Rose-Hulman Institute of Technology

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Human-Computer Interaction Laboratory

Milestone 3

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1 Executive Summary

This document's purpose is to detail the participant scheduling system proposed by the Human-Computer Interaction Lab of Wisconsin-Madison. It is the second document describing this project, and details project design through use cases, data flow diagrams, and storyboards. The project exists because the lab wishes to unify their schedule information and provide a simple, intuitive interface for prospective participants to sign up for experiments.

2 Introduction

The Human-Computer Interaction Lab at the University of Wisconsin-Madison wants a web-based system to better manage the scheduling of participants for their studies. These studies range from one-on-one experiments to group interactions, and many of them involve the robot used by the lab. Currently, each researcher arranges studies independently via email and is responsible for scheduling rooms, avoiding conflicts, and notifying participants of changes; unifying this information onto one system simplifies all of these tasks. To the client, the most important benefit of a unified system is the ability for participants to easily browse all available experiments, which is not possible over email. However, a variety of other functionality should be integrated into this utility to take advantage of the unity of information; most notable is recognizing room conflicts when scheduling studies, since the lab has only one robot and it cannot be moved.[**?**]

Project information will be documented as follows: Milestone 1 provides an overview of the project, from client background to key features and requirements. Milestone 2 covers the behavior of the system, including use cases and data flow diagrams. Milestone 3 details constraints, back-end requirements, and elaborates upon the user interface. Testing and maintenance information can be found in Milestone 4. Milestone 5 will include usability data and interface re-design related to such data.

3 Client Background

The client is the Human-Computer Interaction Lab at the University of Wisconsin-Madison. Their research focus is the on the way humans perceive computers, and how this perception influences their actions. The main goal is to learn about this interaction through making hypotheses, experimenting, analysing the data, and then publishing papers on the results. They draw the participants for their experiments from a wide range of people, usually ranging from 18-65 years of age and from diverse technical backgrounds. As such, any system they use must be designed for all levels of technical competency.

4 Current System

Each researcher has their own method of handling participant scheduling. For most, the current system is to have the participants email the individual researcher and then that researcher records the time slot in some sort of Excel spreadsheet. Other researchers have tried Google Calendar appointment slots; while this is a better system, not everyone uses it and the client believes it is too complex for most participants and some researchers. Addressing the lack of unified data and superfluous effort on the part of the participants is the primary goal of the project.

5 Product Overview

This section provides a high-level view of the product capabilities, interfaces to other applications, and system configurations.

5.1 Product perspective

The participant scheduling system will be a new product. It will be used to schedule experiments and participants in the Human-Computer Interaction Lab at the University of Wisconsin-Madison. The product is independent and totally self-contained, besides a few external software packages; it is not a component of a larger system.

5.2 Elevator Statement

For the researchers in the Human-Computer Interaction Lab at the University of Wisconsin-Madison who currently schedule experiments and participants with rudimentary tools such as pencil and paper, email, or Google Calendar, the participant scheduling system will be a web application that will streamline the lab's scheduling process. Unlike current solutions, this application will be the same for every researcher, so it will also be easier for participants to be a part of multiple experiments.

5.3 Summary of Capabilities

Here are the major benefits and features the product will provide.

Customer Benefit	Supporting Feature
List of participants for an experiment	Reports
Room availability (avoid conflicts)	Overall lab schedule
Simple sign up	Intuitive user interface
Track all experiments	Experiments manager
Access from anywhere at any time	Web application

5.4 Assumptions and Dependencies

- The participant scheduling system will be a web application.
- The server has the necessary operating system and software.
- There is no integration with any other system.
- There is no import of existing data.

5.5 Rough Estimate of the Cost

There is no monetary cost for this project, because the software development, as part of a college class, is free. Similarily, all software used is open-source. Furthermore, the client will be provided with free servers through the University of Wisconsin-Madison for the finished product. The client will perform maintenance and management on their own.

6 Usability Requirements

- For anyone who has used a web application before, there should be zero training time required before being able use this system.

- For anyone who has never used a web application before, there should be minimal training time (approximately ten minutes) required before being able to use this system thanks to the on-screen help in the form of a tutorial.
- No more than half of the time required to actually visit, email, or call a researcher to schedule an appointment will be needed to use this system.
- The new system shall be judged by 99% of the user community to be at least as useful as the existing system and by 90% of the user community to be at least as useful as competing state of the art system.
- On-screen help will be an accessible option for struggling users.
- There will be no drastic interface changes from existing web applications, so the user will feel right at home.

7 Performance Requirements

- The average response time for the next screen to appear after the user has selected an option that will change the screen is thirty milliseconds and the maximum is sixty milliseconds.
- A minimum of one page load per second will be supported.
- Each individual session will support one concurrent user while the overall system will support all users using the web application in parallel.

8 Reliability Requirements

- The system will be up 99.99% of the time (less than one hour of downtime per year).
- On average, failures will not occur within three months of one another.
- Due to innovative remote diagnostics, updates, and repairs, 90% of all system failures will be able to be repaired within five minutes and 99.9% of all failures will be able to be repaired within one hour, depending on the maintainence crew.
- All appointments will be accurate to the nearest minute 100% of the time.
- Appointments will be successfully scheduled 99.99% of the time, and in the case a scheduling fails, the user will be able to try again 100% of the time.
- There will be no more than one bug per thousand lines of code.
- There will not be any critical or significant bugs. However, there will be up to one minor bug per thousand lines of code. Minor is defined as not affecting the usability of the system or scheduling data.

9 Appendix

10 Glossary

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