

The university student as an individual
and a citizen

Design patterns for the project
Smart Campus



Smart Campus

Developing services for improving
the students' quality of life

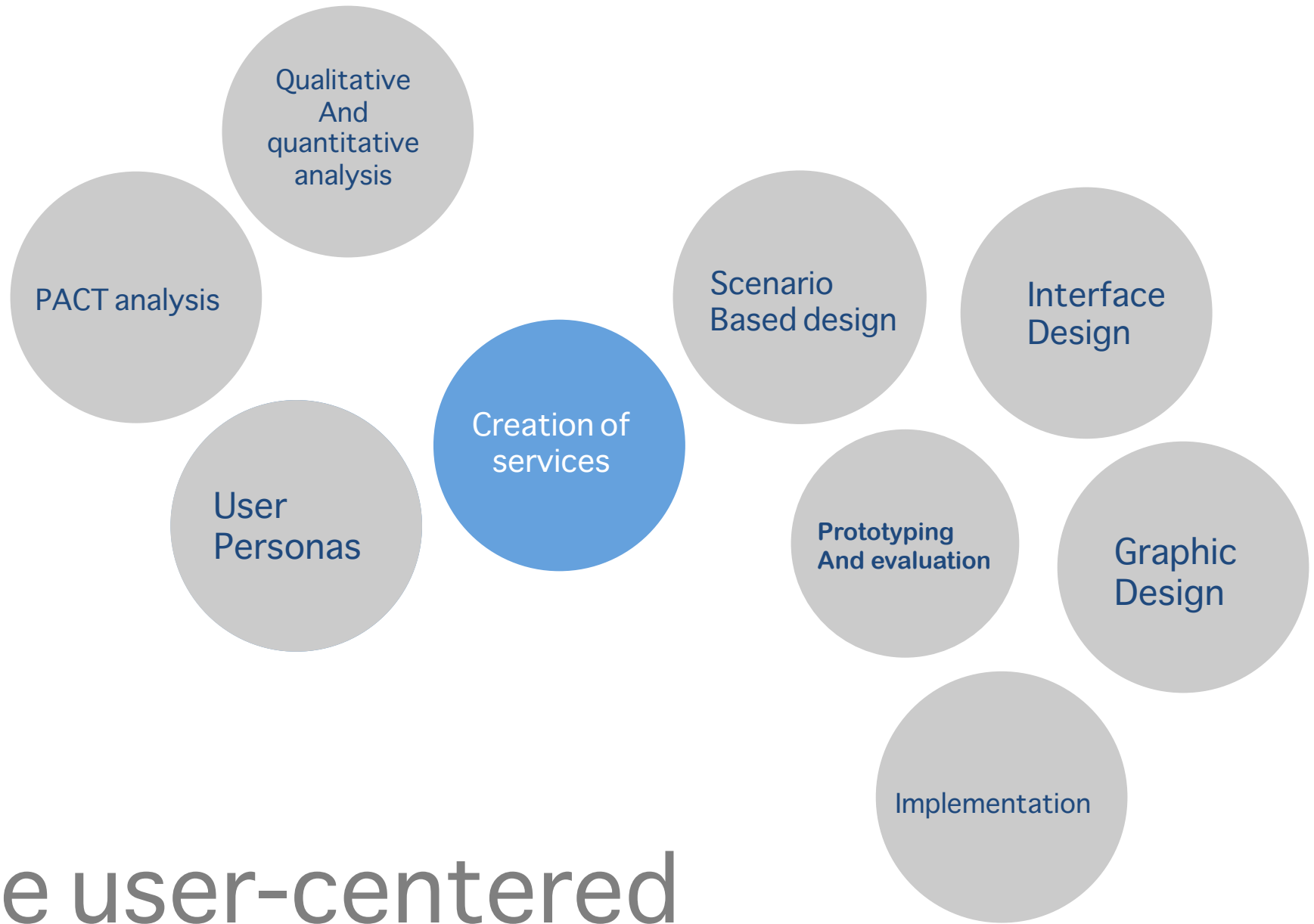
A platform for students' participatory design

An infrastructure for allowing students to
design for themselves

Augmenting the physical space with layers
of information.

Designing solutions with an added value
So that people will really adopt them





The user-centered design process



Recent activities

Questionnaires

Focus Groups

Participatory Design

Benchmarking

Personas

Scenarios

Dimensions

Design patterns

Services

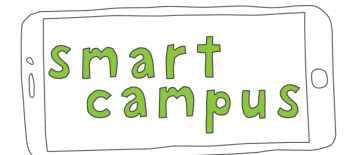


Areas:

Studying

Practical life

The individual



Studying

As a higher psychological process

Zone of proximal development
the role of peers in learning

Relationship between student and professor
mediated by artifacts



Video streaming

- _ Possibility of replay, feed-forward, pause,
- _ Big pictures of the blackboard for formulas and exercises in class.
- _ Part-time, visually impaired and disabled
- _ Support for rehearsing the most difficult lectures.
- _ Distance learning.
- _ Mobility to and from Povo bypassed



Collaborative notes taking

- _ A learning environment
- _ Contextual and collective note taking,
- _ Automatic tagging
- _ Building documents through home works and exercises, Q&A
- _ Overcome division between professor and student
- _ Multiple levels of participation
- _ Sharing knowledge between peers
- _ Manipulation of theoretical constructs
- _ Exercises as artifacts and representation for knowledge



Time manager

- _ A smart assistant to help you planning the time
- _ Asking what the student is doing at the moment
- _ Use this to show graphics
- _ Compare these with the same one of other students.

Study together

- _ Applications for reciprocally motivating students
- _ Supporting of homework and group studying.
- _ Applications for finding students to revise together
- _ Peer pressure is a great resource for motivating students.
- _ Social context of peers is often left to chance
- _ Give and receive support
- _ Task based collaborative environment



Practical life

Bureaucracy

Supports for studying

Eating

Transportation

Housing



How difficult? Check the course and Thesis finder

- _ Statistics on average grades
- _ Time needed to pass an exam
- _ Difficulties in preparation
- _ Students comments
- _ A space for the professors to present themselves

- _ Reviews from peers of the professors
- _ Indexing of how many students have found a job and where
- _ Reports on average duration of the thesis,
- _ Students and teachers comments

- _ Collaborative sources of orienteering
- _ Practical information
- _ Help accomplishing the timelines
- _ For choosing the study plan
- _ Planning future career



Worldwide Uni

a thematic collaborative service indexed by nationality, area of the world

provide thematic instances

accommodation, leisure, religious needs, language exchange,

solving all the practical needs a foreign student can encounter.

support the process of adaptation of foreign students.

a group of foreign students should rank this set of services

Collaborative thematic environments for foreign students



The certified portfolio

Collaborative artifact among
Student
Professor
Administrative staff
Human resources

Historical artifact on the path of
The student



- _ storing in a captivating way the achievements of the students
- _ gathering the letters of references from the professors
- _ indexing the stages, projects and working experience
- _ accompanying the students for his whole academic life
- _ available from societies and industries at their request.
- _ for teachers to have a trace of the students' careers and to present
- _ have an ordered and systematic way to trace their path
- _ show their early results, their way to work, their strengths and attitudes.
- _ The students more conscious about strengths and drawbacks
- _ and will learn to present themselves
- _ document the milestones of their careers
- _ new skills acquired on the way.



Bus finder

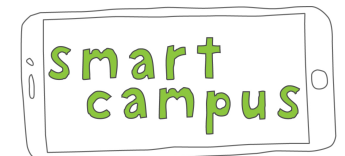
Paper eater

Admin queue skipper

Mensa queue skipper

Menu finder

Lunch mate finder



Accommodation finder

Car pooling

Virtual parking lot

Card all-in-one



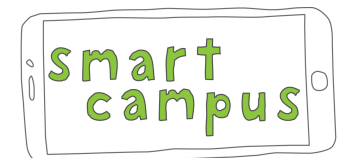
Communication

Information overload

Filtering data

The student's identity

Making good guesses



The individual

Colleagues
Friends
Family
Leisure
Sport

Citizenship
Culture
Participation



Volunteer finder

- _ for giving and receiving volunteering for disabled students.
- _ GPS based volunteering
- _ filling the information gap
- _ a layer of information on the territory
- _ a new interpretation GPS based apps

Time bank

- _ exchange volunteering
- _ proof of the time spent for the other students
- _ provide the available people in the right place and moment
- _ works with the logics of reciprocity and exchange free of money.
- _ could have an effective realization thanks to the logistical characteristics of the University of Trento.



Uni voice

- _ make pressure on the University of Trento administration
- _ take in consideration their particular needs in the decisions and in the budget
- _ make the other students sensitive to particular issues and problems.
- _ Even mundane decisions could represent a step beyond for students wellbeing
- _ make the students feel more considered.

Action from UniTn

- _ facilitate involvement in causes from students
- _ organizing pressure
- _ reflecting the principles of direct democracy.
- _ organize the voice of the students of Trento
- _ well-shaped collective identity
- _ harmonically build the whole personality of the student.



Where are my friends?

- _ A geographical position system based application
- _ Provides awareness of students
- _ Close friends sharing their location, activity, mood and availability
- _ Reinforce the relationships inside the university
- _ The spare slots of time with chances for socializing

Discover Trento

- _ A geographical position system for students
- _ Share their leisure and interests
- _ Organising travels around Trento.
- _ Social context for the students
(but also of leisure, sport and culture time)
- _ Exploring the territory near Trento
- _ People with visual impairment could benefit from it



Benchmark analysis

The main reason of why many technologies failed in the past was because they missed to afford the processes of appropriation

Appropriation:

incorporating technology in our daily life, including it in our routines, loving it as a personal tool and care about it as something really improving our quality of life.

Appropriation is somehow invisible: bad design is always visible

Working for appropriation means not only thinking in terms of usability, but also trying to reinvent existing applications and putting added values

The solutions to faults and problems of others are our design space!



University apps

Analyzed 25 apps mainly in UK

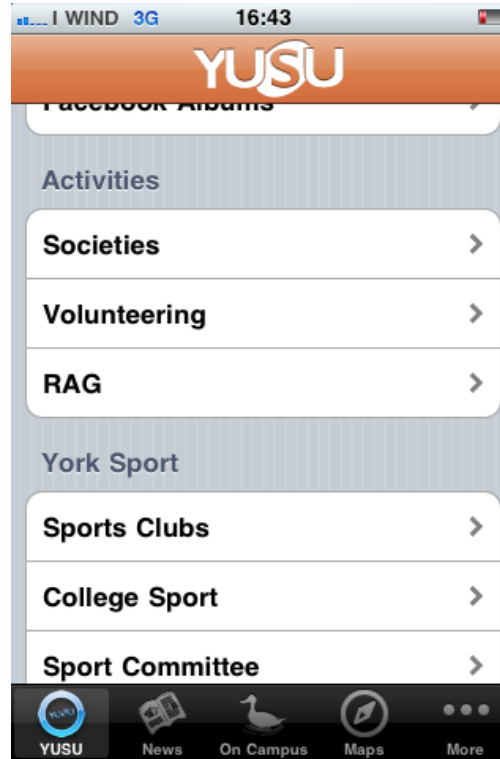
Hypertexts -- web metaphor

Interactive maps ("find my friends")

The UK ones are mostly from the same format

Some of them are about open days orienteering





University of York

An example of University app created by student with useful fields
Anyway it is still an hypertext



Problems

Web based metaphor does not exploit mobile capability

Useless information

Limited exploitation of social networking

Missing engaging interactions

Boring look & feel



College Tracker

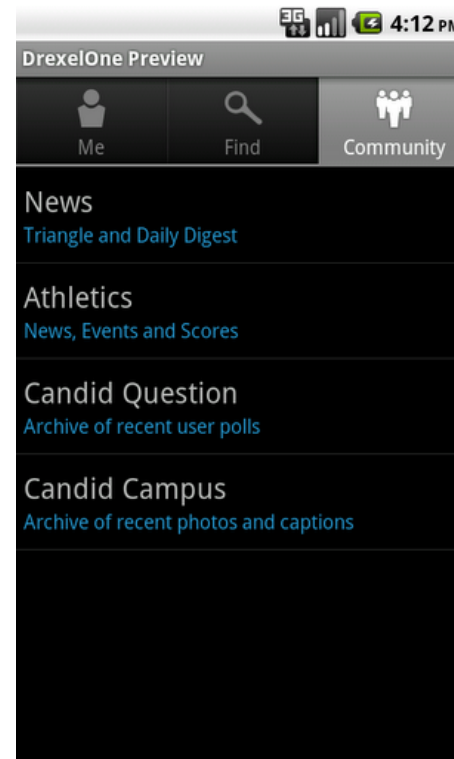
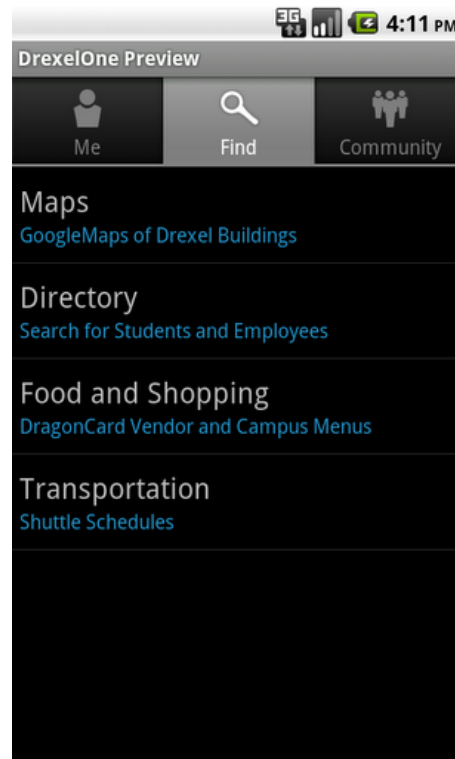
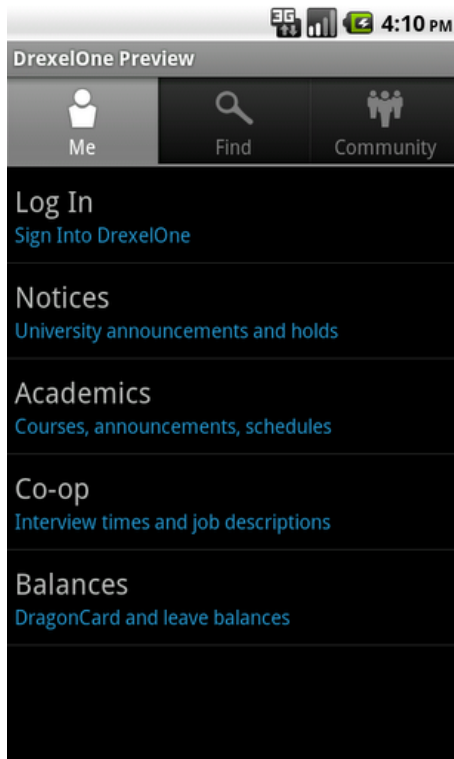
Tracks classes and grades

Clumsy, every grade has to be entered by the student

Too basic, it does have only this function.



All you need in a campus: course info, maps, menus, news, jobs/interviews schedules. Load money on student card. Hints for nightlife outside campus and discount places. Polls, pictures -> comments. Transport schedules and next bus available.



The student is mostly passive
No public view of basic information on a student
(i.e. name, year, major, small sample of portfolio)



Schoolschedule

Stundenplan Deluxe
Freitag, 25. November 2011

Stundenplan deluxe | **Stundenplan Deluxe**

Prüfungstermine | Ergebnisse | Durchschnitt und

Aufgaben nach Fach Filtern

- Mathematik**
Lernen!
bis: Montag, 14.11.2011
- Deutsch**
Aufsatz: was ich von meinem Leben erwarte.
bis: Mittwoch, 16.11.2011
- Einkauf**
- Cola
- Eis
- Melonen
bis: Sonntag, 20.11.2011
- Biologie**
Blätter sammeln.
bis: Montag, 14.11.2011
- Müll**
rausbringen
bis: Mittwoch, 16.11.2011
- Amazon**
Weihnachtsgeschenke bestellen.
bis: Dienstag, 20.12.2011

| Zeit | Mo. | Di. | Mi. | Do. | Fr. |
|------|-------------------------------------|-------------------------------|-----------------------------------|---------------------------|---------------------------------|
| 8 | 08:00 Bio Bio 1 08:45 | 08:00 Musik Aula | | | 08:00 Deu 08:45 |
| 9 | 08:55 Franze 224 | 09:30 Musik | 08:55 Deu 09:40 | 08:55 Mathe 213 | 08:55 Phy 09:40 |
| 10 | 10:20 Franze | 10:20 GK | 10:20 GK | 10:20 Mathe | 10:20 Erdk |
| 11 | 10:30 Mathe Raum 102 11:15 | 10:30 Deu Raum 401 | 10:30 Bio 11:15 | 10:30 Info 11:15 | 65 Min |
| 12 | 12:15 Info PC2 13:00 | 12:10 Deu | 11:25 Phy Raum 401 12:10 | 11:25 Sport Halle 2 | 11:25 Franze SPZ 12:10 |
| 13 | | 12:15 Erdk 201 13:00 | | 13:00 | |

Stundenplan: WS 2011/12





Support keeping track of courses, exams, assignments and grades. You can make schedules for every study or other activities, you can share them, you can arrange the favorite visualization. You can cancel withdrawn classes.

Too hassle for color coordination. No exchange between stud and prof. Manual input for everything. Assignments and duties cannot be prioritized.




College on Track website


Allows the student to have and update a portfolio along their career


Digital Portfolio Ashley Covington


Journals Showcase Activities Academics Test Scores

▼ Performing Arts


 Indian Classical Dance

 Senior Showcase Performance


 Les Miserables-2.jpg


 Les Miserables-1.jpg

▼ Other work

 The Struggle to Become Adult.pdf

My Albums

 Varsity Team (6)

 Woodworking (6)

upload photos, projects,
school activities, assignments,
teachers can upload as well





Journals Showcase **Activities** Academics Test Scores

| Grade Level | Hours/Week | Weeks/Year | Positions, Honors, Letters | Activities |
|-------------|------------|------------|------------------------------|---|
| 10th Grade | 10 | 25 | Member—varsity tennis team | I am the only sophomore on the varsity team. |
| 10th Grade | 10 | 15 | Motion control software lead | Leading the software team writing the motion control code for the school's robot. |
| 9th Grade | 10 | 15 | Coder on FIRST Robotics team | Part of the coding team writing sensor software for the robot. |
| 9th Grade | 5 | 25 | Tennis team member | Playing on the JV tennis team. |



Journals Showcase Activities **Academics** Test Scores

9th Grade

| Semester | Course Title | Academic | Marks | Credits |
|----------|------------------------|----------|-------|---------|
| First | Algebra (Honors) | Yes | B | 5 |
| First | Biology | Yes | B | 5 |
| First | Literature and Writing | Yes | B | 5 |
| First | P.E. | No | A | 5 |
| First | Spanish 1 | Yes | B | 5 |
| First | US History | Yes | A | 5 |
| Second | Algebra (Honors) | Yes | A | 5 |
| Second | Biology | Yes | B | 5 |
| Second | Literature and Writing | Yes | A | 5 |
| Second | P.E. | No | A | 5 |
| Second | Spanish 1 | Yes | B | 5 |
| Second | US History | Yes | B | 5 |

10th Grade

| Semester | Course Title | Academic | Marks | Credits |
|----------|-------------------|----------|-------|---------|
| First | Chemistry | Yes | C | 5 |
| First | Drama 1 | Yes | A | 5 |
| First | Geometry (Honors) | Yes | B | 5 |
| First | P.E. | No | A | 5 |
| First | Spanish 2 | Yes | B | 5 |

Credits Earned

| 9th | 10th | 11th | 12th | Total |
|-----|------|------|------|-------|
| 60 | 60 | 60 | 60 | 240 |



Reflexivity as a cognitive device for improvement

Life logging should support reflexively thinking about themselves

Objective: create artifacts supporting awareness on themselves and their own life.

Personal Information Management is about tools supporting self management: it is about habits and their consequences on ourselves.

Our role: providing artifacts to make people let them know themselves.

Reflexivity and student's life: we need to create supports for their reflexive thinking about their routines and about what they are learning and where they are going toward. E.g. "The Reflective Practitioner (Shon, 1987), Human Reflexivity and Social Mobility (Archer, 2007).

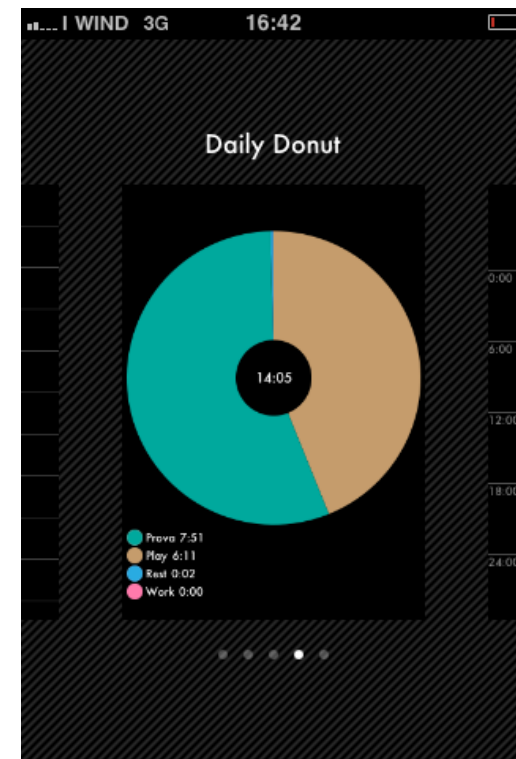
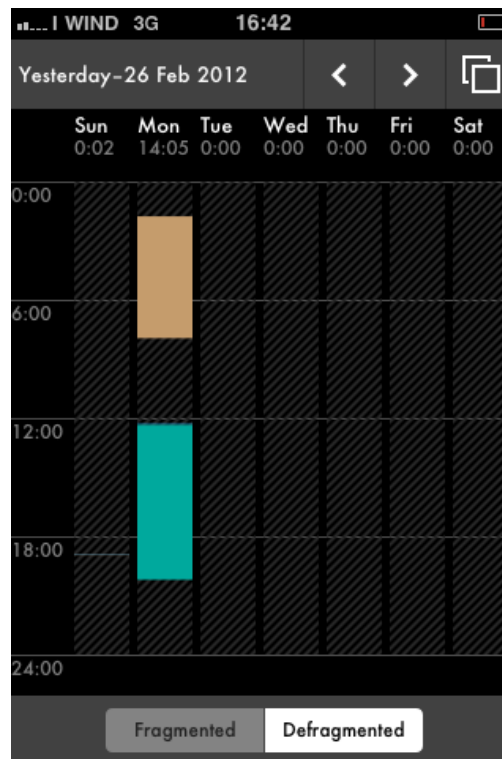
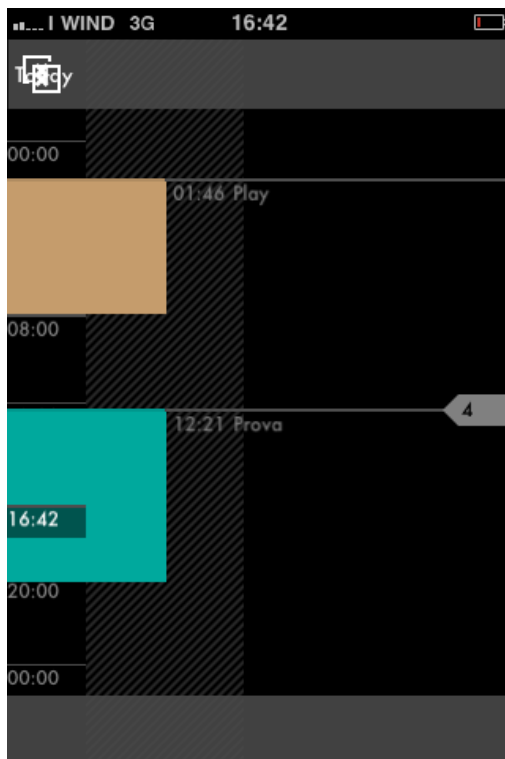


Time management

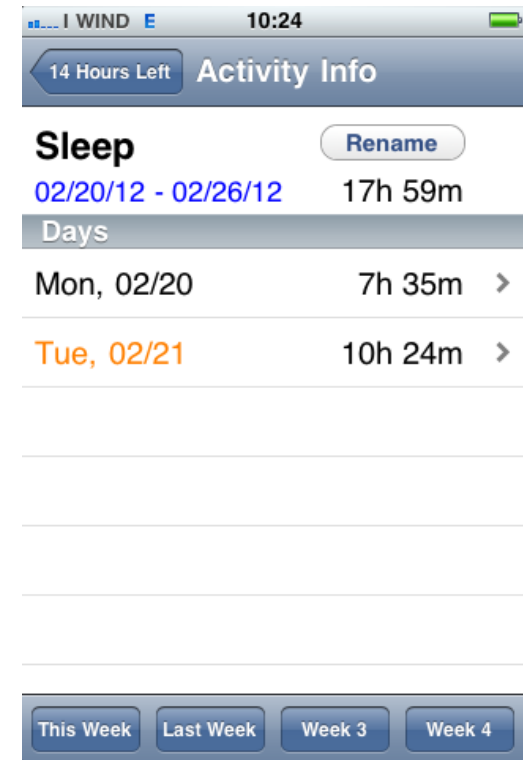
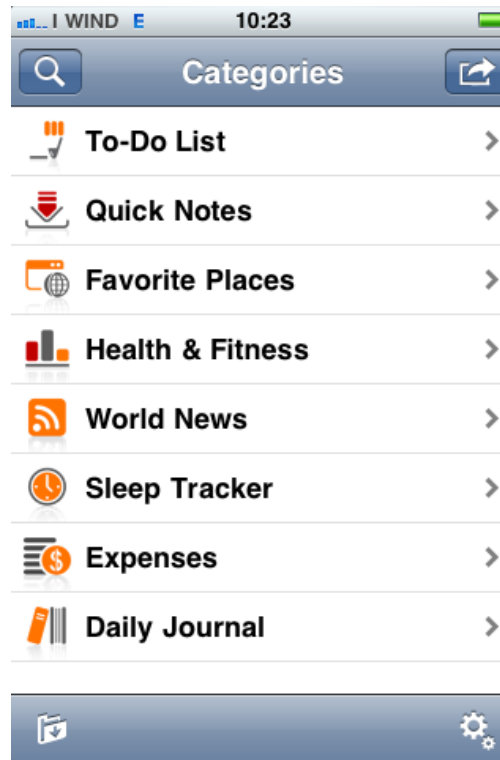
Allow you to track your activities and have graphs to compare and share

Some applications have social networks updating people on others' current activities

Can be based on self report or on chronometers



Time management can keep track of the most different activities....





USER NAME:

PASSWORD:

Sign in

REMEMBER ME ON THIS COMPUTER

HELLO...

DAYTUM HELPS YOU COLLECT, CATEGORIZE AND COMMUNICATE YOUR EVERYDAY DATA.

START USING DAYTUM

BEGIN COLLECTING AND EXPLORING YOUR DATA TO REVEAL THE BIGGER PICTURE. [LEARN MORE...](#)

CREATE YOUR ACCOUNT

Submit Email

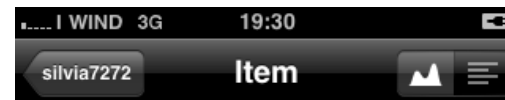
WHO USES DAYTUM?



[RYAN](#) USES DAYTUM
3502.5 BIKE M



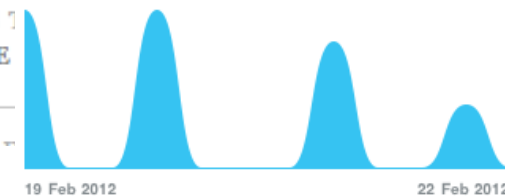
[BUDTZY](#): (LESS 1
ADDED 1.0 COFFEE



5 Entries, Total: 16

Coffees

NO CATEGORIES



Time management apps faults that can be exploited in design space

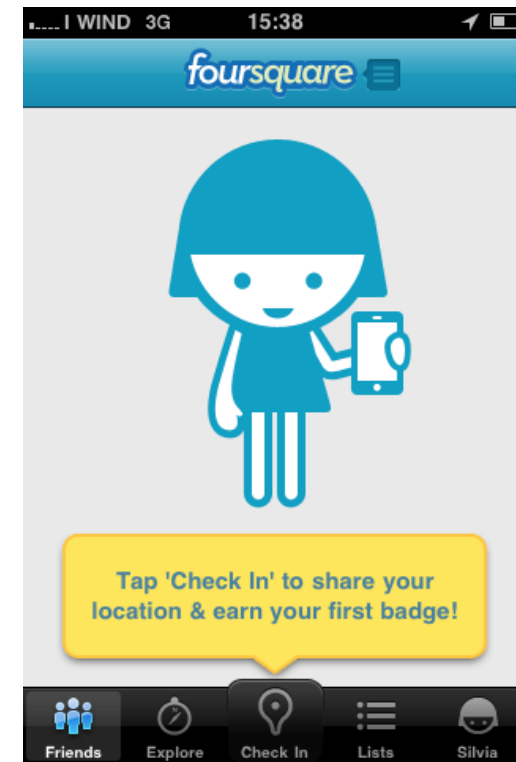
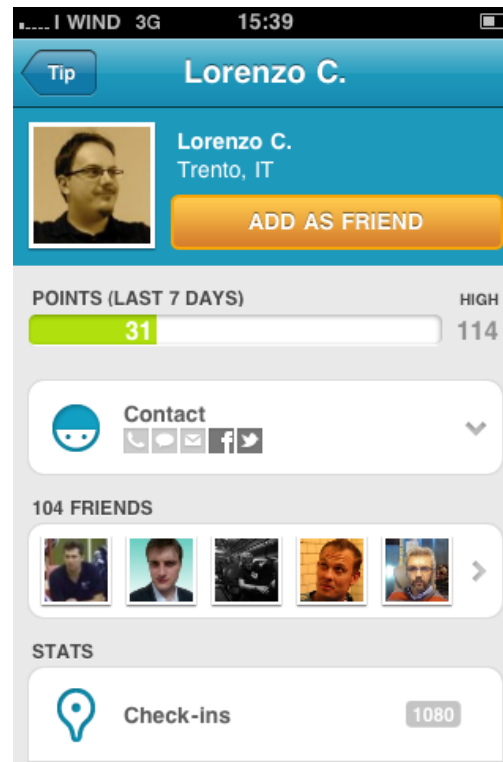
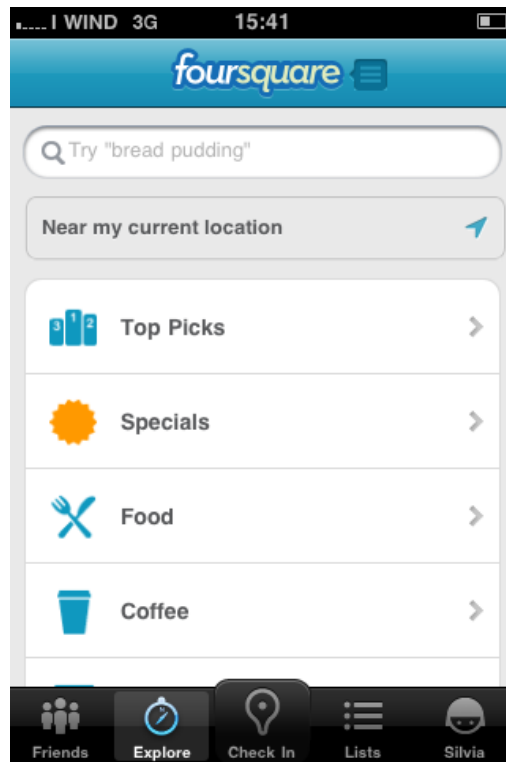
Usually they allow only daily or weekly visualizations

They have only one kind of visualization (either graphs, or pies....)

They don't afford a balanced use of time (e.g. use of spare time vs working)

Reflexivity can be better analyzed as a cognitive activity
in order to imagine more effective solutions than the existing ones





Location based social networks

Perception of space is augmented by GPS technologies

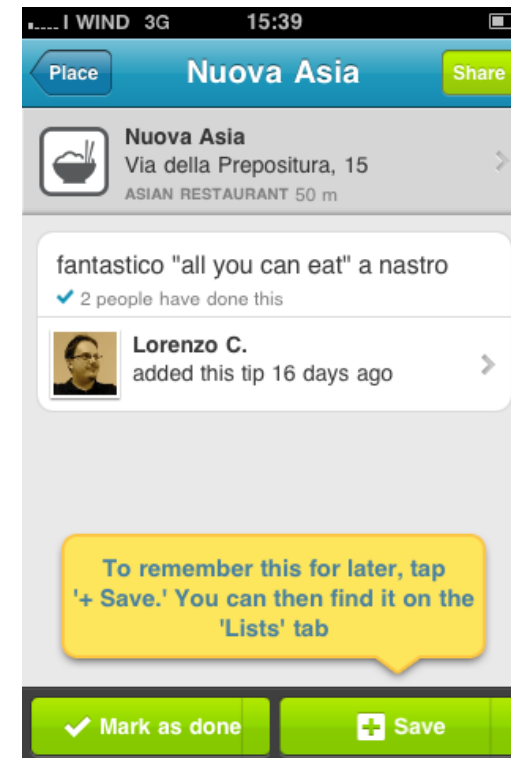
Physical environment adds a new dimension, the one of communication without a center and collaborative sharing of data

The human body has new potential of being into the world: e.g., location based networks support situated geographical, orienteering, spatial reasoning and increased chances for socializing

find people in your nearby, ask for their friendship, know where your friends are

Lots of offering (but only two working !) also in some university apps but impossible to test

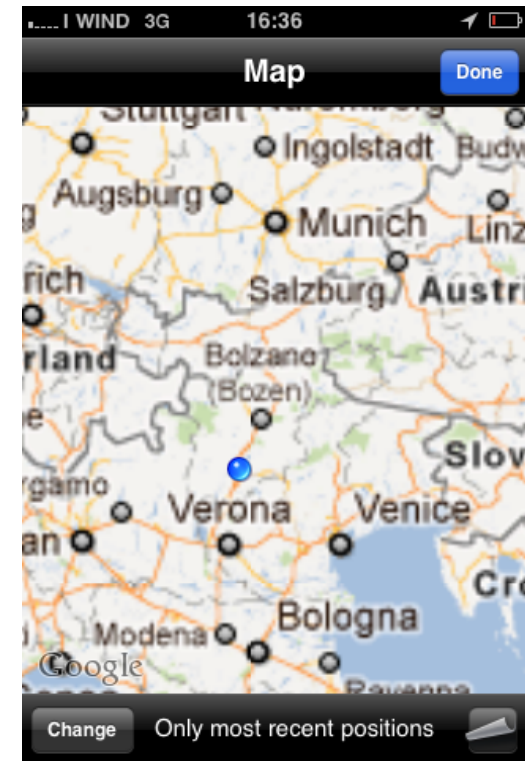
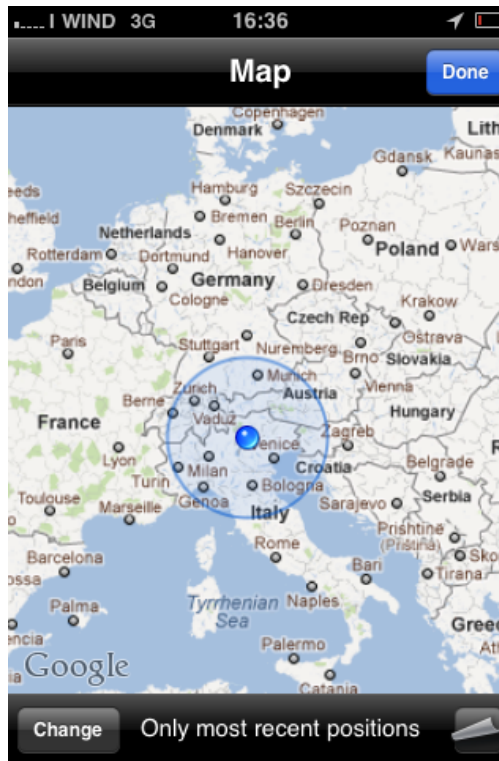
Based on different technologies: adoption rate is location dependent





Friend tracker

Always find where someone else is
Not sure if it works on lower scale

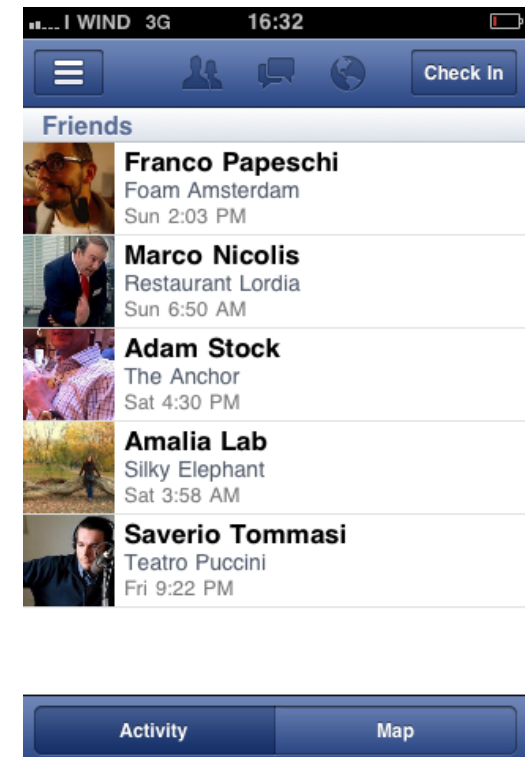
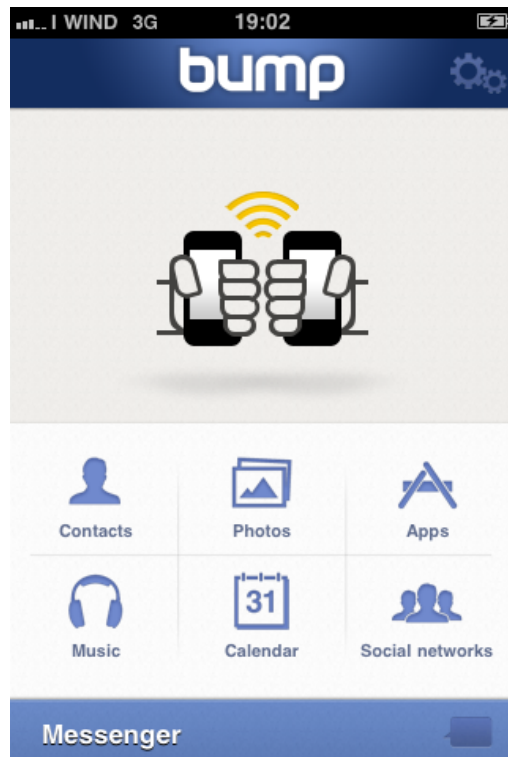


Other ways to social networking and use of physical space

Bump allows to exchange data while bumping the phones

Google + and its definition of relationships' spaces

Facebook allows check-in as well



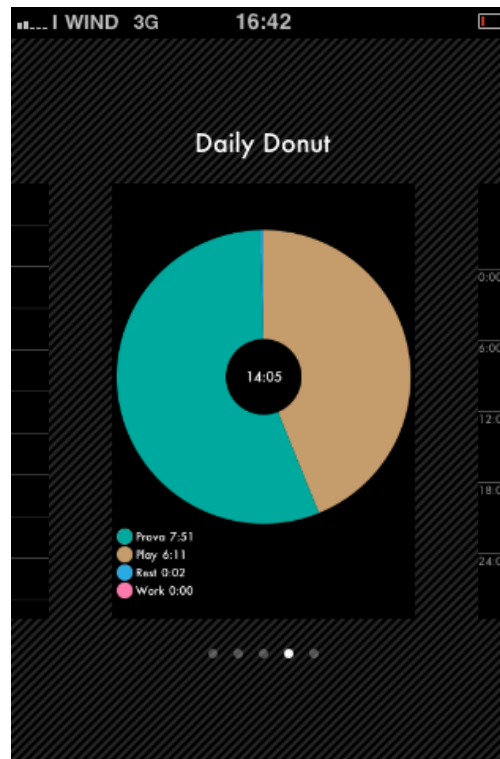
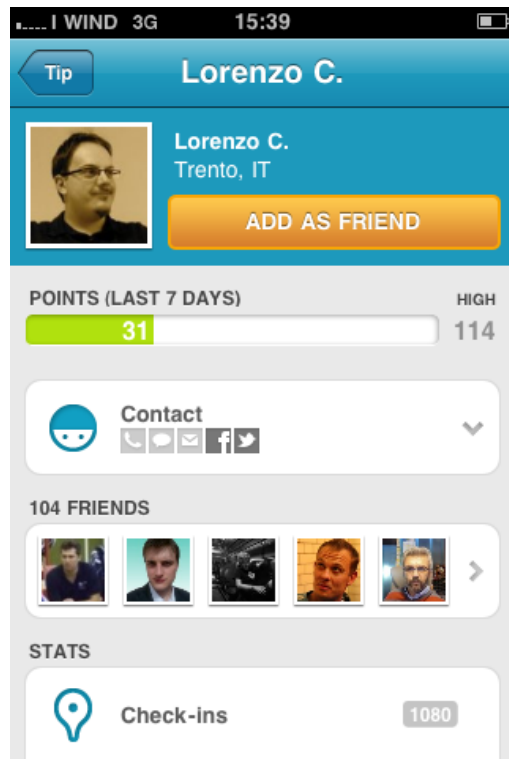
Notes on location based social networks

They allow serendipitous exploration of the physical space

They need to have a critical mass of users to work well

They could be populated from other services than referencing places (e.g. mood of people, activity, willingness to meet others, interests etc.)

GPS based + life logging+ university



Our directions

- _ a modular set of services
- _ students design and implement for themselves
- _ the university as the place for the harmonic growth of the individual
- _ the university as a reflective time into build themselves and own life
- _ support cognition and reflexivity
- _ facilitate the growth of every net

