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Supply Activity Logger Executive Project Summary

Purpose:

To produce software that will display sensor data collected from a device developed by the hardware team to monitor the conditions a shipment is subjected to, in order to give suppliers insight needed to prevent future product losses.

Audience:

The primary stakeholders and audience for this product are our Project Partner, the employees of HP, and our instructors. The finished product should provide HP with an easy and efficient way to monitor the shipping conditions of packages being shipped to and from HP. This will aid in positive customer relations, quality control, and minimize product losses.

Background Information:

HP and other companies have experienced numerous unexplained product damages and losses during shipping. Inspection of damaged merchandise often does not explain what happened. To address this problem, HP needed a device to log the conditions packages are subjected to during transit. This device will record raw sensor data measuring orientation, atmospheric pressure, impact, temperature, humidity, and GPS location data. The sensor data will be stored, processed, and displayed in a user-friendly web application for analysis.

Development Process/Management:

The project was carried out by the development team in tandem with the Project Partner. The development team was split into subgroups: one hardware team and one software team. The subgroups worked closely together for the duration of the project. The design process took place over the course of Fall term. Once the designs were established, the teams began implementing and testing the systems during Winter term. During Spring term, the project underwent final validation, and both the hardware and software were finalized. Over the entire course of development, communication between the development team and the Project Partner occurred at regular intervals. The Project Partner assisted the development team by providing overall guidance throughout the project.

Results:

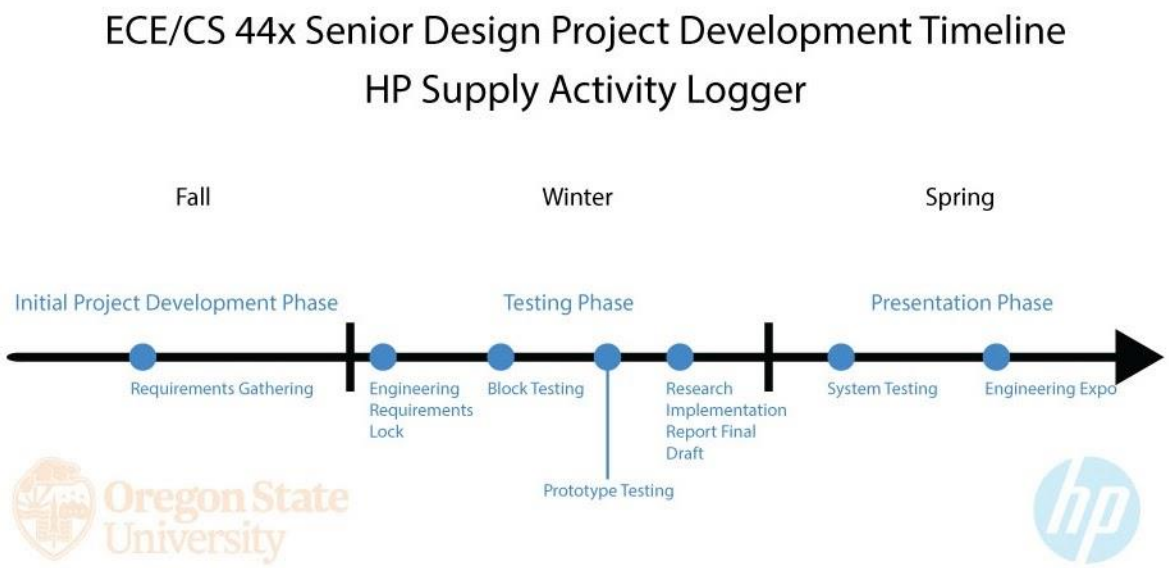
The combination of hardware and software developed by the teams should give HP insight as to why their packages are getting damaged throughout the supply chain. If significant evidence is found showing how or where packages are damaged, HP can use this information to take appropriate action to reduce the frequency of their losses.

Project Approach and Evaluation:

The software team began by researching different software platforms to be used for the web application. After deciding to use Node.js for our web application platform and MySQL for the database, we began prototyping an efficient way to store and display data in a user-friendly

manner that would allow HP to evaluate the source of product damages during shipping. We had to work with the hardware team to agree on how logged sensor data would be formatted so that it would be compatible with the web application. After further designs and partial implementations, we restructured the database to be more optimized and settled on a web hosting service. We then used an iterative approach to add functionality to the system, slowly building and testing until we reached our final product. Throughout the process, we met with our Project Partner and the hardware team frequently to ensure that we were meeting the engineering requirements, meeting the Project Partner's goals, and making revisions as needed.

Project Timeline:



Supply Activity Logger Timeline

	Assigned To	Status	Start Date
Fall 2020 (September 23rd - December 4th)			
Assignments and Documents			
Introductory Email and Initial Discovery Inquiry	Overall Team	Completed	Week 2
Executive Project Summary	Overall Team	Completed	Week 3
Team Protocols and Standards Document	Overall Team	Completed	Week 3
Engineering Requirements Draft	Overall Team	Completed	Week 4
Scope and Requirements Meeting	CS Team	Completed	Week 4
Risk Register	Individual	Completed	Week 4
Block Diagram Draft	CS Team	Completed	Week 6
Project Charter Assignment	CS Team	Completed	Week 7
Instructor System Architecture Meeting	CS Team	Completed	Week 8

Engineering Requirements	CS Team	Completed	Week 9
Block Diagram	CS Team	Completed	Week 9
Block Validation	Individual/CS Team	Completed	Week 10
Winter 2021 (January 4th - March 12th)			
Misc.			
Select Web Hosting Vendor	CS Team	Completed	Week 11
Begin Web Interface Prototype Development	CS Team	Completed	Week 11
Begin Database Development	CS Team	Completed	Week 11
Assignments and Documents			
Block Validation I	CS Team	Completed	Week 13
Meet with Project Partner	CS Team	Completed	Week13
Block Check-Off 1	CS Team	Completed	Week 14
RIR Paper Draft and Peer Review	Individual	Completed	Week 14
Research & Writing Studio Consultation and Feedback Summary Paragraph	Individual/CS Team	Completed	Week 14
Weekly Meeting Notes	Individual	Completed	Weekly
Technical Mentoring Meetings	Individual	Completed	Weekly
Block Validation 2	CS Team	Completed	Week 16
Meet with Project Partner	CS Team	Completed	Week16
Second Block Checkoff	CS Team	Completed	Week 17
Final Block Checkoff	CS Team	Completed	Week 20
	Assigned To	**Status**	**Start Date**
Spring (March 29th - June 4th)			
Misc.			
Database Validation and Verification Testing	CS Team	Completed	Week 21
Begin Server Side Scripting Development	CS Team	Completed	Week 21
Schedule Meeting with ECE For Validation and Verification Testing (Hardware and Software)	Overall Team	Completed	Week 21
Assignments and Documents			
Elevator Speech Assignment	Individual	Completed	Week 22
Requirements Lock and Timeline Goals	CS Team	Completed	Week 22
Meet with Project Partner	CS Team	Completed	Week 23
Initial System Checkoff	CS Team	Completed	Week 25
System Beta Test	CS Team	Completed	Week 28
Final Requirement Checkoff	CS Team	Completed	Week 28
Project Closeout Draft	CS Team	Completed	Week 28

Project Summary Video	CS Team	Completed	Week 29
Project Closeout Final	CS Team	Completed	Week 29
Project Showcase Video	CS Team	Completed	Week 29

Legend
Items directly related to partner project
Personal goals and tasks
Items indirectly related to partner project

Key Lessons

- When multiple teams need to work together, good and frequent communication is key.
- Make sure that both the students and the Project Partner are clear on the project requirements.
- Create a realistic schedule and do your best stick to it.
- Expect the unexpected – allow for time to deal with contingencies that get in the way (team member illnesses, emergencies, etc.).
- Create a budget early and monitor expenses throughout the process.
- Schedule time to review and re-factor code, if necessary, to keep it organized and efficient.
- Keep organized notes for use in documenting events at the end of the project.