Usability and Usefulness of Localization Technology Used in Dementia Care

icchp 2010

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Dementia

- Collective term for several chronic brain diseases - reduction in cognitive functioning
- Worldwide prevalence 35.6 million; projected prevalence 2050 115.4 million
- At greater risk of getting lost outdoors - higher risk of injury
- Worry and searching for carers
"We conducted perhaps a 100 searches in the last year he was living at home. It was terrible! I was so worried about him that it is almost impossible to describe”

Spouse of person with dementia
Localization technology

• Common combination - GPS and GSM (mobile phone) technology
• The person with dementia carries a GPS/GSM unit on his or her person
• Localization is done with a mobile phone or a computer with Internet access
• Call, SMS or web interface
• Location given as a set of map coordinates, an address, a point on a map or a combination of the above
**Nokia Communication Centre – Meldingsl...**

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<td>Klokkeslett:</td>
<td>15. april 2010 14:41</td>
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SOS Alarm from 09.02.2010 15:39:09, Location from 09.02.2010 15:38:20:
http://maps.google.de/?q=60.9132750+10.7695583&ll=60.9132750,10.7695583&z=16
Related research

• GPS/GSM increasingly used to locate persons with dementia
• Lack of knowledge in terms of the users’ practical experiences
• Especially a deficiency in the knowledge about usability and usefulness
Aim of study

Main aim to explore and document how private citizens experience the usability, user friendliness and usefulness of GPS/GSM based localization devices used to locate persons with dementia
Method

• Six families interviewed about experience with localization technology
• Six spouses & one son - interviews of the persons with dementia inappropriate
• Completed Quebec User Evaluation of Satisfaction with assistive Technology 2.0 questionnaire (QUEST 2.0)
Results

• Used in conjunction with mobile phone; three also used computer
• Two families split tasks between several members when searching
• Persons with dementia all passive users
• Only use basic localization functions
Results II

• By and large informants found their localization aids easy to use
• Very useful
• Increased feeling of security and freedom
• Has had a positive impact on their overall situation
• All recommend equipment to others in similar situation
This is so simple to use that anyone can use it

Spouse of person with dementia
My situation has become much easier. I clearly feel much calmer about it now, and if she goes our or disappear I know that I can find her

Spouse of person with dementia
Results III

• Some of the difficulties encountered:
  • Secure fastening of the device
  • Impractical size
  • User interface issues
  • Inadequate detail of the localization maps
  • System instability
  • General weaknesses with GPS-technology, i.e. does not function indoors
I think the user interface is not very user friendly. It is very elaborate with many key presses and menus when conducting a search

Spouse of person with dementia
I dread if it were to fail during a critical situation because I know it sometimes malfunctions

Son of person with dementia
Results IV

• There is agreement between the findings from the interviews and QUEST 2
• Overall interpretation - informants find the equipment easy to use, and it fulfils their needs
Discussion

• The findings indicate that the users find the equipment relatively easy to use
• How universal are the results?
• Sample
  • Relatively young informants
  • Quite familiar with ICT
  • Highly motivated
  • No stated disabilities affecting usage
• Are they average carers?
Discussion II

• Several received assistance from children; very skilled at ICT
• Only used the most basic functionality of the equipment
• Remedy - larger and more “representative” samples
• Potential for false sense of security – not mentioned by informants – usefulness given priority over safety concerns?
• Mild to moderate dementia
Conclusion and planned activities

• Localization equipment:
  • can successfully be used to locate persons with dementia who go missing
  • viewed as very useful and relatively easy to use despite some usability and technical issues
• Generalisation?
• Need for further R&D - security & privacy protection, new technologies, use in the public health sector and additional usability studies
• Seeking funding for project involving usability, privacy protection and data security
I was totally exhausted by all the searching. This [the GPS] has simply given me a new life".

Spouse of person with dementia
Acknowledgements

Many thanks to the informants who shared their stories, and thanks to Lise Fjeldvik and Sidsel Bjørneby for their input, and Rehab-Nor for permission to use QUEST 2.0.
Thank you!

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