Milestone 1

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1 Executive Summary

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.

3 Client Background

The client is the Human-Computer Interaction Lab at the University of Wisconsin-Madison. They are primarily involved with studying the interaction between computers and humans. The main goal is to learn about this interaction through making hypotheses, experimenting, analysing the data, and then publishing papers on the results.

4 Current System

Researchers each have their own method of handling participant scheduling. For most the current system is to have the participants email the individual researcher and then that research then records the time slot in some sort of excel sheet. Other researchers have tried Google Calendar appointment slots which is a better system but not everyone uses it and there is still a lot of manual work on the side of the client.

5 User/Stakeholder Description

5.1 User/Stakeholder Profiles

The stakeholders for our system fall into two distinct categories, participants and the people in the research lab. These categories then fall into a few subsections that will be described in detail. The participants themselves fall into the categories of technical and nontechnical users. For the technical users they may some a high degree of technical background and will be wanting a rich user experience. Furthermore these users will want the system to be more robust and provide a large number of features to make them feel comfortable. Success to them would include a system that they can possibly custom and work into their already technical work flow. The nontechnical users may or may have had experience with any sort of web interface. This provides an extra challenge for our solution because we must make the interface intuitive enough that people who are not comfortable with computers can use. A success for the nontechnical user would be the ability

for them to use the software in a way that does not interfere with their normal daily work flow and they can overcome any hesitancy they have with using computers to schedule their participation in an experiment. The other class of stakeholders involves people in the research lab. Since the lab consists of undergraduate students, graduate students, and professors, each of their use of the system varies. Furthermore, since the research lab will be controlling and maintaining the system once in place their is a subclass of the people in the research lab which act as both administrators and maintenance technicians. Since the research lab is involved with Human-Computer Interaction, many of the people in the lab will be experienced with computers. However, from the client we learned that a few outside researchers who may use the system we develop may not have a large degree of technical knowledge. Therefore we must design the system in a way that permits researchers, students, and professors to setup experiments and look at participant lists in an effective manner for all of them. Since these people have been using a rudimentary system before, we must make the new system capable of integrating into their work flow without causing them any more work than before. The success for the researchers, students, and professors comes from being able to schedule participants in a way that works effectively and simply from their point of view. The administrators and maintenance people from the research lab we know are all technically savvy users. This means the system must be simple to maintain and possible expand at a later date if needed. The key responsibilities for the administrator include being able to add and remove other users from the system and ensure that the system is functioning correctly. The maintenance people must ensure that the system is stable and in a working condition when required. The success for the administrator can be defined as having an intuitive management interface that provides them the flexibility they need to perform their duties. For the maintenance people, success can be defined as having a system that is stable and requires little work to keep it operational even over a large number of years.

5.2 User Environment

The user environment is basically the same between the classes of users listed above. The working environment consists of mainly just one user at a time on their own machine joining an experiment. This will stay constant but there may be many users at once on separate computers for any number of experiments. The task length should be fairly minimal and involves them finding an experiment they would like to participant in and then signing up. The entire length of the activity should only take a few minutes as to not inconvenience the user. The only environmental constraint that will be imposed on the user is that they must use a web browser of some sort. This means that the user will be required to have some device that has internet access. The system today involves the user going to a website to find the contact email and then sending the contact an email specifying that they would like to participant in an experiment. The users may have some sort of calendar system that they use so we may have to integrate with it but it is not a hard requirement but instead a possible feature.

5.3 Key Needs

5.3.1 What is the need?

The problem of...	listing and browsing all currently running experiments
Affects...	the possible participants of the experiments
And results in...	less people signing up for the available experiments
Benefits of a solution...	would permit possible participants to see currently running experiments in one place and have easy access to them all in a standard format

5.3.2 How is it solved now?

There is no current solution to the problem.

5.3.3 What is a possible solution?

The possible solution involves having a single page where all the current experiments being held are listed in a format easy to browse.

5.3.4 What is the need?

The problem of...	signing up for an experiment is a complicated nonstandardized process
Affects...	the possible participants of the experiments and the researchers collecting the data
And results in...	wasted time and effort signing up and compiling lists of participants for each experiment
Benefits of a solution...	allow participants and researchers to get used to a standardized format of signing up and collecting experiment participants that would be quicker than manually creating the lists

5.3.5 How is it solved now?

The current solution is to manually email a researcher that you want to do an experiment with and the researcher must then respond and compile a list of people and times which takes a large amount of time

5.3.6 What is a possible solution?

The solution would be to have a sign up sheet that looks the same for each experiment with a few optional fields that would then be placed in a database that can be queried later to easily determine the list of participants for each experiment

5.4 Alternatives and Competition

5.4.1 Google Calendar Appointment Slots

The issues the client mentioned about Google Calendar appointment slots was that their was no way to list all experiments in an easy format and no way to do multiple experiments at once. Furthermore, it would be a hassle to have to compile all the appointment slots into a list of participants for the experiment. The process to use Google Calendar appointment slots was also very manual as for each experiment the researcher would need to go through and outline all available times. The approach also did not work well for participants since they would need to navigate to each calendar separately to look at all available times for an experiment.

6 Product Overview

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

6.1 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; it is not the component of a larger system.

6.2 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.

6.3 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 anytime	Web application

6.4 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.

6.5 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. Furthermore, the client will be provided with free servers through the University of Wisconsin-Madison for the finished product. The client will perform maintainence and management on their own.

7 Features

Feature	Status	Priority	Effort	Risk	Stability	Target Release	Reason
Browse Experiment	Approved	Critical	Medium	Medium - High	Low - Medium	1st	Lets experiments be advertised better and to display the experiments
Store Experiments	Approved	Critical	Medium	Low	High	1st	Store experiment for the data to be web based.
Levels of Authentication	Approved	Critical	Medium	High	Medium	1st	Have levels of admins, workers and participants in order to control privacy issues and other sensitive data
Schedule Experiment	Approved	Critical	Medium	Medium - High	Low - Medium	1st	Need to schedule experiments in order to browse them
Filter Experiments	Approved	Useful	Low-Medium	Low	High	2nd	Filter the experiments when browsing according to Time, Date, Payment, etc.
View All Participants for an Individual Experiment	Approved	Important	Low-Medium	low	High	2nd	View all of the participants by admins and workers only of individual experiments
Admin Back End	Approved	Useful	Medium - High	Low	Low	2nd	A back end for the admins to do their duties from
Edit/Modify Schedule Slot	Approved	Useful	Medium	Medium	Medium	3rd	Modify or Edit schedule from a participants view
Edit/Modify Schedule Slot	Approved	Important	Medium	Medium	Medium	2nd	Modify or Edit schedule from a workers/admins view
Notify Participant Reminder	Approved	Useful	Medium	Low	High	4th	Send an email or text reminding participants for their experiments
Form to get User Info	Approved	Useful	Low	Low	High	4th	A form to gather participant Info
Admin Report	Approved	Useful	High	Low	High	4th	Reports on experiments scheduled with an option for Individual experiments reports
Ease of Participant Scheduling	Approved	Useful	Medium	Low	Low	4th	Make scheduling a near 1 click process
Overall Schedule	Approved	Useful	Medium	Low	Low	4th	Have an overall schedule viewer
Cancel Schedule Slot	Approved	Important	Low	Low	High	4th	Allow for participants to cancel schedule slots for appointments
Remove Experiments	Approved	Important	Low	Low	High	4th	Allow for workers or admins to remove schedules
Tracking of Consent Payment Forms	Proposed	Useful	Medium	Low	Medium	5th	Allow for workers to check off participants when filling out consent/payment forms
User Report	Proposed	Useful	Medium	Low	Medium	5th	Allow participants to have a report on new experiments
Accounts	Proposed	Useful	High	Low	Medium	TBD	Accounts for users
Prevent Scheduling Conflicts	Proposed	Useful	High	Low	Medium	TBD	Prevent participants from scheduling 2 experiments at once
Prevent Scheduling Conflicts	Proposed	Useful	High	Low	Medium	TBD	Prevent 2 rooms from being scheduled at the same time
Install Scripts	Proposed	Useful	High	Low	Low	TBD	Install scripts for installation
Documentation for Maintenance and User	Proposed	Useful	High	High	Low	TBD	Documentation

8 Solution Constraints

Source	Constraint	Rationale
Systems Mandate	Must be able to be ran on Red Hat Enterprise Linux Server 6.1.	This is the operating system that the client currently uses.
Technology Mandate	Must use PHP or Python as the programming languages	These are the languages supported by the client
Databases Mandate	Must use MySQL or PostgreSQL database management systems	These are the database management systems supported by the client.
Time	The time constraint on the project is the end of Second Term (Rose Hulman time)	At this point the group is reduced to 1 person.
Equipment Budget	No new equipment can be bought for the project	The software will be place on an existing server and we have no budget.
Privacy	Participants must not be able to see who else is participating in a project.	Privacy is key for the experiments.