

**HII CLD:
European Trusted Cloud Ecosystem
(EIT 14605).
Politecnico di Milano Sub-granting
on task A1634:

Application to connect citizens
to the city (local services and opportunities).**

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1 Introduction and General Context

This document describes one sub-granting proposal offered to eligible contractors by Politecnico di Milano [1], in the context of the High Impact Initiative named: “European Trusted Cloud Ecosystem”, supported by EIT Digital in its Digital Infrastructure (former Future Cloud) action line.

The “European Trusted Cloud Ecosystem” initiative goal is to provide consumers and businesses with better tools and services to take greater control over the use of sensitive and personal data created by and about them. At the same time this data is enabling and stimulating the business growth – companies within the trusted service eco-system, accelerated by the HII, are developing innovative and trusted products and services which can be tailored and personalized for the specific needs of the individuals and businesses.

Politecnico di Milano [1], in a joint activity with Telecom Italia [2] and FBK [3], aims at stimulate the usage of territorial big data and anonymized personal data in order to stimulate new business in the area of smart city services, especially related to tourism. The objective of the sub-grant is the development/customization/consolidation of one multi-platform mobile application (based on a preliminary Telecom Italia and FBK’s prototype), which connects the user (tourist or local citizen) with the city of Como, enabling users toward the exploration and exploitation of local opportunities (events, services, shopping offer). The application, moreover, collects anonymized personal data into the My Data Store platform (MDS) platform offered by Telecom Italia’s in the context of the HII, in order to provide the city and the local businesses ecosystem with insights about the city dynamics.

Contractors are requested to provide evidence of expertise with the activities that are subject of this sub-grant, in particular multi-platform mobile app development and Graphical User Interface

Chapter 2 of this document will describe in more details the non-technical aspect of the sub-grant, reporting also the amounts, the evaluation criteria, the expected timeline, traveling and IPR issues.

Chapter 3, instead, reports the technical aspects, including a description of the context of the work and main requirements for the application that will be developed.

2 Non-Technical Aspects

2.1 Conventions

In the rest of the document the following convention is adopted to differentiate between mandatory and preferred requirements:

- shall** A key word indicating a mandatory requirement. Solutions are *required* to meet all such mandatory requirements.
- should** A key word indicating flexibility of choice with a strongly preferred alternative. Equivalent to the phrase *is recommended*.

2.2 Sub-granted Activities and Budget

The sub-grant will consist in the acquisition of one multi-platform (IOS and Android) software for mobile device, including the back-and capabilities (server side capabilities and a Web dashboard) and the interaction between the front-ends and the back-end.

The sub-granted activities will consist in the development of the multi-platform mobile App, and a (Web) control dashboard for the administrator and master users, controlling the contents offered by the App. The App will be for general purpose, but as part of the sub-granted activities it will be customized to the context of the city of Como (Italy). The App will allow the collection of data from the users and the connection to some APIs offered by Telecom Italia's My Data Store platform (a Personal Data Store enabling toward the collection of data) to collect anonymized personal data. The App will be based in term of concept on the prototypes/mock-ups already developed and provided by Telecom Italia and FBK, called Familink [4], but should be re-designed with the more updated technologies and best practice in terms of user experience.

In details the offered sub-grant is part of the catalyst 14605-A1634- contributing to the Task 5 of the initiative: "Business Experiments & Trusted Ecosystem Marketplace". It consists in the development and deployment of the following services supporting the initiative "Como Smarter City for Smarter Citizen".

- 1) A working multi-platform mobile application for citizens or city visitors which offer to the users a set of information concerning places, events, services and shopping opportunities in the city. The content shown in the app is governed by a server-side dashboard. The app must include social login mechanisms (at least to Facebook) and features such as the exploitation of QR-codes and the possible interaction with Beacons. The app must synchronize with the back-end, collecting data from the users (e.g. location or the interaction with QR-codes/beacons) and must provide the users with notification mechanism and notifications filtering. The app shall be inspired by the concept of Familink a joint service developed by Telecom Italia and FBK.
- 2) The back-end controlling the mobile application and allowing the collection of the data from the app's users. The back-end offers also a Web dashboard including capabilities for the insertion of events, notifications and new content. The dashboard can be accessed by the service administration and some master users (city officers, store managers, etc.) allowed to insert new content under the control of the administrator.

Both the mobile application and the backend should support the management of rewarding features for the users (collection of rewards and exploitation opportunities).

It shall be ensured the capability to deploy apps in multi-language, including at least Italian and English, even if a preferential criteria for the selection of the sub-grantee consists in the deployments also in further languages (more precise details will be given later).

The amounts granted by the sub-grants will be:

- Up to maximum € 17,000.00 (EUR seventeen thousand);

2.3 Evaluation Criteria

The grant will be awarded to a SME or company with a good portfolio of previous works and proven experience in multi-platform (Android and IOS) mobile app developing, in particular proven experience on personal Apps for user with ultimate, state-of-the-art user experience and data collecting features.

The organization receiving the grant will be selected, according to the selection rules of grantor, on the basis of its proven experience and portfolio of previous works, and on the basis of the further candidatures' information/detail provided.

Each candidate contractor can apply for the sub-grant, i.e. for the development of both the multi-platform mobile application and the back-end (including the Web control dashboard).

Other preferential criteria are related to the proven user interaction and user interface quality and expertise, and to the proven capability to ensure the delivery on time or, even to shorten the expected timeline (e.g. providing Gantt charts or the evidence of the usual deployment cycle and timing).

A preferential criteria is the availability to meet the sub-granter (Politecnico di Milano) and the other partners of the activities (Telecom Italia, FBK and possibly other partners of the initiative) frequenting the EIT Digital co-location center or satellites, for alignments.

A preferential criteria is given to those candidates who will include in the maximum budget cost for the marketing of the user application (printing of flyers, posters and other ads to be published in the city).

As general award criteria, preference will be given to Italian candidates (or European, but with resources with skills in Italian), given that the Apps have to be released also in Italian language and because of the testing phase will take place in Como, in Italy, involving Italian native language final users. The capability to provide multi-lingual options further than English and Italian (such as German and Russian) for the apps target by the sub-grant is another valuable criteria for the selection.

The EIT Digital KIC Partner (Politecnico di Milano) shall give financial support for the KIC added value Activity carried out by the Sub-grantee, within the limits specified by the Annual Grant Agreement.

The maximum amount of sub-grant under this Agreement is € 17,000, but shall in any case never exceed € 60,000 euro within 2016 for the same contractor including its participation to other EIT Digital financed activities (e.g. other sub-grants).

Candidate contractors are welcome to apply for the maximum granted amounts. In case of equitable portfolio and proven expertise, the preference will be given to the candidates guaranteeing more features and meeting the preferential criteria above exposed (including delivery time).

2.4 Timeline

The sub-granting procedure and activities will take place on the basis of the following timeline:

- (within) July 29th, 2016: publication of the present sub-grant call;
- ~~August 21st, 2016~~ (extended to October 14th, 12:00 CET): deadline for candidate contractors to apply;
- ~~August 26th, 2016~~ (extended to October 18th): contractor(s) selection and engagement;
- ~~August 31st, 2016~~ (extended to October 20th): start of the activities (T0 below);
- November 18th: first app's running proof-of-concept/prototype;
- ~~October 31st, 2016~~ (extended to December 5th): end of the main development activities;
- ~~December 7th, 2016~~ (extended to December 16th): end of testing, maintenance and residual development activities;
- ~~December 16th, 2016~~ (extended to December 23rd): end of documenting and reporting activities.

Selected contractor shall comply with the following timeline:

- T0 + 15(~~20~~) days: app requirements definition and agreement (on the basis of previous prototypes and mockups), definition of user interactions, data flow and interface mockups;
- T0 + 30 days: first app's running proof-of-concept/prototype;
- T0 + 45(~~50~~) days: first running multi-platform version of the Apps with the main working features (potential start of parallel testing activities); Small bug/interaction fixing or graphical tuning and some advanced features could follow;
- December 16th, 2016: final, completed version of the Apps delivered;
- December 23rd, 2016: at this time all documentation and software have to be completed, tested and approved; cost-reports (compliant with EU H2020 guidelines) must be submitted and approved as well.

2.5 Budget and Cost Reporting

The funding is 100% on a cost basis, and the budget of the sub-grant is:

- Up to maximum € 17,000.00 (EUR seventeen thousand);

The contractor will be allowed to claim this funding up to the maximum of € 17,000, on basis of cost claim. Within one week from the conclusion of the development activities (i.e. within December 23rd) the contractor is requested to present a Cost Report consistent with the rules of EU H2020 cost reporting and with the guidelines provided by Politecnico di Milano. The report will be verified and approved by Politecnico di Milano; eventual iterations between the contractor and Politecnico di Milano may occur to refine the report within the above established end of reporting activities (December 23rd).

2.6 Traveling and logistics

Most of the sub-granted activities are expected to be performed by contractors in their offices, while most of the interactions with the sub-granter will occur by audio/video conference or electronic means (e.g. e-mail, shared folders, etc.). Nevertheless, face to face meetings are expected to take place in Trento (Italy), at the co-location center of EIT Digital, for the kick-off of the activities and the following discussion of the requirements and app details. The contractor will be also required to travel to Trento for the activity alignments at least once every 6 weeks of activity (at least 3 times during the period of the sub-granted activities). All travel expenses are considered already included into the budget and extra travelling costs will not give right to additional funding/reimbursements.

2.7 Interactions with the KIC partners and Management of the Service

The contractor is requested to ensure the continuous interaction with the involved partners of the activities in order to discuss the requirements, contribute in the service design and approve/check the choices. Some features and technical aspects of the application will be discussed in the first phase of the activities. The contractor is also requested to ensure the maintenance and the management/administration of the service till the end of the sub-granted activities.

2.8 IPR issues

All the IPR of the implemented software shall be owned exclusively by the KIC Partners contributing to the activity, that is Politecnico di Milano, Telecom Italia and FBK (each one for the part of their Background property, and for their contributes to the service design, development and testing accordingly to the identified requirements, with a share that is regulated separately from the current document) and shall be released to the KIC EIT Digital and to its partner: Politecnico di Milano, Telecom Italia, FBK. The contractor shall provide warranty that the implemented software is free of constraints and/or property rights of third parties not previously agreed upon Politecnico di Milano.

2.9 How to Apply?

Responses to this call shall be sent to responsabilegestionale-deib@polimi.it.

Responses shall include the following information:

- Description of the company, relevant competences and experiences
- Link to portfolio of realized apps
- CV of the persons that will be involved in the project
- Contact person
- Requested budget and motivation
- Agreement to move to the appointed EIT Digital nodes/satellites, to have meetings with the sub-granter, as stated in 2.6
- Agreement to respect the proposed project timeline (see 2.4)
 - Award criteria: ability to shorten the fixed deadline (providing Gantt's or the evidence of the usual deployment cycle and timing)
- Prove expertise to develop Apps in English and Italian

Candidates will be evaluated with respect to their competences/experiences and their ability to complete the task according to the tight timeline of the project.

2.10 Information and Contacts

For more information on this call, please contact responsabilegestionale-deib@polimi.it.

3 Technical Aspects

3.1 Technical Context: Como Smarter City for Smarter Citizen

The activities supported by this sub-grant are part of the EIT Digital Future Cloud High Impact Initiative (HII). The goal of this initiative is to provide consumers and businesses with better tools and services to take greater control over the use of sensitive and personal data created by, about and for them. At the same time this data is enabling and stimulating the business growth – companies within the trusted service ecosystem, accelerated by the HII, are developing innovative and trusted products and services which can be tailored to and personalized for the specific needs of the individuals and businesses.

As part of this larger activity Politecnico di Milano jointly with the KIC partners Telecom Italia and FBK pursue the objective to seek and promote the development of products and/or services that take advantage of data (data-driven innovation), deploying technologies that allow a fair, trusted and privacy-preserving exploitation of different type of data, including territorial big data (such as territorial data from the telephone networks -the CDR of Telecom Italia- or from other data-sets collected by the local public administration), data published on social networks, personal data crowd-sensed from the citizens. For this reasons, the partners launched the project “*Como Smarter City for Smarter Citizens*” (ComoSC2) in collaboration with the Municipality of the city of Como (Italy).

ComoSC2 is a Digital Transformation project. It has two main goals: one for those in the Como municipality who govern the territory and one for the owners or the managers of Como point of interest. Decision makers in the Municipality can monitor the effects of the territorial governance decisions they take (e.g., opening a new pedestrian area or investing in territorial marketing. Owners or managers of Como point of interest can monitor the presence and demographics of people to reach interested customers.

To this end, ComoSC2 will

1. identify on the market and deploy in key points of Como new IoT for public space to monitor crowds movements;
2. collect and fuse in real-time data about the Como including privacy-preserving aggregates of TIM Mobile Phone network; and
3. develop or enhance collaborative digital service to make Como a smarter city for smarter citizens.

The objective of this call is to identify a partner able to support point 3.

3.2 Integration of the My Data Store APIs

The service, moreover, must be integrated with My Data Store (MDS) of Telecom Italian, an architectural framework which implements a privacy preserving personal data management paradigm (the Personal Data Store, PDS). The My Data Store framework provides a set of APIs for collection and exploitation of personal data in compliance with users’ disclosure/exploitation preference (based on the data type and source, the requested periods, the quantity, the required anonymisation/aggregation level, the specific

application/services requiring the information, etc.). The data collected/crowd-sensed from the user of the mobile app must be pseudo-anonymized and synchronized with My Data Store (i.e. the data collected, after pseudo-anonymization and adaptation in the expected format, must be inserted in the platform through the available APIs).

3.3 REQUIREMENTS: The Mobile multi-platform application (Front-End)

Sub-granting activity's first objective is the development of mobile application, following an already existing concept,. The app can reuse user interaction and content organization criteria already devised, or improve it, on the basis of a joint requirements analysis with the activity partners. The generic application must be initially customized for the context of the City of Como.

Main requirements for the mobile app that will be developed are listed as follows:

- [R1] Compatible with Android OS \geq 4.0 (including 6.0), multi-screen and multi-resolution;
- [R2] Compatible with iOS \geq 8.0 (including 9.0), multi-screen and multi-resolution;
- [R3] Being compatible with Windows Phones is not mandatory but represents a preferential criteria
- [R4] Shall be developed with multi-language support including at least EN and ITA (the inclusion of other languages such as GER and RUS is a preferential criteria);
- [R5] Shall be development starting from the existing concept and content organization provided by Familink [4] and be inspired from the Familink's interaction flow; but it could be completely renewed in the graphic and completely re-engineered;
- [R6] Shall include the Facebook Social Login, users without social login can access the application with restricted capabilities;
- [R7] Shall include a Profile tab to allow users to set up some personal information and preferences; such preferences should affect the way the different contents are provided to the specific app' user;
- [R8] Shall include notifications, in order to notify users with new content; include a simple control panel (e.g. as part of the profile/preferences) for the users allowing the user to set their preferential filters on the notifications;
- [R9] Include social login based on Twitter, Facebook and Instagram;
- [R10] Must enable the collection of data such as GPS locations and should enable the collection of other data types such as movements type (e.g. walking, running, ...) from accelerometer;
- [R11] Must interact with the Back-End to retrieve the content (such as places, events, opportunities, city services, ...) and in order to store the data crowd-sourced from the users;
- [R12] Shall interact with existing API to retrieve territorial data (e.g. info on available parking, etc.);
- [R13] Shall include a QR-Code reading feature in order to collect information, such as check-in in places or event registry;
- [R14] It should enable a mechanism for rewarding (e.g. points, badges, etc.), based on preferences, actions and application usages made by the user (e.g. based on: number, type and time of check-in/actions/events, number of notifications allowed, data collected, etc.);

[R15] The capability of the application to interact with Beacons (the type/characteristics of the beacons supported must be stated in the proposal) in order to automate interactions (further than QR-Code reading) is a preferential criteria for the selection of the candidate.

3.4 REQUIREMENTS: The Web Dashboard for admin and content Management (Back-End)

Sub-granting activity's second objective is the development of a back-end including server capabilities and a Web dashboard with 2 type of granted users, following the already existing concept of the Familink [4] dashboard. The main features of the back-end are: (i) storage of the content to be proposed and synchronized in the mobile app; (ii) management of the notifications; (iii) management and storage of the data collected from the users; (iv) interaction and orchestration of the mobile app and the Web dashboard; (v) management of the rewarding mechanism (collection of rewards and reward exploitation features).

Main requirements for the back-end that will be developed are listed as follows:

- [R1] Compatible with the most up to date Android OS ≥ 4.0 , multi-screen and multi-resolution;
- [R2] The Web dashboard must be organized so that to enable the provisioning of new users; users shall be of two types: (1) *administrators* (controlling the publication of any type of content, the distribution of notifications, the provisioning of new master users) or (2) *master users* (enabled to the insertion of various type of content, or notification requests). *Administrator* should be enabled to full control over the rewarding mechanism while master users should be enabled only toward the visualization and user exploitation of the rewards.
- [R3] The Web dashboard shall include a Profile tab to allow master users to set up some information;
- [R4] The Web dashboard It must be developed in IT language, preferably with multi-language support (including EN);
- [R5] Should interact with existing API to retrieve territorial data (e.g. info on available parking, etc.);
- [R6] Synchronization with My Data Store (through existing APIs) for the collection of pseudoanonymized personal data from the mobile app;

4 References

- [1] *Data Science Group - DEIB – POLITECNICO DI MILANO*: <http://datascience.deib.polimi.it/group/>
- [2] *SKIL Joint Open Lab – Telecom Italia*: <http://jol.telecomitalia.com/jolskil/>
- [3] *Intelligent Interfaces and Interaction – Fondazione Bruno Kessler (FBK)*: <https://i3.fbk.eu/>
- [4] *Familink*: <http://www.familink.it/>