



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

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### **Summary**

The success of the iCity project is strongly linked to its ability to identify, reach and engage the potential group of users of the iCity platform: developers, entrepreneurs, social innovators, SMEs, etc, who will act as developers creating an ecosystem of services of public interest which takes advantage of the opening up of existing public infrastructures in the four participant cities. To make this ecosystem work, good communication is required between the providers of infrastructure, developers, and the final users.

This document is aimed at establishing a plan for guiding the definition and deployment of the Apps Store that the iCity project should develop to promote the apps developed over the platform.

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ABBREVIATIONS AND ACRONYMS

Acronym	Description
App	Application
PU	Public

# 1 Introduction

## 1.1 Purpose of this document

The success of the iCity project will be mainly based on the ability of its development partners to identify, reach and engage the potential users of the project's technical solution to create services of public interest and value. An effective liaison will be required between the cities, developers, stakeholders and final users to ensure replication and rapid take-up of the iCity solution. The set-up of relationships, communication channels, and a clear understanding of the markets and business models is essential to the creation of tools and value.

This second version of the first document delivered in December 2012, expands the foundation iCity Apps Store established in the predecessor document. Please note that the definition of iCity Apps Store has had substantial changes since the first version - this paper further explains the global concept of iCity Apps Store and detailed elements. This document provides the basic characteristics of each element within the general concept of iCity Project and identifies different roles of the agents involved in constructing an optimal ecosystem for the iCity Apps Store.

It is important to mention that this is a 'living' document for modification during the whole life of the project with contents updated according to the final platform architecture and the apps store strategy defined for each city.

## 1.2 Objectives

The iCity project is aimed at fostering the development of services to build 'Smart Cities' in the urban space using third parties (developers, small and medium-sized enterprises...). The services will be created by opening up existing infrastructures in the participant cities where existing networks will be opened up through 'Apps' to the general public. A shared iCity Urban Platform will be created to allow the simultaneous use of the resources by both public and third party services.

The iCity Apps Store is a service communicating the apps' in the Urban Platform to users in order to make them available and to promote their use.

The **objectives** of the iCity Apps Store are the following:

- To give the project a showcase so that it becomes easily identifiable and reachable by users.
- To go into the detail of the iCity Validation process, explaining the relationship established between developers, users, and iCity in order to guarantee a level of service and proper relationships between the parties;
- To establish an appropriate ecosystem to enable the growth in a community of App users interested in using public services and local infrastructures.
- To further raise awareness on the project, progress made, and activities amongst stakeholders and users.

## 2 General concept: iCity Apps Store

The breadth of the subject means it is important to carefully analyse the concepts to determine the perspective from which we will work.

This latest definition of iCity Apps Store is a modified version of the first document delivered in December 2012. Further evaluation of proposals and ideas has led to a new definition of iCity Apps Store for agreement.

The concept of iCity Apps Store will comprise four iCity Apps Store Showcases (one for each city), made up of a general iCity Apps Store Showcase, an iCity Apps Store where developers can publish their applications under iCity consent and finally an iCity catalogue (possibly integrated on iCity Apps Store Hosting) of all developed and published services applications. Each of the pieces making up the general concept of iCity Apps Store will be supported by iCity Platform, the iCity Apps Store will be hosted as a service in the iCity Platform.

Each piece going to build the concept of iCity Apps Store is detailed below.

Figure 1 illustrates in a simple way, each piece included in the iCity Apps Store concept as well as the relationship between each piece.

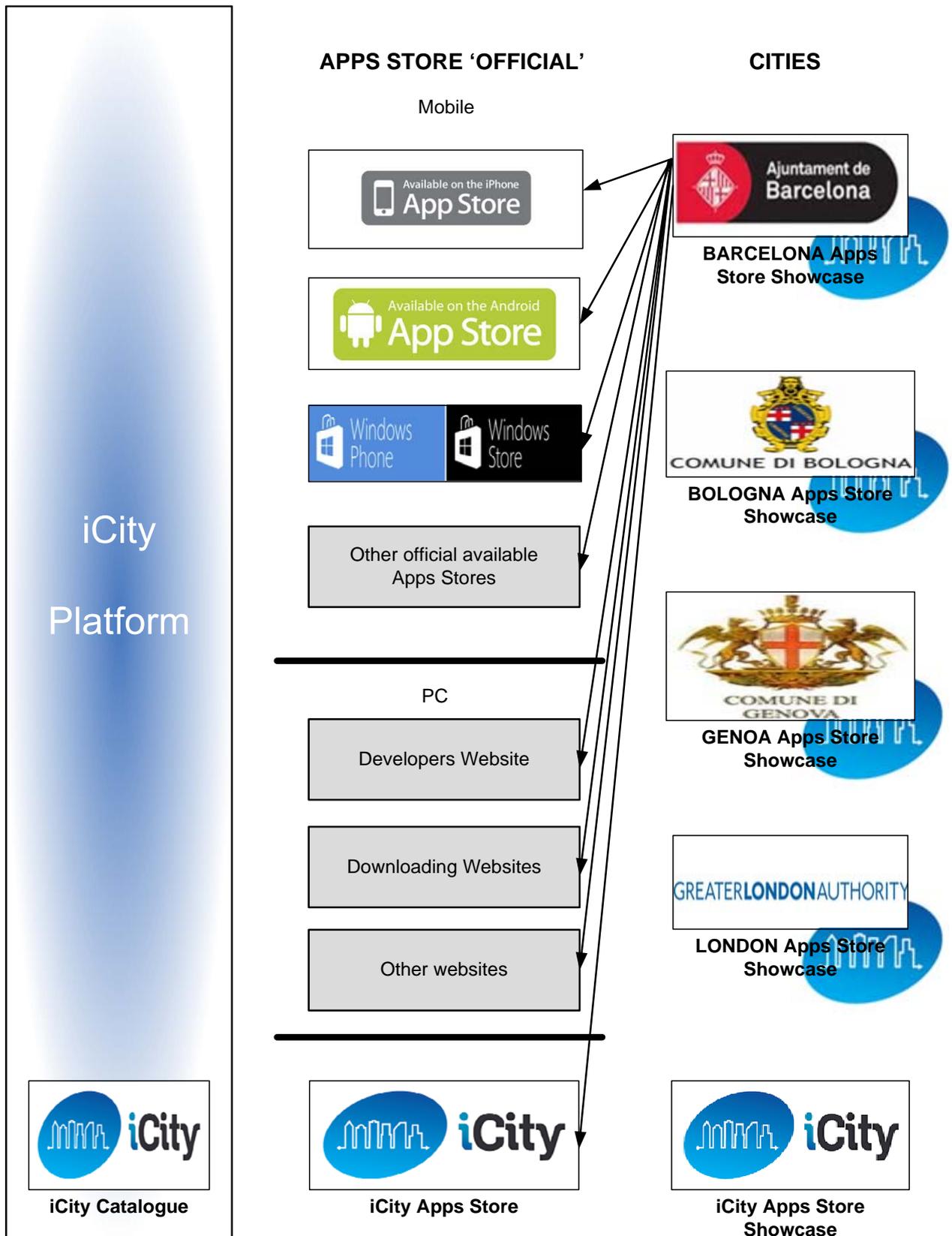


Figure 1: Main pieces which composes the concept of iCity Apps Store

## 2.1 iCity Apps Store Showcase

The iCity Apps Showcase is the front-end of the iCity Apps Store; it is essentially a website with a list of all the applications accessing open infrastructure services via iCity Platform.

iCity applications will be aligned with each cities' strategy, infrastructure, data, partners and local language(s). It will therefore be necessary to generate four versions of the Apps Store Showcases, one for each city with the purpose of listing the applications and open infrastructures of the relevant city. In this way, cities will be able to manage their local iCity platform and applications.

iCity Apps Store will therefore compose five different showcases:

- iCity Apps Store Showcase
- Barcelona Apps Store Showcase
- Bologna Apps Store Showcase
- Genoa Apps Store Showcase
- London Apps Store Showcase

The proposed access path and flow through the iCity Apps Showcase website (Note: same for each showcase) is as follows:

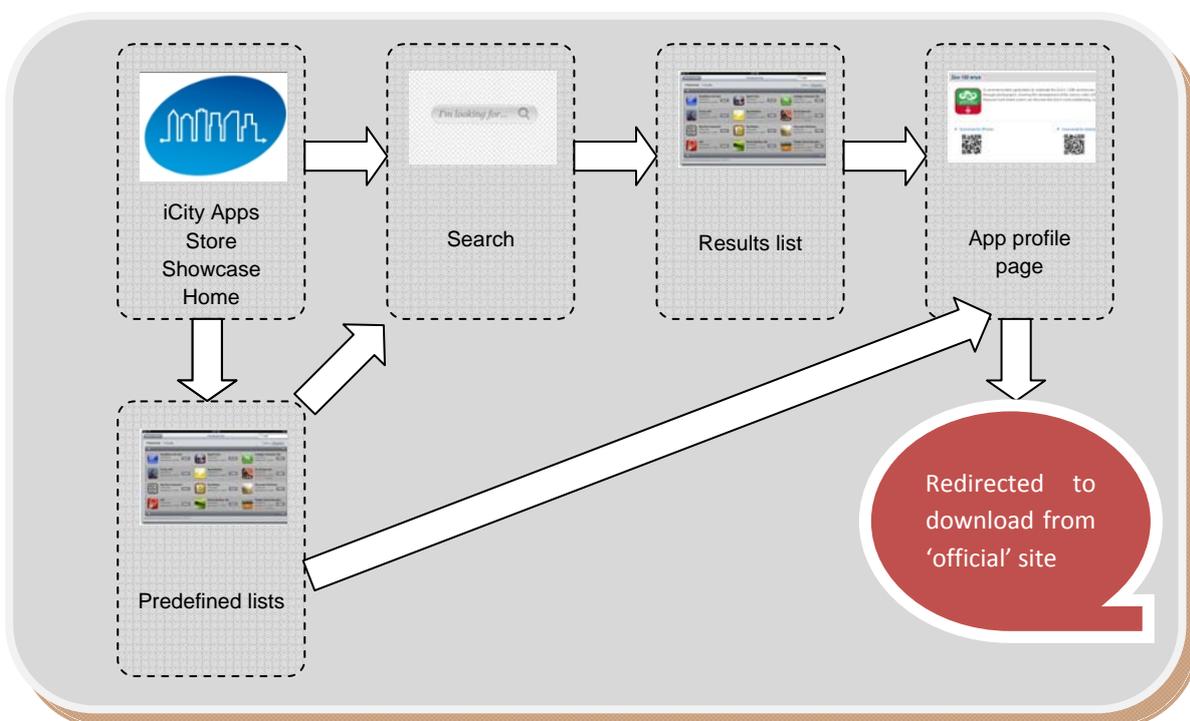


Fig. 2 Flow of the web pages of any Apps Store Showcase

The main functionalities of the Apps Store Showcase are:

- To publish all the service applications created by third parties.

The showcase will not in fact contain the service applications. It will however contain a list of links for each app redirecting the end-user to the 'official' Apps Store or iCity Apps Store where third parties will have published their applications (for instance, Android Apps Store, Apple Apps Store, etc.)

Figure 1 pretends to illustrate this in Barcelona Apps Store Showcase. It can observe that Barcelona Apps Store Showcase has different links to the 'official' sites (App stores, websites...) where third parties have published their service applications.

- Applications can be downloaded by end-users.

As described in the previous point, the user will be able to download the selected App by being redirected to 'official' Apps Store or iCity Apps Store through the local cities Apps Store Showcases.

- To provide a search engine based on different filters and application's characteristics, this will be powerful and simple to use in order to facilitate the apps searching and improve the likelihood of finding an App suited to the end-users needs.

- Every app will have a profile with an exclusive URL identification. This URL will be different for each app permitting to reach the App individually.

Please note that all Apps Store Showcases will be usable, attractive and friendly to users -the portal will include explanations about each App service application (extracted directly of the 'official' Apps Store or iCity Apps Store) with relevant descriptions helping to focus and enhance the user choice.

There are advanced functionalities the Apps Store Showcase should comply with in order to be more usable and friendly to end-users:

- Apps' Rankings based on usage metadata (for example, most used apps, etc).
- Captures ratings and reviews submitted by users, with the possibility of the developer responding to the comments.
- Connecting with social networks, in particular, should allow a Facebook "I Like" for an app, or sending a Twitter message linking the information page of each app.

Section 3 describes each Apps Store Showcase, the portal; available functionalities and operation are introduced in this section as well as the roles of the responsible people.

## 2.2 Apps Store ‘Official’

An important aspect of the general concept of iCity Apps Store is locating where the service applications developed by a third party developer will be published.

Applications developed as iCity Project can be published on an ‘Official’ Apps Store according to operation system (for instance, in Apple Apps Store, Android Apps Store, or any other available site). What the iCity project and Urban Platform offers to developers the possibility to publish their applications in the ‘official’ Apps Store or iCity Apps Store.

It is important to define the iCity Apps Store features and usage so the branding and differentiation is clear to end-users when they compare with the other available apps stores like Apple’s Apps Store, or Google’s Play Apps Store or Microsoft’s Windows Apps Store. These are digital distribution platforms that are intended to provide lists of software to mobile devices. Depending on the application, they are available either for free or at a cost.

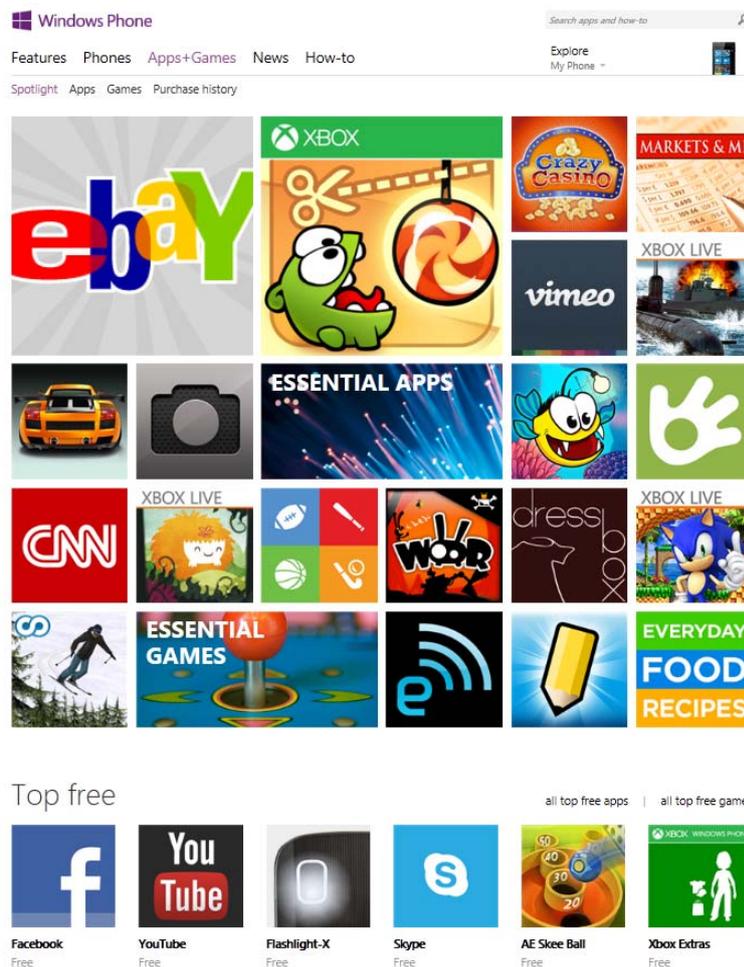


Fig. 3 Windows Phone Apps Store<sup>1</sup>

Although there are apps stores for many devices, they are usually recognised as stores for mobile devices (mobile telephones, tablets, etc). This is not the case for the iCity Apps Store.

<sup>1</sup> <http://www.windowsphone.com/en-us/store>

In this case an app is considered an application of a service that uses, at least, one open city infrastructure. Therefore, an iCity app is an implementation of a service of public interest that uses a feed from a city based function opening up public infrastructure. This can be accessed from a wide variety of devices including fixed network PC's. It is not only for mobile devices, because developers will be able to develop Apps (for mobile devices) but also they will have the possibility to create software for computers.

All the iCity apps must pass the iCity Validation Process in order to be an iCity App but an additional consent by iCity is required to publish a service application in the iCity Apps Store. Validation Process is explained briefly in section 4 because the deliverable 'D5.2 MoU: rules and conditions' is focus on defining this process. However, section 4 goes into detail about last steps on the iCity Validation Process, focusing on publishing service applications.

### 2.3 iCity Apps Store Hosting

The iCity Apps Store Hosting (basically the storage component) is divided in two different parts:

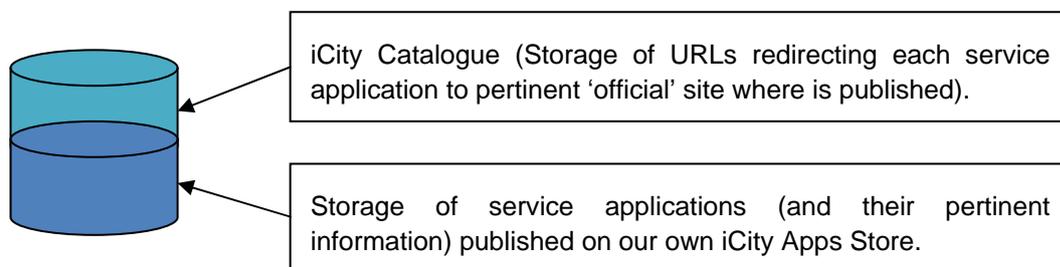


Figure 4: iCity Apps Store Hosting structure

The 'iCity Catalogue' contains a catalogue of all the URLs associated to each service application. Each URL redirects to the site where the third party developer has published its application – Apple Apps Store, Android Apps Store, etc. Applications developed by third parties and published in an 'official' site, are therefore not stored in iCity Apps Store Hosting. Only an identifier URL for each developed service is stored in the system.

On the other hand, services applications published expressly in the iCity Apps Store will be stored in the second part of iCity Apps Store Hosting, keeping all the information related to the application.

In conclusion, the iCity Catalogue will contain all the URLs linked to each App, so it will contain links for each App to the pertinent site (Apple Apps Store, Android Apps Store ... and even iCity Apps Store). But, the 'exceptional' Apps published on the iCity Apps Store will be stored in the storage component of iCity Apps Store Hosting (the URL and also the complete developed application).

Hence, the main features of the iCity Apps Store Hosting are:

- Regarding to service applications developed under the iCity project; notice that depending on site where apps will be published, content stored about each app will be different. The service applications published in 'official' sites, iCity Apps Store

Hosting will store only the links where each service application has been published by a third party (iCity Catalogue).

But the service applications published by third party on 'official' iCity Apps Store, iCity Apps Store Hosting will act as storage of these applications and consequently will store all the related information.

(Including pertinent information in iCity Apps Store Hosting will be done as explained in section 4.2)

- Responds to requests for information from any Apps Showcase, therefore acts as a server, providing URLs to different Apps Store Showcases about each app requested.
- Manages information updates when needed (for example, when receiving a new comment from a user).
- Provides indicators on the use of apps. These indicators will be sent to the apps' owners and also to the iCity referents for each city or partner in order to know and evaluate the indicators performance set in the project.

Indicators are obtained thanks to iCity Platform that it offers accounting among other services.

There will be only one iCity Apps Hosting and it will be a service of the iCity Platform, so it will serve at the 5 Apps Store Showcases.

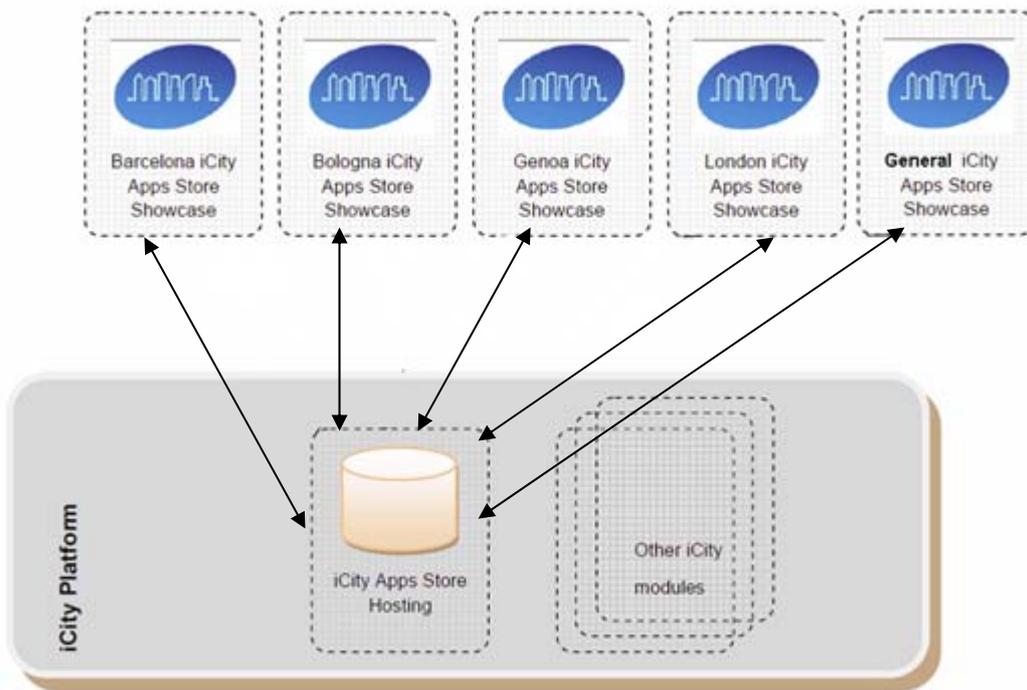


Figure 5: Relationship between Apps Store Showcases and iCity Apps Hosting

In addition, the apps that are obsolete (no longer operational) will keep in the iCity Apps Store Hosting as historical information. The iCity Apps Store Hosting must be the place to know all the iCity apps, the current and the historical apps.

### 3 Apps Store Showcase Strategies

Regarding to five different Apps Store Showcases existing, the purpose of this fragment is to introduce individually each one of them. Detailing its features, its structure and those responsible for each defined task, we will be able to generate a global idea about the current and future scenario.

#### 3.1 iCity Apps Store Showcase

iCity Apps Store Showcase must become an extra communication channel with the end user and will be essential for the proper use of the iCity platform as it must bring together all the service applications carried out under the iCity project.

So iCity Apps Store Showcase should be a top quality communication channel, usable and friendly, allowing users to get all the information required and retain them.

Given that the main consideration is that iCity Apps Store Showcase will be in web format, some real portals have been visited as examples that inspire us during development.

##### 3.1.1 Tasks and roles

To be defined. Work in progress.

It is essential to define main tasks to carry out as well as to appoint responsible people for each task to ensure the proper operation of iCity Apps Store Showcase.

During the development of the iCity Apps Store Showcase, required tasks and roles will be defined and discussed.

#### 3.2 'Cities' Apps Store Showcases

As detailed in section 2 and figure 1 illustrates, Barcelona, Bologna, Genoa and London will have a showcase for each one showing applications and programmes developed by third parties to use in the pertinent cities infrastructures.

Defining Apps Store Showcase for each city is essential to delineate the concept of iCity Apps Store. Hence, this section pretends to explain structure and features from each city showcase as well as clarify the agents involved in a city showcase and their tasks.

##### 3.2.1 BARCELONA

###### 3.2.1.1 First Scenario

The previous version of this document called 'iCity Apps Store', delivered in December 2012, analysed the current situation of Barcelona in terms of the communication strategy to fit the iCity Apps Store.

The document explained that Barcelona has a site where citizens can get information and download mobile apps with city information developed by the municipality ([www.bcn.cat/bcnmobil](http://www.bcn.cat/bcnmobil)).

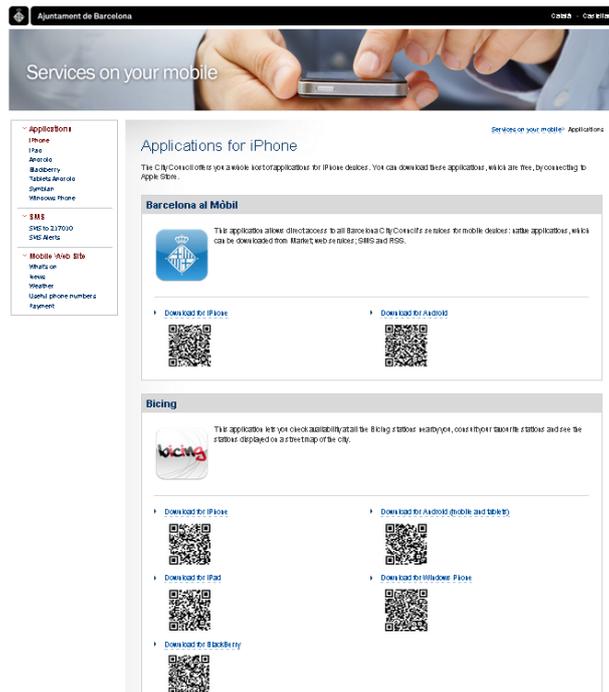


Fig. 6 Barcelona current site for Mobile services<sup>2</sup>

This website gives information about all the services that the Council offers to the citizens for their use on mobile phones. Four different services are offered:

- Mobile apps to be downloaded from markets, depending on the platform: iPhone, Android, Windows Phone and Blackberry.
- Web apps specifically adapted for mobile phones accessible from the mobile's browser
- SMS services through the 217010 number
- SMS alerts sent for free, depending on the subscribed service.

There is also information of new developments and the main news about mobile technology.

### 3.2.1.2 Barcelona iCity Apps Store Showcase

Nowadays, Barcelona has implemented a portal called 'apps4bcn' which contains all the applications related to Barcelona city (<http://apps4bcn.cat/en>)

<sup>2</sup> [http://w110.bcn.cat/portal/site/Mobil/menuitem.39ee81df0abf91b0a042a042a2ef8a0c/?vgnextoid=dec7ebcae47f4310VgnVCM10000074fea8c0RCRD&vgnnextchannel=dec7ebcae47f4310VgnVCM10000074fea8c0RCRD&lang=en\\_GB](http://w110.bcn.cat/portal/site/Mobil/menuitem.39ee81df0abf91b0a042a042a2ef8a0c/?vgnextoid=dec7ebcae47f4310VgnVCM10000074fea8c0RCRD&vgnnextchannel=dec7ebcae47f4310VgnVCM10000074fea8c0RCRD&lang=en_GB)

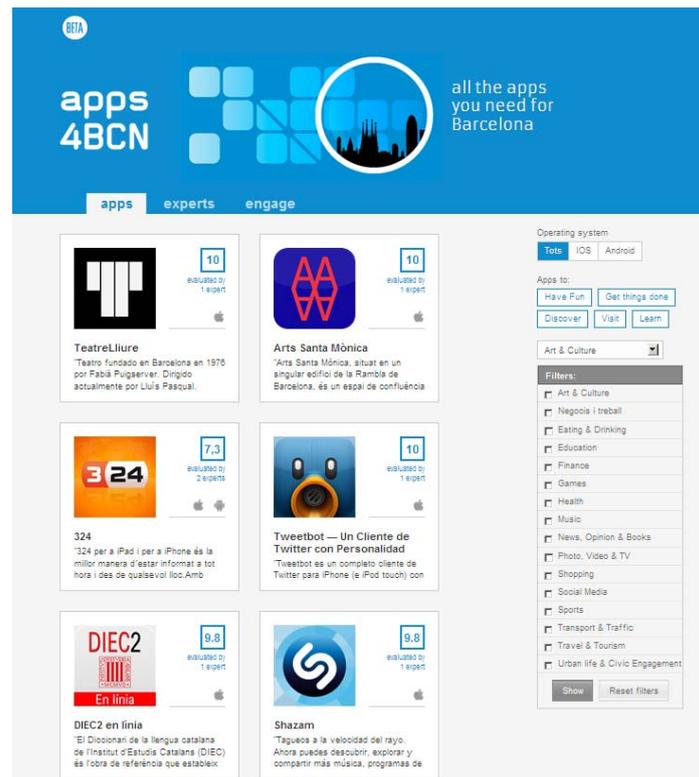


Figure 7: Barcelona portal “apps4bcn”<sup>3</sup>

This portal is structured in three sections:

The section called ‘apps’ offers a collection of different apps regarded to Barcelona city. Each app contains a brief explanation about its content and its usage, operating system required as well as scoring granted by experts.

In the right side, it is showed a search engine to facilitate users the apps searching. According to the metadata of each app, users can search different applications using filters about operating system or categories.

Moreover, clicking on an app, it is detailed extra information about the application. A set of images allows looking at interface app, also user can read comments about cited application and other relevant aspects are showed to user as figure 8 illustrates:

<sup>3</sup> <http://apps4bcn.cat/en>

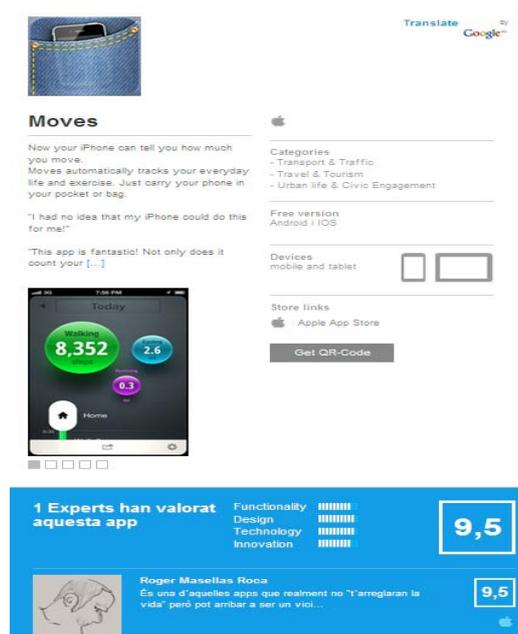


Figure 8: Application profile<sup>4</sup>

The section called 'experts' offers a list of different experts app reviewers in charge of evaluate, score and comment the different apps contained in the apps4bcn portal. This added value allows users acquire extra information and appreciated opinions. Furthermore, clicking on an expert, the user is able to obtain information about this expert as well as generate a list with all the apps evaluated by this expert.

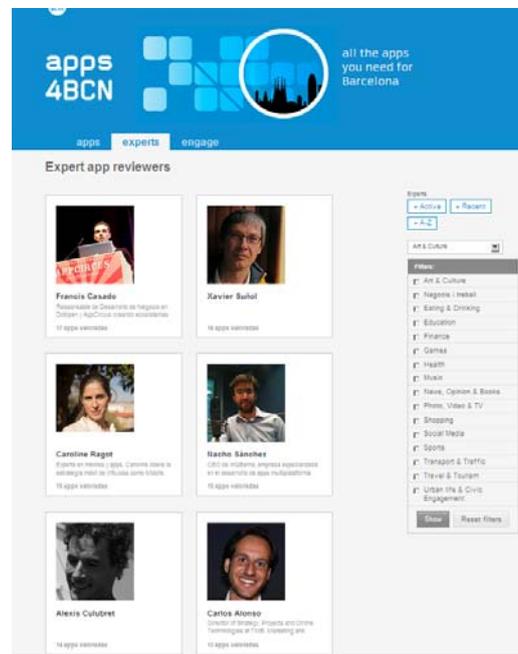


Figure 9: Experts collaborators on apps4bcn portal<sup>5</sup>

<sup>4</sup> <http://apps4bcn.cat/en/app/moves/168>

<sup>5</sup> <http://apps4bcn.cat/experts>

The section called ‘engage’ pretends to encourage and promote citizen participation. It offers the possibility of a user becomes an expert or suggests an app to include in the apps4bcn portal.

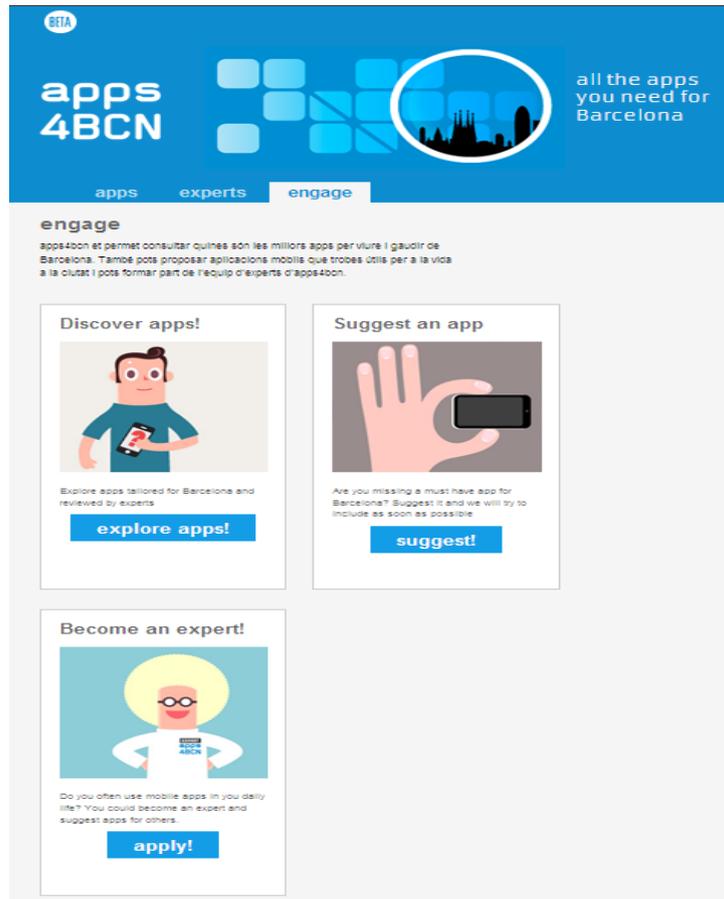


Figure 10: Engage section<sup>6</sup>

Nowadays, it is thinking about the possibility to generate another portal, similar to Barcelona current site for Mobile devices (consult section 1.2.1.1) but focus on iCity Project as well as to promote, disseminate and spread it to citizens.

The idea arises because in the portal introduced previously called “apps4bcn” the end user is not able to know that the application downloaded has been developed under iCity Project. The development environment will be transparent for the end user. Users will access to “apps4bcn” portal, will search for interesting and useful applications for their necessities and then will download the application(s) chosen. In this natural process to download an application, the end user will not be aware of the applications pertinent to iCity Project.

Hence, creating a portal associated to Barcelona site (an example of a possible URL will be [www.bcn.cat/icityapps](http://www.bcn.cat/icityapps)) is possible to solve this situation. This portal will explain and disseminate the iCity Project to citizens and moreover will emphasize the existence of different applications created under the iCity Project with the purpose to use open municipal infrastructures. In this way, citizens can be aware of the project and the importance about accessing to public municipal infrastructures that up to now these infrastructures only could be used by municipal purposes.

<sup>6</sup> <http://apps4bcn.cat/participa>

This portal could contain a list of all the applications developed under the iCity Project focus on the applications which use Barcelona municipal infrastructures. A difference between “apps4bcn” and this portal will reside in the first contain all kind of applications developed to use in Barcelona whereas this portal will contain just the applications developed under the iCity Project to use in Barcelona.

### **3.2.1.3 Tasks and roles**

The maintenance of Barcelona Showcase will be in charge of the responsible of “apps4bcn” portal. It is essential to define main tasks to carry out as well as to appoint responsible people for each task to ensure the proper operation of Barcelona Showcase.

Barcelona suggests the following roles:

- Management of new applications role: Consisting in manage new applications registered into iCity Catalogue within iCity Apps Store Hosting. These new applications must be included in Barcelona Showcase.

\_\_\_\_\_ will be in charge of this role.

- Management of interaction in Barcelona Showcase role: Consisting in manage comments from users of applications. Each application will have a profile within Barcelona Showcase with specific information about it. Furthermore, users will be able to comment and interact with the developer through a list of comments. It is important to oversight that content comments are respectful and constructive, as well as to be able to remove comments that does not accomplish with this requisites.

\_\_\_\_\_ will be in charge of this role.

- Expert role: Different experts will participate in Barcelona Showcase valuing and scoring different applications. Moreover, experts will comment the applications.
- Collector of indicators role: This role involves two parts. One action is aimed to collect the information provided by the iCity Platform in terms of accounting of each application. Then, it's mandatory to send the pertinent indicator of usage to the owner's application. The second action consists in collecting the information sent by owner's application which service application is published in an 'official' site. This information consists on the indicators of usage that only the developer has access through 'official' site where has published the application.

\_\_\_\_\_ will be in charge of this role.

- Statistical role: This role is related with collection of indicators and elaborating statistics to be aware of the usage of the applications developed under iCity Project. With this information, Barcelona as a city will be able to be aware about how many times are used each infrastructure opened, but also Barcelona as a participant of the iCity Consortium can extract conclusions about the success of the iCity Project.

\_\_\_\_\_ will be in charge of this role.

Please, note that will probably exist more roles according to Barcelona Showcase progresses. Maybe some roles become one after fusing.

## **3.2.2 BOLOGNA**

### **3.2.2.1 First Scenario**

The previous version of this document called 'iCity Apps Store', delivered in December 2012, analysed the current situation of Bologna in terms of the communication strategy to fit the iCity Apps Store.

The document explained that Bologna, as a Municipality, did not have an Apps Store / Apps Showcase then, but they were evaluating some solutions proposed by local SME's.

In particular one of these (Bazaar by Epocaricerca Srl) seemed to fit well with the iCity project needs. The needs considered to be covered by this solution were:

- It was about an application that acts as a "container" of apps available in the market.
- It did not depend of the device (Apple iOS, Google Android, Windows Phone).
- The Apps available were both web-apps and native apps from official stores.

This solution was pending to clarify if it was feasible and compatible with the iCity platform.

### **3.2.2.2 Bologna iCity Apps Store Showcase**

Nowadays, Bologna has implemented the following portal:

<http://iperbole2020.comune.bologna.it/bologna-apps/>

The iperbole2020 wordpress blog/portal hosts all the contents related to the "digital agenda" topics: participative process, open call for projects and results of the selection, information about innovative services and activities of the municipality, bologna smart city issues and partnerships, stakeholders' requests and contributions, etc. It's the space dedicated to the community that is involved and will be engaged in the living lab for bologna co-design and in the iCity events / co-creation activities too.

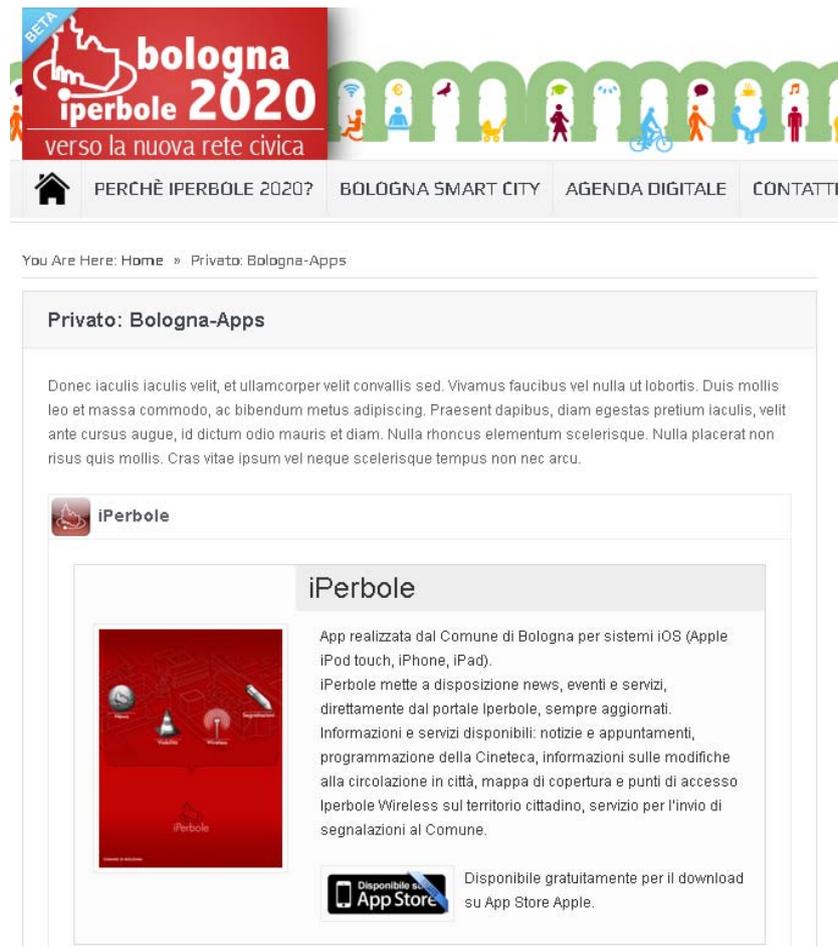


Figure 11

This portal is still in progress but it contains a set of developed applications related to:

- Bologna city (events, news, and different services continuously updated)
- The mobility, parkings, streets night cleaning service, bike paths, traffic limitations...
- Bike hiring stalls
- Busses in real time

Notwithstanding, Bologna has in mind to enrich the section with other apps related to the metropolitan public services in order to broaden the offer in a coordinated and integrated way, so not only the apps produced by the municipality itself.

Below, a set of images are shown with the purpose to illustrate different App profiles published in the portal:

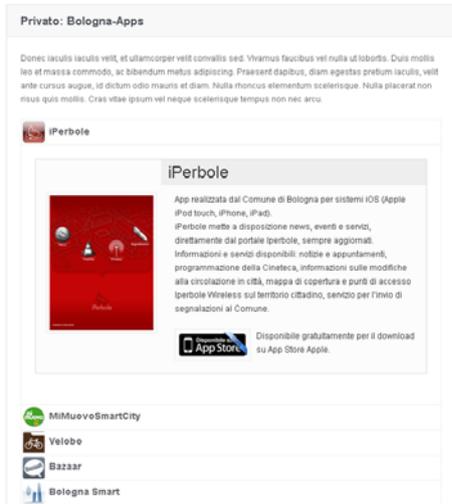


Figure 12: iPerbole App Profile

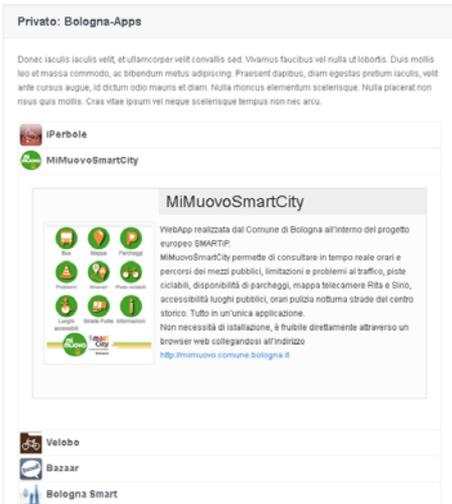


Figure 13: MiMuovoSmartCity App Profile

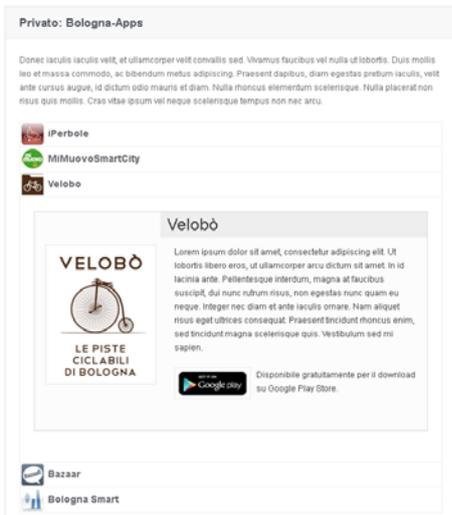


Figure 14: Velobò App Profile

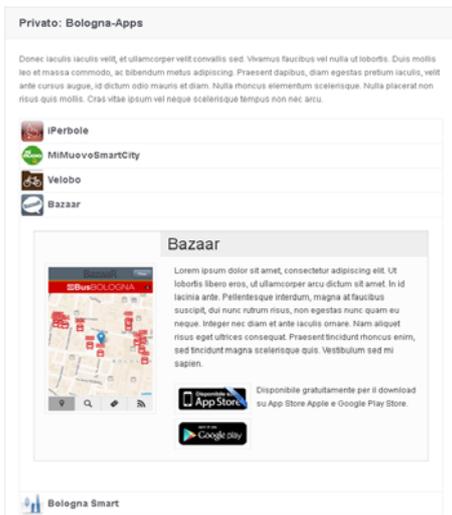


Figure 15: Bazaar App Profile

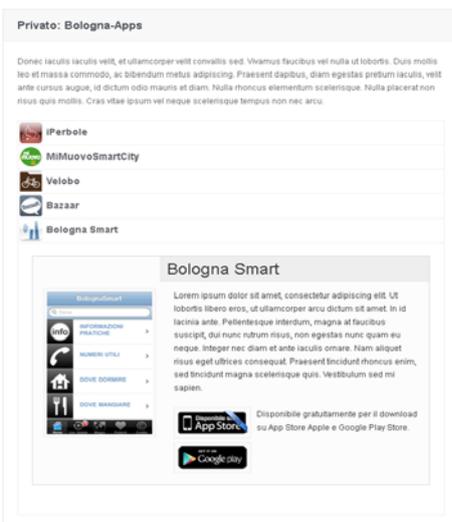


Figure 16: Bologna Smart App Profile

### 3.2.2.3 Tasks and roles

To be defined. Work in progress.

It is essential to define main tasks to carry out as well as to appoint responsible people for each task to ensure the proper operation of Bologna Showcase.

Section 3.2.1.3 proposes some tasks and roles applicable to Cities Showcase.

## 3.2.3 GENOVA

### 3.2.3.1 First Scenario

The previous version of this document called 'iCity Apps Store', delivered in December 2012, analysed the current situation of Genoa in terms of the communication strategy to fit the iCity Apps Store.

The document explained that Genoa municipality has available the Apps Point, an Apps Showcase where citizens can download mobile apps with city information developed by the Municipality or stakeholders. Apps available are either web-apps or native apps from official stores.

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Fig. 17 Genoa Apps Point<sup>7</sup>

<sup>7</sup> <http://www.genovasmartcity.it/apps-point.aspx>

Regarding to the collection of further information (owner, evaluation, voting, etc.), it is referred exclusively to the data contained in Apple and Android Store.

iCity project is considered as good opportunity to develop a new model of their Apps Store, especially considering the growing number of apps that are developed.

### **3.2.3.2 Genoa iCity Apps Store Showcase**

Nowadays, Genoa is still working in the portal called '**Genoa Apps Point**'

<http://www.genovasmartcity.it/apps-point.aspx>

### **3.2.3.3 Tasks and roles**

To be defined. Work in progress.

It is essential to define main tasks to carry out as well as to appoint responsible people for each task to ensure the proper operation of Genoa Showcase.

Section 3.2.1.3 proposes some tasks and roles applicable to Cities Showcase.

## **3.2.4 LONDON**

### **3.2.4.1 First Scenario**

The previous version of this document called 'iCity Apps Store', delivered in December 2012, analysed the current situation of London in terms of the communication strategy to fit the iCity Apps Store.

The document explained that London is at the forefront of the open data movement, working in partnership with its cross-functional bodies (transport, police, health and social services). It has liberated in London Datastore over 500 high value datasets that have stimulated both innovation and economic activity in the software development market.

A range of third party developer applications/services now exist across a wide array of multiple platforms including the web, Apple and Android. Real-time applications already existing to improve end-user lives based on varied levels of open access to data and infrastructure include: Fix My Street, My Council Services, Speak Up, Cycle Hire, Get me There Now, Love Clean Cities and Tube Radar.

The screenshot shows the London DataStore website. At the top, there is a navigation bar with the text "london datastore" and a search box labeled "Search Datastore". Below this is a "London Dashboard" section with a map of London and a headline: "What are well-being levels like in your neighbourhood? Check out the scores for 2012". To the right of the map are several text boxes with links and information.

On the left side, there is a vertical navigation menu with the following items: "Database", "Catalogue", "Organisations", "Categories", "Keywords", "Search Database", "Request Database", "Popular Suggestions", "Latest Suggestions", "Blog", "Inspirational Uses", "Useful Links", "Digital Advisory Board", "About", and "FAQs". Below the menu is a "Share with" section with icons for Facebook, del.icio.us, Digg, Twitter, and StumbleUpon.

The main content area features a "Welcome to the London Datastore" section with introductory text. Below this is a "Latest Datasets" section with a list of datasets, each with a title, category, description, and average rating. The datasets listed are:
 

- Average Private Rents, Borough** (Housing): Summary of monthly rents in private rental market, recorded per 12 month rolling period. Average: 5 (5 votes)
- DLG Affordable Housing Supply, Borough** (Housing): Total of affordable housing completions in each London borough since 1991/92. Average: 4 (1 value)
- 2011 Census Ward Population Estimates** (Demographics): The Local Spatial Unit contains 2011 Census population estimate data for wards in Greater London. Also included is some comparative data from sources such as 2001 Census and GLA population estimates. Average: 5 (5 votes)
- Cross border mobility of secondary school age children** (Demographics | Education): The Intelligence Unit updates estimates on cross border mobility of secondary school age children in London. Average: 5 (2 values)
- Cycle Route on the TfL Road Network** (Transport): Cycle Route on the Transport for London Road Network (TLRN). Average: 5 (5 votes)

On the right side, there are several smaller sections: "Join the mailing list", "Latest blog entry" (with a link to "London Ward Well-Being Scores - 2012 edition (Blog)"), "Twitter" (with a link to "@LondonDatastore"), and "Featured Applications" (with links to "Focus on London", "Elections data", "Live Underground from Maps", "GLA Spending Dashboard", and "Blue Line Realtime Data API").

At the bottom of the page, there is a footer with links for "Organisations", "Accessibility", "Freedom of Information", "Privacy", and "T&Cs", along with the text "MAYOR OF LONDON | LONDON ASSEMBLY".

Figure 18 London DataStore<sup>8</sup>

<sup>8</sup> <http://data.london.gov.uk/datastore>

London has acquired a lot of useful experience in managing their DataStore. Published in their London DataStore site there are inspirational uses of Apps showing visualisations created from the public data. This Apps Showcase permits downloading of applications using either the Apple or Android Apps stores' and permits citizens to rate the Apps without tracking all the data users.

The screenshot shows the 'Inspirational Uses' section of the London DataStore website. It features a sidebar with navigation links like 'London Dashboard', 'Datastore', and 'Inspirational Uses'. The main content area includes:

- Inspirational Uses**: A section explaining the purpose of the page and encouraging public agencies to share their data.
- Custom Age Tool for ONS Mid-Year Population Estimates**: A review of an Excel tool for population estimates from 1995 to 2011. It includes a screenshot of the tool's interface with a table of population data.
- The London Jigsaw App**: A review of an app for iPhone and iPad that uses London's geography to play a jigsaw game.
- Free Data Visualisation Tool from the GLA**: A review of a tool for visualizing data from multiple datasets.

On the right side, there are sections for 'Join the mailing list', 'Latest blog entry', 'Twitter', and 'Featured Applications'.

Area Cd	Year	Area name	Male	Female	Person
E03000001	1995	City of London	3,514	3,239	6,753
E03000001	2000	City of London	3,715	3,275	7,014
E03000001	2001	City of London	3,884	3,275	7,359
E03000001	2002	City of London	4,362	3,489	7,851
E03000001	2003	City of London	4,293	3,536	7,805
E03000001	2004	City of London	4,479	3,197	8,276
E03000001	2005	City of London	4,672	3,978	8,650
E03000001	2006	City of London	5,195	4,205	9,410
E03000001	2007	City of London	5,126	4,766	10,434
E03000001	2008	City of London	6,189	5,141	11,330
E03000001	2009	City of London	6,291	5,190	11,481
E03000001	2010	City of London	6,286	5,291	11,677
E03000002	1995	Barking and Dagenham	78,266	84,578	162,444

Figure 19 London Inspirational uses<sup>9</sup>

<sup>9</sup> <http://data.london.gov.uk/datastore/inspirational-uses>

### **3.2.4.2 London iCity Apps Store Showcase**

Nowadays, London is still working in the concept of London Showcase.

### **3.2.4.3 Tasks and roles**

To be defined. Work in progress.

It is essential to define main tasks to carry out as well as to appoint responsible people for each task to ensure the proper operation of London Showcase.

Section 3.2.1.3 proposes some tasks and roles applicable to Cities Showcase.

## 4 Publishing a service application

Publishing an application in the iCity Apps Store or in any 'official' Apps Store implies passing successfully the iCity validation process.

It is not the purpose of this paper to explain this validation process for apps that use open infrastructures within iCity Project. The document 'D5.2 MoU: rules and conditions' is focus on detailing this process step by step to validate a service application so for more information it is recommended to consult it.

However, figure 20 outlines, in a schematic way, the workflow of the process to develop a new service in the iCity ecosystem by a third party. We need to have it in mind in order to understand how will fit the addition of an app in the concept of iCity Apps Store.

The purpose of this chapter is to expand the information just the last step of figure 20, marked in a red square. The last step corresponds to the process since third party has finished the implementation and validation of its service application, has obtained the license of required open infrastructure and only is required to publish the service application on any Apps Store for users can make use of it.

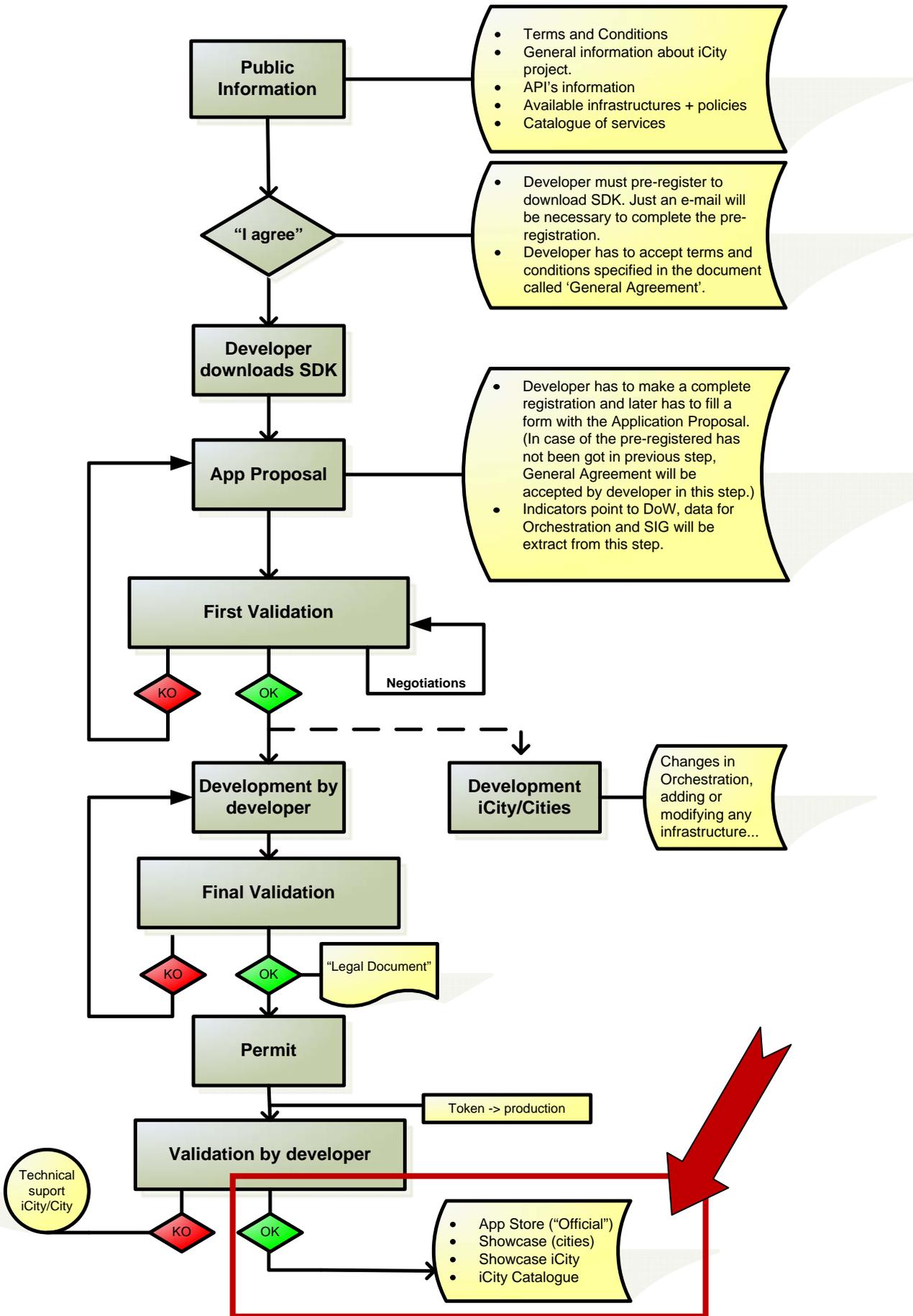


Figure 20: Workflow of the process to develop a new service in the iCity ecosystem

Finally, the last step of iCity Validation process is to publish the service application developed into any available site with the purpose to enable the downloading of the service application and consequently offer the possibility that users can use it. Hence, this last step is also essential to conclude the iCity Validation process and it's not less important than previous steps illustrates in figure 20.

Notice that, third parties are free to publish their developed service application into any available site depending on features of service application (operating system, device that can use it, etc). For instance, if the developed service application is for PC, developer must publish it into website like Softonic, own developers' website, etc. But if the developed service application is for mobile devices, developer can choose the proper Apps Store regarding to operating system used by its application (for instance Apple Apps Store, Android Apps Store, etc). Furthermore, iCity offers third parties the possibility to publish their developed service application on iCity Apps Store.

Enabling to users an optimal downloading to service applications, third parties must choose only one option to publish their service application, so it does not make sense that a service application is published at the same time into two or more different Apps Store.

Therefore, concluding the iCity Validation process implies the publication of the developed service application either 'Official' site ('Official' Apps Store or 'Official' website depending on targeting device) or iCity Apps Store.

Below, according to the developers' choice, it is explained and detailed the corresponding process to follow:

#### **4.1 Publishing on 'Official' site**

Third party chooses to publish the developed service application on an 'Official' site refusing the possibility to publish it on the iCity Apps Store. This option is included in the "App Proposal" within the iCity Validation Process where developers must choose the site where will publish its service application.

According to features of the service application, third party chooses the correct place where will able to other users download it and consequently utilize it.

Having done the publication on just one 'official' site, third party must send to iCity the download URL pertinent to its application.

Afterwards, iCity must add this URL into iCity Apps Store Hosting, specifically, into the part of iCity Catalogue. Moreover, the pertinent Showcases must be informed of the existence of a new service application as well as the corresponding URL of this application.

iCity Showcase will contain the URLs of all service applications developed under iCity Project so this showcase will be informed every time that a new service application is uploaded on iCity Catalogue. Then, iCity Showcase will incorporate the URL associated to this new service application and show it to enable users the download link. Furthermore, the pertinent city Showcase must be informed if the new service application uploaded on iCity Catalogue uses any of its municipal infrastructures. Then, the pertinent city Showcase must repeat the same process described by the general iCity Showcase.

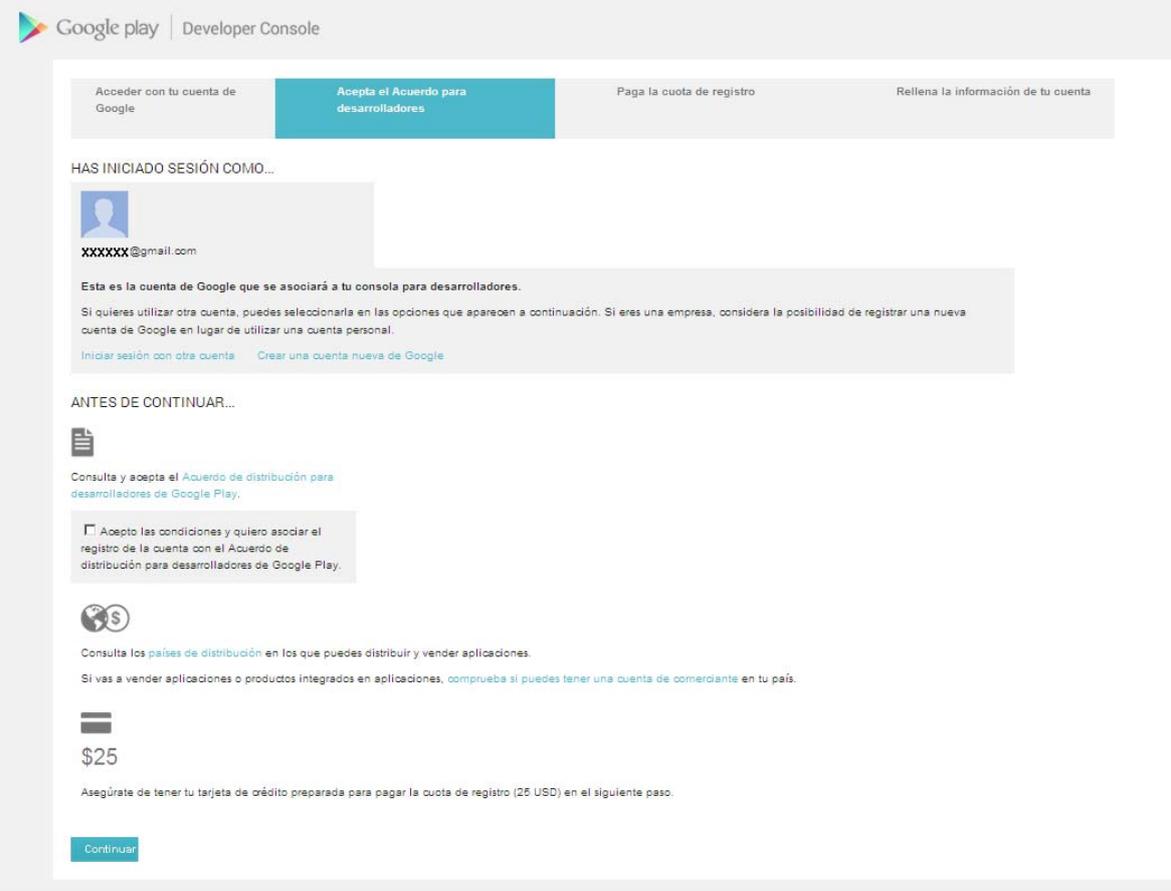
Notice that showcases do not only show a URL. As detailed in section 2.1, they will show information about each application (extracted directly from 'official' site) and other relevant aspects facilitating a friendly and attractive front-end to users.

## 4.2 Publishing on iCity Apps Store

Third party chooses to publish the developed service application on iCity Apps Store refusing the possibility to publish it on an 'Official' site. Notice that this option is possible in exceptional situations. During third party elaborates the "App proposal" within the iCity Validation Process, developers must choose the site where will publish its service application. In case of select in 'iCity Apps Store', will be necessary to add extra information that will be indicated to developer with the purpose to incorporate later all this collected information into iCity Apps Store Hosting.

Because of iCity Apps Store has not been yet implemented, below it is explained operation of the case of Google Play Apps Store in order to catch possible ideas for our case:

The first step to publish in Google play is to visit the Google Play Developer Console and register for a publisher account. This registration requires entering basic information about developer identity — developer name, email address, and so on. This information can be modified later by the developer. Then, the developer must read and accept policies called Developer Distribution Agreement and at the last step to complete the process, developer must pay a \$25 registration fee.



The screenshot shows the Google Play Developer Console registration interface. At the top, there are four steps: 'Acceder con tu cuenta de Google', 'Acepta el Acuerdo para desarrolladores' (highlighted in blue), 'Paga la cuota de registro', and 'Rellena la información de tu cuenta'. Below this, the user is logged in as 'HAS INICIADO SESIÓN COMO...' with a profile picture and email 'xxxxxx@gmail.com'. A message states: 'Esta es la cuenta de Google que se asociará a tu consola para desarrolladores. Si quieres utilizar otra cuenta, puedes seleccionarla en las opciones que aparecen a continuación. Si eres una empresa, considera la posibilidad de registrar una nueva cuenta de Google en lugar de utilizar una cuenta personal.' There are links for 'Iniciar sesión con otra cuenta' and 'Crear una cuenta nueva de Google'. The next section is 'ANTES DE CONTINUAR...' with a document icon and text: 'Consulta y acepta el Acuerdo de distribución para desarrolladores de Google Play.' Below this is a checkbox: 'Acepto las condiciones y quiero asociar el registro de la cuenta con el Acuerdo de distribución para desarrolladores de Google Play.' There is a globe icon and text: 'Consulta los países de distribución en los que puedes distribuir y vender aplicaciones. Si vas a vender aplicaciones o productos integrados en aplicaciones, comprueba si puedes tener una cuenta de comerciante en tu país.' Below that is a credit card icon and '\$25' with text: 'Asegúrate de tener tu tarjeta de crédito preparada para pagar la cuota de registro (25 USD) en el siguiente paso.' At the bottom is a blue 'Continuar' button.

Figure 21: Registration as a developer in <https://play.google.com/apps/publish/>

When the registration is verified, developer will receive a notification at the email address specified during registration. Once developer has registered and received this verification, he/she can sign in to his/her Google Play Developer Console, which will be the home for app publishing operations and tools on Google Play.

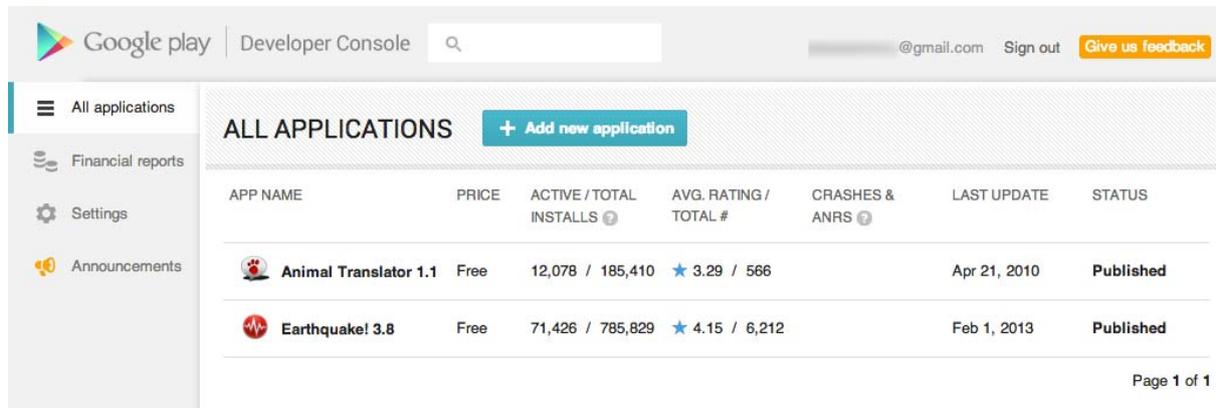


Figure 22: Developer Console Interface<sup>10</sup>

Furthermore, the account details page is where developers specify their basic information or their company in a developer profile. The information in their developer profile is important because it identifies them to Google Play and also to their customers. During registration developer must provide the information for its profile, but can edit and change later.

A developer profile contains:

ACCOUNT DETAILS Saved

DEVELOPER PROFILE

Developer name \*   
The developer name will appear to users under the name of your application.

Email address \*

Website

Phone Number \*   
Include plus sign, country code and area code. For example, +1-650-253-0000.

Email updates  I'd like to get occasional emails about development and Google Play opportunities.

Developer name — this name will be shown to users on developer store listing page and elsewhere on Google Play.

Developer contact information — how Google can contact developer if needed (this information isn't exposed to users).

Developer website URL — shown to users on developer store listing page so they can learn more about the developer company or products.

Figure 23: Account details page

Uploading and publishing an application can be done from the Developer Console. The app is a *draft* until developer publishes it, at which time Google Play makes developer store listing page and app available to users. Developer can unpublish the app at any time.

<sup>10</sup> <http://developer.android.com/distribute/googleplay/publish/console.html>


**EARTHQUAKE!** – com.radioactiveyak.earthquake
Published ▾

**STORE LISTING** Saved Fields marked with \* need to be filled before publishing. 0

**PRODUCT DETAILS**

English (United States)
Add translations

**Title \*** Earthquake!  
English (United States) 11 of 30 characters

**Description \*** Get a head start on the apocalypse with Earthquake!  
English (United States)  
Last 24hrs of earthquakes, with damage and rumble areas shown on an interactive map. Features notifications and vibration to indicate quake magnitude, and a dynamic widget.  
Now optimized for tablets!

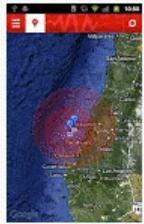
**Promo text** Get a head start on the apocalypse! 24h of quakes mapped.  
English (United States)

**Recent changes** Fixed force close on refresh bug introduced in last update (sorry!)  
English (United States)

**GRAPHIC ASSETS**

If you haven't added localized graphics for each language, graphics for your default language will be used. [Learn more about graphic assets.](#)

**Screenshots \***  
Default – English (United States)  
**320 x 480 or 480 x 800 or 480 x 854 or 1280 x 720 or 1280 x 800. JPG or 24-bit PNG (no alpha)**  
Drag to reorder. At least two are required.



**High-res icon \***  
Default – English (United States)  
**512 x 512**  
**32-bit PNG (with alpha)**



**Feature Graphic**  
Default – English (United States)  
**1024 w x 500 h**  
**JPG or 24-bit PNG (no alpha)**



Figure 24: Store listing page lets developer upload graphic assets, description, support information, and other information to create the store listing page for a specific app.

In addition, the developer console offers to developers the possibility to access to “User reviews page” where developer can obtain scoring and comments of the users. The user reviews page gives access to developer to user reviews for a specific app. Also, developer can filter reviews in a number of ways to locate issues more easily and support customers of its app more effectively.

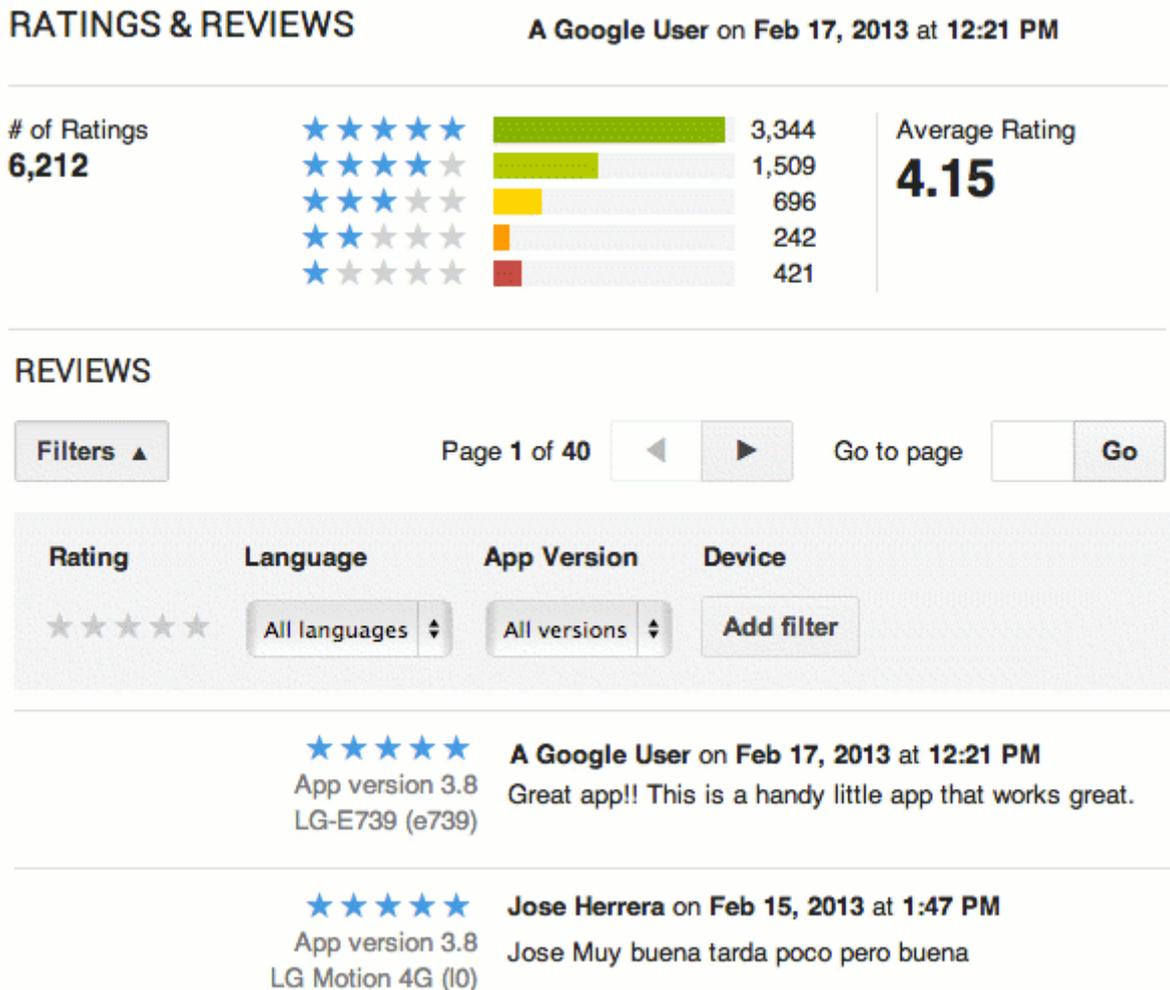


Figure 25: User reviews page

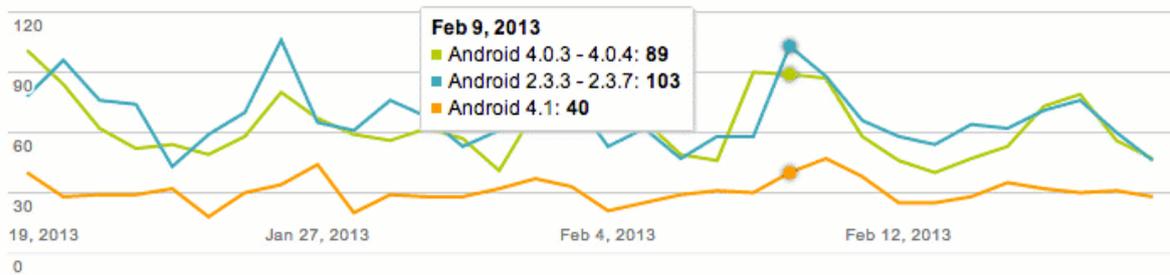
The Developer Console also gives developers detailed statistics on the install performance of their app in the App statistics page. It shows to developer a variety of statistics about a specific app’s installation performance over time.

STATISTICS **Daily device installs** for Jan 19, 2013 - Feb 19, 2013 [Export as CSV](#)  
 Show: last month 3m 6m 1y all

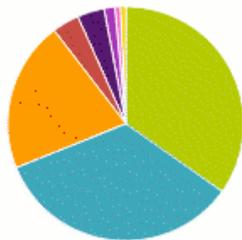


**Android Version** **Device** **Country** **Language** **App Version** **Carrier**

DAILY DEVICE INSTALLS BY ANDROID VERSION



DAILY DEVICE INSTALLS ON FEB 19, 2013



	YOUR APP	
<input checked="" type="checkbox"/> Android 4.0.3 - 4.0.4	47	34.81%
<input checked="" type="checkbox"/> Android 2.3.3 - 2.3.7	46	34.07%
<input checked="" type="checkbox"/> Android 4.1	28	20.74%
<input type="checkbox"/> Android 4.2	5	3.70%
<input type="checkbox"/> Android 2.2	5	3.70%
<input type="checkbox"/> Android 2.1	2	1.48%
<input type="checkbox"/> Android 3.1	1	0.74%
<input type="checkbox"/> Android 3.2	1	0.74%

Figure 26: Apps statistics page

When the service application has been published on our iCity Apps Store, the last step will be the incorporation of the corresponding URL into iCity catalogue as well as into the pertinent showcases.

Finally, it's essential to incorporate the corresponding URL to pertinent showcases. As detailed in section 4.1, the process to notify that a new service application has been incorporated in iCity Catalogue to Showcases will be the same. But in this case the URL will redirect instead of an 'official' site, will redirect to the iCity Apps Store because the service application is published there.

iCity Showcase and the pertinent city Showcase (according to the location of open infrastructure used by this service application) will be informed. Then, Showcases will incorporate the URL associated to this new service application and show it to enable users the download link.

#### **4.2.1 Open discussion**

It is essential to work together on defining the following flows:

- ❖ Uploading the URLs to the iCity Catalogue.
- ❖ Notifying these URLs to the 'General' iCity Showcase and furthermore to the involved city Showcase.
- ❖ Publishing an app on our iCity Apps Store. Defining the flow.
  - What information do we need? In this case, are we going to store the App in the iCity Apps Hosting?
  - Think about if it is necessary that the developer obtains our consent before publishing on our iCity Apps Store.

## 5 Risks

The following table gives an overview of possible risks identified beforehand, indicating the remedial and mitigation strategy to prevent them or to reduce their impact in the iCity Apps Store.

The first four columns has been extracted from the first document 'D5.1 iCity Apps Store' and the last column has been added to demonstrate that currently, there are risks that have been solved, so the following extended table explains the solutions applied:

Description of possible risk	Impact	Probability of occurrence	Remedial Actions	Actions carried out
<b>Lack of deep knowledge of Apps certification process</b>	High	High	A deeper analysis must be carried out in order to define how to certificate an app.	Document "D5.2 MoU: rules and conditions" deeps in the iCity Validation process detailing step by step the process.
<b>How to identify an app</b>	High	High	A deeper analysis must be carried out in order to define how to identify a certificate app.	Document "D5.2 MoU: rules and conditions" analysis the fact of granting tokens in order to identify an app.
<b>Lack of fit the iCity Apps Showcase with potential Apps Stores already created in some cities</b>	High	Medium	Write a specific technical documentation about the functions that iCity Apps Hosting provides to iCity Apps Showcases.	This document explains in detail the relationship established between all the components that constitutes the iCity Apps Store.
<b>Legal requirements on infrastructures use &amp; data access and control</b>	Medium	Medium	Ongoing discussion open and input into WP2.	Still working
<b>iCity Apps Store must be technical complaint with iCity Platform</b>	Medium	Medium	Working together WP5 with WP3 and WP4.	Still working
<b>Having available showcases in each city</b>	High	Low	The four cities already have (or intend to) a showcase.	Improving showcases in each city. This document explains different showcases available currently in each city and the next steps to follow.
<b>Match in time the building of the iCity platform and the</b>	Medium	Low	Working together WP5 with WP3 and WP4.	Still working

<b>building of iCity Apps Store.</b>				
<b>How to engage developers considering that we do not use the Official App Stores.</b>	Medium	High	Explain many times as necessary the strengths of the project	Still working
<b>How to obtain apps use indicators (especially if the app is already available in official apps stores).</b>	Low	Medium	Finding out how to obtain indicators of use of apps available in other stores.	This document explains how developers will send to iCity monthly their indicators.
<b>How to make clear that iCity Apps Store is beyond the mobile applications?</b>	Low	Medium	Explain many times as necessary what is an app in iCity context.	This document emphasizes and explains clearly that a service application is not just a mobile application.
<b>Legal framework changes</b>	High	Low	Be aware of possible legal changes.	_____