ViviTrento: Apps For The Smart City

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Abstract

We present here ViviTrento, the most advanced subset of apps developed within the Smart Campus suite. The goal of the Smart Campus project is to seed the first nucleus of a smart city in Trento, Italy, by applying the participatory design methodologies to obtain a set of mobile apps that can facilitate the daily life of citizens and in particular of university students.

Author Keywords

Mobile apps; Android; SmartCampus; smart city; participatory design.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, human factors.

Introduction

The goal of the Smart Campus project [1] is to seed a smart city in Trento, Italy, by addressing the smaller-scale environment of the university campus first. The campus is in fact distributed through the town and its suburbs and is also frequented by many international students: therefore, a space for designing a technology that can foster integration of students with the city and among themselves emerges.

To this end, a participatory design approach was used to better understand targeted users (both students and university staff): these stakeholders were involved in focus groups and interviews. In particular, groups of students acted as designers too, interviewing their peers also in different departments of the University. From the collected information we derived the specifications for developing the following six mobile apps:

- ViaggiaTrento: sustainable mobility and wayfinding through the city;
- EsploraTrento: discovery of events and places of interest in town;
- LifeLog: capturing multimedia content in a daily diary;
- MyCVs: creating customized multimedia curricula that are at least partially certified by the University;
- MyPeople: social networking in the campus;
- InBox: subscribing to institutional communications and receiving notifications from the other apps in the suite.

We then distributed smartphones equipped with the Smart Campus suite to groups of students, who have been testing the apps in the wild for almost nine months now. Moreover, these students are providing us with valuable feedback, through online diaries, a forum and periodic questionnaires. We intend these students to be a first seed of our community and ambassadors of Smart Campus with their peers. Meanwhile, some students have become more tightly integrated in the Smart Campus team as interns and are currently designing and developing their own applications.

Therefore, students now act as users, developers and stakeholders at the same time.

ViviTrento

ViviTrento is the most advanced subset of the Smart Campus apps: it includes ViaggiaTrento and EsploraTrento and was developed to be the first portion of the project to be publicly available. ViviTrento is being tested with an ongoing user study in the wild that involves 150 municipality employees, due to the interest expressed by the public administration, that add to the students' user base; moreover, it will be soon downloadable from the Play Store. Here follows a more description of the two apps that compose ViviTrento.

ViaggiaTrento

The campus of the University of Trento is distributed in Trento and its suburbs. In addition, the University is frequented by many foreign students. To help these students find their way through the city, but also to encourage sustainable mobility among citizens, we offer ViaggiaTrento (Figure 1). The main feature of the app is to show users the best way to get from one place to another whether by car, bike, transit, or on foot. In addition, ViaggiaTrento provides real-time information about bus and train delays, obtaining them both from the local transportation company and from users' indications. Users can then immediately receive relevant notifications by specifying a route they are interested in monitoring, in case this route is affected by any delays. Real-time information also refer to the availability of parking spots. Moreover, the involvment of users as information providers makes the app tightly coupled with the territory, allowing information to be

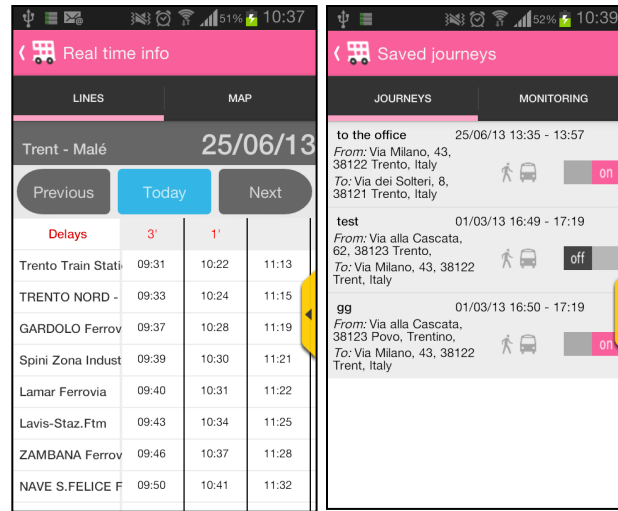timely and differentiating our app from similar ones like Google Maps.

Figure 1. Screens from ViaggiaTrento: real-time information about train lines and a list of saved journeys.

EsploraTrento

Although Trento is not a big city, it does offer a very rich cultural and social life. But keeping track of the many activities available can be difficult as there is no centralized source of information; newcomers in particular expressed their need for an easy way to know what events are taking place and where. The EsploraTrento app (Figure 2) lets users know what is going on around Trento, discover points of interest and create small "stories", that is interesting itineraries to visit within the city that can be shared with other users. These information are categorized and gathered real-time from external sources (such as the municipality or the tourism office) and from users themselves, thus

providing visibility both to official and unofficial events, be them seminars, happy hours, exhibitions or so. Students and citizens can then have a richer experience of their city, also thanks to the implemented social features (following, attending, rating). The app is also coupled with ViaggiaTrento to guide the user towards an event or place.
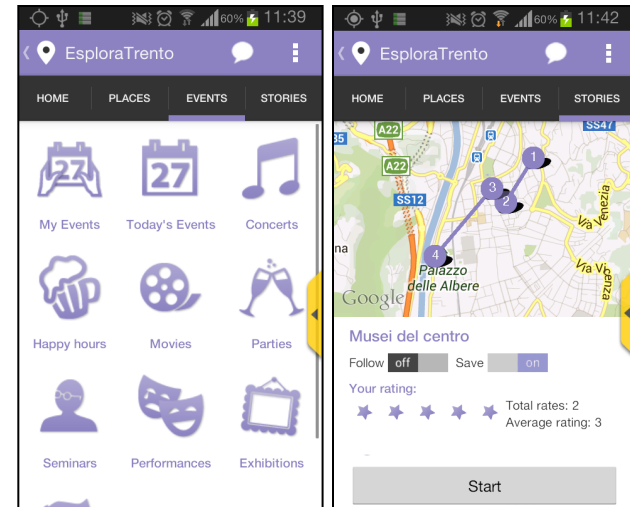

Figure 2. Screens from EsploraTrento: event categories and user-created stories.

Discussion

One of the goals of the Smart Campus project is to seed the community that will sustain the services of the smart city in their growth. To this end, we believe that the role of community-based participatory design was paramount to design services that can actually be useful for their intended users and to guarantee sustainability. Furthermore, we believe that for the smart city community to be established we need to

provide locally useful and interesting information that can be shared among users. In our opinion, this localization approach distinguishes our project and gives it an advantage over globalization approaches [5, 6, 7]. Moreover, being able to provide real-time information distinguishes our app from similar ones [3, 4] which however allow planning trips in an integrated, multimodal way.

The Future

We are now performing a quantitative and qualitative analysis of the data gathered from our tester users through questionnaires, online diaries, interviews and a forum. Our preliminary results show that our participants were in general very positive about their experience with their new smartphone and with the apps. We are also iteratively improving the Smart Campus apps based on the feedback we are receiving from our beta testers: in particular, we count on receiving further opinions from the publication of ViviTrento on the Play Store, which would imply broadening our audience to "random" citizens as well.

One of the strengths of ViviTrento is in the flexibility and customizability of the underlying platform: specialized versions of ViviTrento have been made available to nearby municipalities, adapting information about events, places of interest and means of transportation to the local environment. These parallel experiments are also providing us with further user feedback and test beds. Moreover, such flexibility allows us to compose different subsets of the Smart Campus apps, potentially answering the needs of different contexts.

Finally, we have been encouraging students to add to the Smart Campus ecosystem: at present, we have ten interns actively working on designing and implementing new apps. Together with the recent open source release of the project code [8], we consider this to be a first step towards the growth of a community that can also technically sustain the development of the Smart Campus apps.

Acknowledgements

References (with benchmarking)

[1]   Smart Campus. http://www.smartcampuslab.it/

[2]   Spinuzzi, C. The methodology of participatory design. *Technical Communication 52*, 2 (2005), 163-174.

[3]   Dutch transportation journey planner. http://9292.nl/en/

[4]   Journey planner of the London transportation company. http://journeyplanner.tfl.gov.uk/user/XSLT_TRIP_REQUEST2?language=en

[5]   Google Maps. https://maps.google.it/

[6]   Poynt. http://www.poynt.com/

[7]   Wikitude app. http://www.wikitude.com/app/

[8]   Repository of the source code of Smart Campus. https://github.com/smartcampuslab