

# Privacy Attitudes & User Acceptance in ITS



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# Outline

- Opportunities to Enhance Mobility
- Privacy Concerns
- Study Design and Methodology
- Initial Results
- Conclusions from Study
- Next Steps

# Opportunities to Enhance Mobility



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.

Photo: Ian Britton  
<http://www.freefoto.com>  
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# Privacy Concerns

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

# Study Design & Methodology

## Objectives:

- better understand the mobility patterns and needs of special groups
- explore the potential of IT to impact mobility
- investigate to what degree various factors impact IT acceptance, including privacy

## Discrete Choice Model:

- modeling the acceptance of the e-Adept navigation system and the services it offers
- including latent variables to capture preferences/attitudes

Data: socio-demographics, travel patterns, attitudes, scenario  
Likert Scale: Totally Disagree (1) – Totally Agree (5)

# Initial Results – Sample

23 interviews with visually impaired persons (volunteers)

- recruited via Swedish Association of the Visually Impaired (Stockholm) & 4 information channels
- questions on travel, technology & privacy

Residence (Sweden): 18 Stockholm county, 5 other

Gender: 7 Women, 16 Men

Age: 22-92 years of age, mean 47.17 years

Persons in HH: 14 1-person, 7 2-person, 2 4-person

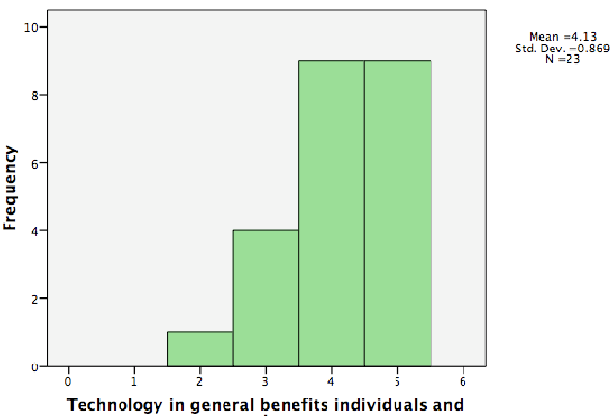
Car Ownership: 17 no, 6 yes

Dial-a-Ride Eligibility: 100%

System familiarity: 10 yes, 13 no

# Initial Results – IT & Technology

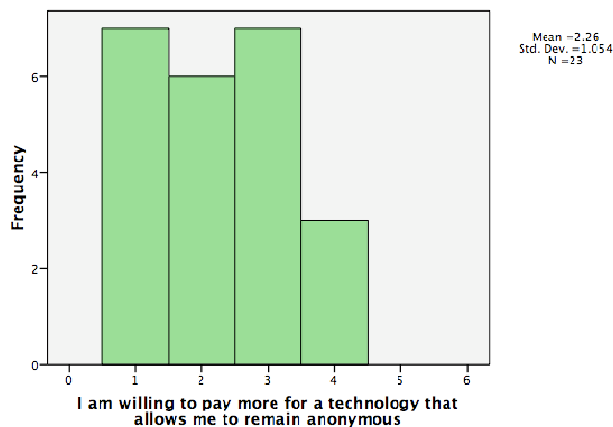
Technology in general benefits individuals and society



- Technology, in general, benefits individuals and society
- mean = 4.13

*"Good technology benefits individuals and society, but bad technology damages them." (Participant 2)*

Histogram

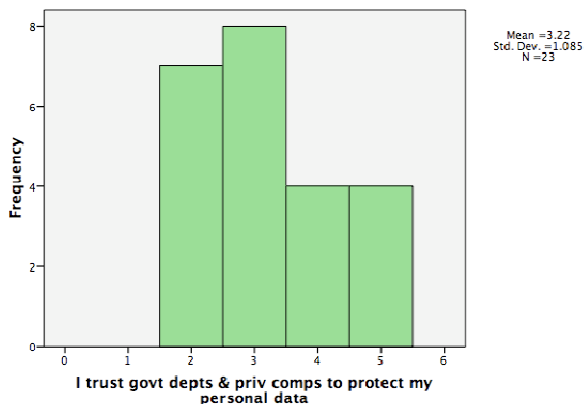


- I am willing to pay more for a technology that allows me to be anonymous
- mean = 2.26

*"I don't want there to be a traceable connection between Dial-a-Ride and the SL Access card." (Participant 16)*

# Initial Results - General vs. Specific Attitude

I trust govt depts & priv comps to protect my personal data

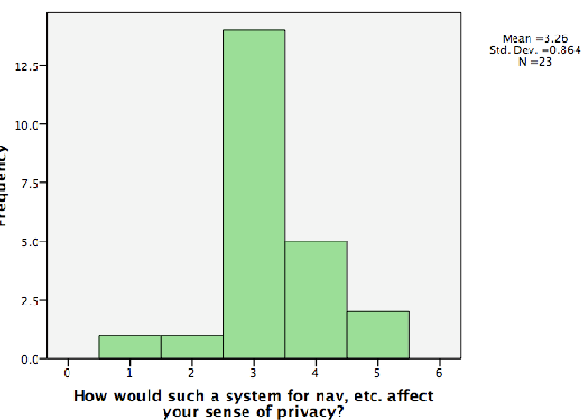


- I trust government agencies and private companies to protect my personal data

→ mean = 3.22

*"I can agree to registration in a database if I gain something from it and if I know the risks involved." (Participant 16)*

How would such a system for nav, etc. affect your sense of privacy?



- How would your sense of "personal integrity" be affected by such a navigation system?  
Scale: Very Negatively (1) – Very Positively (5)

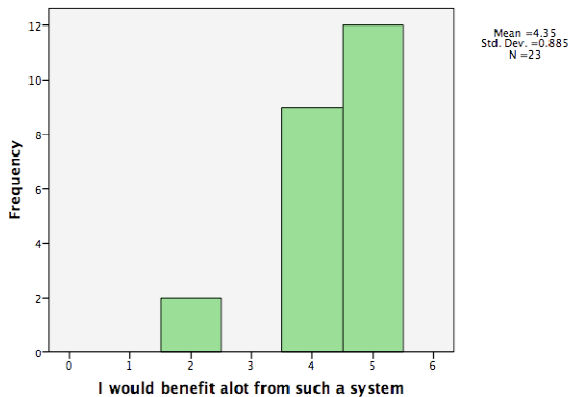
→ mean = 3.26

(No significant difference due to familiarity)

*"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." (Participant 9)*

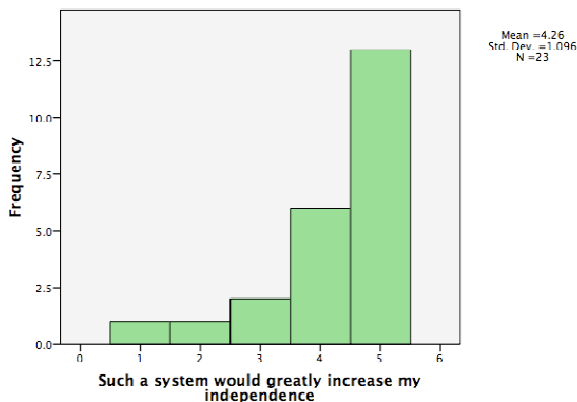
# Initial Results – Specific Context

Histogram



- I would greatly benefit from such a system
- mean = 4.35  
(No significant difference due to familiarity)

Such a system would greatly increase my independence



- Such a system would significantly contribute to an increased independence
- mean = 4.26  
(No significant difference due to familiarity)

# Conclusions from Study

## General:

- Privacy is highly contextual to individuals and situations
- Privacy is difficult to deconstruct as it has many connotations
  - trust, justice, control, dignity, autonomy, etc

## Interviews of visually-impaired, Swedish volunteers:

- Technology is perceived as advantageous, with generally higher benefits than the risks
  - Privacy may be an expected default rather than something to pay for
  - Mixed levels of trust in government and companies
  - The e-Adept navigation system is perceived as highly beneficial with a neutral impact on privacy
- General applicability?

# Next Steps

- Online questionnaire  
→ privacy attitudes of more general groups
- Questionnaire to drivers/leaders of road haulage companies  
→ privacy attitudes about telematic services for HGVs  
(Project "Marknadsmässiga aspekter kring positionsbaserad ITS" at Sweco/KTH)
- Interview questions (problem-centered) to test drivers  
→ privacy attitudes about telematic services for road safety  
(COOPERS project)

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***Thank you for listening!***

***Questions?***

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