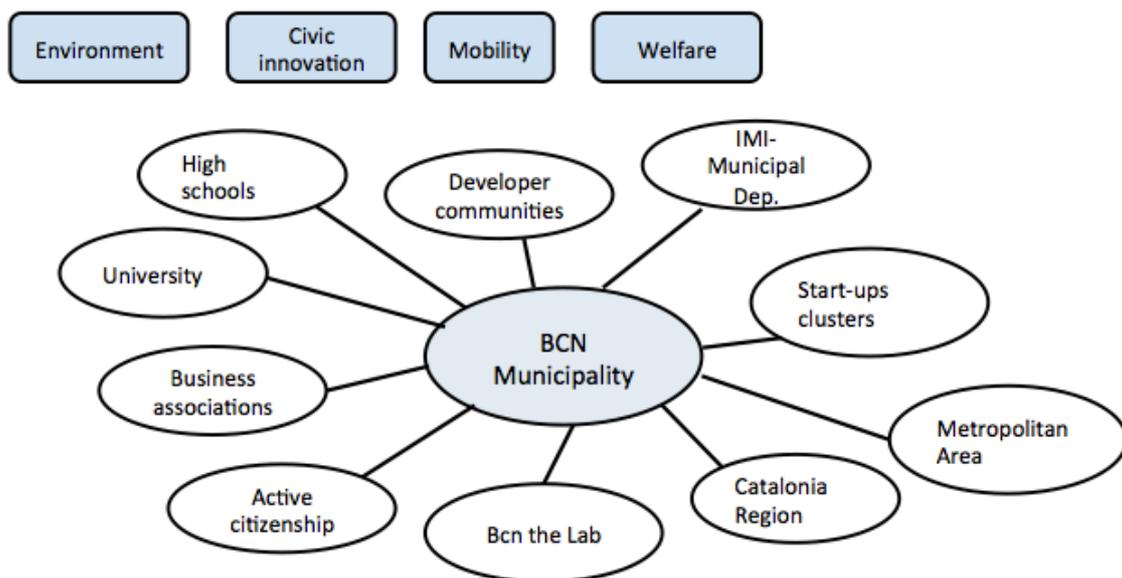
The project got app proposals from the participants but there was not enough involvement to conform *iCity* Scenario commissions.

In terms of the methodology, this tool proposes to identify the circuits (events, sites, publications, etc) of co-creation for each app proposal and understand the drawing power, impact, operation and access roads to assess their contributions.

An important change that WP2 did, following the indication of *iCities*, was to simplify the first iteration meeting. The activity to split the participants in different discussion tables was tested in a meeting at Bologna that was dynamized by Citilab but in the first iteration meetings the activity defined to split the participants in different Scenarios-commissions was not done. During the first iteration meetings there were not enough information systems nor enough involvement of participants. For that reason, WP5 moved the activity dedicated to the definition of the different scenarios from the *2nd iteration* to the *3rd iteration meetings*. Even though, *iCity* scenarios were presented, participants asked questions about them, *iCity* team answered those questions and took in consideration their comments and suggestions.

Barcelona's 1st iteration meeting

First iteration meeting at Barcelona was celebrated at the Centre Cultural *La Farinera del Clot*. The *iCity* team invited Barcelona developer communities champions: *FEWLAPS S.C.P Dept. LSI/UPC, Softcatala, CATPL, GDG de Barcelona, NSBarcelona, JUG Barcelona, Catalunyaapps, Catdroid /Catalunya apps, Perl monger, Mozilla Catalunya*. Six representing those developer communities assisted to the meeting. All of them were contacted through On to one approach.



Participants showed a positive feedback to the open infrastructure (information systems) concept but they expressed their low knowledge of open infrastructure (information systems) concept; Participant developers also questioned about the feasibility to open infrastructures because for them, if to open data is perceived as a difficult process, to open infrastructures would be much more difficult. They also expressed their concern about the end date of the project in relation to the *iCity* as a service: December 2014 seems too close, what will happen in 2015.



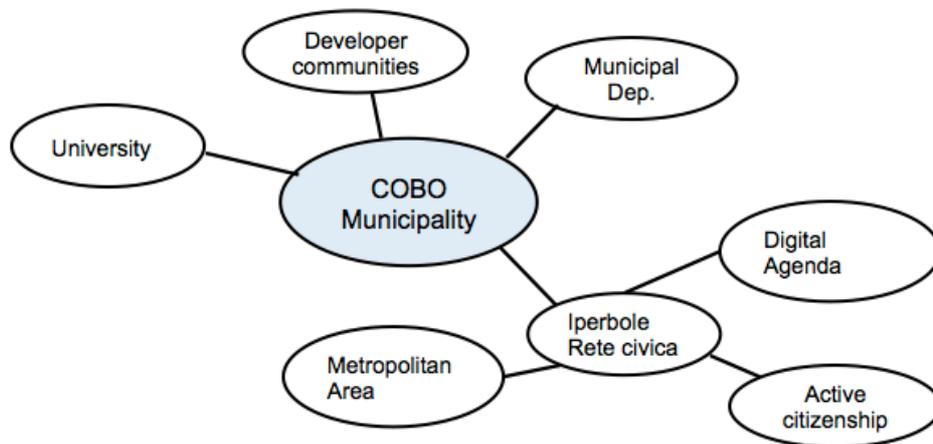
Due to the delay experienced in the project and taking into account the feedback of the developers before presented, a project extension was proposed by the project consortium and accepted by the Project Officer being reflected in the Description of work. iCity Project will finalize his activity at the end of September 2015,

Bologna’s 1st iteration meetings

Bologna celebrated two first iteration meetings.

The first time, Bologna *iCity* team invited relevant stakeholders from its innovation ecosystem regarding mobility and citizenship information systems scenarios that the city decided to make accessible through iCity.

To this meeting there were Municipality of Bologna’s IT, International Relations, Social Media Areas participants. There were also attendants form the Emilia Romagna IT Area, the University of Bologna, the Marconi labs, the RAspiBo, the ERLUG, the Orlando Association and the Snark companies, as well as freelance developers and data journalists.



The debate from the participants and the *iCity team* provided useful questions for developers interested in creating Apps based on *Open data* inserted in *iCity* platform, such as asking if data are updated in real time or are static. (In fact, open data present in the platform are not all dynamic, in general data are saved overtime and some of them are inserted once a year, as data relating to the budget of a given project, but there are also data which are updated in real time, "live", as data traffic).



Participants also showed a strong interest in having open data integrated on the platform in order to make apps development easier and quicker.

Another interesting question was raised about open data licensing, if it is the same for everyone or if it can be customized for each user.

In terms of problems, participants asked when they could have access to an operative *iCity* Platform. At the end of the meeting, the participants have been told that the Bologna APIs (ready since the spring 2013) would have been integrated in the *iCity* platform and made available to the developers by the end of October, according to the deadline planned by WP4.

The second 1st iteration meeting was celebrated on 14th of October 2014. The meeting took place in the Bolognese Conference Room of MAMbo, the Modern and Contemporary Art Museum of Bologna, the workshop "Can a Smart city engineer its ecosystem? Practices and new challenges in engagement and participation among *iCity* partners". About 20 attendees were present, mainly belonging to Bologna Municipality (Culture, IT, International Relations, and Communication Departments) and Bologna University and Emilia-Romagna Region.

This round table was a moment to think about the challenges of citizen engagement and participation in process of building an urban ecosystem, inspired by *iCity* Project by the experts attending the workshop.

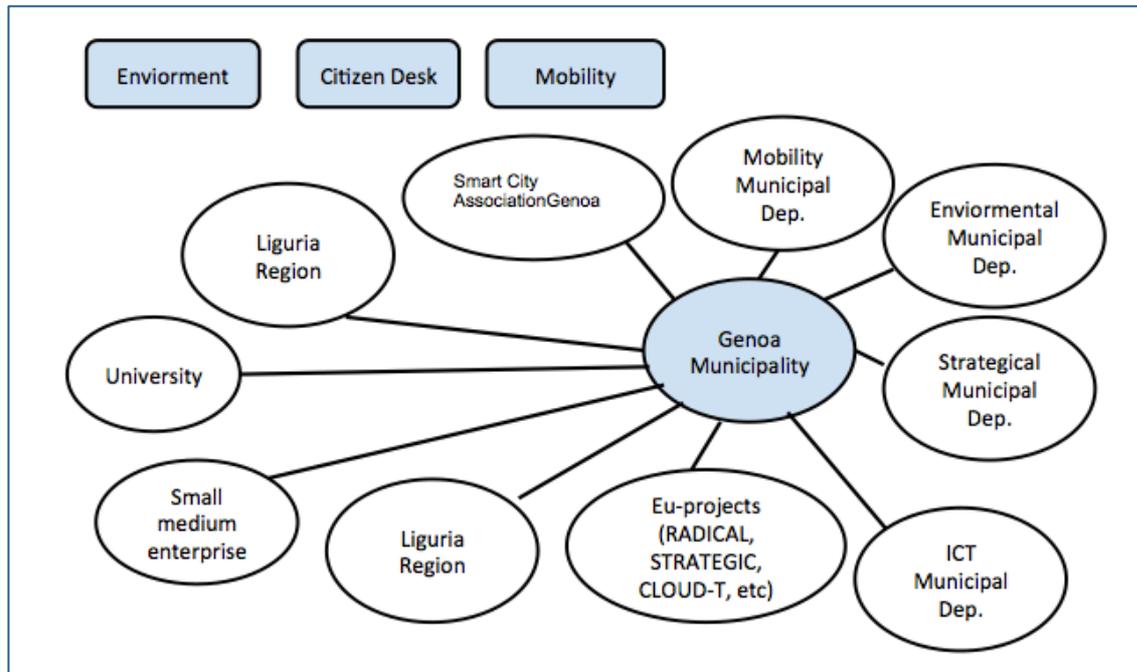
During the first part, there were introductory partner interventions and project manager of the Scientific Committee of the Strategic Plan for Metropolitan City. The second part was moderated by Gaspar Caliri and consisted in a discussion and an attempt to answer the title question: Can a Smart city engineer its ecosystem?

Ramon Ribera-Fumaz, from Universitat Oberta de Catalunya, member of *iCity* Project, explained the concept of ecosystem and models of development with *iCity* Project as a reference. Leda Guidi, from the Comune di Bologna, and also member from *iCity* Project, talked about the participatory and collaborative platform Iperbole 2020. For its part, Valentina Bazzarin, research fellow from the Political and Social Sciences Department of the University of Bologna, focused on how social media and communities can contribute in building and leading a urban ecosystem. And finally, Daniele Donati, President of the Scientific Community for the Strategic Metropolitan Plan of Bologna illustrated which are the challenges and opportunities of the metropolitan cities.

Genoa's 1st iteration meeting

Genoa celebrated two iterations meetings.

The first iteration meeting organized by CDG was addressed to stakeholders of the Genoa's open innovation ecosystem.



CDG proposed to open information systems about mobility, citizenship and environment as their main scenarios.

There were questions about which kind of open data will be available and underlines the importance of having real time data more than "historical" data to develop interesting apps.



Which sensors will be available? CDG answered that at Genoa, they were opening weather, traffic and pollution information systems. Conductor underlined the fact that also London and Barcelona were making available their traffic data that could be a great opportunity for the developers.

They asked about for a global evaluation of the platform competitiveness taking Google under consideration and last but not least, participants asked the *iCity* team if the flow of the data will be provided only from the platform to the outside or it is possible to also upload data from outside. The *iCity* team explained that at this moment the flow was from the platform to the outside but maybe in the future it will be possible to allow the uploading of the data coming from users.



The attendees at the second 1st iteration meeting were companies and freelance developers from Genova. They were a total 12 startup companies created by young developers, 3 freelance developers, representatives from the University Informatics Department, the Open Data Association represented by 5 companies, 3 Municipal employees working on ICT field.

The event started with the presentation of the *iCity* Project made by the representative of the Comune di Genova team: Ms Alessandra Risso, Mr Giuliano Zanoni and Mr Roberto Contri.

Mr Roberto Contri exposed a more technical session based on the platform technical use and structure. The technical session was divided in 2 parts. During the 1st part were presented examples of data that can upload through *iCity* Platform, use of the developer portal, services that can be developed through *iCity* Platform.

The 2nd technical session was devoted to the development of apps and source code. An example of app was presented and some examples of source code were studied.

After the technical session, the meeting attendees had the opportunity to provide some feedback related with the *iCity* Project. The use of homogeny data was an interesting highlight that offered a first approach regarding the development apps that could work for different cities.

The data will be uploaded by public sectors and private sectors therefore the developers will have a large range of data at his disposal for apps creation.

The Municipality of Genova will work on legal side to ensure the data legal protection in order to be able to use/upload the data for/from other projects and to enlarge the number of apps development (services of public interest) through other initiatives as:

- GeoSmatCities (geolocation of underground infrastructures)
- I-Locate (geo-location of people and objects indoor of the buildings, indoor navigation)
- ELE.C.TRA (electric powered transport) University involvement: o It's very important the University involvement and there are some instruments to involve the students. (i.e. internship, thesis) o Involvement of business entities in post degree phases.

Achievement of the engagement goals.

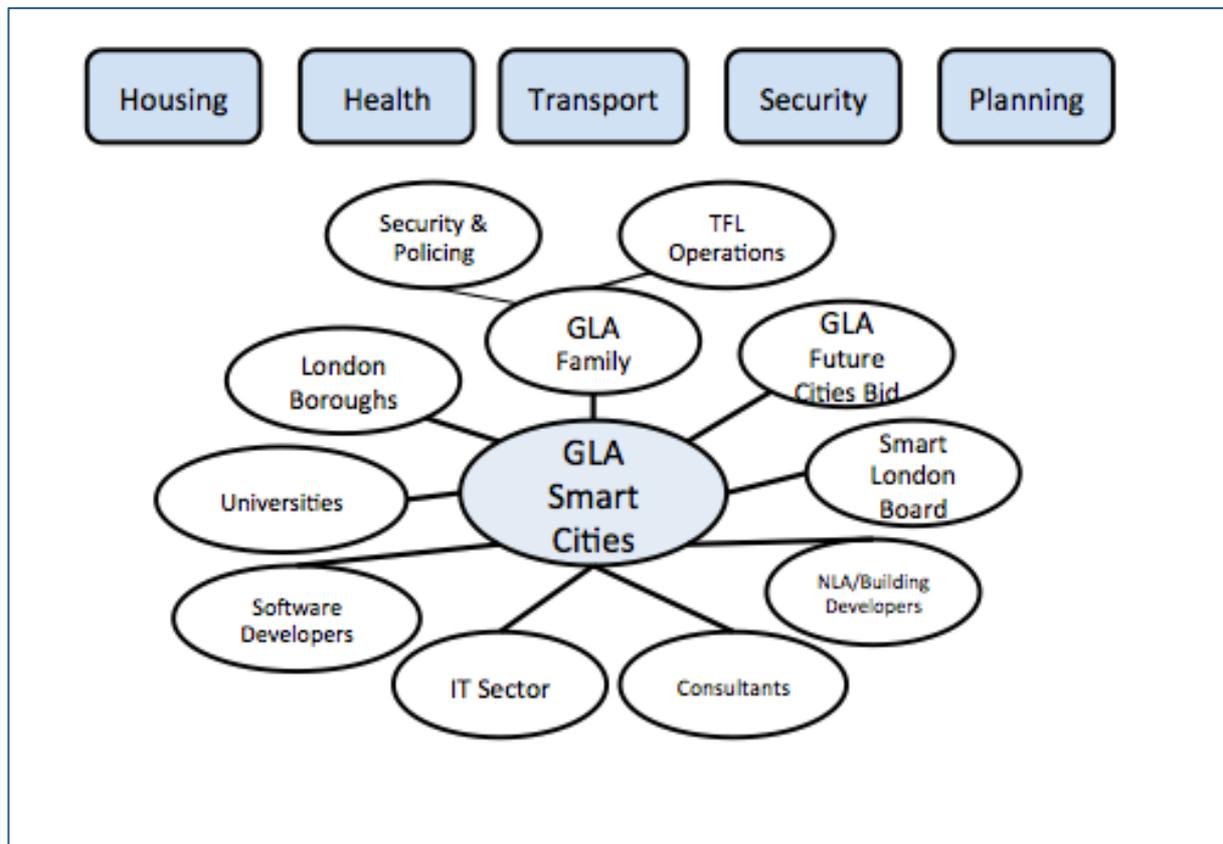
- To obtain new SIG members (indicator #3: 13 new stakeholders by city as a minimum, of which 7 should be young developers). All the participant gave their commitment to become members of the platform. 15 people (10 young developers) are involved in the platform.
- To obtain App proposal letters (indicator #7: 12 new app proposals)

- Community building: a possible creation of a developers group between University and some developers

GLA 1st iteration meeting



GLA then ran a stage one-initiation breakfast event, which was attended by over 150 people with a wide range of infrastructure interests.



GLA has identified transport, energy, health, and open data as the main components to transform London and its 33 Boroughs in a 'smart city'

GLA worked with selected boroughs e.g. Croydon on devising a program to roll out open data/open infrastructure (information systems) solutions in areas such as parking, tele-health, home based energy reduction.

GLA had speakers covering everything from more technical Urban Platforms, where *iCity* spoke about *iCity/Open Data*, Internet of Things and Big Data, to discussion about the types of 'smart' communities.

London is likely to want to emulate in the future – techno city, community, or secure city. Community was preferred.

GLA also looked at emerging smart cities in particular *Masdar* and the work of the *Future Cities Catapult*, which pulled out examples from *Singapore and Datong China*.

There were more than 120 participants in the meeting. The audience expressed different interests regarding the project:

1. They were very interested in 'data as a utility' and how *iCity/Open Data* could help enable and deliver data as a service to the public sector and citizens.
2. Participants also wanted to know more about smart cities from around the world, and to understand how technologies such as Wifi/GSM location intelligence and GIS (Geo-location information systems) will help with modelling future cities.
3. We received several requests for more technical and general information on the *iCity* platform.

2nd iteration meetings redesign and its bootstrapping

Going from mapping the ecosystem to activation of the community users. The strategy for the activation of proposals (Connected with the Hands on Call for ideas objectives) should rely on Development groups that are encouraged to map circuits of co-creation related with *iCity* Project for the development of apps.

2nd iteration meetings activity proposes to identify the potential circuits (events, sites, publications...) of co-creation for each app proposal. The first objective is to understand the drawing power, impact, operation and access roads to assess participant's contributions.

The aim of this workshop is the confirmation of developers (individuals or teams) that want to develop an *iCity* app.

This meeting activity proposes to identify, from each app proposals, the potential circuits or scenarios (events, sites, publications...) were is possible to foster the co-creation and to understand the drawing power, impact, operation and access roads to assess their contributions.

Once uses and users have been identified, we will characterize the different actors involved in this area of activity, define their roles, identify and assess the need to bring in new players to complement their current capabilities. The ultimate goal is to engage and mobilize those stakeholders that can benefit from the intended uses and those who can help them to take advantage of this opportunity

There were two main reasons that drove WP2-WP5 to redesign the 2nd iteration meeting.

A) The feedback of the communities and cities partners got during the first iteration meeting. Developers need hands on the platform to be involved in the project. Beside W2 decided to include the Head activity from the workshop as the one to one approach for questionnaires could block the engagement of the stakeholders in the events. Therefore the questionnaires are done within the event.

B) The consortium had to face that the already accessible infrastructures (information systems) still not sufficient to provide a suitable apps development environment. So WP2 designed a 2nd iteration meeting to enforce the use of the *iCity* Platform by inviting the developers to get subscribed.. The adaptation of the workshops was envisaged as a way to get feedback from the developers on the usability of the platform and the data provided through the platform. It also enlarged the project group of interest that could be mapped and furthered contacted after the platform will be adapted to the developers' requirements and more information systems will be connected.

	Audience	Developer Communities, clusters, associations
	<i>iCity</i> Presentation	The objective was to clarify the open infrastructures (information systems) and public interest services concept and to persuade them to start using <i>iCity</i> Platform. We also explained the need of getting their feedback.
	<i>iCity</i> platform presentation and registration	WP4 team explains how to use the developer portal its API and its documentation. At that moment, all the participants are invited to register into the <i>iCity</i> Platform.
	Training session	WP2 trained them in how to make your first <i>iCity</i> application (<i>javascript</i> or <i>php</i>). It was a <i>Hands on</i> activity useful to tear down the barriers to get them using the platform for the first time.
	Debate	We got feedback from the stakeholders in a qualitative way. The recording of the event allowed us to approach all the suggestions and demands.

code⁴ meant to serve as a template for the second iteration meetings

2nd iteration meeting Barcelona: Fabra I Coats



The first 2nd iteration meeting celebrated at Barcelona was celebrated at *Fabra i Coats*. *iCity* team made an open call to all the forums and developers groups previously detected. 38 developers participated in the meeting.

The training session was successful. All the participants got registered in the *iCity* portal and they follow the tutorial to develop their *First iCity app*. Citilab developed the tutorial and shared the software with participants. Nowadays any developer can find the tutorial and the NODEJS ICITY DEMO files in the developer portal.⁵

The activity and the debate were longer than expected and the time for networking was shorter. During the debate, participants asked about the nature of the platform. The developers were advised that the platform should be based in open standards and open source solutions in order to be considered an open source platform. In this sense it was explained that the platform is already taught as being an open source platform as the API's and the developer portal are open source and the manager portal could be easily replaced with an open source tool, this being already stated in the business model of the project. Therefore *iCity* Platform is taught as open source model.

Participants asked to include some new functionality in the global *iCity* API that treat the data more easily for mobile applications purposes. This was considered a really good feature for the mobile app development. Another issue that participants asked for to the *iCity* team were more infrastructures (information systems) on related with transport in Barcelona. They had a special interest for infrastructures (information systems) that really impact on commercial basis.

Finally they asked us about technical information about the data and the quality of the data of the infrastructures (information systems). All the technical changes proposed by participants were facilitated to WP3-WP4-WP5 in order to be evaluated.

2nd iteration meetings at Citilab

⁴ <https://github.com/bromagosa/icity-node-demo/tree/master/workshop>

⁵ <http://icity-devp.icityproject.com/apiresources/appgallery>

CTL also tested the *2nd iteration meeting* format with young developers. Therefore Citilab invited two Vocational Education and Training (VET) students' courses.⁶



For participant young developers, as a students, it is important connect their learning with real world innovative projects. Participant teachers considered that *iCity* Project was an useful learning tool to be used for dedicated workshops with students. Participant students did not have the skills of a professional developer. But as young developers, they could explore *iCity* Platform and its tools. Besides, they are potential participants for future *iCity* co-creation events and its feedback was relevant.

The Node.js environment is not basic so that reason the activity was more complicated for the students. Citilab team had installed the node.js and the dependencies that were necessary to develop the app to each laptop.

Almost all participants were able to finalize their test application, but there were to many technical concepts in relation with the *javascript* language and node.js that took an important time. So the time to think in potential applications was reduced. The other group was more familiar with the technology used during the session but the problems with the platform reduced the time to develop the app.

As a negative result, during the final talk, all the questions were about technical things, but not about the project. Finally, the networking during the *2nd iteration meetings* with the *Esteve Terrades VET* students was not applicable because all the participants already knew each other.

WP2 understood that it was important to work previously with the teachers so they can do a previous work with the students. This is very important to foster debate. They didn't had questions on the project just about technical issues related with the app development. The problems faced at the start of the session caused a delay that affected the time for the debate.

WP2 understood that is important to explain to the students that this event is not just a class. Our approach tries to show an *iCity* app development process, from the beginning to the end but is not the best approach to teach how to program. It is important that the teacher clarifies the difference to the students.

Main relevant contributions made by attendees:

The register could be more agile. It was mentioned that the subscription process should be

⁶ <http://www.esteveterradas.cat/>: Course on Multiplafom development and Course on web app development. The students of these courses are focused to learn how to develop applications

improved as the communication (emails) through the subscribe process was missing. Participants suggested to have a direct support line (Chat) or to ensure that the questions made by forum are answered on real time, avoiding long delays. The developers expressed that not knowing when the answer it's going to arrive, does not help. They also suggested that It would be interesting to have access to traffic sensors or other related information to allow the development of an app about the better routes to take in order to skip traffic jams.

iCity Camp: pushing development forward.



First day of the iCity Camp

The *iCity Camp* was designed to start the pilot activity.

During the morning of first day, of the *iCity Camp* the program followed the structure of a first iteration meeting as the presentations were addressed to explain and give context to the *iCity* Project.

	Open Call	<i>iCity</i> Camp website, <i>Eventbrite</i> and social networks
	Project presentation (First iteration meeting)	(First iteration meeting approach) David Osimo (data openness), Jordi Cirea (<i>iCity</i> Project objectives), Platform presentation, Round table (information systems responsible) coordinated by Cities.
	Third iteration meeting dynamic	Citizenship, mobility, and environment scenarios debate to arise needs and solutions (future app proposals ideas), coordinated by CTL
	<i>iCity</i> Tour	Inspirational activity

	Semi-structured interviews and questionnaires	Coordinated by the UOC
	Networking	We provided a non-formal relational environment to foster alliances to encourage relation building to enhance co-creation in next stages.

First iteration meeting activity approach developed within the iCity Camp

This first session track corresponded to the methodology approach described in the first iteration meeting.



David Osimo's talk⁷ was very important to inspire the *iCity* participants because he explained very well the openness concept that provides an important context for the *iCity* project. One of his most enlightening contributions was that the success indicator is not that a lot of people is using an open data, open government, or open infrastructures(information systems) service. David Osimo pointed out that what really matters is that the right people are able to access it.

⁷ David Osimo, "How important is openness in governments, enterprises...society" see in the annex.



The reason to that argument is based in the fact that one individual can develop something very important. Therefore, in the openness projects it is not quantity but the possibility that at the right moment someone can use it and deliver something very valuable.

Jordi Cirera, as the project Manager at Barcelona City Council and iCity project coordinator presented his keynote “What is *iCity* Project and what it will be?” to explain the aims, the value proposal, the challenges and achievements of the *iCity* Project.

Round table on how cities have dealt with the *iCity* Project challenge to open their information systems



The roundtable was moderated by Artur Serra, who representing Citilab. This session dealt with different issues: What have cities opened so far? What problems does a city need to deal when opening information systems? What do participants want to open from now on?

Sergi Amigó, as Barcelona iCity responsible explained that is hard to open information systems that allows read and write because it is mandatory to have a test environment and usually those information systems don't have it implemented. Amigo believed to have a platform for sensors open a first step, but believes that iCity important step should be the development of systems that require two-way. iCity provides this possibility bidirectional, allowing the developers to read and collect data incidents that users provide. With a one-way system would not be possible this collection of incidents. Currently, BCN is working on a

project to provide information on the status of the lights in the cities and the time that is needed for changing traffic lights.

Roberto Contri explains that Genoa has been developing projects based on the IOT (Internet of Things), but parallel, wanted to develop projects focused to respond the needs of the citizens. According to him the open system can be used both for institutions and for anybody that wants to use it. Contri also explains that recently CDG has created a project to analyze pollution in cities and another which consisted of locating URLs webcams, a very useful service to increase the safety of citizens.

During this session, participants raised relevant questions in relation to the guaranties of the *iCity* Platform when referring to the privacy of the citizen data. There was also concern about the Public-Private partnerships with big corporations.



Finally Alex Sala, did a quick introduction to the *iCity* portal to explain how to get registered and how and where to start in the *iCity* platform.

Third iteration meeting activity developed within the *iCity*

WP2 designed a dynamic to drive the conversation in each scenario table discussion. There were developed a set of cards simulating a mobile phone.

- **Citizenship:** Information systems related to communication with public. For example, systems that allow citizens to communicate incidents, complaints, of their city. Among the information systems participants will find cultural agendas, or information about public or private facilities, etc.
- **Mobility/Transport:** Information systems related to information that would allow improved urban mobility: real-time traffic conditions, traffic courts, construction, state of public transport, Geo-location updates of buses, trains, trams, etc.
- **Environment:** Information systems-related information - preferably in real time - on air pollution levels of allergens current state of the beaches, etc.



Each scenario was represented by a different colour. Green cards presented the environmental information systems; Blue cards presented the mobility information systems; Finally, Orange cards for citizenship. There was a set of cards to describe the information

systems of each scenario and there was another set of cards with dedicated questions for each group of stakeholders (Companies, developers, information system managers, politicians, citizens).

Finally there were a set of empty cards where participants could write down their suggestions, needs or complaints.

Jordi Cirera, *iCity* Coordinator moderated the group that worked about the environmental scenario. During the workshop participants of this table defined the need to align with the strategy of the city both the development of potential *iCity* services and the opening of new information services as one of the main requirements to convince and involve policy makers in the opening of Information Systems of their city. It was also commented that the strategy should be public and clear to ensure the awareness of the citizens, stakeholders, developers, etc., and to enlarge the knowledge related with openness of Information Systems.

The group also discussed about the importance to provide clear answers to Information Systems managers regarding why they have to open their Information Systems and what is the value that for opening it. But they also find very important to ensure the security of Information Systems, orchestration and the legal issues that are related with the service and its aperture so third parties can develop a service over it.

When they explore the needs of developers they highlighted the need to provide more information about the accessible Information Systems by *iCity*. Developers expressed their concern about the backward compatibility of the *iCity* API. Participants expressed that there are further possibilities about services beyond the apps economy. They proposed as a potential asset the possibility for third parties not only to use city data but to upload data from their apps.



Finally, participants expressed questions about the cost, fees and potential returns of the *iCity* as service.

The second group worked about the Citizenship scenario and Artur Serra, innovation director at Citilab, moderated the discussion. During the activity, the group represented the citizen public opinion.

One of the first considerations that arose from the conversation was that in order to open information systems of the city, the most important issue that policy makers must consider is Transparency.

When the group explored the needs and interest of citizens, they pointed out that it is very important to open information systems that encourages citizens to provide ideas, suggestions and request, not only complaints.

They also claimed that Information Systems Managers should ensure that privacy is respected during all the process. The main idea in the discussion was that while governments should be transparent, citizen's privacy should be protected.



The third group discussed about the mobility scenario.

Second day of the iCity Camp

The second day of the *iCity Camp* hosted of the activity designed to foster hands on development. The structure of the day is described in the table that follows:

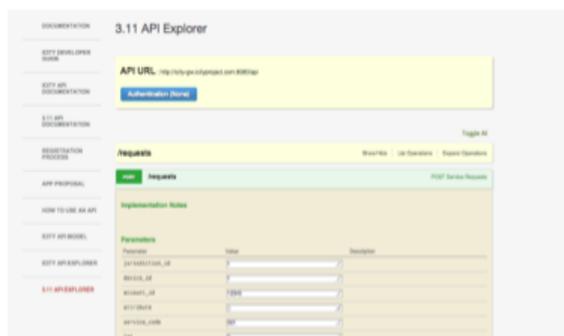
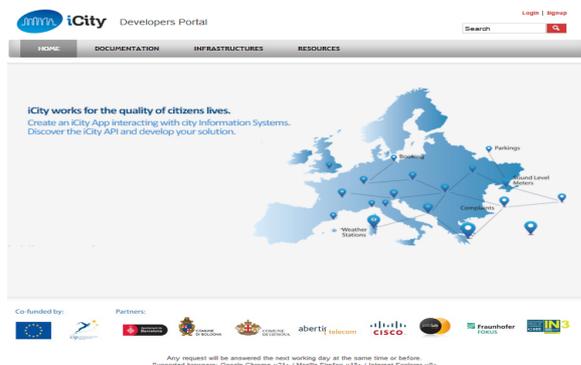
	Project presentation	Welcome and wrap up!
	City API workshop	WP4 Leader lead a demo workshop explaining how to get registered and to use the <i>iCity</i> API
	iCity Contest presentation	We trained them in how to make your first <i>iCity</i> application (<i>javascript</i> or <i>php</i>). It was a <i>Hands on</i> activity useful to tear down the barriers to get them using the platform for first time.
	Getting app ideas	<i>iCity</i> team helps participants to develop their app proposals ideas
	SnAPI! Demo	WP2 Leader leaded a workshop to empower non-developer participants so they can explore the API and prototype apps in a friendly environment.
	Fast App proposals Public presentations	Some of the participants shared in public their app proposals ideas.

2nd iteration meeting: Platform workshop: RET

During the iCity Camp a technical workshop was organized in order to have a 1st interaction with the iCity platform new functionalities and to offer the possibility for the developers to ask questions related with technical aspects concerning the platform.

Alejandro Sala, WP4 Leader, presented not only technical aspects related with the platform (how to get subscribed, API's information systems available, queries etc.) but also he made a short demo of an iCity app, developed by WP4 team.

The technical team of WP4 represented by 3 members form RETE partner attended the whole 2nd day of iity Camp, offering technical support for the development of the apps.

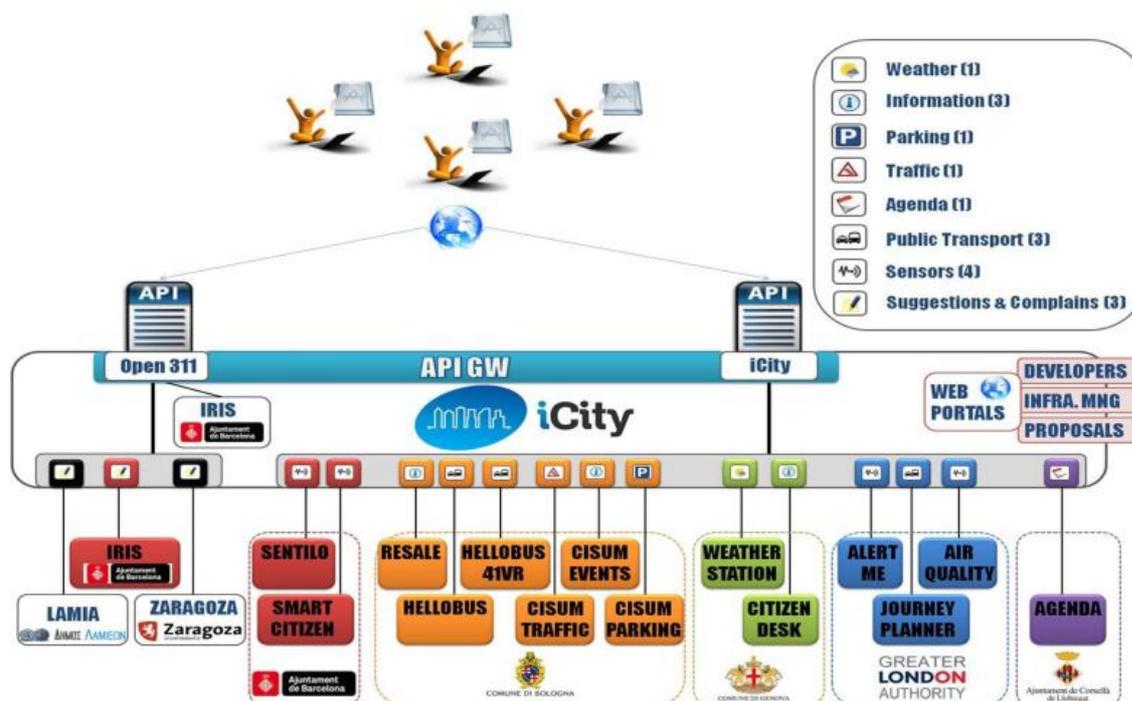


Below it can be visualized the status of the Information Systems implemented through the iCity Platform and the Coming soon Information Systems planned to be implemented during the first semester of 2015.

Information Systems accessible		
ABT	URBIOTICA SENSORS	Environment, mobility
ABT	PARKARE SENSORS	Mobility
BCN	IRIS	Citizenship
BCN	SENTELO	Environment, mobility
BCN	SMART CITIZEN	Environment
CDG	CITIZEN'S DESK	Citizenship
CDG	WEATHER STATION	Environment
COBO	TPER QUERY RESALE	Mobility
COBO	CISIUM EVENTS	Mobility
COBO	CISIUM TRAFFIC	Mobility
COBO	TPER QUERY HELLO BUS	Mobility
COBO	TPER QUERY HELLO BUS 4iVR	Mobility
COBO	CISIUM PARKING	Mobility
COR	AGENDA	Citizenship
GLA	AIR QUALITY SENSOR	Citizenship
GLA	ALERT ME	Citizenship
GLA	TRANSPORT FOR LONDON	Mobility
LAM	SUGGESTIONS & COMPLAINS	Citizenship
ZAR	SUGGESTIONS & COMPLAINS	Citizenship

Information Systems coming soon:		
GLA	CROYDON	Mobility
GLA	LIFE BUS ARRIVAL	Mobility
LAM	PUBLIC TRANSPORTATION	Mobility
LAM	WEATHER CONDITIONS	Environment
LAM	HOTSPOT PLACES	Citizenship
LAM	TOURISM INFORMATION	Citizenship
BCN	AGENDA	Citizenship
BCN	AMENITIES	
BCN	TRAFFIC EVENT	Mobility
CDG	TOURISM WEB CAMS	Citizenship
CDG	WIFI HOTSPOTS	Citizenship

CDG	AIR SENSORS	Environment
CDG	SUGESTIONS AND COMPLAINS	Citizenship
COBO	AIR QUALITY	Environment
COBO	CINETICA	
COBO	DVD/VHS CATALOGUE	
COBO	WIFI LIVE MONITORING	Citizenship
COBO	GEOCODING	
COBO	SUGESTIONS AND COMPLAINS	Citizenship



iCity Contest presentation

WP2-WP5 designed the *iCity Contest* as a competition aiming to encourage the creation of applications using the *iCity API*, which provides access to information systems (citizenship, mobility and environment), offering to developers a good environment for apps development.

The competition was open to any SMEs, team of developers, designers, scientists, citizens, etc, who want to present an app proposal and develop an application in this context.

The *iCity* Project provided a Developers portal, where participants can solve their doubts during the development stages. The participation and rules (registration calendar, rules, criteria and contest prizes, etc) of the contest are described in this document.

The *iCity* contest was presented the second day of the *iCity Camp* and it has been defined in two contests. The first one is the competition for app proposals and the second one is a competition for operational applications.

Start Date	End Date	Headline	Text
15 th Nov. 2014	15 th Nov. 2014	<i>iCity Contest Presentation</i>	The iCity contest will be presented during the second day of the iCity Camp 2014 at Citilab.
15 th Nov. 2014	30 th Nov. 2015	<i>Hands on! Getting the best App proposals at iCity Camp 2014</i>	Participants can propose their apps proposal from the launch of the Contest during the <i>iCity Camp</i> . Once an app ideas is submitted, participants will get their testing key.
15 th Nov. 2014	30 th Nov. 2015	Deadline for the app proposals	The last day to present an app proposal is the 30th of November 2014 .
1 st Dec. 2014	10 th Dec. 2014	The jury evaluate the app proposals	
10 th Dec. 2014	10 th Dec. 2014	The awarded Apps proposals names are published	

Regarding participating applications, a jury of experts has selected the best applications based on the impact in the proposed scenarios (Mobility, citizenship and environment) in terms of the service, the number of information systems used by the app and the number of potential cities were the app would be operative.

15 th Nov 2014	28 th Feb 2015	It's time to develop the <i>iCity</i> apps	After the app proposal is validated the participant will have access to the production mode of the <i>iCity</i> platform.
1 st March 2015	14 th March 2015	Jury's evaluation	The jury will vote the best Application among the app finalists
15 th March 2015	15 th March 2015	Award ceremony	

Best applications will be nominated as finalists. The jury will vote for the best finalists to choose three awarded applications among them.

The criteria for evaluating proposals and applications developed considers the best applications regarding the impact of the use of public information systems in the areas of citizenship, mobility, and environment and the possibility of using the application in several cities.

On the idea contest phase, the two best app proposals that the project received were related with each area of interest will be evaluated by a panel of experts and the SIG members. The three best ideas will be awarded according to the above-mentioned prizes.

WP2-WP5 will organize an awards ceremony in which the organizing team will announce the winners.

Participants asked the *iCity* Team about:

- Information systems (lost and found in relation to the API311 IRIS),
- How to obtain information about the number of people in the street to measure demonstrations.
- How to obtain observations about air quality for all the cities.
- How to use the API for front-end development.

First *iCity Contest* phase results:

App proposals in the Environmental scenario:

Nº	App name, and author-org	Platform	Description	IS
12	Energy game by App intelligent	• Web Apps	With the London data about energy consumption, we want to establish a social game, and each user will be able to publish their energy consumption, and establish a gamified experience of saving energy.	
13	TunedInMove by GESSIUPC	• Android/ • iOS •	<p><i>TunedInMove</i> is an app that maintains to the citizens aware and tuned in to their environment avoiding the problems presented every day in personal mobility.</p> <p>The app provides alerts and formulates suggestions of suitable urban transport, alternative routes, timetables, etc. according to the location and surroundings of the citizen (e.g. manifestations, traffic, weather, pollution, dangerous situations, etc.).</p>	
14	ecoCity by GESSI	• Android	<i>ecoCity</i> is an app that 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. The app also 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.	<ul style="list-style-type: none"> • <i>Sentilo</i>, Suggestion & Complaints Zaragoza, • <i>Iris</i> • IssueReporting Lamia

19	FitRun by Barcelona Tech	<ul style="list-style-type: none"> • Android 	<p>The name of the APP is <i>FitRun</i>. Due to the big popularity of running which is still increasing- it becomes necessary that smart cities support this practice. <i>FitRun</i> gives in real time the best route to perform the training plan based on environmental conditions such as air pollution and weather conditions, as well as improve urban mobility so that runners can train in less crowded zones and get there in their favourite transportation. <i>FitRun</i> has two main goals.</p> <p>First, it gives the best route to runners according to several factors: air pollution, concentration of people in the street, weather conditions, favourite spots of the runner, safety of that spot, and so on.</p> <p>Second, it supports runners to get and come back to/from their training zone based on the way of transportation that the runner likes, and notify to the runner's friends the training details.</p>	<ul style="list-style-type: none"> • <i>Sentilo</i> • <i>Smart Citizen</i>
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App proposals in the citizenship scenario:

Nº	App name and org/author	Platform	Description	IS
2	CityPlanner by Fibers	iOS		<ul style="list-style-type: none"> • <i>Sentilo</i>
3	Ouner by Ouner	Android	<p>Register all your belongings into a personal inventory. Add pictures, invoices or serial numbers by scanning its barcode. If you lost your phone you can show a message at your lock screen. Search through our lost and found map</p>	<ul style="list-style-type: none"> • <i>Smart Citizen, Suggestion & Complaints Zaragoza,</i> • <i>Iris,</i> • <i>Citizen's Desk & Issue Reporting Lamia</i>
5	Week&End Location by Documentala Research Ltd	Web Apps	Localize Activity	<ul style="list-style-type: none"> • <i>Journey Planner-London</i>

15	KidsPlan by UPC1	iOS	<p>Get periodic activities by age: will display all the periodic activities offered by the public and private entities of the city for children between two ages.</p> <p>Get specific activities by age and date: will display all the specific activities offered by the public and private entities of the city for children between two ages in a time period.</p> <p>Route planner between a place and the activity place using public transportation: will display different routes between two points using public transportation. The information provided by this functionality is the description of the route, the public transports to get, the estimated travel time and the cost of the route.</p> <p>This information may be ordered by different criteria (route distance, route cost, etc.</p>	<ul style="list-style-type: none"> • <i>Sentilo</i>, • <i>Cornellà Agenda</i>, • <i>Urbiotica</i> Sensors, • <i>Weather Stations</i> Genoa& Citizen'sDesk
21	uCitizens by uCitizens	Android	<p>Crowd-Sourced: Designed to gather and share all that information you care about.</p> <p>For and By Citizens: Smart Cities should help citizens fulfil their dreams, needs and aspirations. Businesses, city council, culture, entertainment ¡Name it! Share it! Rate it! Have it!</p> <p>Empowering people: With <i>ucitizens</i> everyone is invited to share their info, knowledge and personal recommendations. Everybody has its voice.</p> <p>High Performance: Fast, powerful and Cloud-based, our App will never let you down.</p>	<ul style="list-style-type: none"> • <i>Sentilo</i>

App proposals in the mobility scenario:

N°	App name/ organization author	Platform	Description	IS
10	Sightseer by ToM_org	IOS	App that helps users plan trips around the city	

13	TunedInMove by GESSIUPC	Android iOS	<p><i>TunedInMove</i> is an app that maintains to the citizens aware and tuned in to their environment avoiding the problems presented every day in personal mobility.</p> <p>The app provides alerts and formulates suggestions of suitable urban transport, alternative routes, timetables, etc. according to the location and surroundings of the citizen (e.g. manifestations, traffic, weather, contamination, dangerous situations, etc.).</p>	
15	KidsPlan by UPC1	iOS	<p>Get periodic activities by age: will display all the periodic activities offered by the public and private entities of the city for children between two ages.</p> <p>Get specific activities by age and date: will display all the specific activities offered by the public and private entities of the city for children between two ages in a time period.</p> <p>Route planner between a place and the activity place using public transportation: will display different routes between two points using public transportation. The information provided by this functionality is the description of the route, the public transports to get, the estimated travel time and the cost of the route. This information may be ordered by different criteria (route distance, route cost, etc...)</p>	<ul style="list-style-type: none"> • <i>Sentilo</i>, • Cornellà Agenda, • <i>Urbiotica</i> Sensors, • Weather Stations Genoa • Citizen's Desk
18	SmartTicks by UPC GES	Android	<p>Is an app that will help to the public transport passengers in the management of transport tickets This app will liberate to the users from: problems with damaged or lost tickets, understand the complicated zone map, searching for change in a moving bus, confusion about several kind of tickets (e.g., single, T-Month, T70/30â€!), etc. With <i>SmartTick</i> you only will need your mobile phone with you.</p>	<ul style="list-style-type: none"> • <i>Sentilo</i>

<p>19</p>	<p>FitRun by Barcelona Tech2014</p>	<ul style="list-style-type: none"> • Android 	<p>The name of the APP is <i>FitRun</i>. Due to the big popularity of running Which is still increasing- it becomes necessary that smart cities support this practice. <i>FitRun</i> gives in real time the best route to perform the training plan based on environmental conditions such as air pollution and weather conditions, as well as improve urban mobility so that runners can train in less crowded zones and get there in their favourite transportation.</p> <p><i>FitRun</i> has two main goals.</p> <p>First, it gives the best route to runners according to several factors: air pollution, concentration of people in the street, weather conditions, favourite spots of the runner, safety of that spot, and so on. Second, it supports runners to get and come back to/from their training zone based on the way of transportation that the runner likes, and notify to the runner's friends the training details.</p>	<ul style="list-style-type: none"> • <i>Sentilo</i> • Smart Citizen
<p>20</p>	<p>Movillity4all, Group of software and service engineering (GESSI)</p>	<p>Android</p>	<p>Mobility4all is an application that supports people with reduced mobility (PRM) to move around the city avoiding architectonical obstacles. Users (both citizens and city workers) may report about obstacles and their repair. As main functionalities, Mobility4all allows the planning of 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</p>	<ul style="list-style-type: none"> • Sentilo, • Agenda Cornellà, • Suggestion & Complaints Zaragoza. • Journey Planner, • IRIS, • Parkare Sensors, • QueryHello Bus, • QueryHello Bus-4ivr, • CISIUM Parking, • CISIUM Events, • CISIUM Metropolitan Traffic, • Citizen's Desk & Issue Reporting Lamia.

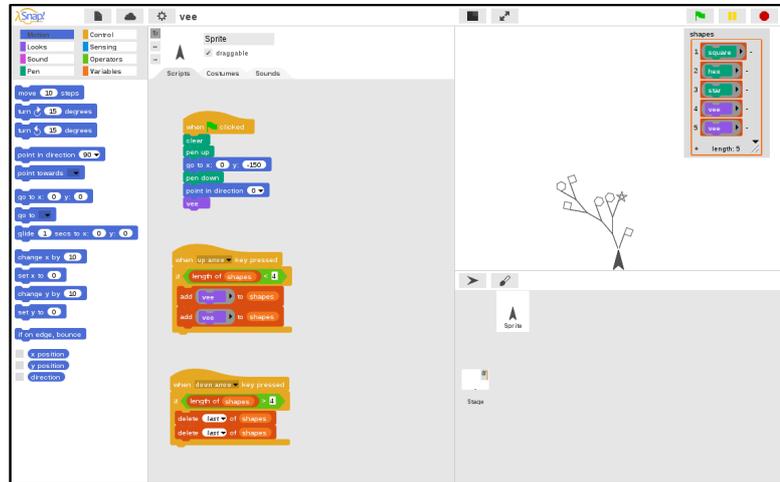
Snap! Workshop

Design: Snap! : a tool to foster prototyping of API-centred applications for the general public

What is Snap!?

Snap! is an extension to the Snap! ⁸. It is blocks-based graphical programming language / environment, which has been developed by UC-Berkeley (USA), and which is heavily inspired by Scratch ⁹ (MIT).

This language is meant to abstract traditional programming by using a graphical metaphor based on construction blocks, thus completely eliminating syntax errors and removing the need to memorize instructions and code conventions (semicolons, indentation, parenthesis, function names, etc.). Lowering the complexity of programming means it is much easier to focus in algorithmic and the abstraction of real world problems into code.



Snap! is, additionally, a language with advanced computational traits, much superior to other block-based languages. Among others, it features first-class functions, lambdas (anonymous functions), heterogeneous first-class lists, continuations, real recursively and JavaScript primitives.

Javascript is the most extended language on the Web, so the fact that *Snap!* is able to interact with external *Javascript* libraries in a transparent and fluid way makes it easily extendable and enriches the teaching experience by allowing students to work in the same way professional developers do.

Snap!¹⁰, our homebrewed extension to this language, is an approach to API programming meant for the general public. *Snap!*'s educational nature translates automatically into Snap!, thus dramatically shortening the gap between an application idea and its tangible implementation.

In order to make API programming available to the general public, many features have been added to the original language, such as new REST functionalities (GET, PUT, POST, etc), compatibility with the two hypertext transfer protocols (HTTP and HTTPS) and, most importantly, seamless integration with the JSON data type, the de-facto standard used in most modern APIs.

⁸ <http://snap.berkeley.edu>

⁹ <http://scratch.mit.edu>

¹⁰ <http://snapi.citilab.eu>

This integration has been implemented in all levels, not only adding new blocks that deal with JSON data, but also modifying many original primitive blocks so that they do not care between this data type and any other Snap! native data types. This means that all blocks related with lists and text strings can now also parse and deal with JSON data.

When working with real world data, it is often the case that big amounts of complex and intricate data need to be scooped and dealt with. Snap! does not provide any tools to visualize and tailor such complex data, so new tools had to be implemented into our extension. Among these tools, the most relevant one is the graphical JSON inspector, tightly inspired in our experience with Smalltalk environments, which reduces complexity and turns dealing with massive amounts of data into an easy and non-tiresome task.

Which is its purpose

Engaging people in programming for the *iCity* platform is not such a difficult task if one means to focus solely in developer communities. However, at Citilab we are used to work with the general public, ranging between children and elderly people, which is why we felt the need to provide with an educational tool such as *SnAPI*

By developing *SnAPI*! And by making it available to the public (and free in both senses), we managed to get students and citizens interested in API programming, and we have been able to teach them how the *iCity* platform is structured, how to create applications that use its data and how real-world applications interact with internet services such as the *iCity* platform.

Who has developed it

*EduTec*¹¹ is a research team mainly focused on technological education and the mathematics of programming. Its primary line of works consists on trying to close the gap between programming concepts and their implementation, always under the general idea that, if a 10-year-old child can understand a concept, it must be also programmable by this same child.

EduTec has developed several pieces of software -and extended several others- that follow these principles and allow us to lower the entry point into programming and technological areas, which are generally regarded as too complex or uninteresting for the general public.

It was only natural that, upon approaching the task of engaging people into programming applications for the *iCity* project, *EduTec* decided to develop tools that would make this engagement easier and available to a much broader public.

How it has been developed

*Snapi!*¹² is a direct extension of the Snap! Programming language/environment, developed in *Javascript* -the native Snap! Language and provided as free software under the terms of the GNU *Affero* General Public License version 3.

The development of this extension has been heavily influenced by our educational experiences, and has suffered many iterative modifications as we have been using it to teach API programming for the *iCity* platform in several workshops, crash-courses, lectures and hackatons.

First version: SnappiCity

¹¹ <http://edutec.citilab.eu>

¹² <http://snapi.citilab.eu>

At first, *SnappiCity!* was designed to make available *iCity* API, which is why its first version was named after it. It featured blocks that allowed us to abstract all functionalities the API provided.

Upon exploring the available queries in the platform, and based on our experience with other mature APIs, we quickly found out there were a lot of missing features. These shortcomings would make programming for the *iCity* API almost impossible for the general public, and much too cumbersome for the seasoned developers, forcing them to retrieve huge amounts of data even when only small bits of information were needed, and preventing information processing to be dealt with at the server side, thus rendering impossible to build attractive and efficient mobile applications that made use of the *iCity* service.

WP2 promptly informed the API developers and requested these features be added as soon as possible, but in the meantime CTL decided to overcome these difficulties by implementing all these functionalities (radius queries, filtering, search by field values, field trimming, aggregate functions, etc) ourselves in the client side.

Second version: SnAPI!

As we used SnAPI in different teaching events, we felt the need to integrate other APIs into the software, so that we could use simpler APIs to introduce our public into Internet data programming before tackling with the iCity platform.

Also, data from different APIs could be matched together, enriching the experience and broadening the horizons of what could be done with this extension.

We renamed the software into *SnAPI!*, and generalized it so it could deal with any REST API that used the JSON format for its data.

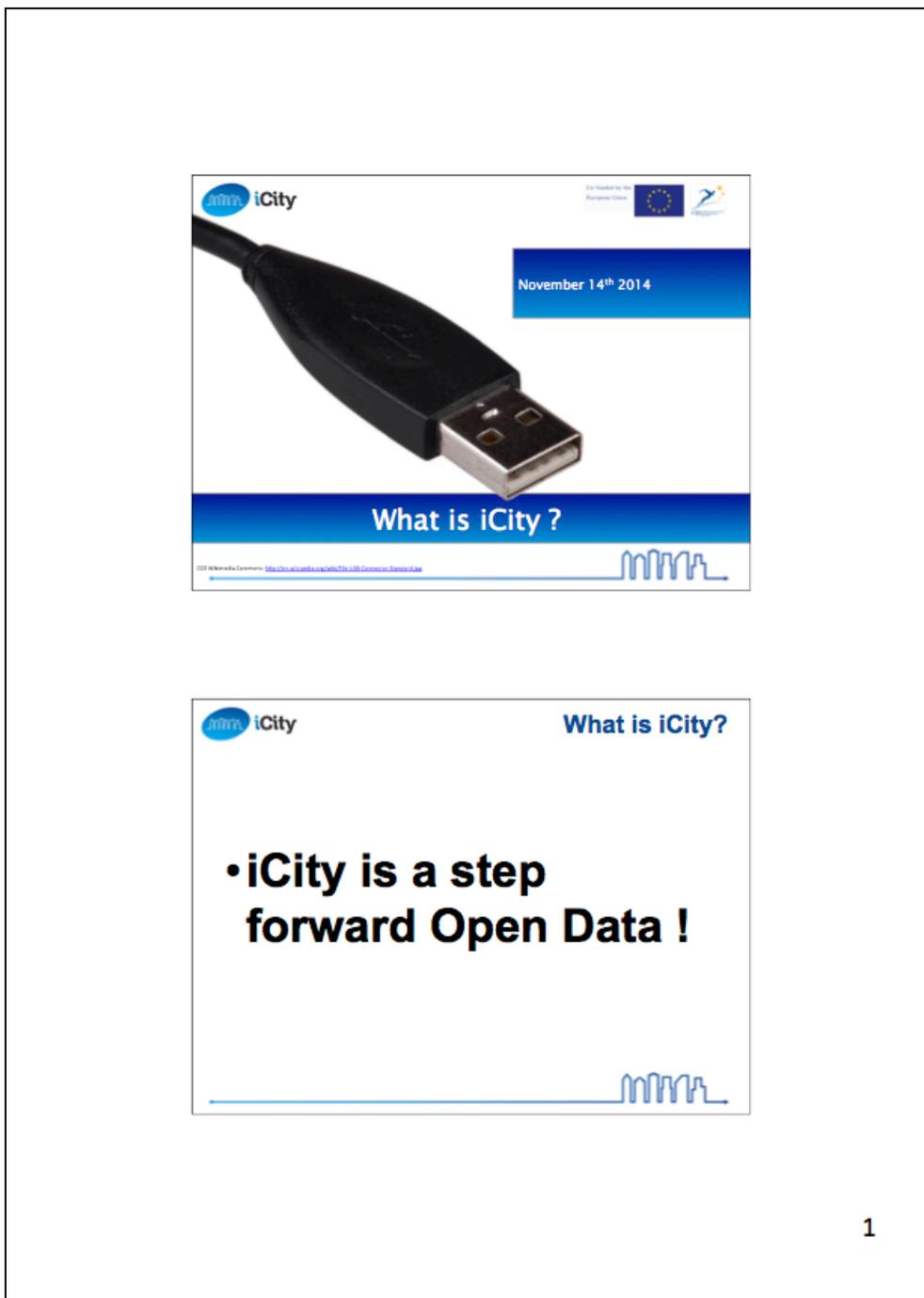
The *iCity* API developers had at this point addressed some of our requests, so we modified our software accordingly. This, and several code optimizations and refactoring's, made *SnAPI!* much faster and usable.



Annex

1st iteration meeting materials

iCity project presentation: Last version (iCity Camp)



 iCity What is iCity?

- **We want open not only processed data, (READ)**
- **but allow third parts interact with the Information Systems of Cities & Companies (READ&WRITE)**



 iCity What is iCity useful for?

- **What wants iCity solve?**



 iCity Idea n° 1

- Here they are my Information Systems!!!
- What are you able to do with them?



 iCity Idea n° 2

- I love my city parking APP !!!
- But it doesn't run in the city I work....(so I install another one)



 iCity Idea nº 3

• We are a small city....

Have we to develop all
APPs for our citizens?



 iCity So, what is iCity?

➤ **iCity is an European Project (CIP)**

➤ **Who are the iCity Consortium?:**

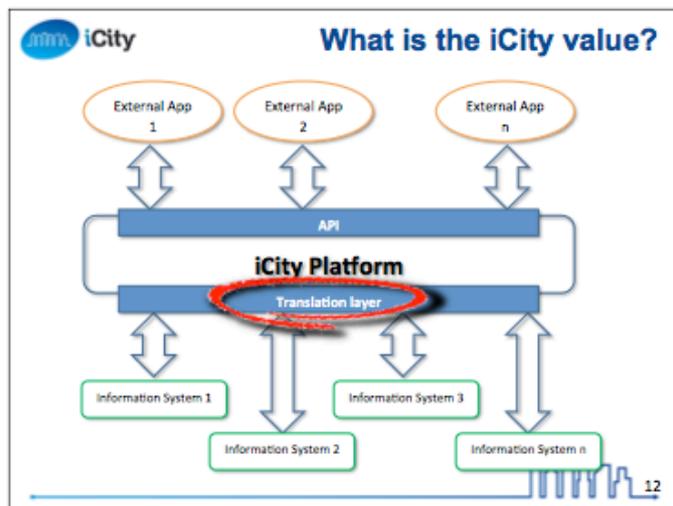
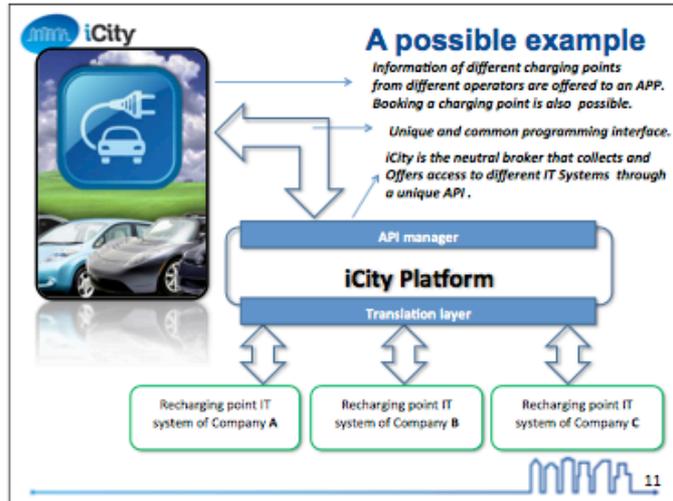
- Abertis
- Barcelona
- Bologna
- Cisco
- Citilab
- Franhofer/Fokus
- Genova
- UOC

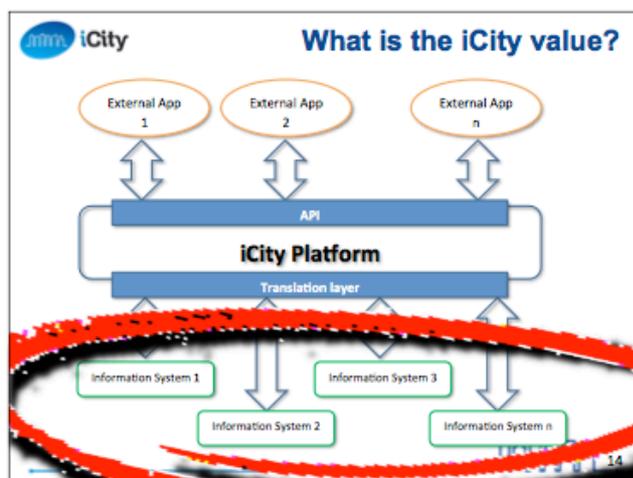
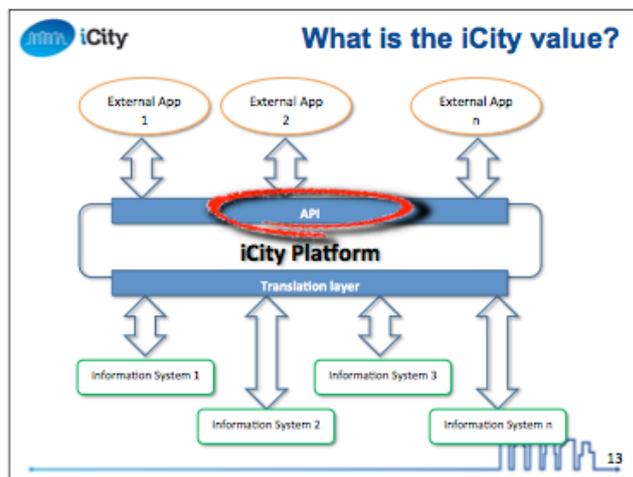
Co-funded by the
European Union    8

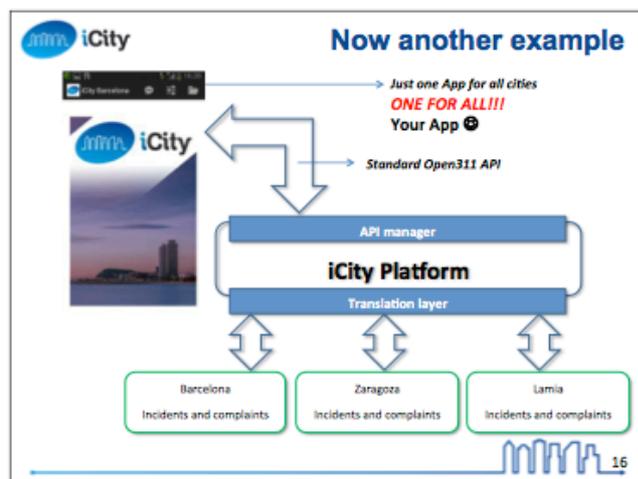
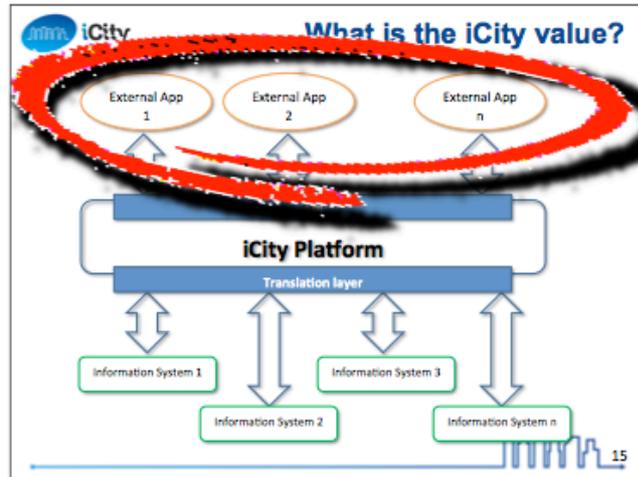
 **Main Goal**

✓ Facilitate the **controlled opening** of the information systems of organizations so that **third parties** can use them in a **secure and manageable** way.

Co-funded by the European Union             







 **iCity** **iCity value**

- **For the IT system manager**
 - Increases the channels for offering services and provide more visibility to them, and
 - Platform offers security
 - Platforms will offer accounting
 - Platform will offer orchestration
- **For the citizen**
 - Services and APPs created for other cities can be used.
 - More Services an APPs can be created and used.

The Project has received funding from the European Union under the Horizon Europe programme   17

 **iCity** **iCity value**

- **For cities and for public and private organizations**
 - Facilitates the creation of new services for the citizens that neither had thought in
- **For Developers:**
 - ✓ Can access to multiple IT systems through an unique end-point.
 - ✓ Makes developing easier
 - ✓ A service or an App thought for one city can be used in some others, increasing the target.

The Project has received funding from the European Union under the Horizon Europe programme   18



2nd iteration meeting materials

How to make your *iCity* apps:

a) Javascript and Nodejs

This is a demo application showing how to retrieve and process data from the *iCity* API by means of *NodeJS*. It is meant to be the "hello world" application for *iCity*.

The example can be found at: <https://github.com/bromagosa/icity-node-demo>

b) SnappyCity SnAPI!

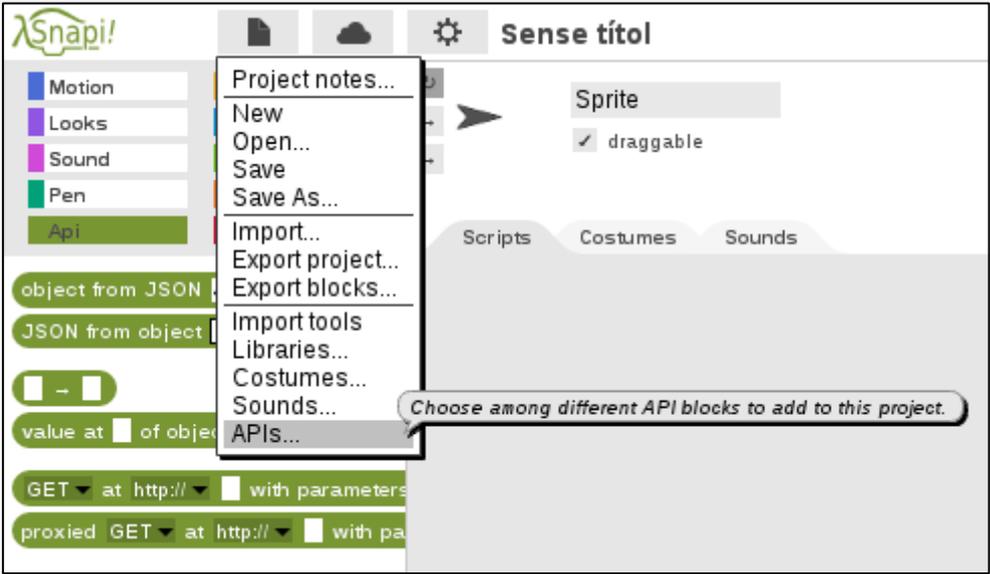
Description: *SnappyCity* is a Berkeley Snap! Extension developed by Citilab with which everybody can learn how to program by using the *iCity* API. Snap! is a graphical language that makes use of the building blocks metaphor, and the *iCity* extension adds blocks for interacting and retrieving information from the API.

How it can be used: examples

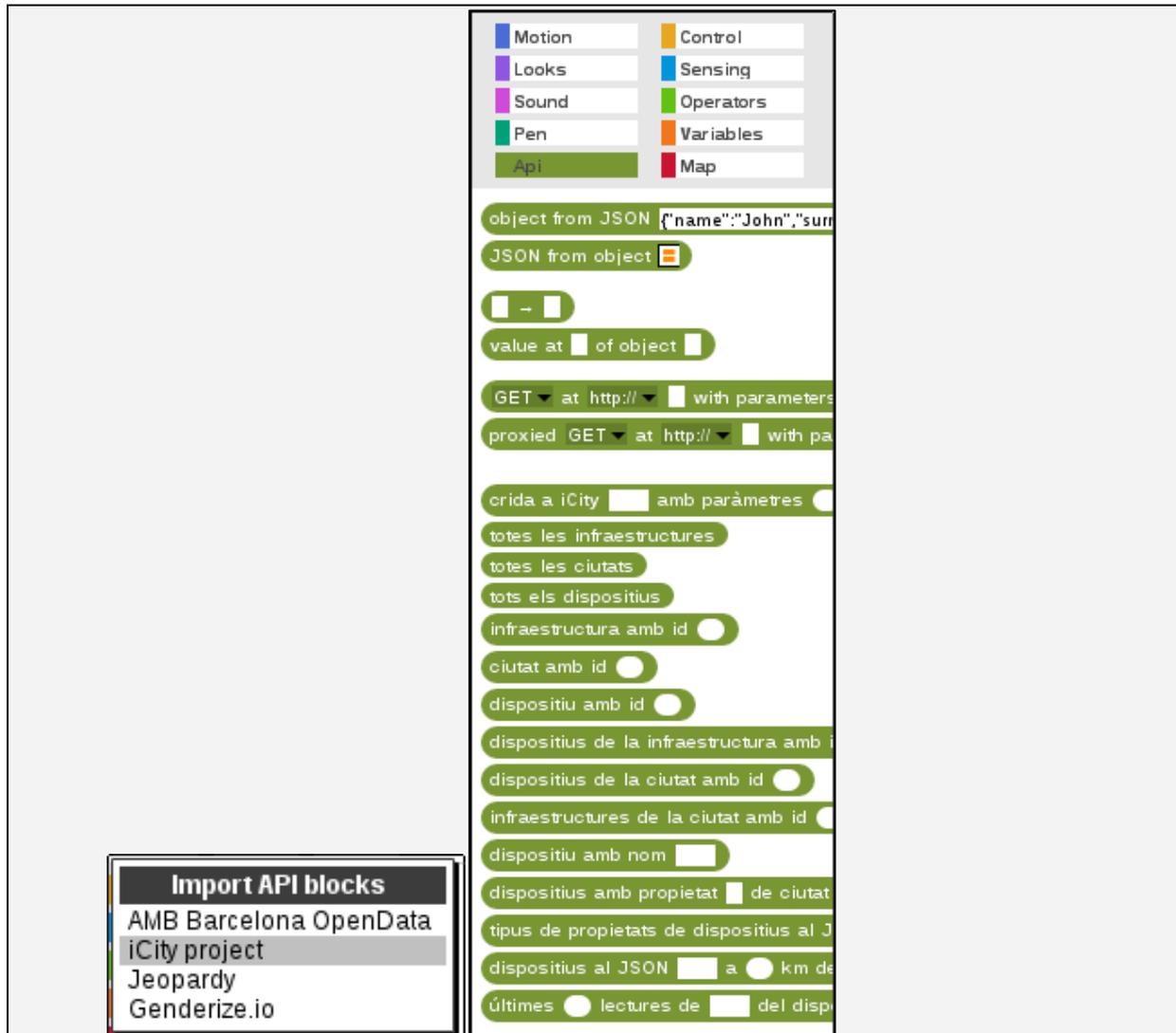
CTL for WP5 presented a series of code snippets and simple application examples that show a glimpse of what can be done in *SnAPI!*.

Exploring the iCity API

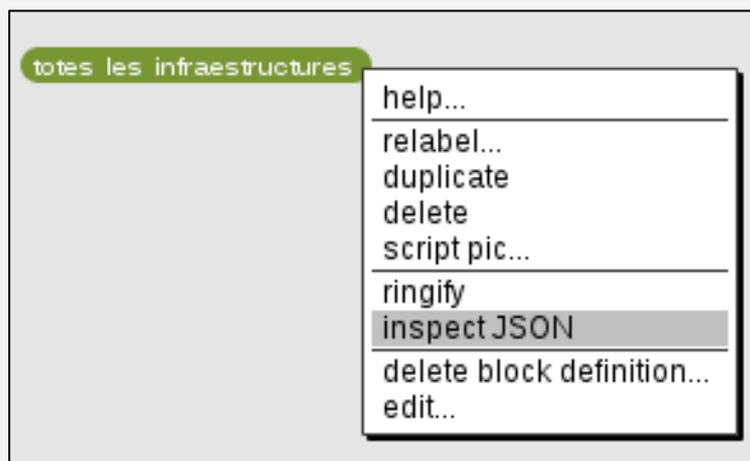
We will first load the iCity library by following these steps:



The screenshot displays the SnAPI! interface. On the left, a sidebar lists various categories: Motion, Looks, Sound, Pen, and Api. The 'Api' category is selected, and a context menu is open over it. The menu items are: Project notes..., New, Open..., Save, Save As..., Import..., Export project..., Export blocks..., Import tools, Libraries..., Costumes..., Sounds..., and APIs... A tooltip points to the 'APIs...' option, containing the text 'Choose among different API blocks to add to this project.' The main workspace shows a 'Sprite' object with a 'draggable' checkbox checked. Below the workspace, there are tabs for 'Scripts', 'Costumes', and 'Sounds'. The workspace contains several API blocks, including 'object from JSON', 'JSON from object', 'value at [] of object', 'GET at http:// [] with parameters', and 'proxied GET at http:// [] with pa'.

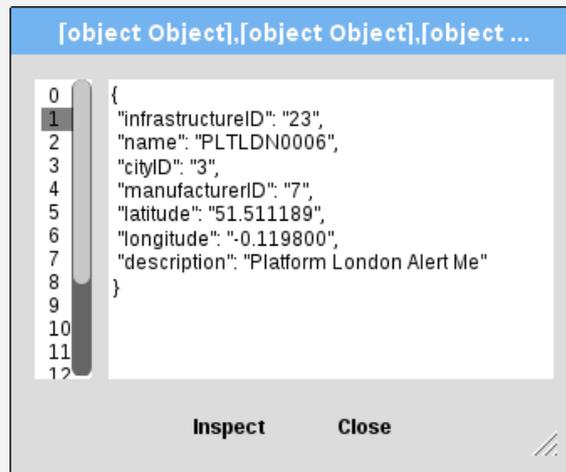


This action has added a collection of blocks into the API category, as shown in the figure.

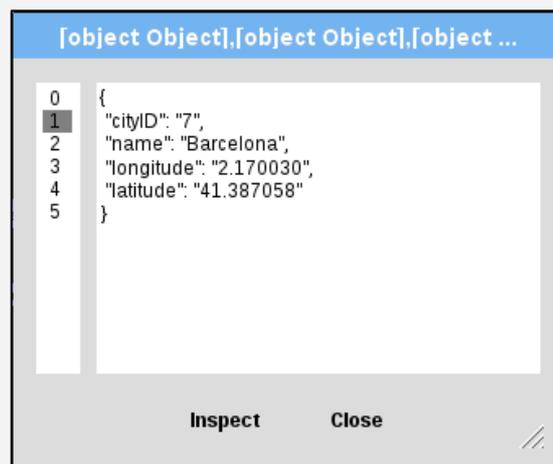


Once we have loaded the iCity library, we can try to explore all infrastructures by right-clicking on the corresponding block and selecting the “inspect JSON” option:

This will open up an inspector window similar to this one:

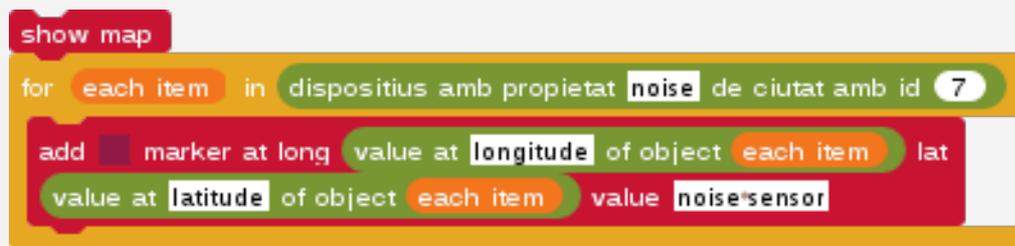


We can navigate inside any JSON structure by double clicking on the items on the left column. This way, we can first explore what properties we want to retrieve and then later build code that accesses them. For instance, to find all noise sensors in the city of Barcelona, we first need to inspect the list of cities and find the ID of Barcelona:



dispositius amb propietat **noise** de ciutat amb id **7**

Then we can perform a filtered query such as:



Which we can inspect to find all these devices and their respective IDs. Let us now build a map showing where these sensors are located:

We can now build on this code so that it shows their latest noise reading:

```

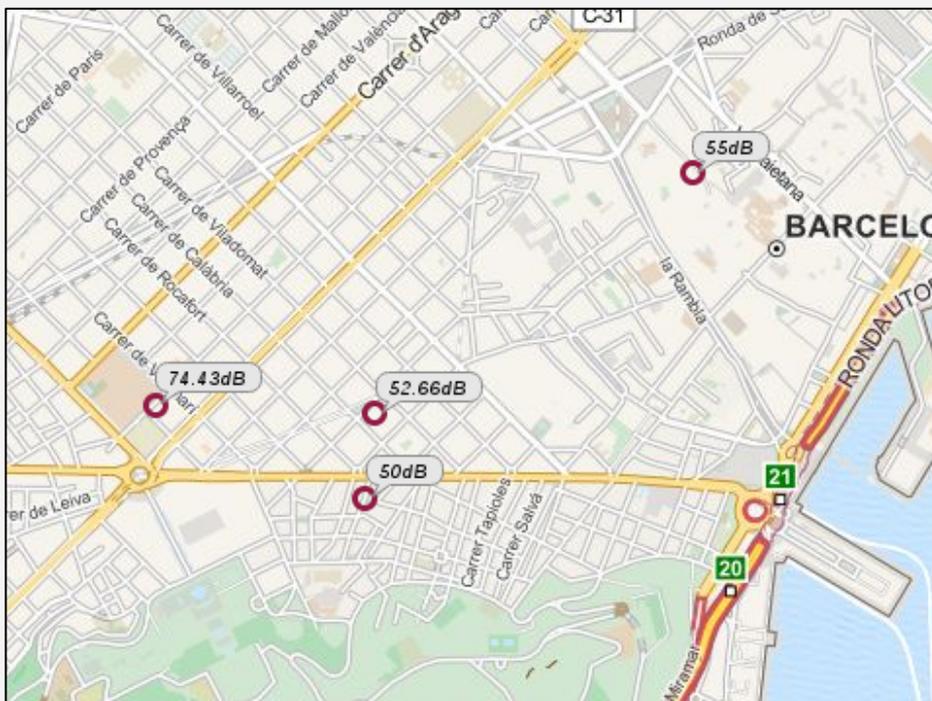
remove all markers
show map
for each item in dispositius amb propietat noise de ciutat amb id 7
  add marker at long value at longitude of object each item lat
  value at latitude of object each item value
  join
  value at value of object
  item 1 of últimes 1 lectures de urn:noise del dispositiu amb id dB
  value at deviceId of object each item

```

Notice how, by inspecting the structure of a reading query result, we found out it is returned as an array of readings, and the property that holds the actual number is called “value”.

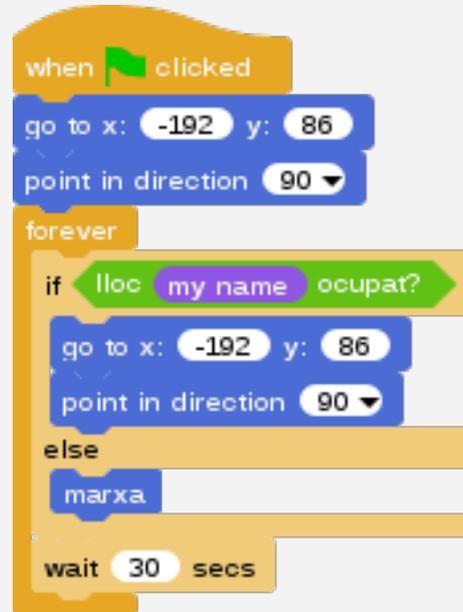
By requesting it we can extract its value and use it to add contextual information to each marker.

We can check each reading by clicking on the corresponding marker, or just show them all by clicking on the **show markers** block:



Parking spot visualization

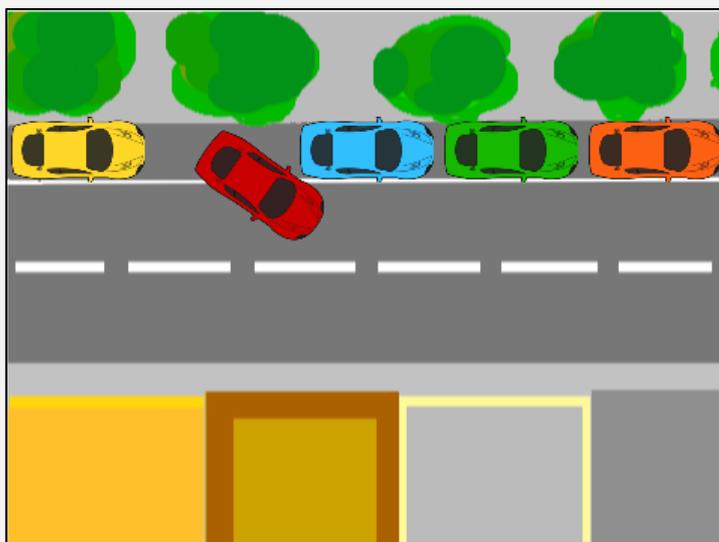
In this example, we retrieve the latest reading of a collection of parking spot sensors, located in the same street in Barcelona, and use this information to display a live visualization of these parking spots.



If a car is parked there, we show it. Otherwise, we have it leave:



The query happens inside the green boolean block, which discerns whether a particular sensor reports the spot is free or occupied:

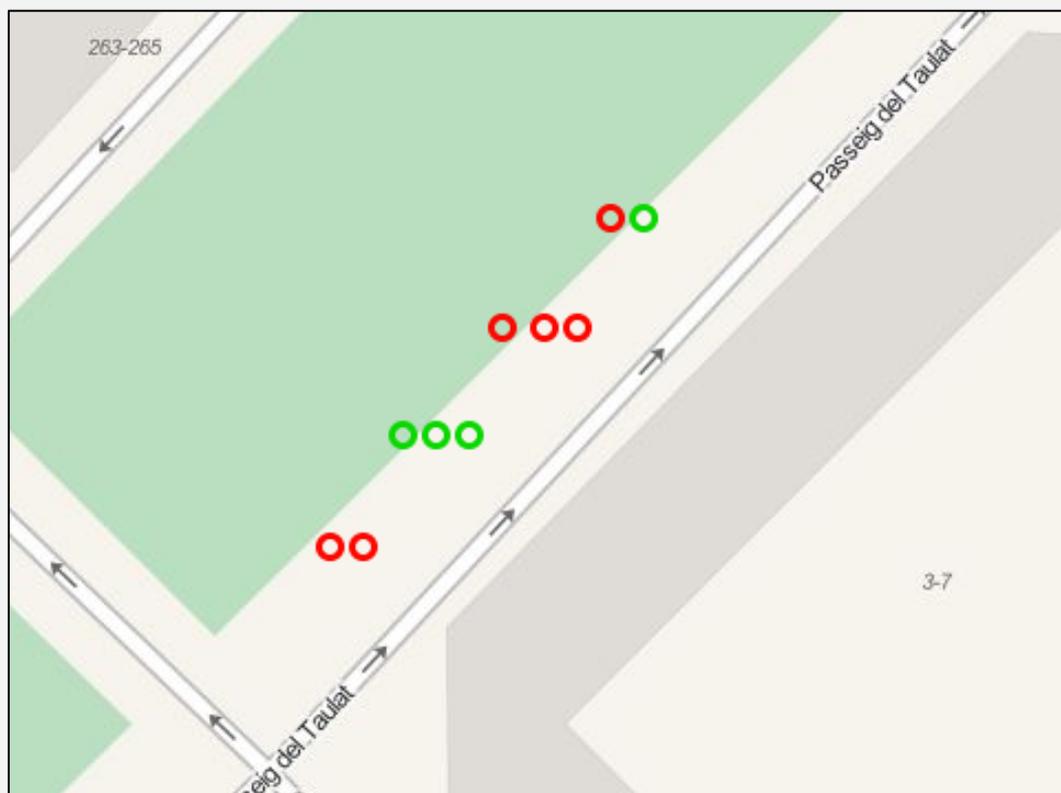


In this case, all spots were occupied except for the one represented by the red car:

```

when clicked
  show map
  remove all markers
  for each item in dispositius amb propietat parking de ciutat amb id 7
    script variables is occupied color
    set is occupied to
      value at value of object
      item 1 of últimes 1 lectures de urn:parking del dispositiu amb id
      value at deviceID of object each item
      occupied
    if is occupied
      set color to color
    else
      set color to color
    add color marker at long value at longitudine of object each item lat
    value at latitude of object each item value ParkingSensor
  
```

Notice how the same sensors could be very easily shown in a map for a more traditional and less children-oriented visualization:



Red markers represent occupied spots, while green markers represent the free ones.

World temperatures

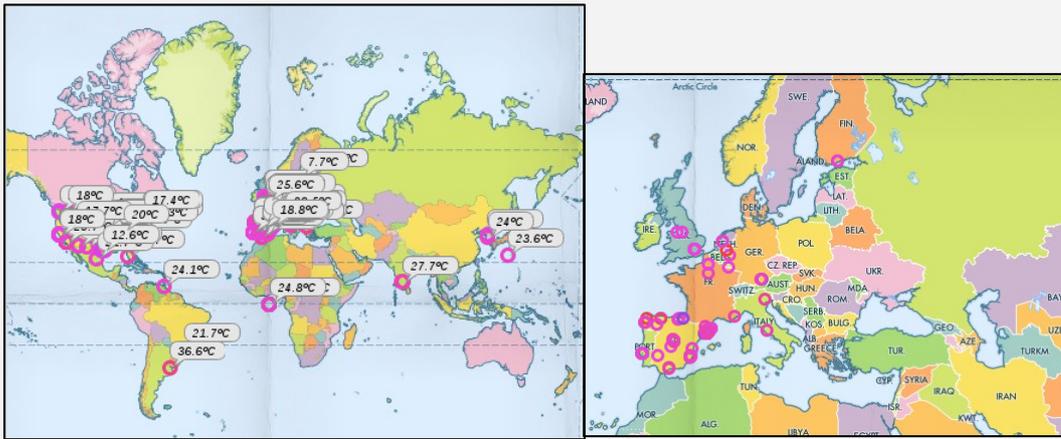
One of the most popular devices is the temperature sensor, which allows us to build a very short and nice-looking application that displays the current world temperatures in a heat map style.

```

when clicked
  switch view to political
  set center at long: 7.2 lat: 44
  set zoom level to 1
  remove all markers
  show map
  script variables sensors index
  set sensors to dispositius amb propietat urn:temperature de ciutat amb id 7
  for cada element in sensors
    script variables reading color
    set reading to últimes 1 lectures de urn:temperature del dispositiu amb id
    value at deviceID of object cada element
    if not reading = 
      set color to
        temperature value at value of object item 1 of reading to color
      add color marker at long value at longitude of object cada element lat
        value at latitude of object cada element value
      join value at value of object item 1 of reading °C
  
```

Taking advantage of the fact that the SmartCitizen platform is integrated into iCity, we can gain access to world-wide temperature readings, although most of them reflect temperatures inside homes:

This is a project that takes a long while to run, as there are thousands of queries to be sent to the API to deal with, but we can still check temperatures as they appear in themap one by one:



By right-clicking on a marker, we can also visit its location in three different online map services, including Google Street View:



These are only some examples of what can be quickly achieved by programming in Snapi!, but the ceiling is high enough to allow citizens and kids to create really complex applications that deal with data from different APIs.

iCity Camp materials

iCity Camp report

<http://youtu.be/81UjXPstIts>

14th of November of 2014

Keynote by David Osimo

http://youtu.be/g_iC3TirK6c

Keynote by Jordi Cirera, Project presentation

http://youtu.be/VzloIW_bi8A

Roundtable information systems by City

<http://youtu.be/TaMagkVaGB8>

Citizenship, mobility and environment discussions

<http://youtu.be/jirG4uOG950>

iCity Tour

<http://youtu.be/40418a49Jck>

15 of November of 2014

Welcoming at Citilab and iCity Camp warm up

<http://youtu.be/PeMXRjbcYo8>

Alex Sala, iCity Platform Demo

<http://youtu.be/Jr6ZomFN5k8>

Jose Garcia, Sanpi workshop

<http://youtu.be/hyGwMTotdwl>

Getting app ideas!

http://youtu.be/IGJNNBr_i_0

Rules of the iCity contest: <http://icitycamp2014.citilab.eu/wp-content/uploads/2014/11/Rulesof-iCity-Contest12182014.pdf>

App proposals template:



**iCity CONTEST RULES
2014**

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Please provide the following information about your APP proposal:

AUTHOR(S)

Name:	
Surname:	
Email contact:	
Organization:	

Name:	
Surname:	
Email contact:	
Organization:	

APP PROPOSAL NAME AND DESCRIPTION

(Please describes your application in 5 lines)

MAIN GOAL

(Please describes your application in 5 lines)

INFORMATION SYSTEMS THAT THE APP USES

(Please, list the information systems and its properties that your applications uses and the cities where your application works).

SCENARIO/S (MOBILITY, CITIZENSHIP, ENVIRONMENT)

(Please describe how your application uses th information systems of one or more scenarios explaining its potential)

FUNCTIONALITY

(Please describe the functionality of your application)

ANDROID / IOS / WEB / OTHER

(Please, describes where youre application works and where can be download or used by citizens)

DESCRIPTION AND COMMENTS

(Feel free to describe and comment anything relevant about your application)

Thank you for participate in this project and good luck!

iCity Project Team
developers@icityproject.com