

Interaction Techniques for Using Handhelds and PCs Together in a Clinical Setting

Alsos and Svanæs 2006

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Mark Weisers dream of ubiquitous computing.

Specialized elements of hardware and software connected by wires, radio waves and infrared, will be so ubiquitous that no one will notice their presence

- We have the building blocks but not the the network, software and user interface interoperability
- Privacy and security issues to be solved
- Lack of research in the field. (work, office, leisure)
- Need more complex scenarios
- Alsos and Svanæs suggests hospitals

Most systems require tailored software. However the Pebbles project[1] resulted in software for off the shelf hardware. Alsos and Svnæs compare themselves with this project using standard hardware.

As shown there is quite a lot of interesting research being done on experimental systems, but Alsos and Svans claim that very little is known about how these systems compare with regards to usability. This is the main drive behind their research.

- Brainstorming session with hospital doctors
- Criteria
 - Patient terminals
 - Exist in many hospitals already
 - Touchscreen devices next to bed
 - Mainly for entertainment
 - Health workers have PDAs
 - PDAs have integrated RFID or barcode readers
 - All devices reachable through common IP-network



Several interesting ideas. The rest of the research was based on the idea of using the patient terminal and PDA to show patient x-rays and ct-scans as part of pre-op briefing. 8 prototypes were created based on this idea.

Prototype 1: WIMP

Windows, Icons, Menus and Pointing device



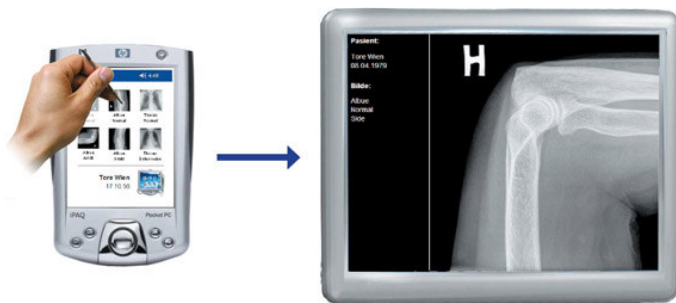
- Baseline prototype
- Only used patient terminal
- Traditional touch screen solution
- Doctors didn't have any trouble
- Patients found it a good way to receive information



- Same as previous except menu moved to PDA
- Doctors found this solution fast and easy
- However some claimed it required to many focus shifts
- Wanted to focus only on patient and one object of common interest



- Menu on PDA
- To show image click on menu, move PDA towards patient terminal
- Simulated by operators
- Very awkward
- Didn't see the point
- Nobody guessed it was simulated



- Drag image to icon representing screen
- Some doctors expected image to appear as soon as it was clicked
- Commented on that icon representing terminal didn't look the same as terminal
- Some tried to drag the image back after use, believing they had "transferred" it to the terminal
- Satisfied with system after they had learned to use it



- PDAs screen extended to the terminal
- Some thought it a different type of drag and drop
- Others thought it a type of shared desktop
- Claimed this was a fault with the prototype
- Didn't say anything else about it



- Basically turned PDA into WACOM-board to control terminal
- Doctors found this awkward and pointless
- Pointed out it would be easier just to touch the terminal



- Similar as previous, but one had to click on buttons instead
- Again the doctors complained about the many focus shifts
- Took the focus away from the patients

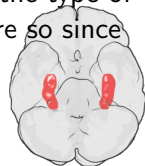


- Copy of the terminals screen on the PDA
- Image on PDA to small
- Menu to small to see at all
- Doctors ended up using the terminal directly instead

- WIMP on PDA highest ranked
- PDA as remote lowest ranked
- Terminal at bedside was an easy and good way for patient and doctor to share information
- However using the terminal required the doctors to bend over the bed in a somewhat awkward way. Using the PDA solved this problem.
- The PDA however removed some of the focus from the patient. Doctors wanted to only focus on the patient, and one object in common.
- No agreement on if doctors should be allowed to have “secret” information on PDA

- The results of the different prototypes weren't exactly surprising
- Can one really come to any conclusions with only 4 test subjects?
- What did they actually test? There is a big difference in usability and self learn-ability.

Neuroscientists have discovered a link between the activity in, and the size of the brains hippocampus and our ability to navigate maps[2]. Modern navigational systems, including the world wide web, the way we use our cellphones, and also the techniques presented in this article are moving towards mapping methods. Hugo Spiers has speculated that as we now rely more and more on the web to tell us how to navigate we might be reducing the growth of cells in our hippocampus[3]. If this turns out to be a problem, it might easily affect the way we choose to rely on the type of technologies Alsos and Svans present in their article. Even more so since the setting presented is a clinical setting.





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The New York Times, February 17th, 2009.

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