A Comparison of Data Capture Methods: Tablet PC, Personal Digital Assistant (PDA), Keyboard and Digital Pen

Ronald Boldt
Managing Director, Allpen GmbH
Lecturer for Basics of Information Engineering, University of Applied Sciences Berlin

Disclaimer

The views and opinions expressed in the following PowerPoint slides are those of the individual presenter and should not be attributed to Drug Information Association, Inc. (“DIA”), its directors, officers, employees, volunteers, members, chapters, councils, Special Interest Area Communities or affiliates, or any organization with which the presenter is employed or affiliated.

These PowerPoint slides are the intellectual property of the individual presenter and are protected under the copyright laws of the United States of America and other countries. Used by permission. All rights reserved. Drug Information Association, DIA and DIA logo are registered trademarks or trademarks of Drug Information Association Inc. All other trademarks are the property of their respective owners.
Purpose of Study

• We need accurate, complete and structured records captured in a clinical environment
• Mobile devices offer the biggest potential to increase mobile data capturing processes
• Many projects with mobile devices fail or do not deliver the expected results – WHY?

Purpose of Study

• Criteria like mobility, initial cost, technical infrastructure, scope of application, etc. are not enough and not front-ranking
• Comparing data capture methods only from a process perspective (time, failure quote, resources)
• Assumption: usability is the main selection criterion
Mobile Devices

Keyboard entry:
Typing data into a computer at the point of origin or typewriting of existing handwritten data. Mobile data capturing with Laptop.

Personal Digital Assistant (PDA):
Writing or typing (screen keyboard) with a stylus directly on the screen.

Tablet PC:
Writing or typing (screen keyboard) data with a stylus directly on the screen. Significantly bigger than PDA.

Digital Pen:
Writing with a digital ballpoint pen on paper. The pen saves all data that are written with it.

• Digital Pen & Paper
  - Standard invented and developed by Anoto
  - Paper is additional printed with a dot pattern on which the digital pen orientates itself on every page
  - Digital pen saves all whatever is written with it
The Usability-Lab

• Usability-Lab at the Department of Informatics at the HAW Hamburg
• Recording of test scenarios
  - Up to 6 cameras
  - Stereo audio recording
  - Recording of screen contents, mouse movements, clicks and keyboard use
  - Eye-Tracker

The Test

• Test persons:
  – Persons with different habits of using information technology
  – Informatic students
  – Nurses
  – 5 plus 4 evaluable complete results
  – 5-7 are sufficient for qualitative studies
The Test

• **Test scenario: anamnesis**
  – Asking the patient
  – Non-verbal realized information

• **Recording of:**
  – Needed times
  – User error and quality of recorded data
  – User behavior and rating of the methods

What the patient does not say  Questionnaire
The Test

• 5 steps of the sequence
  1. Pre questioning of the test persons
  2. Introduction and problem definition
  3. Test run
  4. Test performance
  5. Debriefing session

Results

• Capturing times in seconds
Results

• Capturing quality

![Bar chart showing usage error, write error, and capturing quality for PDA, Tablet PC, Keyboard entry, and Digital Pen.]
Conclusion

• Usability is the main criterion to select the right mobile data capturing method for an organization
• Writing with pen on paper is a cultural technique and the easiest way to capture data in clinical environment
• A digital pen meets the needs of users for the most part without any changes in their usual data capturing process

Thank you for your attention