

User acceptance of location-based services for emergency management in Australia

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The Third Workshop on the Social Implications of National Security, 23-24 July
2008, Canberra, Australia

Presentation online

- Location-based services (LBS): An overview
- LBS for emergency management (EM): The opportunity
- User acceptance of LBS for EM in Australia
- The research model
- The research approach: Targeting the people
- Conclusion and future work

LBS: An overview (1)

- LBS are electronic services that take into account the geographic area of a mobile phone, and provide the mobile phone user with services based on the location information.
- LBS enable subscribers to get knowledge via their mobile phone, handheld device, PDA, or laptop computer based on their current location (or another location).

Küpper, 2005

Tata Consulting, 2003

LBS: An overview (2)

- Pull vs. Push applications
 - Pull applications are used by subscribers to retrieve information about their or others location
 - Location information is updated only when a subscriber uses the services
 - Examples might include:
 - Driving directions
 - Where am I?
 - What is the nearest point of interest?
 - Where is my husband?

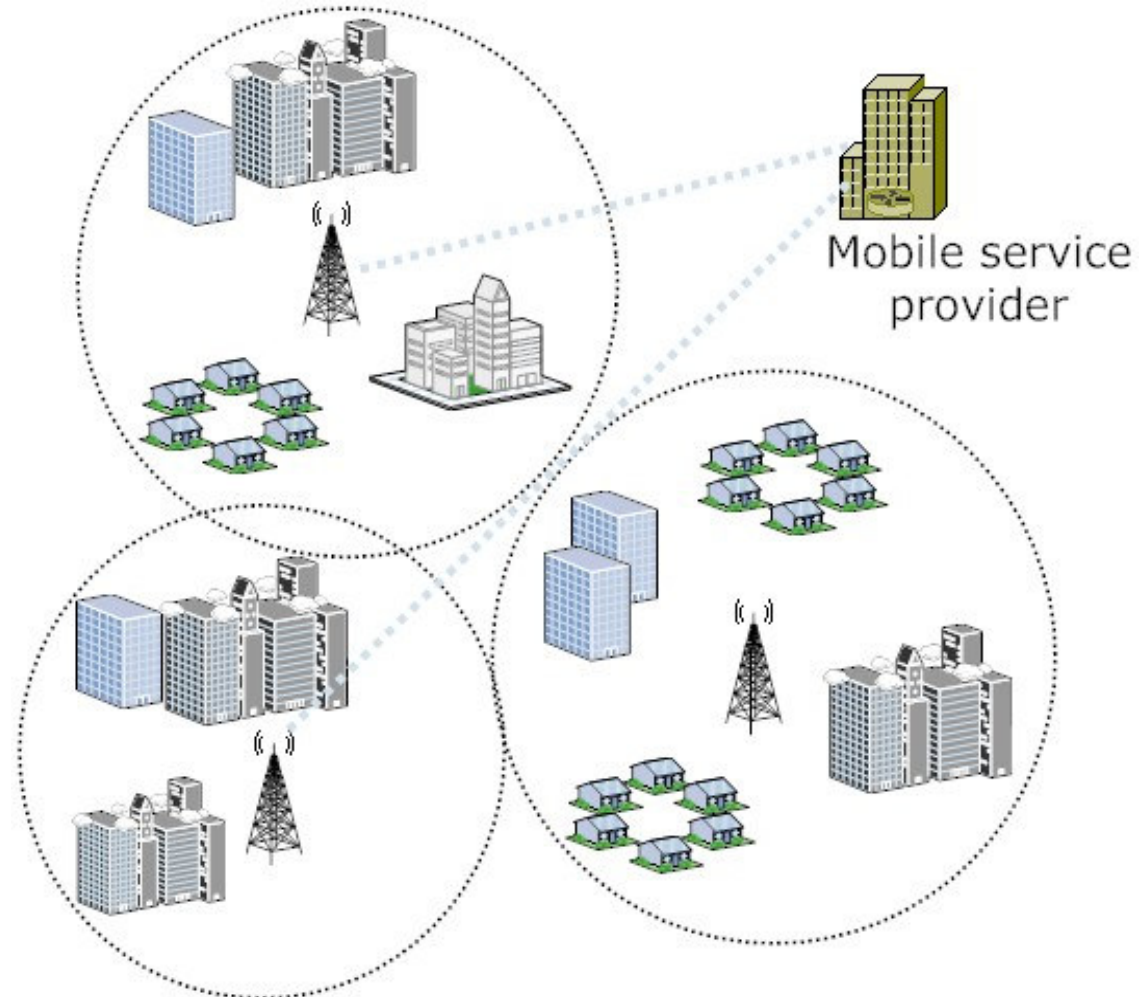


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LBS: An overview (3)

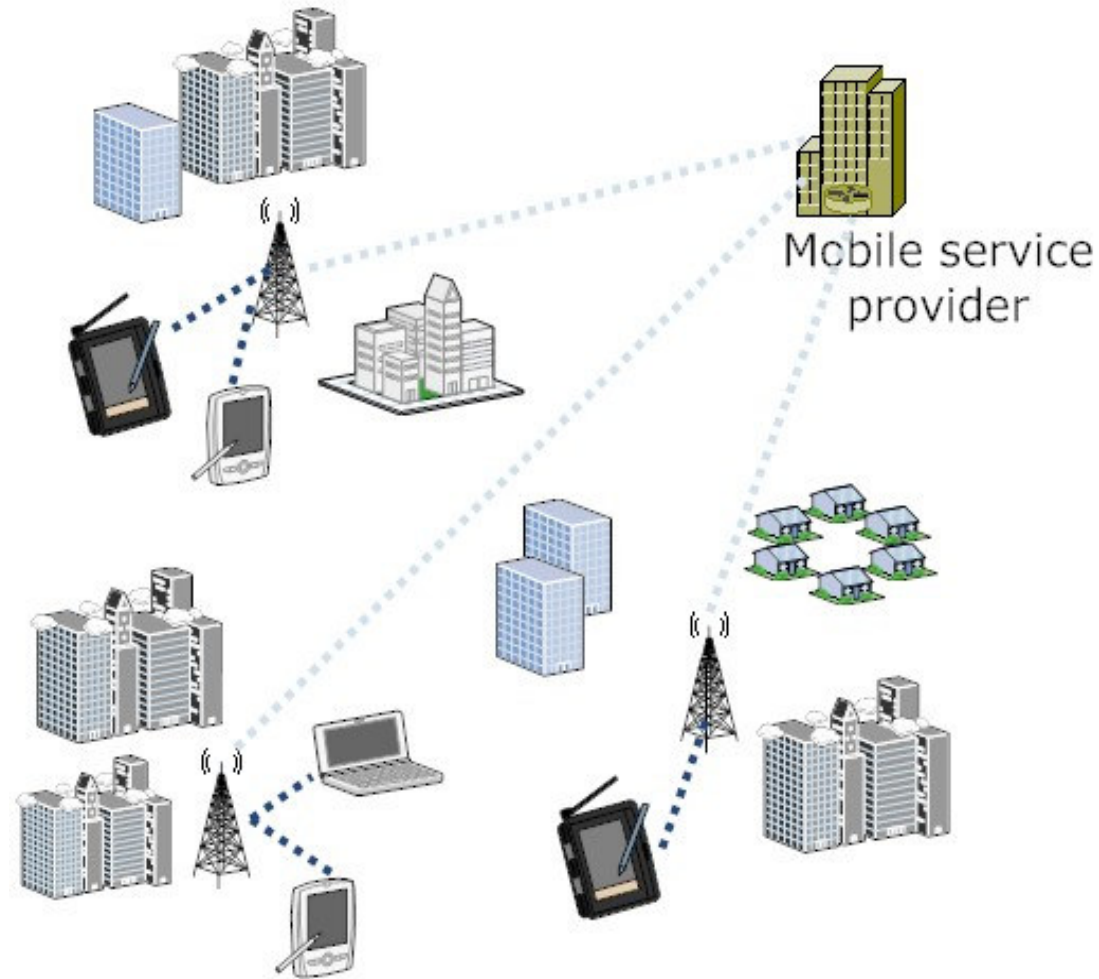
- Push applications are triggered by an event such as entering a specific area.
- The location of the user has to be spotted actively in real time in order to push out the service to her/him.
- Examples might include:
 - A promotion from a nearby shopping centre
 - A subscriber who is approaching or crossing near a predefined point of interest
 - Local news related to the current location of LBS subscriber
- Push applications can be used to deliver information to all mobile phones that are located in a specific area (within the coverage of one cell or more)
 - Cell Broadcasting Service (CBS) vs. Short Messaging Service (SMS)

Cell Broadcasting Service



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Short Messaging Service



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LBS: An overview (4)

- Location-tracking vs. location-aware services
 - Location-tracking services provide information about a user's whereabouts to entities other than the user himself
 - Location-aware services provide location information to the actual user (i.e. the requester)

LBS for EM: The opportunity (1)

- The applicatory possibilities of LBS solutions make them well worth exploring in the domain of EM since users' location(s) can be determined or tracked.
 - LBS can be used to find the almost exact geographical location of a mobile user in the case of a 000 emergency call or a distress text message.
 - Relevant alerts and information regarding major events such as severe weather conditions, a terrorism act or a natural disaster can be delivered to LBS users, if the event happened in

LBS for EM: The opportunity (2)

- LBS has been successfully utilised in the domain of EM. Some examples include:
 - The Avian Flu Tracker in Hong Kong: A dynamic LBS solution that is designed to warn citizens of their proximity to potentially infectious regions.

Michael, et al., 2006

- Tsunami Disaster in Sri Lanka: Dialog GSM used location-based cell broadcasting technology to provide updated emergency information to its subscribers along the coasts of Sri Lanka. The information included coming waves, brief news reports, hospital help lines, and supply distribution centres.

Writer, 2005

LBS for EM: The opportunity (3)

- **Lemma promises mobile phone terrorism alert**

- NSW Premier Morris Lemma has announced new counter-terrorism measures, including an alert system able to send text messages to all mobile phones in a suspected target zone.

[Australian Associated Press General News, 26 February 2007](#)

- **Plan to use SMS for SOS**

- SMS text alerts warning Victorians of terror attacks or other disasters are expected to form part of a new national emergency system.
- As well as being sent via the media, SMS or email alerts will be used to help inform the public in specified areas of terror attacks or natural disasters.

[Herald Sun, 27 February 2007](#)
The Third Workshop on the Social Implications of National Security, 24 July 2008, Canberra, Australia

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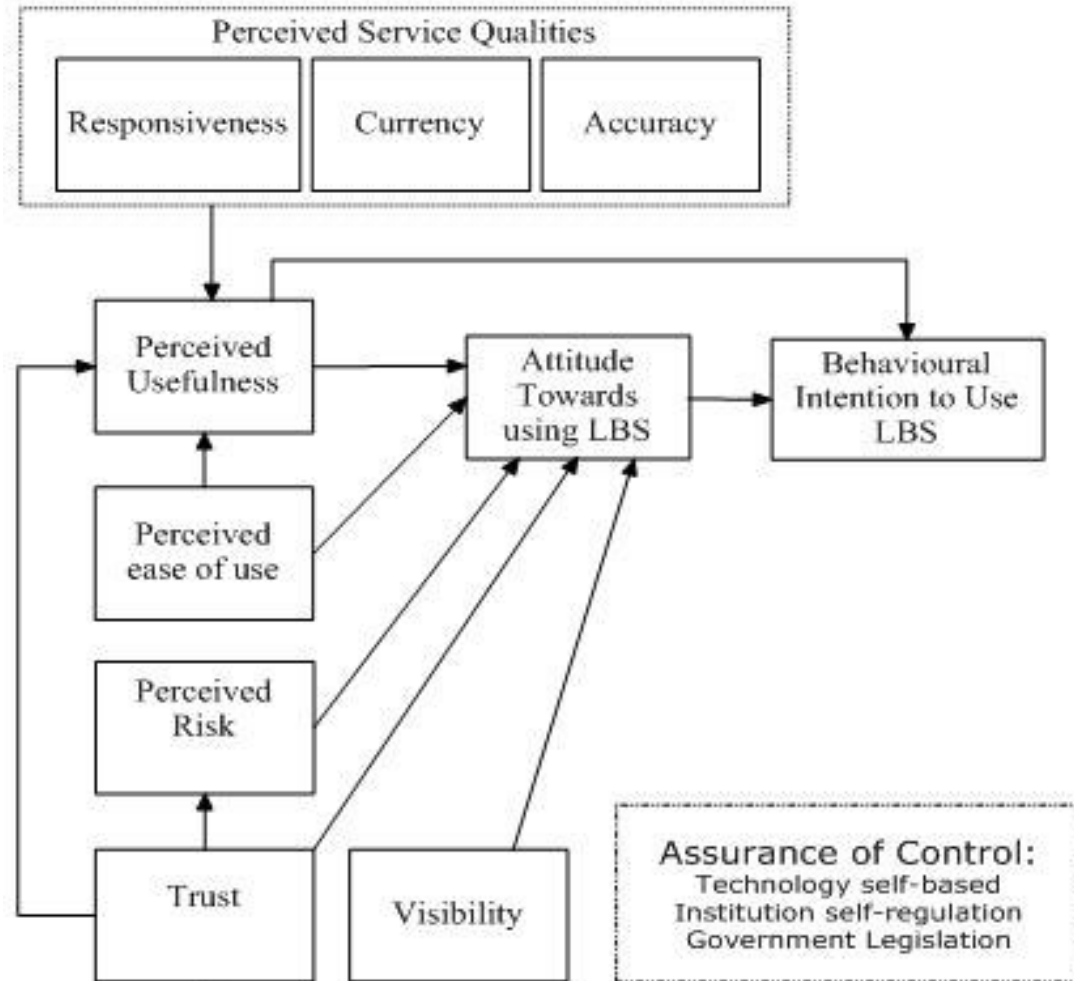
User acceptance of LBS for EM in Australia

- So, what are the consequences of introducing LBS in the domain of EM? How do Australians think about that?
- The research is aiming to determine the underlying motivations that would influence individuals' perceptions regarding the use of LBS in EM.

The research model (1)

- The research model extends and builds upon the Technology Acceptance Model (TAM).
- TAM is a special adaptation of the Theory of Reasoned Action (TRA).
- TAM postulates that the usage or adoption behaviour is predicted by individual's intention to use the new IST. Behavioural intention is determined by individual's attitude towards the use of the new IST. Attitude, in turn, is influenced by two key beliefs: perceived ease of use and perceived usefulness
- Extending TAM with the theorised factors is expected to yield an improvement to the model's ability to predict LBS acceptance, while providing a justifiable theoretical approach for integrating the new variables within the nomological structure of TRA.

The research model (2)



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The research approach : Targeting the people (1)

- A survey will be employed to investigate people's acceptance of using LBS in EM. The survey comprises three sections:
 1. The introduction: The possible use of LBS in emergencies and hazardous situations.
 2. The vignettes: "Brief stories or scenarios that describe hypothetical characters or situations to which a respondent is asked to react"
 - Two vignettes are designed to represent two different situations. The first represents an innocuous-defined situation (harmless), while the other typifies a pernicious-defined situation (harmful)
 3. The questionnaire:
 - Contains a set of statements for each of the model's constructs.
 - General knowledge questions about LBS
 - People are asked to rank the level of importance of providing LBS various hazards and emergency situations.

Martin, 2004

Conclusion and future work

- The utilisation of Wireless mobile technologies, specifically LBS, for EM has not yet truly commenced in Australia.
- This research is an ongoing investigation regarding the consequences of introducing LBS under an all-hazardous approach for managing natural and man-made emergencies.
- The research will examine the importance of user acceptance in deploying successful LBS solutions in Australia.
- A conceptual model has been theorised to better understand the underlying determinants that will influence users' perspectives regarding LBS.
- User acceptance of LBS will be surveyed. The results are expected to provide an insight about the issues and concerns the general users might have.
- The results will confirm or refute the willingness of Australians to use these services.