Smart Campus

Creating services WITH and FOR people

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Trento: Smart City

Trento:
• small city in the north of Italy
• capital of a mountainous region

Trento is one of smartest cities in Italy:
• High quality of life:
  – Good services: education, health, ...
  – Low unemployment rate
  – Good environment
  – ...
• Good ICT “infrastructures”:
  – Optical fiber, public wireless, open-data, ...
  – Top-level university and research centers (FBK-IRST, CreateNet, Trento RISE, ...)  
  – ICT companies and private research institutes: Microsoft, Telecom Italia, FIAT, ...

Question:
To which extent do the ICT “infrastructures” contribute to the quality of life in Trento?
Trento: Smart Community?

‘A Smart Community is a community that has made a conscious effort to use information technology to transform life and work within its region in significant and fundamental, rather than incremental, ways.’

[California Institute for Smart Communities, 2001]
Vision

• Trento has the potential to become a “Smart Community lab”

• In such a lab:
  • Citizens (and companies) are engaged, and collaborate with the city to identify and solve problems
  • The city opens up its systems (not only open data, but also private data, services, devices…) to accelerate the innovation
  • A new generation of services, created FOR and BY the citizens, is made available by the city

• This requires:
  – Invest in education (university and high school), according to the “Educating City” vision
  – Strengthen the involvement of the business (SME in particular) AND of the developer community
  – Sharpen the (fundamental) governance role of cities
  – A proof of concept
Creating services WITH and FOR students
Our goal...

• Our goal:
  – to create a new generation of services available to students in Trento...
  – ... involving a growing community of students in all parts of the project.

“Smart Campus empowers the community to design, develop and use innovative services they want and like.”
Presentation Overview

• Smart Campus: motivation & vision
• **Our initial moves**
• The results (so far)
• Conclusions
In a Nutshell, Smart Campus...

- has had **3,416 commits** made by **60 contributors** representing **1,063,724 lines of code**
- is mostly written in **Java** with a low number of source code comments
- has a young, but established codebase maintained by a **very large development team** with **increasing Y-O-Y commits**
- took an estimated **292 years of effort** (COCOMO model) starting with its first commit in **February, 2012** ending with its most recent commit **13 days ago**

www.ohloh.net/p/smartcampus_lab
The Services

Which Services?

• Not just services for the academic life, but also services for:
  – Socializing
  – Moving around
  – Sharing events
  – Signaling problems
  – ...

• Any service that makes student’s life easier (and the campus more attractive) is a good candidate.
Services: analysis

Moving around
- Bus finder
- Car pooling
- Bike & green

Social life
- Discover Trento
- Where are my friends

My social networks

Practical life (inside UniTn / Outside UniTN)
- 4Me
  - Electronic Portfolio
  - Event buster
  - Time manager
  - Communication

Accademic life

4Me

Interactive map
First released services

Plan your **trips** in Trento, and monitor your recurrent trips

Manage your **communities**, share and follow relevant topics

Capture your **experiences** and share with your friends

**Discover** interesting events, places and itineraries in Trento

Organize the **messages** from the campus, the city, and the other apps

Present **yourself** by combining certified infos from Uni with your own content
The community:

• In the project, students can be users, testers, designers, developers, ... of the services...

• ... bringing their vision, creativity and skills ...

• ... and ensuring that services really serve their needs.

Channel the creativity
Ensure the sustainability
The community:

- In the project, students can be users, testers, designers, developers, ... of the services...
- ... bringing their vision, creativity and skills ...
- ... and ensuring that services really serve their needs.

Ensure the sustainability:

- A strong and stable community will ensure a continuous evolution in the services.
The team

TEAM LEADER
Marco PISTORE

Alessandro TOMASI
Annapaola MARCONI
Gabriele ZACCO
Ilya ZAIKHAYE
Matteo GEROSA
Raman KAZHAMI/AKIN
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INTERACTION DESIGN
Antonella DE ANGELI
Samiun LAPIN
Niccolò DE UFFICI
Sylvie NOEL
Simone BORDIN
Cristina CORE

PLATFORM & SERVICE

DEVELOPMENT

Oscar ZAMBOTII
Matteo CHINI
Ronald CHEN
Viktor PRAVDIN
Mirko PERILLO
Giordano ADAMI
Federico LUCCA
Davide POGORZELSKI

LUCA MICHELI
Manuel VISENTIN
Matthia BENEDETTI
Luca AMADORI
Lorenzo GHIO
Insa KANOLD
Francesco MATURI
Giovanni DE FRANCESCO

Desmond AGYEMAN
Francesco BONADIMAN
Stefano BOZZI
"Human Computer Interaction" course of Univ. of Trento (2012-2013)
– 3rd year of the Informatics Bachelor, 90 students

“Help us in testing and improve the app”
– 1000 comments on the students’ “diaries”
– 100 “bug” / requests of improvements

“Think to the next service you would like to have”
– Each group of students has designed a new service
– At the end of the course: competition for the best idea
Students on the Job
The Winners

4th Smart City seminar
“A participatory design contest: with, for and from students”

Desmond Agyeman
Francesco Bonadiman
Stefano Bozzi
Francesco Maturi
Nicola Parrello
Students on the Job

The Winners

**Frequent problems:**
Queue length depending on the time

**Frequent problems:**
Sometimes food looks good but tastes bad (or maybe it is the opposite)!

**The solution:**

iFame
Students on the Job
The price: “Now implement it!”

MARCH 2013:
- The iFame team wins the competition

APRIL-OCTOBER 2013:
- The students develop the iFame app

NOVEMBER 2013:
- “Go Live!”
iFame: positive result

iFame:
- App stringly requested by the students
- Designed and developed by the students

Functions:
- menu & diet
- evaluation of the dishes
- length of the queues

Key points:
- based on “open” and private data (menu and card credit) of the University Canteen System
- successful collaboration between students and University Canteen System
- growing community of students using regularly the app
A negative result: StudyMate

StudyMate:
- runner-up in the student competition
- designed & developed by students

Functions:
- agenda (of courses, exams, events)
- notifications of updates
- course materials
- evaluations of courses.
- study groups

Problems:
- difficulties in integrating Uni systems
- “evaluation of courses?”
- “course materials?”
- students’ commitment decreases
Students on the Job: Hackathon

- **Programming marathon**
  - Goal: develop an APP for the 2013 University games
  - ... exploiting the Smart Campus platform
  - ... in 48 hours (night included!)
Hackathon: the winners

MARCH 2013:
- Hackathon competition

APRIL-MAY 2013:
- UG app design (=> app for volunteers)
- Joint work with UG organizing committee

JULY-SEPTEMBER 2013:
- Development in the lab
- Joint work with company developing the server side

DECEMBER 2013:
- University Games
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Services & Community
Evolution of Services
Services & Community
From the Campus to the City

ViaggiaRovereto
ViaggiaTrento
Vivi Trentino
Trentino Family
Percorsi dell’Arte 2.0
Unversiades 2013 Voluntaries App
Teaching perspective
The HCI course – 1 year after

- “Human Computer Interaction” course of Univ. of Trento (2013-2014)
  - Optional course of the 3rd year of the Informatics Bachelor
- **120 students**
  - +30% w.r.t. 2012-2013
  - More than the students enrolled in the 3rd year of the Informatics Bachelor
- **Approach**
  - Each student has to **involve a “friend” from another faculty (120+120)**
  - Team work among students and friends for:
    - Designing new services
    - Crowdsourcing
    - Evolution of the apps: new functionalities, new designs, ...
- **Very positive first results, to be better analyzed**
Social media

Forum:
- > 400 users, ~400 topic, ~2000 posts, 200,000 views, bi-lingual interactions
- ~ 450 posts on ideas for new services

Social networks:
- Facebook: 509 likes
- Google+: 307 “+1”
- Twitter: 154 followers

Student feedback:
- > 1000 comments in student diaries
- > 100 error reports

Software repository:
- 60 contributors
- > 3000 commits
- ~ 250 error reports

Statistics & analytics:
- App usage & student usage profile

- **Very large data set** on a complex and extensive participatory design and community building experiment

- **Hard to access and to analyze**
  - Privacy issues
  - Multiple users identities (how large is our community?)
  - Replications (of bugs, of messages)
  - Correlations among entries (e.g., bug report on forum -> fix on repository; request for feature -> new release)
  - Lack of automation in the analysis
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Assessment

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Science 2.0?

... at least as far as we agree that research on Smart Communities is not an exclusive concern of the scientists!
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