

Long-Term, Large-Scale Usability Evaluation Methods – A Case Study

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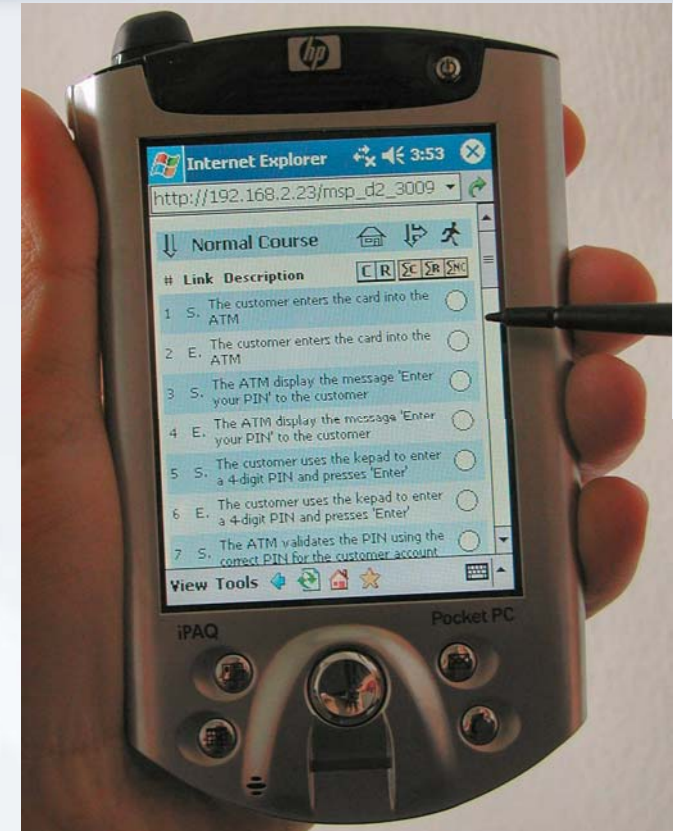
Characteristics

- Long-term: 2 days up to some weeks
- Large-scale: 30+ test users
- Combination of qualitative and quantitative evaluation approaches
- Method triangulation

- Development of a mobile application for IT field technicians
- Implementation of an appropriate instrumentation-mechanism
- Execution of a mobile usability study

Experiment Environment and Results

- Tested with 30 users in Dec. 2004.
- Tested in lab and field
- User differed in experience in IT, mobile tool usage, age and gender.



Method (1/2)

- 30 subjects with varying experience from 21 to 60 years
17 men, 13 women
- Questionnaire realized as a mobile application which contains several items testing the experience concerning the use of computers and mobile devices and the frequency of use
- Three representative tasks with the instrumented mobile tool for field technicians (repair + maintenance jobs)

Method (2/2)

- Recording the PocketPc screen by a remote video capturing tool
- Questionnaire about the „perceived usefulness“, the „perceived ease of use“, the impact of the context and the mobility situation
- Note taking by the observer
- Debriefing interview with the participant



Motivation

- Demand for such an application for the field support
- Increase field technicians productivity and delivery of superior customer service
- Support the whole workflow for the field support and reduce media breaks
- Mobile usability evaluation using non-intrusive evaluation methods

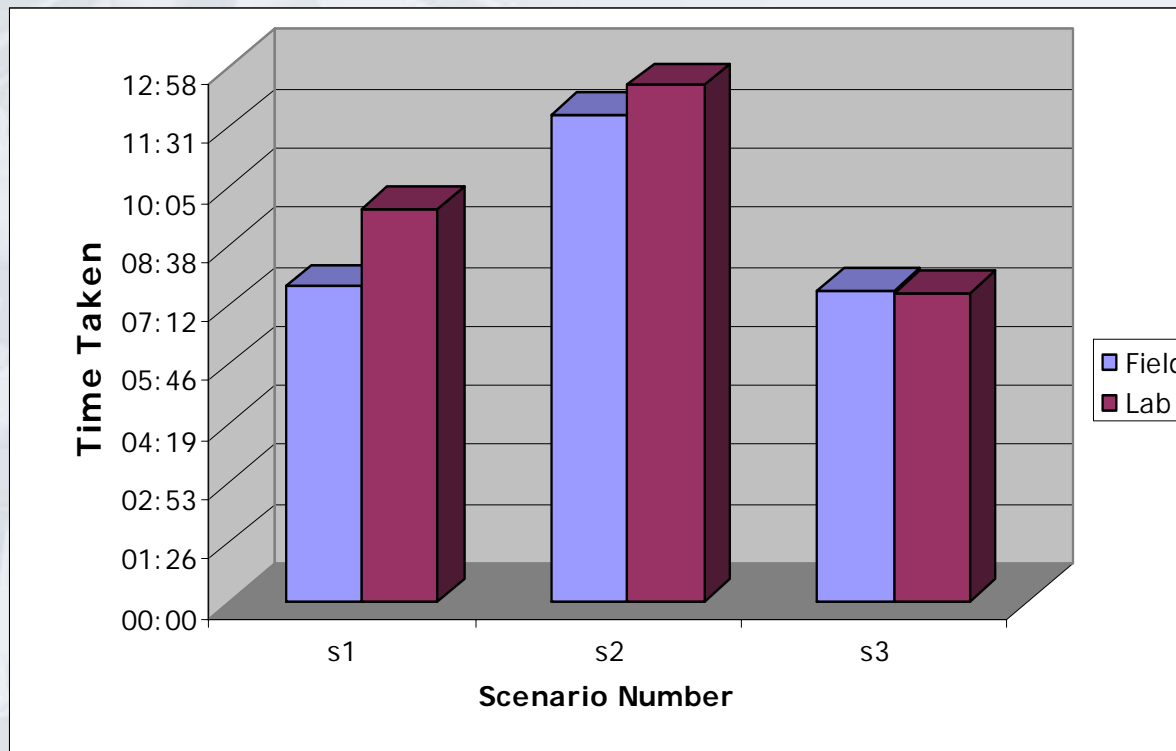
Functions of the Field Support Tool

- View job descriptions which technician has to execute ordered by priority
- View client and location details and former occurred problems of a certain client
- Administration of a Knowledgebase
- Use of signature capturing
- Data replication via WLAN or USB cable

Instrumentation of the Mobile Tool

- Investigation of the course of events a user has taken
- Use of a proprietary instrumentation mechanism for the mobile application
- Implementation of an instrumentation class which writes the corresponding information in a SQL Server CE database

Results: Lab vs. Field



Times (field/lab):

- Scenario1:
07:40/11:50
- Scenario2:
09:33/12:32
- Scenario3:
07:33/07:31

Figure 1: Time comparison between lab and field in minutes

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Results: Lab vs. Field

	Excellent (min)	Acceptable (min)	Unacceptable (min)
s1	< 7	7-10	> 10
s2	< 10	10-15	> 15
s3	< 6	6-10	> 10

Table 1: Scale for the time needed to solve the scenarios

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Results: Lab vs. Field

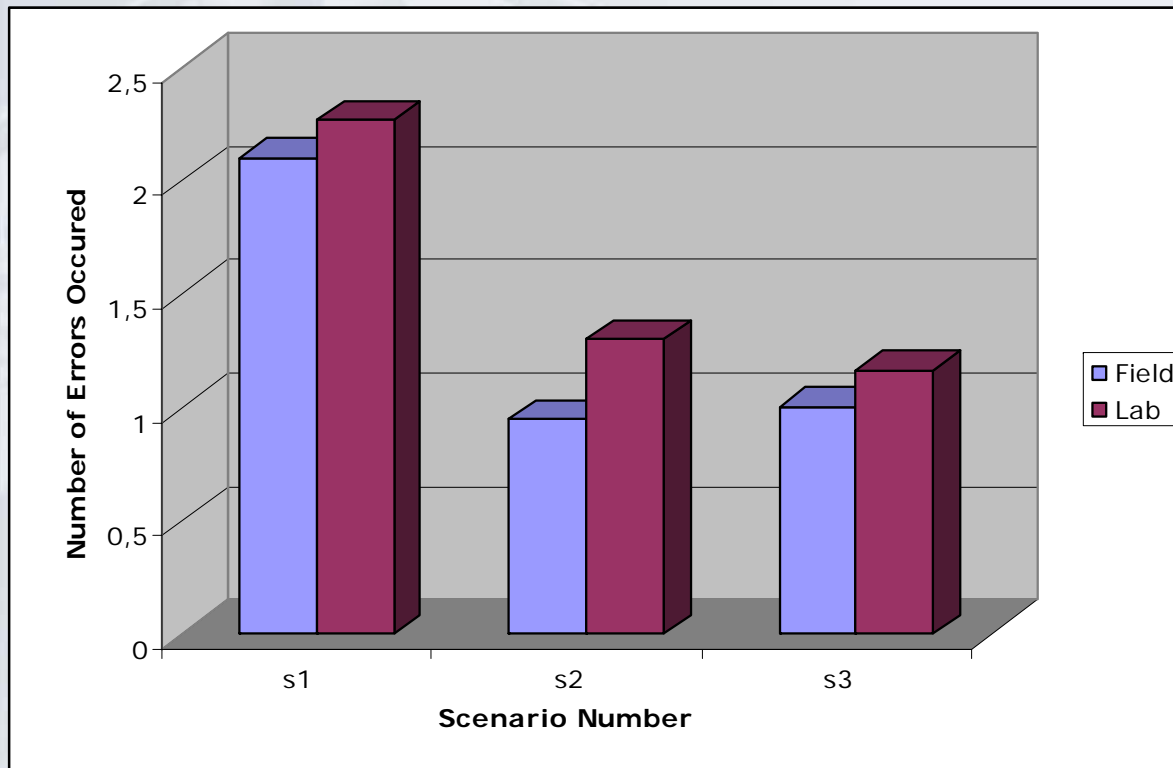


Figure 2: Error comparison between lab and field

	Excellent (min)	Acceptable (min)	Unacceptable (min)
s1, s2, s3	0	1-3	> 3

Table 2: Scale for the number of occurred errors

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Qualitative Results

Category	Number
[1]: Prevent Tasks	1
[2]: Significant Delay	5
[3]: Minor Effect	4
[4]: Suggestions	7

Category	Usability Problems
1: Prevent Tasks	<ul style="list-style-type: none">• Inconsistency of the update and the insert button
2: Significant Delay	<ul style="list-style-type: none">• Inconvenient indication of start and end time• Unnecessary scrolling mechanisms• Slow scrolling mechanisms• Inconvenient choose of corresponding jobs• Deletion of the email address when pushing the clear button in the edit menu
3: Minor Effect	<ul style="list-style-type: none">• Inconsistency of several buttons• Separate display of the icon and its name• New jobs are highlighted in the same colour• Navigation problem when coming back to a tabPage of the Details screen
4: Suggestion	<ul style="list-style-type: none">• Replace the comboBox with a listView and add a sorting mechanism to the listView• Add corresponding PDF-documents to a problem-solution entry• Add a context menu• Add an article list to the Parts field• Improve the current available message boxes• Add a sorting mechanism to the data grid on the main menu• Resizing the textBoxes and the character size

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Details 10:58

Fabasoft

Insert Update Menu

Title: Web-Service Error

Category: **Software**

Description: Web-Service is not displayed by the IIS.

Solution: Switch to command prompt and use the

JobDetails ClientDetails Location History

Details(AUA) 4:32

Pdf Insert Menu Update Menu Home

Titles

- Sync Error - MS Exchange 2003
- Access denied on 2003**
- Exchange Install Error
- Access Denied - AD

Category: **Operating System**

Description: A 2003 Server was added to a 2000

Solution: A problem with the computer account in

JobDetails ClientDetails Location History

Conclusion

- Impact of context and mobility on time to solve a task
- Impact of context and mobility on the perceived ease of use
- Certain tasks could be executed faster in the field (non extensive use of virtual key board)
- The screen capturing tool provided rich semantic information without influencing the participants
- The developed instrumentation mechanism provided limited semantic data

A faded background image of a classical building facade. On the left, there is a large, ornate figure, possibly a statue or a decorative element, with a helmet-like top and a striped, scale-like body. The rest of the image shows architectural details like columns and a pediment.

Thank you for your attention!

Questions???