

WName: DigSight

Roles: Paragraph each

Linus (Competitor And Current Market analysis):

Arguably the most important step in the early stage of the process of product development is doing research on competitors and current market analysis. This allows you to learn about the current products on the market to know how people are already dealing with the product as well as understand what IP is out there already. While you are researching other products, some of which may be very successful, you also learn about what features make them successful as well as what features users do not like. This research helps tailor your own product to fit the needs of the users by understanding how others are solving the same problem.

Jon (Research & Development/ User Market):

This is crucial in the first stage of the development process especially when trying to take this new product to market. R&D will be important to understanding the current wants/needs in the market in order for DigSight to stay ahead of the competition. Skills include, part design/research, 3D Modeling, CAD, and SolidWorks to make prototypes of the product or models as a proof of concept. Key responsibilities include researching the current market and figuring what the need is for the current user and how DigSight can be catered to that. Once the user market is identified, this market can be used to modify and improve the current product.

Kalpak Gaonkar (Team Lead/Testing/ Feedback gathering):

This is a crucial part in the development of any product. Testing and feedback allows you to design a product that performs better than your competitors and are also safe to use. Testing will not only determine if the components work individually according to the requirements but also work when integrated together. After each round of testing, it is important to gather feedback to further improve the model. Feedback will enable the team to determine if the product design satisfies the initial requirements and determine if further changes to the design are needed. Skills include software testing (manual or automated) skills, electrical component testing skills to conduct testing of software and components.

Adam Luk (VR/AR Cost Analysis):

Fundamental in determining the most cost-effective methods in research and development of prototypes and future final products of the DigSight while maintaining reliable materials and offering a cheaper cost to price ratio in comparison with similar historical products and current competitors. In addition, it is important to source a good accurate estimate budget for this project to reliably present to stakeholders within the project. Skills include detailed and dense analysis within in the ins and outs of the DigSight VR/AR cost to produce via parts and materials, manufacturers, and shipping. Key responsibilities include research and cost analysis,

communication with manufacturers and designers, and ability to accurately dig deep to source out the best information used for comparison and analysis.

Zane Hodgkins (VR/AR mock images and/ or Videos):

The creation of models and mock images will be an important step in visualizing our product and will allow for rapid feedback from several sources. The creation of these models will allow us to demonstrate what our final product would do, and demonstrate the key features in a very cost and time effective manner. Skills to complete this task will be artistic ability, computer imagine and use skills aswell as a through understanding of the product and what is important to demonstrate in a model. These models need to clear demonstrate the user experience a production version of our product would create. These models will be very useful in securing feedback, funding, and for making design decisions going forward.

Project Summary:

Product: DigSight

Scope: A VR software that allows a user to see pipes and powerlines that are underground to help users to be able to dig without having to call 811-Dig. This will let users to be able to go on with their digging needs in a more efficient manner saving time, effort, and money.
time, budget

Time: Project Management has until the end of June to provide a detailed proposal on the research and development of the ins and outs of the VR software for DigSight that provides consumers an innovative edge to dig safely with needing to call public service for in doing so. In addition to this, the proposal would include the cost of manufacturing, market profits, comparison with historical attempts of this products and current competitors, as well as if it is reasonable for manufacture for commercial use.

Predicted Users: Construction teams, Gardeners, Plumbers, Electricians, Exterior Designers, and overall Consumers who like to do handy work independently.

Importance/Priority:

- a) First upmost priority in the research and development of the product to ensure it is feasible to create and has an innovative edge compared to other VR softwares that resemble our scope.
- b) Create expected timeline for project.
- c) Develop a critical market research and analysis project management model to quickly and effectively produce a feasible presentation model to stakeholders by the end of the month.
- d) Become financially feasible in manufacturing the prototype and final designs as well as for future plans for widespread commercial use.

Standouts:

- a) Pros:
 - Easy User Interface for applications
 - Accident prevention
 - Long term and more convenient than digging up sites to check and physically marking the ground.
- b) Cons:
 - Data for application may be difficult to product and implement into DigSight
 - R&D and production may be lengthy
 - Final product and prototypes leading up to it will be costly

Method for Analysis and Plan for Research: Initially analyze market for this product, competitors and past attempts of it. Then create a timeline for deadlines and quarterly expectations. Throughout it, the plan for research targets will be listed for expectations. Once feasibility is fully analyzed, the cost for production and sale will be then implemented and provided for future steps.

Conclusion: This has provided a rough scope and plan for research and analysis for the VR product, DigSight, and plans to use this summary to flesh out details for timeline and analysis.

Final Deliverable Summary: 2 page

- 2) Product scope, time, budget
 - a) Scope: A VR software that allows a user to see pipes and powerlines that are underground to help users to be able to dig without having to call 811-Dig. This will let users to be able to go on with their digging needs in a more efficient manner saving time, effort, and money.
 - b) Time: until June 28th
 - c) Budget:
- 3) Historical products and current competitors
 - a) 811-Dig: People can call this number and someone will come help locate pipes or wires underground before digging.
 - b) Magnetic Locators: This detects any iron/steel or pins made of rebar and pipe. This is typically used for locating valves underground.
 - c) Pipe/Cable Locators: These devices typically have 2 parts: transmitter and receiver. This device sends out a signal underground and once it hits a pipe or cable a signal bounces back and the receiver is used to locate that signal.
- 4) Standouts, pros, and cons
 - a) Pros: Easy of use, accident prevention, the Long term is far superior to having the ground spray painted each time. DigSight will be just one device, while the other solutions on the market have multiple parts/devices which can make the setup hard and it is harder to carry around
 - b) Cons: Data may be hard to find, set up may be expensive
- 5) Improvements
 - a) Building an easily accessible dataset of underground pipes
 - b) One device that can detect and locate underground pipes and cables
- 6) Method for Analysis and plans for research
 - a) Research ways to find a data sources that have the location of wires and/or pipes underground
 - b) Research what type of devices will work with it
- 7) Users
 - a) Construction teams, gardeners, plumbers, electricians, homeowners,
- 8) Importance/Priority:
 - a) 1. Data that helps to locate where pipes and wires are so this can be added to the app
 - b) 2. Creating a prototype
 - c) 3. Marketing/advertising
- 9) Possible Hinder/Competitors:

- a) The biggest hindrance is that data can be hard to find and it can be expensive to implement and setup DigSight
- b) As far as competitors, the main service is 811 Dig. The main devices currently on the market right now are magnetic locators and pipe/cable locators. However, these devices cannot detect everything and each system comes with 2-3 devices which can make it cumbersome to use

10) Conclusion

- a) **How this project will have a positive impact**
- b) **What's next**

11) Reflecting on project

- a) **What we have learned**
- b) **Final takeaways**

12) Development Process

- a) Videotape an area and add a visual aspect that shows where pipes and wires are as a reference.

Testing Plan: 1 page

- a) Discuss the product features and collect feedback each Thursday
- b) Discuss project progress with professor and college feedback

c) Testing:

i) Unit testing:

- 1) **Hardware:** Testing of individual components will be done using manual testing, where the tester will determine whether the components work based on previously agreed metrics. This testing will be carried out in coordination with the lead hardware engineer.
- 2) **Software:** Testing of individual functions of the software would be carried out using white box testing to check if all test cases are satisfied. This can be done with or without automation. All test cases will be written by the lead developer.

ii) Integration Testing

- 1) **Hardware:** Testing will be done after assembly of all components to ensure all components work together. The lead hardware developer will carry out the testing and will determine whether modifications are needed based on whether the components satisfy on the previously agreed metrics.
- 2) **Software:** Black box testing of the software will be conducted with the test cases from the lead developer. This testing will be automated to check whether all test cases are satisfied. If the testing is unsuccessful, a new version of the software will be developed and the process will be repeated.

iii) System and user testing:

- Testing of the assembled prototype will be carried out to test battery life, cameras, holographic display. Testing will be done based on the initial requirements of the product (i.e. quality of the holographic display, battery life, audio and video quality among others). User testing of the software will also be done based on the initial requirements of the software. First, the testing will be carried out internally by people working on the project. After successful internal testing, the product will be made available to around 20 construction workers at different sites. The product will be tested for battery life, accuracy of digital overlay of pipelines/ construction obstacles, comfort to the user and dust resistance.

Zane: Project Management:

should include:

How tasks are chosen:

- Volunteers get first priority
- Group work is split by group members evenly based on skills, experience, and current workload

When work is shown

- Group work should be completed in shared files
- Updates during group meetings

How feedback and critiques work

- Open forum and time to discuss thoughts during group meetings
- Scheduled design / progress reviews

Proper communication between members

- Main form of contact is group chat, please check once a day at least for messages and reply promptly

What are acceptable reasons for not meeting expectations

- Sick (Virtual attendance if you are okay)
- Family Emergency
- With notice to group

Teams should also discuss what occurs when expectations are not met.

- Team meeting
- If the issue isn't resolved we will bring it before the professor

Conflict Remediation

- Conflict will be settled by team vote majority

Zane: Preliminary Project Schedule:

outside these meeting times please refer to group chat for planning

June 7th- Project Proposal Complete

June 9th- Background research review and design meeting

June 14th- Check in with professor, work on models

June 16th- Design Review, Feedback review

June 21th- Presentation work

June 23nd- Presentation review/ practice

June 28th - Present