Proposal for a Usability Assessment Project

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The following is a response to the Emerson RFP for a usability assessment project. The response is made on behalf of the software usability research group in the computer science department at the Texas State University. The group includes: Dan Tamir, Carl Mueller, Oleg Komogortsev, and several graduate students.

**1.0 Introduction**

The usability research group is engaged in research related to the correlation between usability and user effort. Physical and mental user efforts are assessed through measurements of user manual and eye activities while interacting with software. Further details about the current state of the research and tests performed so far can be found in [1, 2].

The Emerson Process Management, Process Systems and Solutions division is developing software for process control and interested in evaluating several aspects of the usability of the user interface of their software. In specific, the division is interested in a pilot study to compare the usability of two versions of Emerson’s software using the effort based methodology developed by the Texas State usability research group.

**2.0 Proposal for pilot study**

We propose to perform a pilot study that will include the following activities:

1. We will “teach” the Emerson Process Management, Process Systems and Solutions division how to design a test procedure that fits our methodology.
2. We will work along with the Emerson team to design the appropriate set of tests.
3. We will perform a set of tests as specified in the next sub sections
4. We will collect and log the relevant data
5. We will reduce the collected data and “teach” Emerson how to reduce the data
6. We will analyze the results of the tests
7. We will write a report summarizing our findings and submit this report to Emerson.

We are expecting the Emerson Process Management, Process Systems and Solutions division to donate $5,000 to the Department of Computer Science at Texas State University. This money will be used to further the usability research done by the usability research group.

**2.1 Proposed set of tests**

We will perform two sets of tests to assess the usability of two versions of Emerson’s software. Each test will include 15 tasks related to process control. One set of tests will include experienced users from the Emerson facility. The second set of tests will include Texas State students with moderate to high computer usage skills.

Test1 Experienced Users

Six users from the Emerson division with experience related to the Emerson’s software will test the two versions of the software. The tests will be performed in the Emerson facility using Emerson computers and software and Texas State eye tracking equipment, and user activity logging software.

Test2 Novice Users

A group of six students from Texas State University will test the first version of the software and another group of six users will test the second version of the software. The tests will be performed in Texas State University using Texas State computers, Emerson software on virtual machines, Texas State eye tracking equipment, and user activity logging software.

Tasks

A set of 15 tasks will be compiled by Emerson and the usability research group. Each test subject will perform the 15 tasks on one (novice users) or two (experienced users) versions of the software.

Coordination and Moderation

Graduate students from the usability research group will moderate the tests. They will instruct the users before the test, observe and document relevant details about their behavior, and help them in case there is a need for help. This will not include any help related to the actual performance of the tasks. Each user will fill a questionnaire before and after completing the tests. The Usability research group will obtain permission to perform the tests using human subjects from the IRB of Texas State University.

It is expected that Emerson will provide the following:

* A scenario to be used to design the tasks
* Two Microsoft Virtual PC 2007 virtual machines with the two versions of the application installed.
* Screen capture video of the task being performed in each virtual machine to assist training the moderators
* On-site Technical assistance on first day of testing
* Six experienced users for Test-1.

Schedule

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| --- | --- | --- | --- |
| **Who** | **What** | **Start** | **End** |
| Emerson | Supply the list of tasks |  | April 30 |
| TX State | Set the test protocol | May 1 | May 23 |
| Emerson & TX State | Perform tests in Emerson facility | May 24 | June 15 |
| TX State | Perform tests in TX State | June 15 | June 30 |
| TX State | Result analysis & technology transfer | July 1 | July 15 |

References

1. Mueller C., Tamir, D., Komogortsev, O., Feldman L., “An Economical Approach to Usability Testing”, accepted for presentation in the 33rd Annual IEEE International Computer Software and Applications Conference (compsac2009), Seattle, WA, July 2009.
2. Komogortsev, O., Mueller, C., Tamir, D., Feldman L., “An Effort Based Model of Software Usability”, accepted for presentation in the 2009 International Conference on Software Engineering Theory and Practice (SETP-09), Orlando, FL, July 2009