

Group No. 1 Cloud Feasibility Report

Group

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Client

Aging adults (65 and older) and those with chronic conditions that affect their mobility, such as paraplegics, stroke victims, and the obese.

The Task to be Undertaken

The primary goal of this project is to develop a database that stores data taken from a Edison sensor and organizes it based on user profile information. User profiles will consist of the data that the specific user has entered, with username and password authentication to control access.

The project consists of three main parts: creating a front end interface for a user to login and view their sensor information, an administrative interface so an administrator is able to modify the database as needed, and a database which contains the data for each user.

Benefits

Not only will the people who are using the device benefit, but also those around them including family members and medical professionals. The elderly and infirm who use the device will have peace of mind knowing that they have a safety net in case anything happens, and also their medical professionals will have easy access to medical information provided by the device. Family members can rest assured that this device will help keep their loved ones safe in case of emergency.

Preliminary Requirements Analysis

The system needs to meet the following functional requirements:

1. Interface
 - a. User side
 - i. Create an account
 - ii. Access all the data gathered through the sensors
 - iii. Display information in a visually pleasing and simple way

- iv. Enter specific information about certain activities that the sensor could not pick up
- b. Administrator side
 - i. Add/remove/modify user accounts and data from the database
- 2. Database
 - a. Must allow user accounts to be added and deleted
 - b. Must allow users to manually input activities
 - c. Must pull the specific activity each user did from the sensor data
- 3. Final product is easily expandable and upgradeable

The system may have the following functional requirements:

Undecided/Optional

- 1. Algorithm that suggests certain activities the person should try or try to avoid
- 2. Alerts that warn the user if they are doing something that may endanger them if it continues often
- 3. A blog or forum where people can discuss and share healthy living habits and activities
- 4. Gamification system that rewards users with “points” for being safe and healthy

Foreseeable nonfunctional requirements may include:

Uptime, reliability, number of concurrent users supported, response time of the system, response time of database, and ease of use. Other nonfunctional requirements may present themselves as the Group progresses through the development process.

Technical Requirements – Feasibility

- 1. Server - The system will be running on a server provided by Amazon Web Services. Everyone in the Group will be required to help maintain this server. The first step in this is to create AWS accounts and gain access to whatever server we can acquire from them.
- 2. Database - AWS comes with a built in database so this will definitely be taken advantage of. Amazon Relational Database Service has all the capabilities of other relational databases like MySQL but all the software and maintenance such as backing up the database is taken care of for us thanks to Amazon RDS.
- 3. Interface - Web page with a simplified interface that uses a mixture of HTML, PHP, Javascript, and CSS. We may use existing libraries to eliminate some development costs.
- 4. Web - The system may need to be integrated with information provided by the FDA in order to accurately portray information about each food and their nutritional values. This information can be pulled from the web and put into our own database.

Scope

Due to the many snow-days this semester the Group has very limited time to work on this project. Because of this the Group agrees that the design and functionality should be kept simple, but also leave space for any additions the Group would like to make if the time is found. So with time being a factor the main focus will be on data collection and organization will be accessible through a simplified UI, for the sake of our Client, and an administrative interface to support the UI.

Suggested Deliverables

Management Deliverables:

1. Any management deliverables will be produced upon request by our Client

Technical Deliverables:

1. A database will be required to support user profile information (username, password, stored data, etc.). Specifics about the nature of the data and it's scale will develop as the project moves forward.
2. An administrative interface to add/remove/modify data where necessary. This interface should be simple enough so that any user that accesses it can navigate it effectively.
3. A front end user interface to allow the user to sign-up, login and check any saved data. This UI should be simple enough so that our Client, which consists of the elderly and those with chronic debilitating conditions, can navigate it effectively.

Walkthrough

User Walkthrough:

When the user first launches the website, they are presented with a login screen. There will be a form to sign in. After they login, they will be brought to their personal profile page, which contains a list of the data entries their Edison sensor sent to the server. The entries will be clickable links that take user to a page that allows them to review the data collected by the sensor.

Administration Walkthrough:

An administrator needs to be able to modify the database by adding or deleting entries and even modifying the entries themselves. The administrator's interface will be similar to the standard user interface. Instead of having a personal profile page, the administrator will be brought to a page which contains a list of currently logged in users. In order to add to the database, the administrator can navigate through the user list to get to a specific user's profile page. On the profile page, there will be an "add entry" button. The administrator will be taken to a separate form to input the information for that new entry. In order to delete an entry, the administrator can navigate through the list of entries for a user to a specific entry and click delete on that entry's detail page.

Software Development Process

For this project we will be using an agile software development model known as Scrum. Scrum involves an initial planning phase then a developmental sprint phase which produces a potentially shippable product increment. The Scrum format has the following benefits:

1. Full Client Access - Allows the Client to be involved with the development process
2. Product Simplicity - Attempts to eliminate complexity and promote simplicity (which is ideal as our Client is most likely not “tech-savvy”)
3. Group Efficiency - Skills of the development team can be used to their full potential in these short bursts. This is because each member has other assignments to work on and the short bursts don’t take up a lot of time and can be easily planned around.

Some extreme programming practices will be used, such as pair programming. This will help bridge the skill gaps that may arise among team members. It is also useful for keeping code consistent and ensuring that members of the team understand what others are trying to do.

Outline Plan (Principal activities and Milestones)

- Milestones and deliverables asked of the Group via class assignments will be completed upon request.
- Organizational tasks (such as creating a Trello board, etc.) should all be completed by March 25th.
- Proof of concept for the database and backend should be completed by April 1st.
- Completed user interface should be done by April 15th.
- Completed backend infrastructure should be done around April 23rd to allow the Group enough time to solidify our prototype before the semester ends.

Visibility Plan

External:

Meetings the Group makes with the Client will most likely not be planned in advance. As of writing this meeting time with the Client will be set up on a case to case basis dependent on the Client’s and the Group’s availability. If any situations arise between meetings the Group will conduct any communication via the Google Group, Gmail or some other third party such as Trello. As we are using an agile model the Client will be updated upon each iteration of the project to make sure they are up to speed and fully aware of our progress.

Internal:

At the time of writing this the Group has no plans for regular meetings. If the situation calls for it the Group will coordinate for a meeting. Otherwise communication and planning will be done either via the Google Group, email or some other third party service. The Group has discussed using product management software, such as Trello, to organize the development

process. Such software will allow the Group to manage tasks for each developer as well as track progress made as we progress through the development process. In addition, the source code will be stored on a GitHub repository that the Group will contribute to. Features, fixes and milestones will be logged and compared to with schedule to make use the Group is on the right track for the project.

Business Considerations

As UMass Lowell students, the Group owns the copyright in the software that we create for this project. The Group agrees to transfer the copyright to the Client and provide the Client with unrestricted license to use the system. It is possible that a project may develop concepts that could be patented. If such a situation arises, the Group collectively own the right to all patents associated with the system. We understand that the use of open source solution is a viable option and there are not any licensing issues to this extent.

Risk Analysis

1. Incomplete Requirements:

- Risk: It is possible that requirements for features and milestones may be implied, but not openly discussed among the group members. Due to lack of a concrete meeting schedule most communication will be done electronically, which could lead to the full scope of instructions and requests to be lost in translation.
- Solution: To reduce this, the Group should be as thorough as possible when communicating so all sides understand what is required of them. Product management solutions such as Trello may be employed to manage team communication.

2. System Integration:

- Risk: The Group members will be working independently of each other and pushing any changes that they make to the repository. There may be unpredictable obstacles with this format due to differences in system configuration, programming styles or unfamiliarity with GitHub.
- Solution: To prevent this, Group members need to understand how GitHub functions as a platform. Any further issues should be voiced in either the Google group or email.

3. Human resources:

- Risk: The Group is relatively small, with only five members, all with varying specialties, skill levels, and relevant knowledge for the project. This may cause unforeseen complications when dividing work and responsibilities among the group.
- Solution: To help mitigate this, Group members should try and share knowledge and provide aid to those group members struggling to meet requirements. Team

members with specialized knowledge will be assigned appropriate tasks to deliver in a timely manner

Conclusion

Based on the analysis of this feasibility study the Group has collectively agreed that this project is feasible and the group is willing to take on the project. Currently, the costs of the project are believed to only involve the labor costs of the Group. The preliminary deadline for the project will be set for May 1. On this date our system should be live and interacting with the remaining sub-group's projects.