An Appeal to Discuss Ethical Issues in Context with Cooperative User Localization

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"We are moving into a world where your location is going to be known at all times by some electronic devices. [...] It's inevitable. So we should be talking about its consequences before it's too late".

Smarr L. (2003)
Founder of NCSA (National Center for Supercomputing Application)
and now director of California Institute for Telecommunications and Information Technology

One can see that continuous localisation and tracking of certain people or even the whole population is made possible when looking at current technological developments.

"It is quite possible for an abusive husband, for example, to purchase an inexpensive device or service that will enable him to follow his wife's every step, monitor her daily travels, report her whereabouts, identify whether she visits a specified friend, and time her stay on any given visit".

Dobson J.E. and Fisher P.F. (2003)
'Geoslavery'
IEEE Technology and Society Magazine
Vol. 22, No. 1, 47

"Digital technologies are setting down the new grooves of how people live, how we do business, how we do everything".

"We want free online experiences so badly that we are happy to not be paid for information that comes from us now or ever".

"In a world of digital dignity, each individual will be the commercial owner of any data that can be measured from that person's state of behaviour".

Lanier J. (2013)

Who Owns the Future

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74% of the Europeans see disclosing personal information as an increasing part of modern life.

European Commission
Special Eurobarometer 359 –
Attitudes on Data Protection and Electronic Identity in the European Union.
Report. Fieldwork: November – December 2010
Publication: June 2011

Due to technical developments users are often only vaguely aware of the fact that they transmit their current location and trajectory to navigation and guidance service providers while at the same time receiving aggregate information based on data transmitted by other users.

Ng-Kruelle G., et al. (2002)
The price of convenience: privacy and mobile commerce
Quarterly Journal of Electronic Commerce, 3(3): 273-285

Individual consumers of navigation services must always balance costs (e.g. loss of privacy pertaining to personal location and driving speed) against benefits obtained (e.g. navigational support, improved road safety, collision avoidance, etc.).

"Privacy is the right to be left alone."

Brandeis, cited in Lanier J. (2013)
Who Owns the Future

"In general, the association between the real identity of the user issuing an LBS request and the request itself, as it reaches the service provider, can be considered a privacy threat. [...] Simply dropping the issuer's personal identification data may not be sufficient to protect user's privacy."

Mascetti S., et al. (2007)
Spatial generalisation algorithms for LBS privacy preservation
Journal of Location Based Services, 1(3): 179-207

Location privacy is "the ability to prevent other parties from learning one's current or past location" thus the "protection of location privacy is one of the most significant issues of LBS."

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Beresford A. R. and Stajano F., cited in Kido H., et al. (2005)
Protection of Location Privacy using Dummies for Location-based Services
Proceedings of the 21st International Conference on Data Engeneering ICDE '05

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"There is a risk that data can be passed on to third parties including movement profiles, personal lifestyle and consumer behaviour. In this way data pools may arise that are no longer controllable."

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Schaar P., Quarks & Co (2014)
The Power of Data
WDR German Television

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▸ A good many countries are reviewing their national legislation in order to cope with social issues as well as security threats in the area of data protection.

▸ The legal acts do not specifically concentrate on the use of mobile positioning data in statistics.

▸ Legal restrictions are the most important barrier when it comes to accessing the data.

▸ There is a need for research programmes to develop the process of anonymisation as no conclusive methods have been produced so far.

Ahas R., et al. (2014)

Eurostat feasibility study on the use of mobile positioning data for tourism statistics

Report

▸ For technical developments the consideration of the needs and acceptance of end-users has become entrenched as state-of-the-art.

▸ For assessment of end-user's acceptance the technology acceptance model is most commonly used.

▸ The key hypothesis of the technology acceptance model implies that the end-user's intension to use a technical solution is mostly driven by conviction of two main factors:

1. subjective perceived usefulness leading to a user's benefit
2. subjective perceived level of difficulty of the utilisation
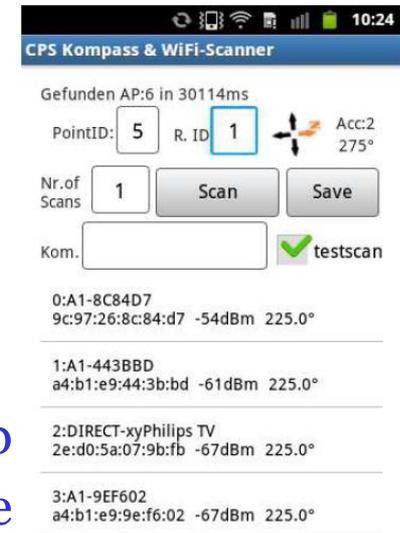
Wanka A. (2014)

Personal communication in preparation of the InKoPOMoVer study

InKoPoMoVer Study

Cooperative Positioning for Real-time User Assistance and Guidance at Multimodal Public Transit Interchanges
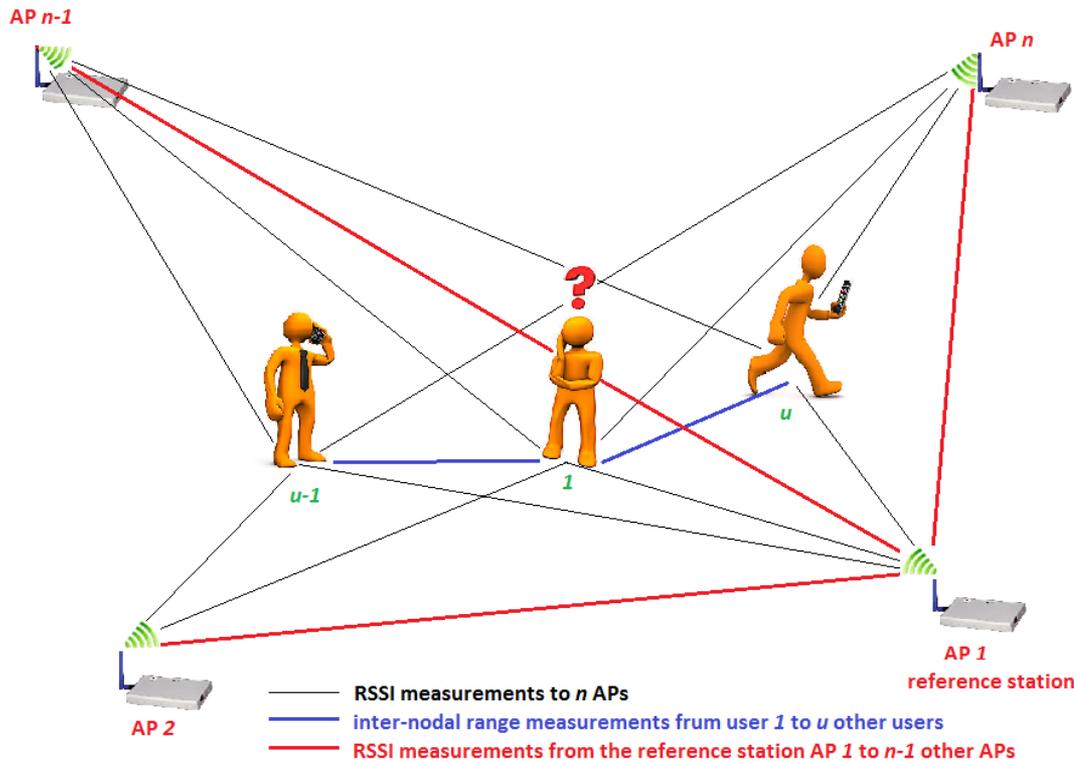
Localization concept for a transit situation

App interface

Users are asked to give their informed consent for every step in the whole localization procedure.

General Aims

1. Smooth transit at stations: providing real-time information for passengers, e.g., information of their connecting trains and underground lines, alternative routes, indoor navigation guidance,
2. Indoor behaviour modelling on the micro level in the stations: results can provide inputs for the traffic management sectors to make decisions, e.g., during an emergency, services maintenance, and
3. End-user orientation: supply of an end-user oriented demonstrator as guidance system and service for routing of individuals and/or user groups.

Sociological and Ethical Approach

Integration of targeted end-users and researchers equally into the development process is performed in Living Labs.

It is investigated:

1. which level of knowledge different user groups have about the transference of their data on their smartphone and on which way transparency can be created for them (e.g., in technological blogs, new media, senior citizens pensioner's clubs),

2. which data different user groups are ready to reveal, what this readiness depends on and whether differences exists in data and transference ways,

3. which benefit do different user groups expect for the supply of their data, and

4. like with regard to sensitive data a safe and secure solution can be found from user's point of view (e.g. passwords, self-exclusion, encoding).

Conlusions

▸ Privacy and data protection has to be openly and formally considered in every LBS research project from the very beginning.

▸ Ethics and research ethics as a subject have to be taught at every Technical University.

▸ Every Technical University has to implement an ethics committee or to cooperate with another (Technical) University that has an ethics committee.

▸ Privacy and data protection has to be part in every country's Basic Law and as academics we are responsible for promoting it.