Testing the usability of well scaled mobile maps for consumers

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Usable well-scaled mobile maps

Dutch research project

keywords:
- user-centred design
- generalization
- mobile geo-applications
Outline

- Introduction
- Research project UWSM2
- Generalization for mobile geo-applications
- Methods for usability testing of mobile geo-applications
- Methods applied and put to the test (including a new technical solution for field-based testing)
- Proposed methodology for testing the usability of well-scaled mobile maps
- Conclusion
Research project on usable mobile maps

www.gdmc.nl/uwsm2/
Generalization for mobile map displays

Multi-scale databases:
often multiple representation
drawbacks: redundancy, fixed levels of detail

Solution: scaleless / variable scale data structures
- single representation with additional structure to access at any level of detail
- often also spatial organization (clustering / indexing)
- progressive transfer: keep sending more details compared to raster formats: data pyramids, wavelets)

e.g. tGAP structure (van Oosterom, 2005)
tGAP
topological Generalized Area Partitioning

- data structure supporting vario-scale data
- store data only once, with no redundancy of the geometry
- derive different representations of the same data on the fly according to the level of detail required
- smooth zooming, realized through progressive transfer
Generalization experiments with tGAP
UML class diagram tGAP structure
tGAP structure and updating tGAP

Local update, control propagation effect

- types of update: split, merge, boundary change
- effect: face tree (branch), edge forest (part), BLG trees
Methods for usability testing of mobile geo-applications

- laboratory based
- field based

Most usability testing of mobile geo-applications in laboratory only!
Better to have combination of field and laboratory testing

but,
high amount of human resources required!
Methods applied and put to the test

- observation
- thinking aloud
- video / audio recording
- semi-structured interviews
Put to the test: 3 possible combinations of research methods

Usability testing user population

- Observation + A/V Rec.
  - Semi-structured Interview
  - GROUP 1

- Think-Aloud + Audio Rec.
  - Semi-structured Interview
  - GROUP 2

- Observation + Think-Aloud + A/V Rec.
  - Semi-structured Interview
  - GROUP 3
Field based usability testing system implemented
Field survey execution

User

Observer
Field survey execution
Research materials: resulting video output
Combinations of usability testing methods put to the test

- 3 comparable user groups of 6 test persons
- unfamiliar test area
- scenario-based test sessions and navigation tasks
- test application = iGO My way 2006

www.i-go.com/en/
Proposed methodology for testing the usability of well-scaled mobile maps

Combination of:
- observation
- thinking aloud
- semi-structured interviewing with our new
- remote observing/
- audio & video recording /
- communication / system
Conclusion

- Increased use of mobile geo-applications
- In our research project: particular attention for generalization of map displays (smooth zooming)
- Need for user-centred design and evaluation
- Proposed methodology for testing the usability of well-scaled mobile maps
Thank you for your attention!

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