User Attitudes and Acceptance of ITS

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Project Context

ITS systems

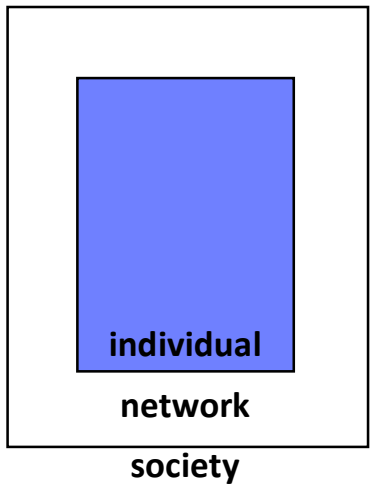
journey planning
navigation
surveillance
personal alarms
smart cards
mobile wallet
incident warning
intelligent parking
variable message signs
etc

real & perceived affects

accidents
congestion
environment
security
mode choice
privacy
trust
assurance
independent mobility

etc

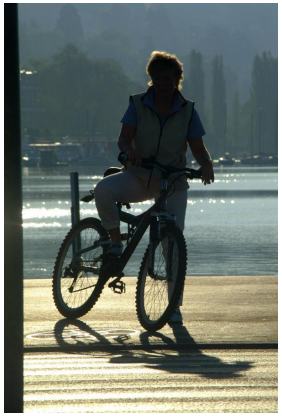
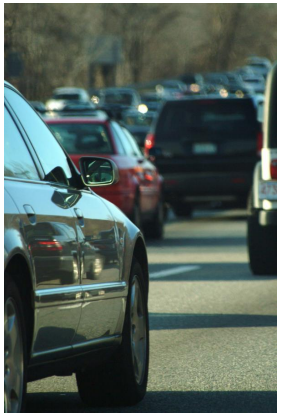
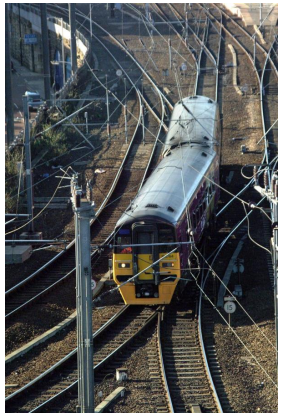
perspectives



Project Background

Urban Mobility: needs, enhancement via ITS



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Sense of Assurance:

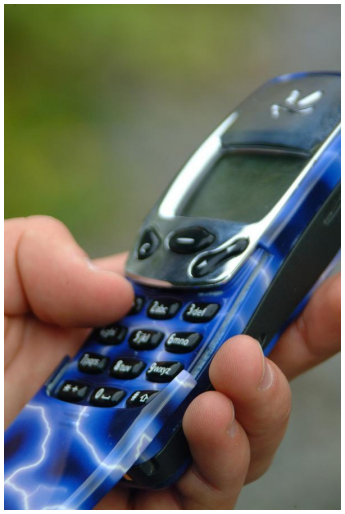
perceived safety/security + connectedness

via pervasive access to relevant information and/or communication (help)

Project Background & Goals

- Further understand the impact of personal needs on urban mobility
- Explore potential of ITS systems/services to enhance mobility, e.g. navigation, travel planning, alarms, etc
  Opportunities to overcome mobility barriers, especially for vulnerable groups
- Address potential ethical issues and trade-offs of using IT to enhance mobility (e.g. privacy concerns)

Opportunities to Enhance Mobility



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Use IT to enhance individuals' mobility through:

- Information – journey planning, maps, services
- Monitoring – sensors, surveillance systems
- Localization – navigation & (personal) alarms
- Identification – geotagging, virtual maps/signs
- Authorization – smart cards, RFID tags
- Communication – immediate and pervasive

Example: e-Adept navigation system in Stockholm

- smart phone with GPS, etc
- pedestrian, bicycle, & road networks & municipal databases
- PT information, support alarms, virtual signs, etc.

Privacy Concerns

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Individuals' privacy concerns:

- anonymity, lack of knowledge about information use, lack of control, etc

The U.S. National Research Council (2007) found that:

- Individuals' power is limited
- IT has compromised privacy
- The loss of privacy often results in harm

2002 VINNOVA report on transport informatics & privacy:

- Concerns over: use, access, registration, repurposing, integration, etc.
- Conclusion: intrusions may be acceptable if "the benefit is greater than the consequences"

Methodology – Case Studies

Visually Impaired (VI) Persons (2009)

23 structured interviews

Professional HGV drivers & road haulage company representatives (2010)

30 + 20 structured interviews (administered at Sweco)

Older Adults (OA) >= 65 years old (2010-2011)

online survey, 252 respondents as of 22 February

General Population – online survey, ongoing

Mobile Alarm Project – structured interviews, ongoing

Questions to User Groups

What is their current travel/work situation?

- mobility needs and habits, use of PT, use of IT, etc

What are their general attitudes?

- technology, privacy, trust, etc

What are their specific attitudes about various ITS systems

- perceptions of effects on assurance & privacy, perceptions of benefits, potential effects on mobility

What role can ITS play?

Are the system/services perceived as privacy invasive?

Is there a trade-off between assurance & privacy?

Technology Attitudes/Use

Interested in new technology? √

Technology benefits individuals and society? √√

"good tech. benefits people, bad tech. damages them"

However, some express feelings of social exclusion

- "old" technologies/services disappearing or becoming inaccessible (automated telephone systems, banking)
- "forced" to adopt new technologies/services
- "new" sources of information not accessible &/or affordable

Privacy & Trust

Nothing to hide, nothing to fear? √ √

Trust govt. agencies & private companies to protect data? X

Westin (USA) – privacy index

Privacy Fundamentalists, Pragmatists, Unconcerned

Privacy index (based on nothing to hide + trust questions)

	High – Moderate – Low Concern
Visually Impaired	17.4% – 52.1% – 30.4%
Older Adults	6.1% – 67.4% – 26.5%
Drivers/Comp Rep	0% – 48% – 52%

Scenarios

CCTV, Real-Time Info., Navigation System, Location via Mobile Phone, Intelligent Truck Parking, Incident Warning…

Privacy & Assurance – little or no difference across systems
neutral effect on privacy & positive effect on assurance

→ Exception, Advanced Incident Warning (comp rep)

Effects on assurance generally rated highest in PT & vulnerable travel situations (unfamiliar trip, alone)

Social/Company benefits perceived as higher than personal benefits

Personal Integrity Concept

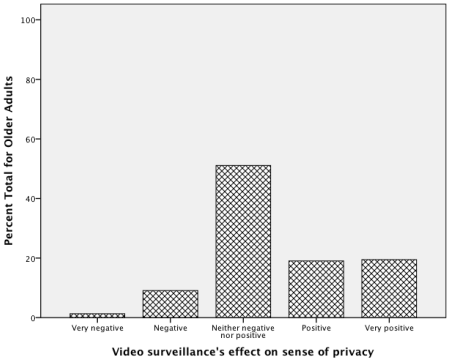
The word "privacy" does not exist in Swedish

→ Personal integrity as pride, independence, honesty, etc.

"I can feel that a navigation system improves my sense of personal integrity because of increased independence, but that does not mean I'm not concerned about a surveillance society" (VI participant 19)

"Personal integrity" explicitly defined

e.g. CCTV's impact on sense of personal integrity



CCTV perceived to increase assurance & deter crime

→ Personal integrity = physical privacy (protection) from harassment/crime?

Gender Analysis (Older Adults)

No significant difference in privacy index

Men expressed a greater interest in new technology

Women traveled alone more often despite indications that they feel less assured (not controlled for lifestyle effects)

Women felt video surveillance (4 of 8 situations) and real-time information (7 of 8 situations) would have an even greater positive effect on assurance

→ Men more interested in tech, but it may help women more

A Few Conclusions

- ITS systems have positive perceived effects on assurance, but this does not necessarily translate to perceived benefit
- Perspective important
  (e.g. employer vs employee, user group)
- ITS systems may be more interesting to men, but may benefit women more
- ITS systems have neutral perceived effects on privacy
- ITS systems can have positive effects on “integrity”

Next steps

- Explore effects of lifestyle
- Analysis of general public & comparison with other user groups
- Explore concept of personal integrity as related to privacy and other concepts, e.g. independence, personal security, etc

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Thank you for listening!

Questions & Discussion?

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