



Release Lanyard Project

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Team 5

**By: Andrew Baker, Tim Haynes, Styson Koide,
David Lofgreen, Carly Siewerth, & Chris Temme**

Overview

- ▶ Problem Statement
- ▶ Current Design
- ▶ Top Design
- ▶ Proposal
- ▶ Gantt Chart
- ▶ Conclusion
- ▶ References

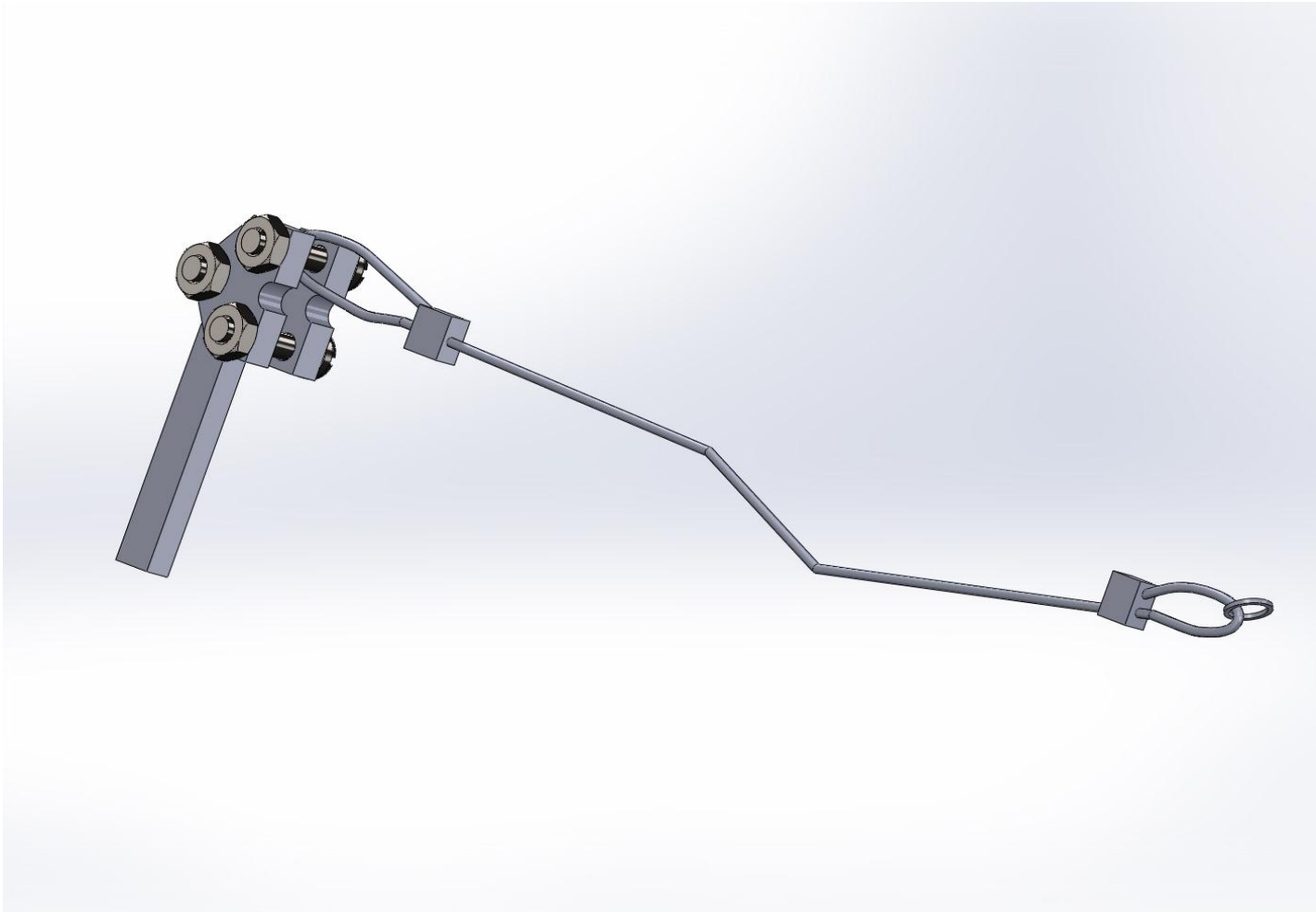
Problem Statement

- ▶ Issues with freezing temperatures and debris
- ▶ Issues not activating weapons system
- ▶ Issues with poor installation

General Constraints

- ▶ Temperature Range -50°C to 150°C
- ▶ Activation Force of 50N
- ▶ Breaking force of linkage 75N

Current Lanyard Design



Design Ideas

- ▶ DuPont™ Krytox® Lubricants
- ▶ Wide Temperature Range: $-70\text{ }^{\circ}\text{C}$ to $399\text{ }^{\circ}\text{C}$
- ▶ Suborbital, orbital, deep space flight, commercial, corporate and military aviation applications

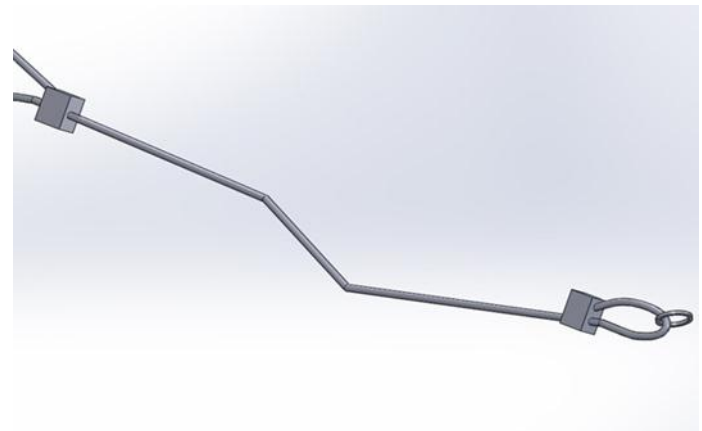
Design Ideas

- ▶ Cap for Guide Pipe
 - Required Temp. range -50 to 150°C
- ▶ Fluorosilicone Rubbers
 - Temp. range -74 to 175°C
- ▶ Silicone
 - Temp. range -60 to 200°C



Design Ideas

- ▶ Cable Coatings
 - Required Temp. Range of -50 to 150°C
- ▶ Tyvek Wrap
 - Temp. Range of -73 to 135°C
- ▶ Teflon Wrap
 - -73 to 204°C



Top Design

- ▶ Housing
- ▶ Rapid Prototyping
 - Stainless Steel \approx \$385
 - Aluminum \approx \$50



Housing Properties

	Aluminum 6061	Stainless Steel 304
Raw Material	≈ \$50	≈ \$385
Manufacturing	In House	In House
Yield Strength	35,000psi	40,000psi
Brinell Hardness	60–95	163

Top Design

- ▶ Servo
 - Metal Gears \approx \$25
 - Plastic Gears \approx \$15

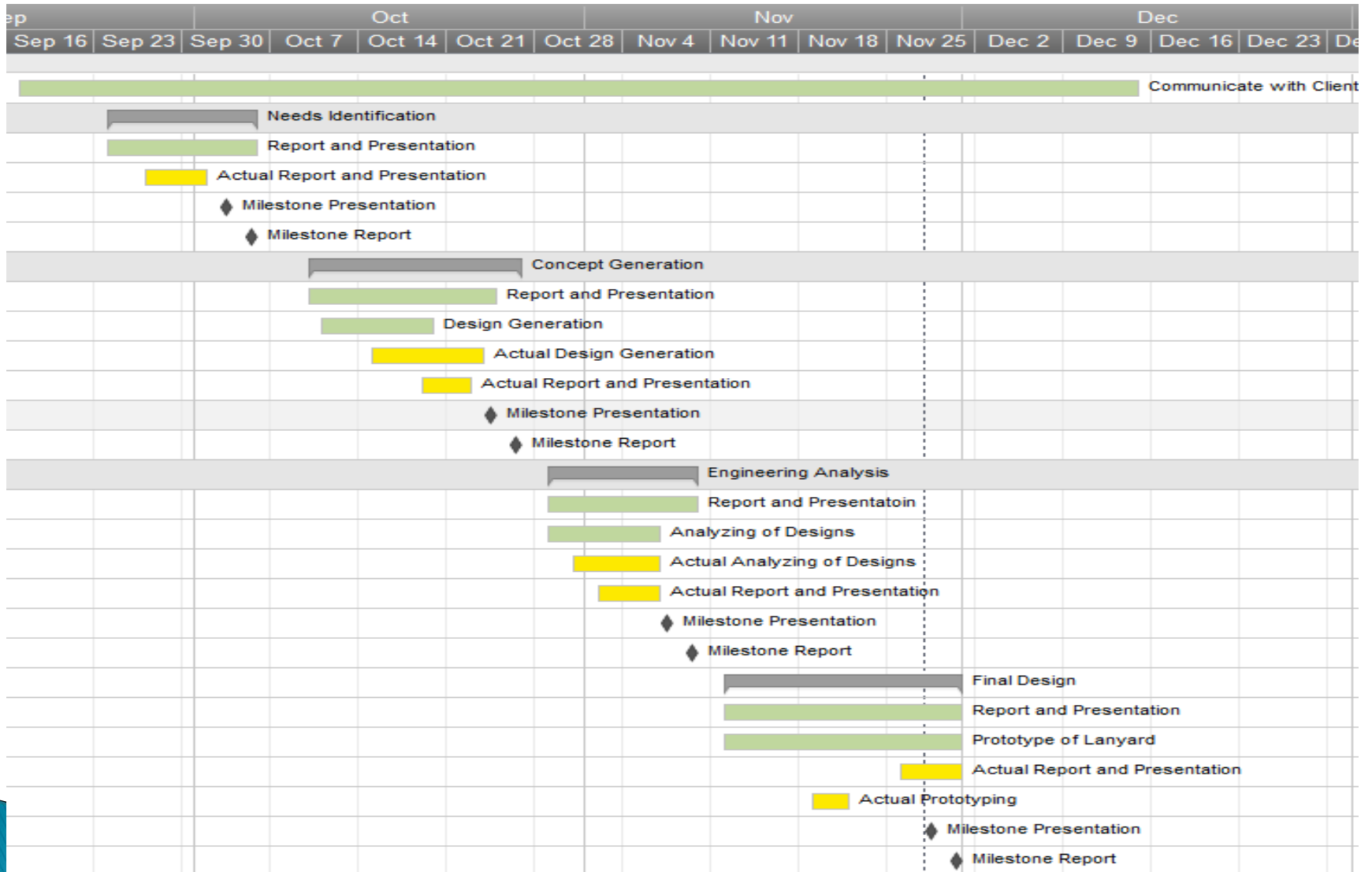


Proposal

- ▶ Housing and Servo
 - Aluminum \approx \$50
 - Metal Gears \approx \$25

- ▶ Housing
 - Stainless Steel \approx \$385
 - Aluminum \approx \$50

Gantt Chart



Conclusion

- ▶ Problem Statement
- ▶ Current Design
- ▶ Top Design
- ▶ Proposal
- ▶ Gantt Chart

References

▶ Stephen Larimore

- Raytheon Department Manager

▶ Kelly Convington

- Raytheon Mechanical Engineer

▶ Internet

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- <http://www.materialconcepts.com/products/tyvek/sheets/>
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Questions?