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Bellidea

A living lab to co-design a smartphone app promoting sustainable individual mobility patterns

For the past years, the City of Bellinzona (Canton Ticino) has been devoting considerable efforts to reduce individual car use and to favour diffusion of public transport and slow mobility, especially by allocating funds for new cycling infrastructures and improved bus/train interchanges. Although necessary to promote a change in the dominant mobility patterns, however such structural and regulatory tools are not sufficient to make a change.

Acknowledging this gap, city managers opted for also exploring the effectiveness of cognitive-motivational tools, by relying on ICT and smartphone-based approaches: in early 2017 citizens of Belllinzona were invited to join the *Bellidea* living lab and co-design a smartphone app to promote sustainable mobility patterns among their peers. In Spring 2018 the resulting app will be launched to the whole population.

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1. Introduction

A smartphone app is an ideal device for a city to deliver persuasive messages supporting the transition from car-dependency. In fact, besides providing citizens with real time travel tracking feedback, apps allow cities to get real life data on the citizens' mobility patterns, that can be used to inform future policy-making.

However, smartphone-based mobility tracking experiments we ran in the past highlighted two main limitations [1]:

• *preaching to the converted:* such apps mainly attract citizens with high environmental awareness, thus not being representative of average citizens;

• *high drop-off rates and early abandon:* level of engagement of smartphone apps users decreases over time: frequently users quit using apps before they have modified their mobility patterns.

To favour enduring and large scale diffusion of the app and offer equal access opportunities for all social categories, we designed the *Bellidea* living lab.

2. Overcoming limitations of past initiatives

To overcome past limitations, we opted for:

• sustaining the app use with a set of tangible prizes (extrinsic motivational factors), directly targeting mainstream citizens who otherwise would not show any interest in the app;

• opening-up the design of the app main contents and functionalities to the citizens themselves: if they own the tool, they will be stimulated to use it for a longer period of time and to promote its diffusion among their circle of family and friends.

In such a framework, in early 2017 we launched a public campaign aimed at recruiting people living, working or studying in Bellinzona, inviting them to take part in six monthly meetings to co-design with us the *Bellidea* app.

Car drivers	Public transport users	Bicycle riders
Commuters	Target groups	Students
Elderly people	Foreign communities	Teachers

3. The sample of participants

Overall 46 citizens answered our recruitment campaign. Their mobility patterns, self-declared at sign-up, show that once again many of them come from the circle of "converted" citizens, who have already reduced car use.

Means of transport used [% of participants]
9% — Neither car nor motorbike
27% — All means of transport
64% — Car or motorbike (n= 46)

Means of transport owned [% of participants]
7% — 16%
77%

Also, as in all activities requiring voluntary engagement over time, the number of participants attending the meetings soon decreased.

Number of participants to *Bellidea* activities

Are the same limitations as past experiments occurring? Or will the number of participants increase again with the next meeting (Autumn 2017), when the first digital app prototype will be released? Time will tell.

4. Automatic transport mode detection

The *Bellidea* app we designed with citizens invites users to collect points, which can be redeemed for prizes (discounts on energy bills, local stores, public transport). Points are based on the weekly percentage of travelling time by public transport, bicycle or walking.

Since real prizes are offered, detection of the mode of transport is crucial. Requesting users for a validation, as in many mobility tracking apps, would leave room for cheating. On the other hand, current automatic detection capability is limited, with peaks in detection accuracy only reaching 75% of trips [2].

Participants to the lab opted for avoiding validation as much as possible, accepting the risk of not attributing points to users who deserve them, if detection is wrong.

To this purpose, improved algorithms based on [3] are being developed: a short training period will require validation for all trips, providing no points; then, validation will only be asked for estimated likelihood of the mode of transport below a certain threshold.

5. Collective goals and community prizes

To engage as much citizens as possible, participants to the *Bellidea* living lab suggested to introduce community prizes as well. As a result, besides individual eco-feedback and individual mobility-related challenges, the *Bellidea* app will also include collective goals for change: in some periods of the year, with the support of a public communication campaign, the app will launch community challenges, such as «This month, let's use the bicycle for at least 20% of our overall travelling time».
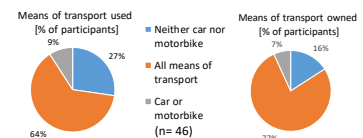
If app users achieve such challenges, the whole community gets prizes, such as for example a discount on public transport season tickets for all the citizens.

We expect that such a mechanics stimulates people to keep the level of activity high, since it builds on both their feeling of belonging to the local community and on their desire for attractive prizes.

6. Expected impact

The *Bellidea* app prototype is currently underway, based on all the elements designed in the living lab. Launch of the final *Bellidea* app to the whole population is planned for Spring 2018. If we manage to obtain its wide diffusion, we expect reductions in mobility-related impacts, at least for systematic trips, as suggested by preliminary results of a similar experiment we run in the same area (*GoEco!* project).

Positive impacts will however go further. In fact, the *Bellidea* living lab we created provides the City with new channels to interact with the citizens: data collected by the app can be actively analyzed and discussed with them, thus bringing new energies, ideas and points of view in the design of future mobility scenarios.

Moreover, if the whole *Bellidea* approach proves successful, the City will be endowed with a new set of governance practices, applicable to future decision-making processes in other fields than mobility.

References

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www.bellidea.ch
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