

# *User-centered methodologies and techniques for requirements gathering*

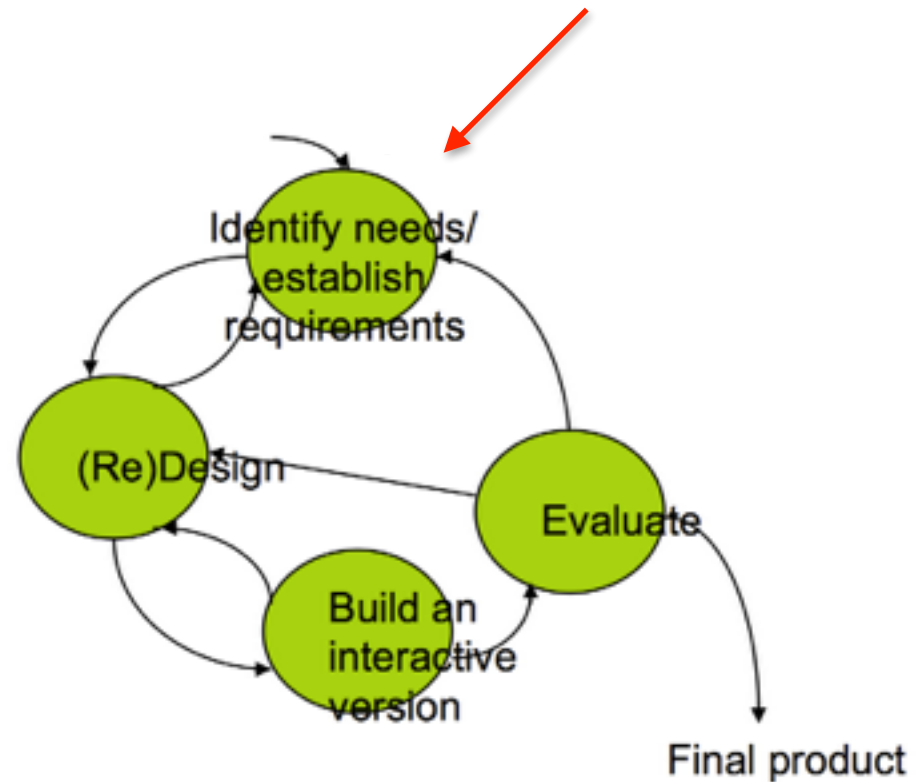
Gaia Trecarichi

# Outline

- Requirements gathering techniques
- Focus Group Techniques
- The IES-Cities Project Case Study
- User Research Results
- Conclusions

# How to identify user requirements

- *Data-gathering*
- *Data Analysis*
- *Requirements Specifications*
- *All of this is iterative*



\* slide taken from Prof. DeAngeli HCI Course: [http://disi.unitn.it/~deangeli/homepage/lib/exe/fetch.php?media=teaching:hci:hci2013\\_2014:user\\_reqs.pdf](http://disi.unitn.it/~deangeli/homepage/lib/exe/fetch.php?media=teaching:hci:hci2013_2014:user_reqs.pdf)

# Data gathering techniques

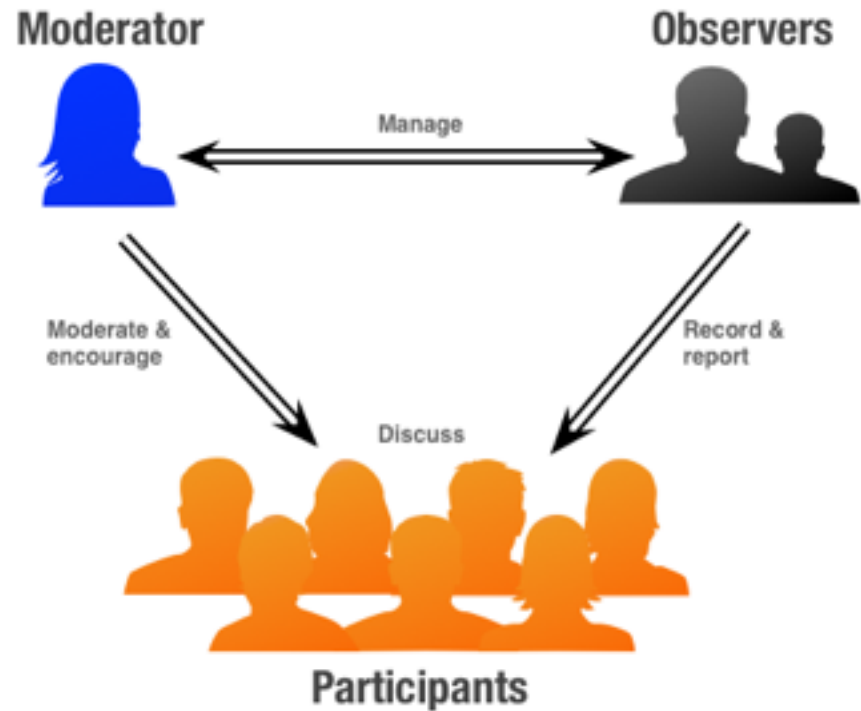
- **Studying documentation:** procedures and rules are often written down in manual, good source of data about the steps involved in an activity and any regulations governing a task
- **Observations:** spend time with stakeholders in their day-to-day tasks, observing their activities
  - gain insights into stakeholders' task
  - good for understanding the nature and context of the task
  - time consuming
- **Questionnaires:** series of questions designed to elicit specific information
  - questions may require different kinds of answers
  - often used in conjunction with other techniques
  - can give quantitative or qualitative data
  - good for answering specific questions from a large, dispersed group of people

# Data gathering techniques

- **Interviews:** structured, unstructured or semi-structured, good for exploring issues, time consuming and may be infeasible to visit everyone
- **Focus Groups:** used as the main methodology to gather user requirements
  - allows to collect multiple viewpoints
  - face-to-face meetings with groups of 6-7 people
  - encourages contact between developers and users
  - used to obtain qualitative data
  - based on discursive interactions between participants guided by a moderator and focused on specific topics

# Focus Group methodology

1. Select the target focus groups
2. Schedule conversations
3. Invite participants
4. Moderate the session
5. Report the results



# Focus Group techniques

- **Questionnaires:** used at an early stage or at the end of a focus group session as a more formal tool for concept evaluation (research objective 2)
- **Workbook:** pre-meeting technique used to prepare the ground for the FG sessions; users can think about the discussion topics in advance and can thus contribute more effectively. It allows to save time during FG sessions (especially if they last just 2 hours). A workbook contains questions about demographic details, opinions and information about things people own and use. Used as a tool for understanding user activities and needs
- **“Day-in-the-life” exercise:** warm-up technique alternative to the workbook technique when this is impractical. To be done at the start of the FG session, it is used to bring fg participants at ease;
- **Brainstorming:** used to generate ideas; it follows warm-up techniques; given a topic, group members write down their own ideas (5 mins) and after the moderator asks each person to present the idea.

# Focus Group techniques

- **Brainwriting:** used to generate ideas; each member starts by writing his ideas and then pass it to the member sitting beside. Each member will continue to write ideas (using other's ideas as inspiration) till all the sheets have been passed.
- **Storytelling:** used to generate ideas; each member provides ideas in the context of a story after the problem has been presented; may be time consuming.
- **Scenario-based discussion:** used to evaluate future services; participants describe usage scenarios related to a given service, underline significant features and associated pro and cons; moderator presents the idea to be evaluated and its features; participants assess how the new features address the pro and cons discussed earlier. It can be used to generate ideas also.
- **Visual evaluation:** provide a visual stimulus to foster discussion about envisaged features. Low-fidelity (e.g., storyboards) and/or medium-fidelity (e.g., screen-shots) prototypes can be used.
- **User testing:** participants perform real tasks with working products/prototypes. It can be used to compare two or more similar products. Good for stimulus and discussion; observation and more formal questionnaires can be used to gather feedback on the user trials.



# Which technique for which goal

Technique	Understand user context	Evaluate preliminary ideas	Generate new ideas	Test existing solutions or prototypes
Questionnaire		X		
Workbook	X			
“day-in-the-life”	X			
Brainstorming			X	
Brainwriting			X	
Storytelling			X	
Scenario-based		X	X	
Visual evaluation		X		
User testing				X

# Focus Groups: tips

- *highly structured approach vs. free-flowing discussions*
- *research aims not too broad, abstract or demanding*
- *avoid influencing the discussion (over-specific questions)*
- *prefer “open” questions to “closed” questions*
- *have additional exercise available*

# The IES-CITIES Case Study



- Development of **mobile urban apps** that are based on an open platform where the information is obtained from **Open Government Data** and enriched through citizens' contributions
- Citizens as **“prosumers”**

# Requirements Gathering: methodology phases

- ***Planning the focus group research***: research objectives, purpose and desired **outcomes of the research**, available **resources**, time scale (internal, external deadlines), number of focus group sessions to be organized per target user group
- ***Identification of user groups***: possible categories of target user groups were analysed and finally a selection of the most suitable ones was carried out.
- ***Logistics and recruitment of participants***: this activity involved the definition of **criteria for recruitment** (age, occupation, gender, education, level of skill), the planning of **dates and location**, the preparation and distribution of **adverts/invitations**, the communication with participants via direct contact, emails and phone calls, the composition of groups, the organization of **refreshments** and **small presents** as a return to participants

# Requirements Gathering: methodology phases

- **Preparation of paper and online questionnaires:** to serve two purposes:
  - o as an alternative means to focus groups, to reach people for which it is difficult to have f2f meetings and a broader number of users.
  - o as a more formal tool for concept evaluation, used at the end of a focus group session
- ***Definition of focus groups content:*** to structure the focus group sessions. In particular, the most appropriate **methods and techniques** to be adopted were identified and used to conduct the sessions
- **Conduction of focus group sessions:** in this stage guided group discussions lasting 2 hours have taken place.
- **Data Analysis:** reports made to summarize the salient points emerged during the focus group discussions, and from which user stories, scenarios, services and finally mockups were derived.

# Planning the FG research

- **Research objectives:** gather user requirements from three categories of users for the development of mobile applications to support sustainable mobility. In particular, user studies will be carried out with a fourfold aim:
  1. *Identify user activities and needs* involved in daily transfers and related habits; this requires the understanding of the context of use, i.e., the physical, social and organizational environment where user activities take place;
  2. *Evaluate preliminary ideas* on possible mobile services for mobility;
  3. *Generate new ideas* about possible mobile apps;
  4. *Test existing solutions or prototypes*
- **Desired outcomes:** *present the results of the gathering and analysis phases in terms of textual descriptions (user stories), more formal diagrams (e.g., UML diagrams), table, etc.*
- **Resources:** *1 person full time, 1 person part-time*
- **Time scale:** *about 1.5 months*
- **Number of FG session per TUG:** *1*

# Identification of user groups

- **Analysis of different target user groups:** characteristics, their relevance for the territory, the potential user needs and the means to contact them.



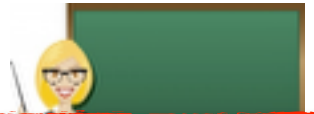
Parents in the Rovereto area are highly interested in *moving easily with their children* and in enhancing interaction with the city. Rovereto has a *great offer of public spaces* adapted to children, and a *nice variety of extra-scholar activities* to entertain kids after their time at school.



Rovereto offering a vast *variety of cycling routes* with lots of worth sightseeing points of interest. Each year more bike enthusiasts join the pleasure of making different routes through Rovereto's surroundings, and create a unique opportunity to *enrich with data those routes*: natural barriers, points of interest, pre-defined routes, wildlife recording, etc.



already established community



# Target User Group Analysis

<i>TUG</i>	<i>Desc</i>	<i>Why Relevant</i>	<i>Potential needs</i>	<i>How to reach</i>	<i>Notes</i>
<b>commuters</b>	people who travel regularly to or from the city for working purposes	this category might be representative of the population (about 19000 commuters per day )	<i>travel smoothly</i> from home to the work place (e.g., from inner valleys to Rovereto) and viceversa		Legambiente conducted an <a href="#">online census</a> for commuters.
<b>resident employees</b>	citizens working and living in the city for companies/public institutions with many employees	contribute to traffic congestions	<ul style="list-style-type: none"> <li>- reach the work place in the fastest way</li> <li>- share journeys with colleagues</li> </ul>	participants to the project " <a href="#">A Lavoro in Bici</a> ". Maggio-Luglio 2013 3a edizione	might be interested in some form of "shared mobility" (e.g., P2P car sharing)
<b>bikers</b>	people who travel regularly by bicycle for pleasure or working purposes	cyclists are present in the territory and are the main users of the bike routes	<ul style="list-style-type: none"> <li>- discover bike routes</li> <li>- get help for bike repair</li> </ul>	<ul style="list-style-type: none"> <li>- contact people involved in the "Riciclofficina" project</li> <li>- association</li> </ul>	relatively active <a href="#">fb group</a> on local public transport in Trento
<b>walkers and runners</b>	citizens that, above all in early morning or evening after work, practice running or walking	more and more citizens practice running within the city	<ul style="list-style-type: none"> <li>- discover ad-hoc paths for running/nordic walking</li> <li>- provide suggestions, ideas, corrections to improve existing paths</li> </ul>	- " <a href="#">Roverunning training</a> " project	- 5 <a href="#">ad-hoc paths</a> already exist



The screenshot shows the Facebook profile of 'Rovereto Green'. The page header includes the Facebook logo, a search bar, and the user's name 'Gale Tronchetti' with navigation links for Home, Likes, and Posts. The main content area features a yellow background with green text announcing several events: 'CONCORSO AL LAVORO IN BICI' (13-15 May), 'SETTIMANA EUROPEA DELLA MOBILITÀ' (16-22 Sept), 'BIMBIBICI' (12 May), 'SETTIMANA EUROPEA PER LA RIDUZIONE DEI RIFIUTI' (20-27 Nov), and 'IL VERDE E LA MONDIALE AMBIENTE' (1-2 June). A small graphic of a smiling green leaf with the text 'ho IL VERDE IN TESTA!' is positioned next to the last event. Below the announcements, the page title 'Rovereto Green: buone pratiche per una città più vivibile' is displayed, along with a 'Ti piace' button and a 'Messaggio' button. A description of the page as a calendar of events is visible. On the right side, a large green flag with a white star and crescent is partially visible, along with a 'Not' sign.

facebook

Carri persone, luoghi e oggetti

Gale Tronchetti Home

**13 MAGGIO - 12 LUGLIO**  
**CONCORSO**  
**AL LAVORO IN BICI**

**12 MAGGIO**  
**BIMBIBICI**

**1 - 2 GIUGNO**  
**IL VERDE E**  
**LA MONDIALE**  
**AMBIENTE**

**16 - 22 SETTEMBRE**  
**SETTIMANA EUROPEA**  
**DELLA MOBILITÀ**

**20 - 27 NOVEMBRE**  
**SETTIMANA EUROPEA**  
**PER LA RIDUZIONE**  
**DEI RIFIUTI**

Immagine di copertina

**Rovereto Green: buone pratiche per una città più vivibile**

227 "ti piace" • 3 ne parlano

Condividi

un calendario di eventi, una raccolta di appuntamenti, una serie di appunti, alcune istruzioni per riflettere, sensibilizzare, diffondere buone pratiche

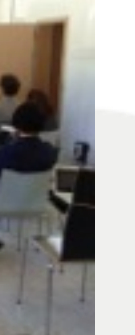
Informazioni • suggerisci una modifica

Foto

"ti piace" 227

Eventi

Not



# Logistics and recruitment

- FG held at the **Urban Center** in Rovereto: a center born from the need *to make citizens actively involved in the public policies of the municipality*. The ultimate goal is to create an “house of the city” where to increase the level of information, participation, transparency and knowledge of the urban decisional processes.
- Participants were *contacted* mainly *by phone calls and emails* gathered during the Green Night event in Rovereto.
- Group composition:
  - *“Bikers” FG* (11 Jun 2013, 6pm-8pm): 9 participants, well distributed in terms of age, education level, occupation and place of residence (some were living in the city center, others in the surrounding areas).
  - *“Parents” FG* (13 Jun 2013, 5pm-7pm): 4 participants, well distributed in terms of place of residence. It turned to be more difficult to engage parents of pre-school kids to join a 2-hour long activity like a focus group meeting.
- *Refreshments* were foreseen for all participants and *small gifts* were given such as tourist guides, stickers, t-shirts, leaflets for kid events and activities.

# Questionnaires

- For each TUG, prepare a paper/online questionnaire thus to reach a broader number of users.
- Paper questionnaires distributed at the Green Night (Notte Verde) event about sustainability, green mobility and green economy organized by the municipality of Rovereto on the 1<sup>st</sup> June 2013.
- **About 120 paper questionnaires** were filled by different users.



1. Quanto utilizzi la bicicletta?

☐ quasi sempre   ☐ spesso   ☐ abbastanza   ☐ poco   ☐ mai

2. La bici che usi:

☐ è di mia proprietà   ☐ me la prestano  
☐ la noleggio   ☐ fa parte del servizio bikesharing

3. Per quali tipi di percorsi usi solitamente la bici?

☐ casa-lavoro   ☐ casa-scuola/università   ☐ per andare a fare la spesa   ☐ gite personali  
☐ per uscire la sera   ☐ eventi sportivi   ☐ per andare in palestra   ☐ commissioni  
☐ altro: \_\_\_\_\_

4. Dove si svolgono i tuoi percorsi abituali?

☐ piste ciclabili urbane   ☐ piste ciclabili extraurbane   ☐ strade secondarie   ☐ strade primarie  
☐ sentieri asfaltati   ☐ sentieri sterrati  
☐ altro: \_\_\_\_\_

5. Usi, di solito, applicazioni per smartphone per pianificare i tuoi spostamenti? ☐ sì ☐ no

Se sì, quali? \_\_\_\_\_

6. Useresti un'applicazione per smartphone che ti aiuta a usare meglio la bicicletta a Rovereto e dintorni?

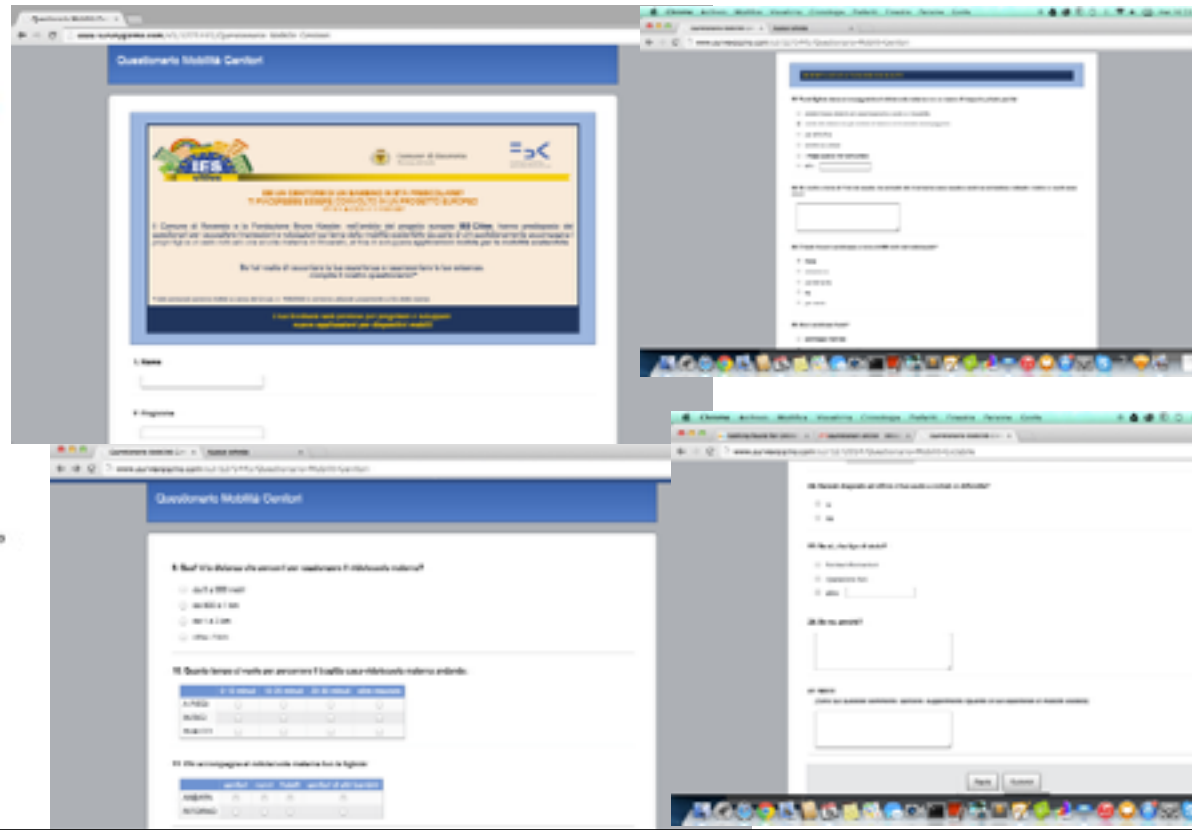
☐ sì, sembra utile   ☐ no, non ne sento il bisogno   ☐ altro: \_\_\_\_\_

7. Quali sono i maggiori disagi relativi ai tuoi spostamenti in bici?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



The screenshot shows the online version of the questionnaire. It features the same header with logos as the paper version. The questions are presented in a clean, digital format with radio buttons and checkboxes. The interface includes a progress bar at the top and a 'Salva' (Save) button at the bottom right. The questions are identical to those on the paper version, covering bicycle usage, types of bicycles, routes, and smartphone app preferences.



# Questionnaires distribution and recruitment of FG participants



**SEI UN AMANTE DEL CICLISMO O CICLOTURISMO?**  
**TI PIACEREBBE ESSERE COINVOLTO IN UN PROGETTO EUROPEO PER LA COLLETTIVITÀ**

Il Comune di Rovereto e la Fondazione Bruno Kessler, nell'ambito del progetto eur IES-Cities, hanno predisposto dei questionari per raccogliere impressioni e valutazioni sul della mobilità sostenibile da parte di chi abitualmente si sposta in bicicletta.

Se hai voglia di esprimerti sulla tua esperienza di mobilità ciclabile, compila il nostro questionario!

Il tuo feedback sarà preposto per progettare e sviluppare nuove applicazioni per dispositivi mobili!

**SEI ANCHE TU UN AMANTE DEL CICLISMO E DEL CICLOTURISMO?**

“Ti piacerebbe essere parte attiva di un progetto europeo per la collettività?”  
 Se hai l'entusiasmo e la voglia di raccontare la tua esperienza di mobilità ciclabile e proporre nuove idee, partecipa al nostro focus group!

Il Comune di Rovereto e la Fondazione Bruno Kessler, nell'ambito del progetto europeo IES-Cities, organizzano delle interviste collettive (focus group) volte a coinvolgere la cittadinanza intorno al tema della mobilità sostenibile e a comprendere le esigenze degli amanti della due ruote.

(Cercheremo di trasformare la tua idea in nuove applicazioni per dispositivi mobili!)

- Ogni partecipante riceverà un omaggio da parte del comune di Rovereto
- La durata del focus group è di circa 2 ore
- È previsto un welcome coffee

Il focus group prevede la partecipazione di minimo 5 - massimo 8 persone.

Nel caso di domande di partecipazione eccedenti il numero massimo, si procederà alla composizione del gruppo cercando di rispettare il più possibile una corretta proporzione tra:

- femmine/maschi;
- giovani/adulti



**DATI PERSONALI\***

COGNOME e NOME

ETÀ ☐ under 18 ☐ 18-25 ☐ 26-35 ☐ 36-50 ☐ over 51

CITTÀ

OCCUPAZIONE ☐ SESSO ☐ maschio ☐ femmina

E-mail (facoltativo)

Tel. (facoltativo)

Se sei interessato a partecipare, compila questo modulo.  
 Per maggiori informazioni contatta il comune di Rovereto al numero 0462/200000 o via email: [euro@comune.rovereto.tn.it](mailto:euro@comune.rovereto.tn.it)

**DATI DEL PARTECIPANTE**

COGNOME	NOME
ETÀ <input type="checkbox"/> 18-25 <input type="checkbox"/> 26-35	SESSO <input type="checkbox"/> M <input type="checkbox"/> F
CITTÀ	
OCCUPAZIONE	
E-mail (facoltativo)	
Tel. (facoltativo)	

Il focus group è previsto in data **MARTEDÌ 11 GIUGNO 2013** alle ore 10.00 presso l'Urban Center di Rovereto (C.so Rosmini 58).

Ti chiediamo cortesemente di confermare via e-mail l'adesione,

**Ti aspettiamo!**



6. Per quale ragione hai scelto questi mezzi?

☒ costo ☒ comodità ☒ alternativa ☐ inquinabilità ☐ flessibilità oraria ☐ altro:

7. Usi, di solito, applicazioni per smartphone per facilitare i tuoi spostamenti?

Se sì, quali? GRACIA TRONITUELA

8. Quali sono i maggiori disagi relativi ai tuoi spostamenti?

4 ORE DI VIAGGIO

9. Quali informazioni potrebbero esserti utili durante i tuoi spostamenti?

TEMPO A ROVERETO  
ORARI ROVERETO

# FG content definition: activities

- **Warm-up:** a technique used to bring participants at ease and to address objective 1. A list of questions was prepared to guide the open discussion
- **Brainwriting:** used to generate ideas; each member starts by writing his ideas and then pass it to the member sitting beside. Each member will continue to write ideas (using other's ideas as inspiration) till all the sheets have been passed. To guide this activity, key phrases for idea inspiration were prepared
- **Scenario-based discussion:** used to identify requirements for future services. Three user scenarios were prepared based on 3 functionalities to evaluate: retrieve info, send reports and interact with other peers.
- **Questionnaire:** used at the end of the sessions as a more formal tool for concept evaluation. It was the same that was distributed during the Green Night.

# FG content definition: moderator guide

Topic	Description	Aids	Duration	Start-at	NOTES
Pre-meeting drinks			10 min	18:00	
Introduction	<ul style="list-style-type: none"> <li>- explain the objectives for the project</li> <li>- the aims/programme for the session</li> <li>- practical Issues: alert to audio recording, - confidentiality, sign consent form</li> <li>- create social identity for cyclists</li> <li>- ask participants to introduce themselves</li> </ul>		10 min	18:10	
Warm-up discussion	spend 5 minutes to think (or take notes) about your experience with bikes: what actions you perform when you take it, where do you go, problems you face, if and how do you signal problems, if and how you interact with other cyclists, etc.	question list	30 min	18:20	- used to bring fg participants at ease and to <i>Identify user's habits, preferences and needs</i>
Brainwriting session	Spend 5 minutes writing down an idea related to: <ul style="list-style-type: none"> <li>- what type of info to get</li> <li>- how to signal problems</li> <li>- how to interact</li> <li>- how to share info</li> </ul>	Paper sheet with key phrases for idea inspiration	10 min	18:50	<ul style="list-style-type: none"> <li>- used to generate ideas; each member starts by writing his ideas and then pass it to the member sitting beside.</li> <li>Each member will continue to write ideas (using other's ideas as inspiration) till all the sheets have been passed</li> <li>- prepare blank paper sheets</li> </ul>
Break			10 min	19:00	

Topic	Description	Aids	Duration	Start-at	NOTES
Scenario-based Discussion: future services	<ul style="list-style-type: none"> <li>- moderator presents the concept idea to be evaluated or asks participants to write stories if they have.</li> <li>- moderator gives participants user scenarios related to potential services (i.e., get info, send report, interact with peers)</li> <li>- participants discuss associated pro and cons</li> </ul>	Paper sheets with three user scenarios based on the 3 ideas to evaluate: <ul style="list-style-type: none"> <li>- get info</li> <li>- send reports</li> <li>- interact with other peers</li> </ul>	30 min	19:10	<ul style="list-style-type: none"> <li>- used to identify requirements for future services;</li> <li>- user scenarios are written in terms of who, what, when, how, why; and are related to potential features.</li> </ul>
Questionnaire	Fill in the questionnaire to have a more formal tool for concept evaluation		10 min	19:40	
Closing	Thanks participant, inform about future steps in the project		10 min	19:50	

## FOCUS GROUP BIKERS

DATE: Tuesday 11, 18:00-20:00

MODERATOR: Gala

ASSISTANT: Nicolò

GOAL: gather user needs and requirements from citizen that regularly use the bike as a transportation means, for the development of mobile applications to support sustainable mobility.

OBJECTIVES: In particular, this focus group is carried out with a threefold aim:

1. Identify user's habits, preferences and needs about their daily mobility experience; this requires the understanding of the context of use, i.e., the physical, social and organizational environment where user activities take place;
2. Generate new ideas about possible mobile apps;
3. Evaluate preliminary ideas on possible mobile services for mobility (e.g., user's availability to interact and share info with other peers)

# FG content definition: aids

## LISTA DOMANDE WARM\_UP ACTIVITY

1. Riportare una esperienza positiva che ha avuto utilizzando la bicicletta, un aneddoto significativo...

Qualche altro?

2. Riportare una esperienza negativa

- a. Cosa e' successo?
- b. Qual è stato il problema?
- c. Come lo avete risolto?
- d. Cosa vi avrebbe aiutato?

### FARE SEGNALEZIONI

Come tutte le mattine, Martina prende la sua bici per andare a lavoro. Percorre la pista ciclabile urbana che la condurrà a destinazione in 15 minuti. Durante il tragitto si accorge che ci sono dei lavori in corso che bloccano la pista. La deviazione le comporta un giro che la farà ritardare di tanto; per evitare che altri come lei siano informati troppo tardi dell'interruzione della pista, segnala il disagio alla comunità dei ciclisti tramite il suo smartphone. Inoltre, ritiene utile segnalare al comune la mancanza di segnali che informino dei lavori in corso sulla pista ciclabile.

## LISTA DOMANDE WARM\_UP ACTIVITY

1. Come vi organizzate per accompagnare i vostri figli a scuola?
2. Se e come è cambiata la vostra esperienza di mobilità quando è arrivato un secondo figlio.
3. Come vi organizzate per il doposcuola, cosa fate? E se aveste un'applicazione per smartphone?
4. Vi organizzate con altri genitori, con vicini di casa?
5. Come avete iniziato? I vostri figli erano in classe insieme, erano vicini di casa?
6. Riportate una esperienza negativa legata al tragitto casa-nido/scuola e viceversa, oppure girando per Rovereto e dintorni.

- a. Cosa e' successo? (imprevisto in strada, incidente, pioggia, barriere architettoniche)
- b. Qual è stato il problema?
- c. Come lo avete risolto?
- d. Cosa vi avrebbe aiutato?
- e. Come avete preso le informazioni che eventualmente vi servivano? (telefonare marito/moglie; amici)

Se c'è un imprevisto per strada, ...



Se un altro genitore abita vicino casa mia, ...



Se non trovo parcheggio, ...



Se devo organizzare il doposcuola, ...

Se cambia il tempo, ...

Se buco una gomma, ...



Se scopro una nuova pista ciclabile, ...

Per incontrare nuove persone, ...



Se devo pianificare una gita, ...

Se cambia il tempo, ...

### INTERAGIRE CON ALTRI UTENTI

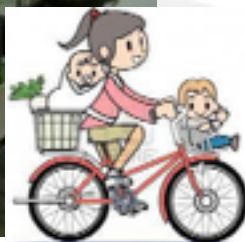
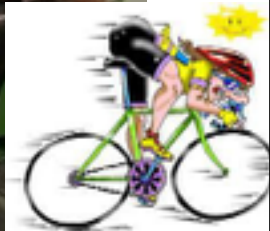
Sergio e' da poco a Rovereto. Pur non essendo un esperto, a Sergio piace girare in bicicletta e dopo la sua giornata lavorativa decide di avventurarsi nelle piste ciclabili extraurbane. Durante il tragitto si accorge che la sua bici ha un problema che non riesce bene ad identificare e risolvere. Data l'ora tarda, i negozi di riparazione sono chiusi. Sergio decide di consultare via smartphone la lista dei problemi riscontrati da altri utenti e di come questi siano stati risolti. Non trovando un articolo che possa riguardare il suo problema, Sergio manda una richiesta di supporto alla comunità dei ciclisti descrivendo il problema e dove si trova. Luca, registrato come utente esperto e disponibile a dare supporto, riceve la richiesta di aiuto e si offre di dare supporto via chat piuttosto che fornire il suo numero di cellulare. Vedendo che il problema non si risolve, Luca e Sergio si sentono al telefono e decidono poi di incontrarsi.



# Conduction of FG sessions



- **Target:** bikers, parents
- **Objectives:** identify perceptions, opinions, needs, attitudes on types of information, reports, interactions



## FARE SEGNALAZIONI

Come tutte le mattine, Martina prende la sua bici per andare a lavoro. Percorre la pista ciclabile urbana che la condurrà a destinazione in 15 minuti. Durante il tragitto si accorge che ci sono dei lavori in corso che bloccano la pista. La deviazione le comporta un giro che la farà ritardare di tanto; per evitare che altri come lei siano informati troppo tardi dell'interruzione della pista, segnala il disagio alla comunità dei ciclisti tramite il suo smartphone. Inoltre, ritiene utile segnalare al comune la mancanza di segnali che informino dei lavori in corso sulla pista ciclabile.

1. Quanto utilizzi la bicicletta?

☐ quasi sempre ☐ spesso ☐ a volte

2. La bici che usi:

☐ è di mia proprietà ☐ me la prestano  
☐ la noleggio ☐ fa parte del servizio

3. Per quali tipi di percorsi usi solitamente la bici?

☐ casa-lavoro ☐ per uso sportivo ☐ per uso scolastico

4. Dove si è

☐ piste ciclabili ☐ strade ☐ altro: \_\_\_\_\_

5. Usi, di solito

☐ Se sì, qu

6. Useresti Rovereto

☐ sì, sent

7. Quali sono

\_\_\_\_\_

8. Di quali

☐ piste ciclabili ☐ punti di incontro ☐ parcheggi ☐ segnaletica ☐ altro: \_\_\_\_\_

6. Per quale

☐ costo ☐ comodità ☐ altro: \_\_\_\_\_

7. Usi, di solito

☐ Se sì, qu

8. Quali sono

☐ Se sì, qu

9. Quali informazioni

☐ tempo ☐ costo ☐ altro: \_\_\_\_\_

10. Saresti disposto

☐ Se sì, chi

☐ ritardo ☐ deviazione ☐ parcheggio ☐ altro: \_\_\_\_\_

☐ a servizio di info ☐ in parcheggio pieno ☐ altro: \_\_\_\_\_

☐ info scorrette ☐ strada ghiacciata ☐ ingorgo ☐ strada chiusa ☐ altro: \_\_\_\_\_

Se c'è un imprevisto per strada, ...



Se un altro genitore abita vicino casa mia, ...

Se non trovo parcheggio, ...



Se devo organizzare il doposcuola, ...

Se cambia il tempo, ...



# Data Analysis



	Bikers	Parents	Students
<b><i>Information</i></b>	dislocazione piste ciclabili, punti di prelievo del bikesharing, rastrelliere, punti di noleggio bici, bicigrill, centri di riparazione, stazioni di ricarica, meteo, orari trasporti pubblici.	stato del traffico, dei parcheggi, e degli orari dei trasporti pubblici, possibilità per i mezzi pubblici di ospitare a bordo carrozzine, attività extrascolastiche, organizzate dalla scuola, luoghi ricreativi per bambini sia all'aperto che al chiuso, eventi per bambini .	sull'orario dei mezzi pubblici, sulla dislocazione e la disponibilità dei parcheggi in prossimità delle stazioni o delle fermate degli autobus.
<b><i>Report</i></b>	furto della bicicletta, problemi durante il prelievo di una bici del bikesharing, la mancanza di segnaletica adeguata, l'interruzione della pista ciclabile, l'inattesa fine della pista, etc .	barriere architettoniche, mancanza di informazioni, blocchi di traffico in prossimità della scuola, inagibilità degli ascensori, mancanza di passerelle per carrozzine, etc.	ritardi, disagi a bordo (sporcizia, freddo, sovraffollamento), mancanza di informazioni, incidenti, scioperi, deviazioni, chiusura delle strade.
<b><i>Interaction with other users</i></b>	ricevere e fornire supporto in termini di informazioni o di aiuto concreto (ad esempio, offrendo di riparare la bicicletta).	organizzarsi con altri genitori per l'accompagnamento dei propri figli a scuola.	Organizzare viaggi in condivisione con altri studenti quando possibile.

# User Stories



would like to consult bike routes within their region

want to access relevant information such as weather forecast and public transport schedules in real time

want to consult bike-related data: bike sharing pick-up points, shops, repairs, etc.

would like to be able to send reports about their mobility experience and the status of cycling resources: bike theft, missing signage, unexpected end of route, etc.

Expert bikers have expressed their desire to help peers with their knowledge, for example, when repairing their bikes




Citizens want to be informed about extra-scholar activities for their children

Parents want to know which covered and open-air recreational areas are available in the region

Parents would like to have the possibility to organise with other parents how they take children to the nursery/school, thus saving money, time, and getting to know each other in a

# Personas

- Representation of the goals and behavior of the group of users
- Synthesized from data collected with questionnaires and focus group meetings
- Behavior patterns, goals, skills, attitudes, and environment, with a few fictional personal details to make the persona a realistic character

A man with dark hair, wearing a white long-sleeved shirt and dark trousers, is riding a black bicycle. He has a black bag slung over his shoulder and is looking towards the camera.

**PAOLO**

Age	35
Profession	Engineer
Home life	Married, with one daughter

Paolo is originally from the south of Italy and has been living in Rovereto for 5 months. He likes to explore and discover natural places in his new territory. He has always loved to take the bike because of the many opportunities it can offer. He finds that travelling by bike gives the opportunity to discover little villages that otherwise remain unobserved; he appreciates the lovely smell of the landscape, the wind in the hair, the joy of new encounters. His interest in the mechanics of things, united with his passion for the bikes, has made him skilled in repairing them and willing to help others when needed. Paolo is very busy with his work; unfortunately he doesn't have the possibility to go to work by bike because the work place is far from where he lives and because he needs to bring his daughter at school. However, during his free time, he tries to take every opportunity the territory can offer: bike-related events, personal trips in the cycling routes, bike-powered concerts, etc. Being an engineer, Paolo is also interested in experimenting new technologies; he is eager to use new mobile applications that would allow him to speed up the process of knowing the new living context and be helpful to others.

A woman with dark hair, wearing a blue patterned shirt and a black helmet, is riding a bicycle. She has a young child sitting in a front-mounted child seat on the bike. The child is wearing a white helmet and a black vest. They are both smiling at the camera.

**MARTA**

Age	43
Profession	Employed in public sector
Home life	Separated, with one son

Marta has been living in Rovereto since she was child. She works as a librarian in the city center and usually takes the bike every day to go to work. Usually she drives along the urban cycling path and takes her 4 years old son at school before going to work. She likes to use the bike for daily transfers but since she has a little kid, she pays a particular attention for the safety of the roads. She never trusts drivers and sometimes she feels unsecure even when riding within the urban cycling paths. She does have a smartphone but she uses it as a normal mobile phone, with its basic functionalities. She is not too keen on technologies and she realizes that, while most of her friends are informed about events for children organized by the Municipality of Rovereto and the many existing associations, she is always one step behind. If she could find an easy way to catch up with all this, she would be motivated in getting skilled in the use of information technology.

# Scenarios and Services

- Described as a short story and derived from the user studies
- Show the use of the set of services that will be running on the IES Cities platform
- Each scenario is associated to one or more “user personas”,

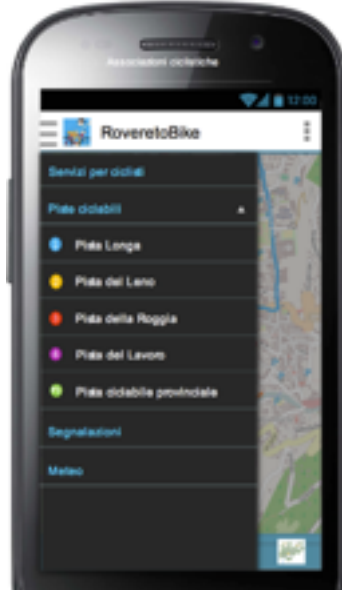
<b>Scenario ID</b>	Rovereto 1
<b>Title</b>	Cycling Trip
<b>Actors</b>	Paolo
<b>Required services</b>	Rovereto Cycling Map, Rovereto Explorer, Real-time Viability
<b>Required datasets</b>	<ul style="list-style-type: none"><li>• publicly/open available datasets: cycling paths, bicigrill, cultural places, timetable info.</li><li>• private/personal datasets: current location data</li></ul>
<b>Initial state of the scenario</b>	The <b>IES Cities</b> icon is shown on the mobile phone menu. When the user decides to activate it, he/she just has to push on this icon.

# Scenarios and Services

Description	<p>Paolo wants to make a trip by bike in the Rovereto area. Unfortunately his bike is broken, but he decides to profit of this inconvenience and try the bike-sharing service offered by the Municipality of Rovereto. Since he never uses this service, he doesn't know the dislocation of the bike pick-up points. He therefore takes his smartphone and open the <i>Rovereto Cycling Map</i> service to locate them; those closer to him are marked.</p>
	<p>Once he has taken the bike, he accesses the list of cycling routes. It's now 10am and Paolo should be back by 4pm for the birthday party of his nephew. After having consulted different cycling routes, he chooses the one with a travel time that would allow him to be back on time for the party, whose average slope is not too high, and with interesting cultural places to see along the path.</p>
	<p>Paolo doesn't know exactly how to arrive to the cycling path from the pick-up point location. He therefore uses the <i>Rovereto Explorer</i> to find the fastest path to reach the cycling path;</p>
	<p>Paolo finally enters the bike trail and starts his trip. After 2 hours and half of riding, he decides to stop and eat something. Since he doesn't have any food with him, he consults the <i>Rovereto Cycling Map</i> to locate the closest bicigrill, where he can stop to have a drink and inflate the bike tyres. He then reaches the place and takes a rest.</p>
Prerequisites	<p>After sometime, Paolo realizes he won't be on time for the party of his nephew if he plans to go back by bike. He therefore thinks to go back by taking public transport means. With the help of the <i>Real-time Viability</i> service, he consults the timetable of the train and bus connections that can bring him back at home, and the traffic status as well. He finally deems convenient to try the public transport and head towards the closest bus stop.</p>
	<p>The user should have the services installed, the user profile created, Internet access, GPS enabled</p>



# Mockup



# Conclusions

- User studies carried out adopting a participatory design approach in the context of the IES-CITIES European Project
- Focus Group methodology selected according to time-constraints, project guidelines, local context (Rovereto)
- Qualitative Analysis in terms of personas, user stories, and scenarios
- Identification of services and design of mockups
- Lack of time to distribute online questionnaires, and to carry out quantitative analysis

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- Morgan, David L. - Planning focus groups, 1<sup>st</sup> edition, SAGE Publications - 1997