



Mitigation Documents

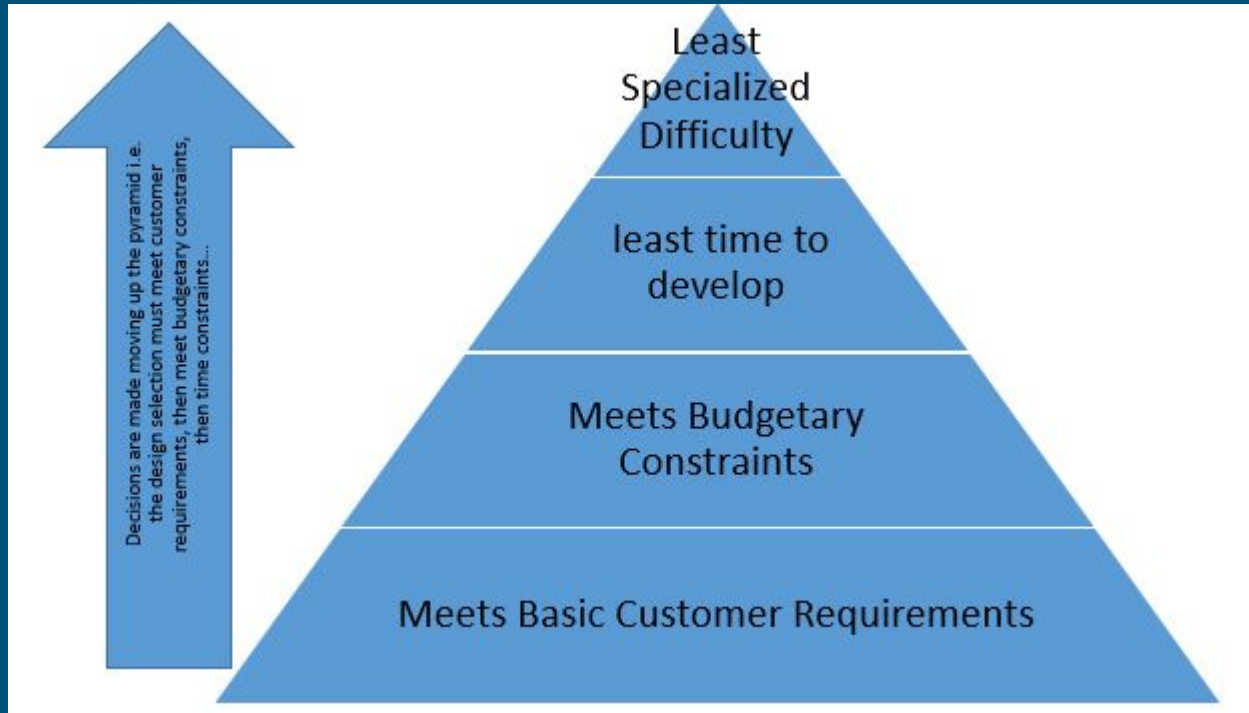
Elizabeth Hughes



Mitigation Best Practices

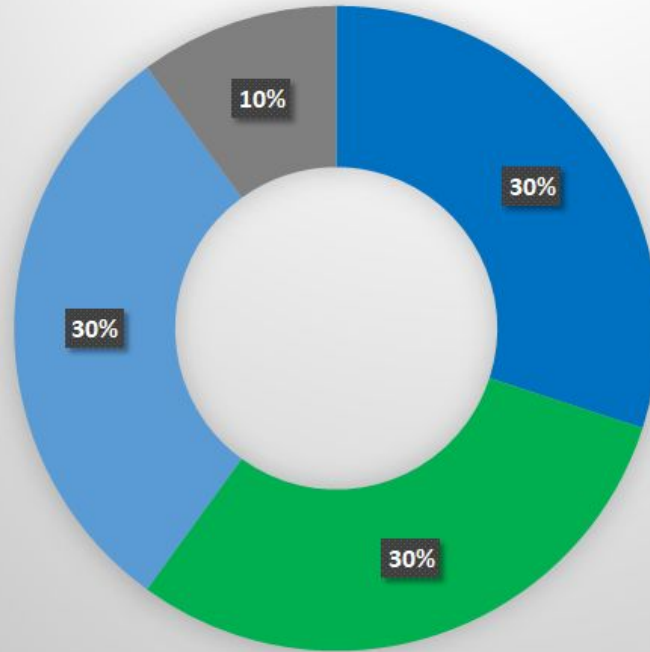
What Could go Wrong?	Response	How Do We Know?	Decision Outcomes
Long Lead time on parts	Use Gantt Chart to identify parts and track progress on purchasing and receiving	Parts are required for critical paths	<ul style="list-style-type: none">*PM has more tracking work*Design Decision have to be made earlier*More work for integration*Less time spent during choke points*More time for prototyping
Spend Budget too quickly	Treasure tracking budget categories	<ul style="list-style-type: none">*create budget*pair BOM w/ budget*use safety factor when budgeting*cut unnecessary design components	<ul style="list-style-type: none">• More work for treasure• safety factor will limit design features• Cutting design features will limit scope which will save time• Have \$ for unexpected expenses• Increase flexibility later on in the project

Criteria for Decisions



Risk Assessment

Risk Breakdown



- Optics
- Software
- Budget
- Surrounding Hardware

Mitigation Plan

Software: Choose MCU Platform With Libraries
Software Block Diagram
Initial Testing / Programming of User Interface

Optics: OCWR Testing
Multimode Insertion Loss Measurements

Budget: Optics Cost Analysis
MCU Cost Analysis
Cost Breakdown of Supporting Subsystems

Surrounding Hardware: Purchase Fixture
Thermal Management Analysis
Prototype Signal Conditioning Circuits

Power Management Subsystem

Owned by : Neville

Mitigation Strategy

1. Using the AC to DC converter for the arduino power supply.
2. Using a constant current power supply for laser.

Desired Outcome

1. Creates simple circuitry for powering all systems.
2. Stabilizes the current through the laser diode

Optical Subsystem

Owned by : Nathan

Mitigation Strategy

1. Use a transceiver as one of the optical sources
2. Simulate Optical Path using Lumerical Interconnect
3. Perform lab measurements

Desired Outcome

1. Reduce cost of optical components
2. Confirm the validity of engineering metrics
3. Prove testing methodology and verify validity of purchased optical components

Signal Conditioning Subsystem

Owned by : Neville

Mitigation Strategy

1. Use a known transimpedance amplifier topology.
2. Using a IC prototype board

Desired Outcome

1. Ease of circuit design
2. Implementation without a PCB

Physical Containment Subsystem

Owned by : Erica

Mitigation Strategy

1. Connect with SME on CAD
2. Share CAD progress with team every week
3. Share Lean Implementation Plan progress with team every week

Desired Outcome

1. Stay on schedule with CAD progress
2. Gather team input and make improvements based upon feedback
3. Utilize feedback

Microcontroller/ User Input Subsystem

Owned by : Elizabeth

Mitigation Strategy

1. Purchase Microcontroller Ahead of time
2. Create Flow Chart Diagram detailing all major aspects of software
3. Components are being bought based on accessible libraries
4. Code is being broken down into multiple subsystems for parallel work
5. Arduino simulator is being used
6. Using drag and drop metacoder to develop skeleton code

Desired Outcome

1. More time for Systems Integration and Coding
2. Software is more understood within Group and is able to be divided and tested in parts
3. More transportable code and development time is less
4. More man hours are able to be put into code development
5. Multiple people can develop code simultaneously
6. UI design is Sped up and testing is implemented sooner