

Location based based mobile services and privacy

- controlling access to location information

I. Tjostheim, B. Nordlund, J. I. Vestgaarden

{ingvar, bjornno, jornv} @nr.no

Norwegian Computing Center (NR)

Conflicting interests?

- The mobile technology = opportunities

but, what about

- Privacy concerns

The individual's information privacy is the right to determine when, how, and to what extent information about a person is communicated to others.

Westin, Alan, (1967) *Privacy and Freedom*.

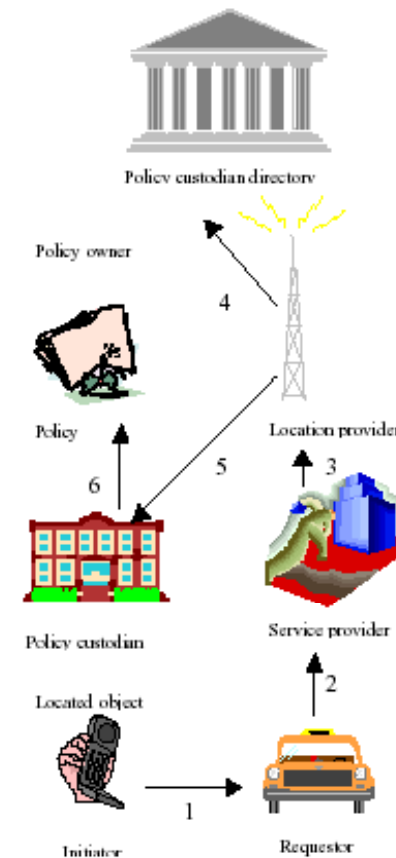
- *“Location-aware services as a general concept raise a number of ethical and legal issues. These include security, user privacy, etc. Obviously such issues have implications for everybody, including tourists, and the successful resolution of these issues is a prerequisite for the widespread deployment of electronic tourist guides.”*

O’Grady, O’Hare, & Gregory (2002) in
Information Technology & Tourism

The prototype

– controlling access to location information

- This prototype is a system that provides a single place for a user of a mobile phone to define his or her privacy policy regarding location information.



Hypothesis

- H1 Individuals that are unwilling or reluctant to reveal personal information are less positive to location based services than individuals willing to share personal information.
- H2 Very few individuals that are unwilling or reluctant to reveal personal information are interested in giving the control of access to location information to telecom operators, third parties or other players in the mobile environment.

The survey

- Respondents with GPRS mobile phones were recruited by TNS Gallup in Norway from their "Gallup panel" (representative panel of the population)
- Three questionnaires;
 - * recruitment questionnaire
 - * mobile questionnaire (MCASI)
 - * follow up questionnaire

<i>Willingness to reveal personal information in an electronic environment</i>	Users of GPRS m-phones
E-mail address	86%
Name and address	42%
Shopping behaviour information	46%
Info about gender, age, income	45%
Official id-number	2%
Credit card number	4%
Information about m-phone location	45%
	(N=222)

Segmentation

- For the purpose of this study, the respondents were segmented into two groups.
- The members of the **sensitive group** are those that do not reveal any information listed in table above plus those willing to reveal only their email address, **24%**
- The **less sensitive group** = the rest of the respondents, **76%**

<i>Attitudes to location based mobile services</i>	Answered “yes at least one of the listed companies should be allowed to use location information to offer services”	No one should be allowed to offer location based services
The members of the sensitive group	15% (15)	33% (38)
The less sensitive group	85% (87)	67% (76)
$\chi^2 = 10.1, p < 0.0015$	100% (102)	100% (114)

<i>Attitudes to location based mobile services</i>	The members of the sensitive group	The members of the less sensitive group
Answered companies should be allowed to use location information to offer services No one should be allowed to offer location based services	28% (15)	53% (87)
	72% (38)	47% (76)
$\chi^2 = 10.1, p < 0.0015$	100% (53)	100% (163)

<i>Who should offer location-based mobile services?</i>	The members of the sensitive group	The members of the less sensitive group
Travel companies (taxi, train, bus)	19% (10)	42% (70)
Other travel services	2% (2)	14% (24)
Restaurants	9% (5)	14% (23)
Shops	9% (5)	13% (22)
Market research companies	4% (2)	16% (26)
Companies offering guiding/"how to find the nearest..."	17% (9)	35% (58)
No one should be allowed to offer...	70% (38) (N=54)	45% (76) (N=168)

<i>Who should control access to location information?</i>	The members of the sensitive group	The members of the less sensitive group	Total sample
My telecom operator	13% (7)	22% (37)	20% (44)
Service providers	0% (0)	11% (19)	1% (19)
A third party (not a telecom operator or a service provider)	11% (5)	11% (19)	11% (24)
My self	70% (38)	57% (96)	60% (134)
Don't know	6% (3)	3% (5)	4% (8)
$x^2 = 11.75, p < 0.0083$	(54)	(168)	(222)

- The findings, the survey-results can be interpreted as a support to the first hypothesis, H1. Only 28% of those reluctant to reveal personal information is positive to location based services.
- Of the individuals described as privacy sensitive only 24% answered that a telecom operator or a third party should control the access to location information – most of them (70%) were in favour of controlling this information themselves. This result supports to a large extent the second hypothesis, the H2.

Concluding remark

- Should companies offering mobile services be allowed to make use of location information?
50% yes
50% no
- There is a demand for “Travel services”
....if, yes I agree location information should be used, then travel services are on the top of the list

- It is documented that attitudes to privacy e. g. willingness to reveal personal information, correlate with interest in (or lack of interest in) location-based services.

A majority of the m-phone users answered that they wanted to control the access to location information themselves.

- This is an important result (input) for the development of the prototype about controlling access to location information.

Acknowledgement

- The paper was written as part of a project funded by The Research Council of Norway.