



Team 515: Virtual Design Review #1

30-Sep-19

Team Introductions



Ryan Irwin
Control Systems Engineer



Christian Gonzalez
Project Manager &
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Jarrod Darrow
Quality & Test Engineer



Kemuel Nelson
Design & Test Engineer

Sponsor



Jeffrey Payne, PE
Staff Mechanical Engineer
Lockheed Martin Mission Systems & Training

“Solve complex challenges, advance scientific discovery and deliver innovative solutions to help our customers keep people safe.”

Jarrold Darrow

Objective

The objective of this project is to support an adjustable weaponized ground vehicle training simulator that will be set up by two individuals.

Project Background

Lockheed Martin has the need for a weaponized ground vehicle trainer that can emulate a variety of vehicles and deploy conveniently in the field.

- Similar products exist
 - Not conveniently deployable
 - Not very portable
 - Training limited to a singular, specified vehicle

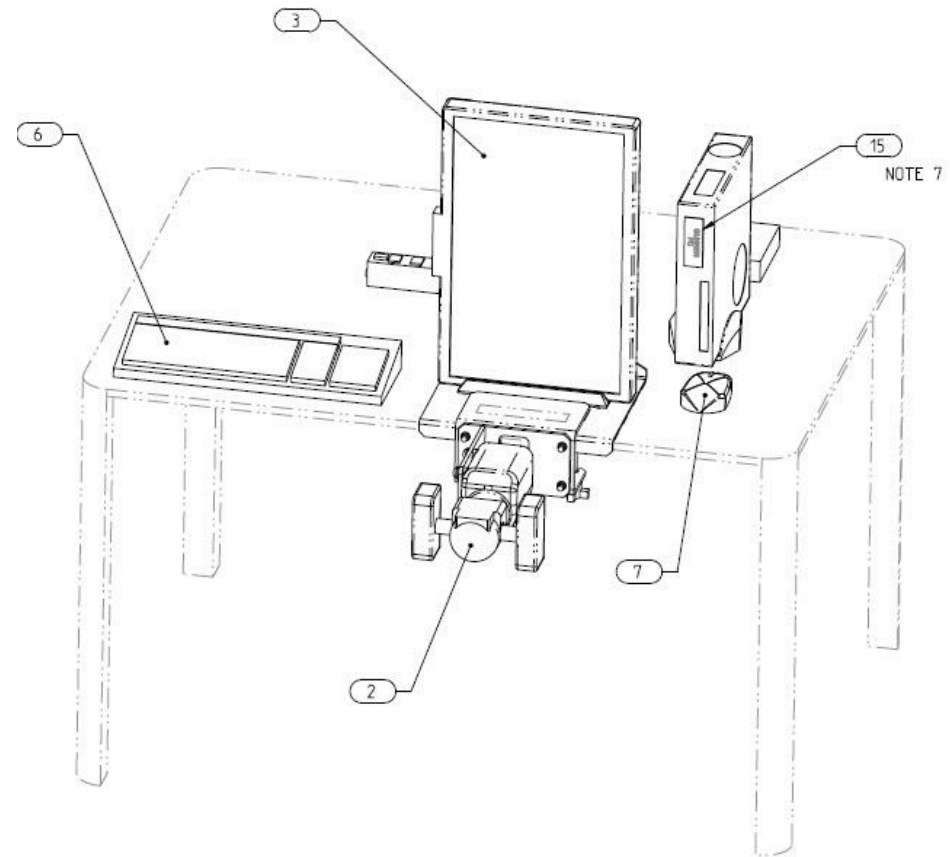


Figure 1: Schematic of a mounted weaponized ground vehicle training simulator

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Figure 2: Close Combat Tactical Trainer (CCTT)



Figure 3: Advanced Gunnery Training System (AGTS)

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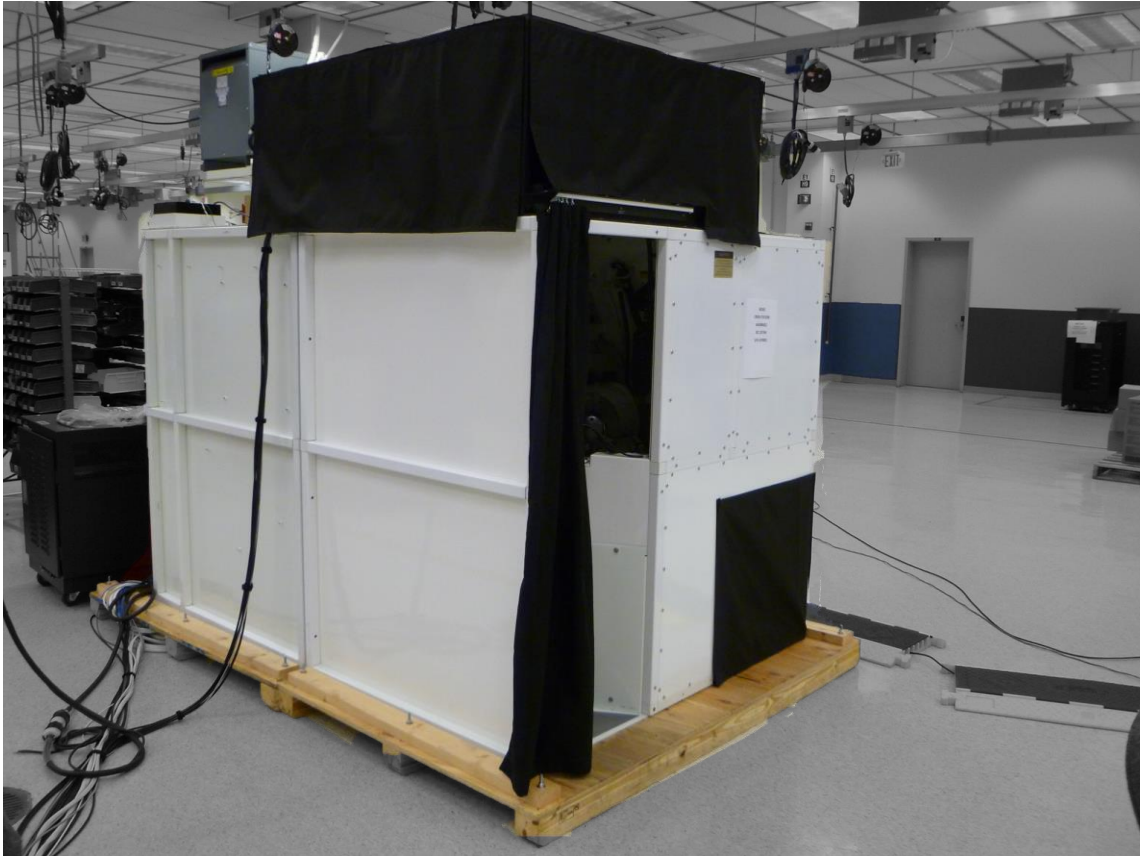


Figure 4: Outside view of AGTS



Figure 5: Mounted controls of AGTS

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Customer Needs

- Compact, lightweight, sturdy, long-lasting
- Minimization of loose parts
- Support a mounted training simulator weighing up to 60 lbs.
- Seat must support a maximum weight capacity specified by MilSpecs
- Adjustable dimensions between the seat and mounted training simulator
- Assemble/Disassemble within a few minutes



Figure 6: Sturdy, compact, carrying case

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Project Scope

Key Goals

- Weigh less than or equal to the desired weight specification
- Require two people to carry
- Assemble/Disassemble within a few minutes
- Fit into two storage cases for transportation
- Adjustable dimensions between seat and mounted training simulator
- Eliminate need for customer to find tables and chairs

Assumption

- All-terrain deployable
- Storage will experience rough transport
- Weather-resistant
- Simple to set up
- Serviceability with minimal access to tools/hardware

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Personnel of Interest

Markets

- **Primary:**
 - United States Military
- **Secondary:**
 - Universities/Research Institutions
- **Tertiary:**
 - Gamers

Stakeholders

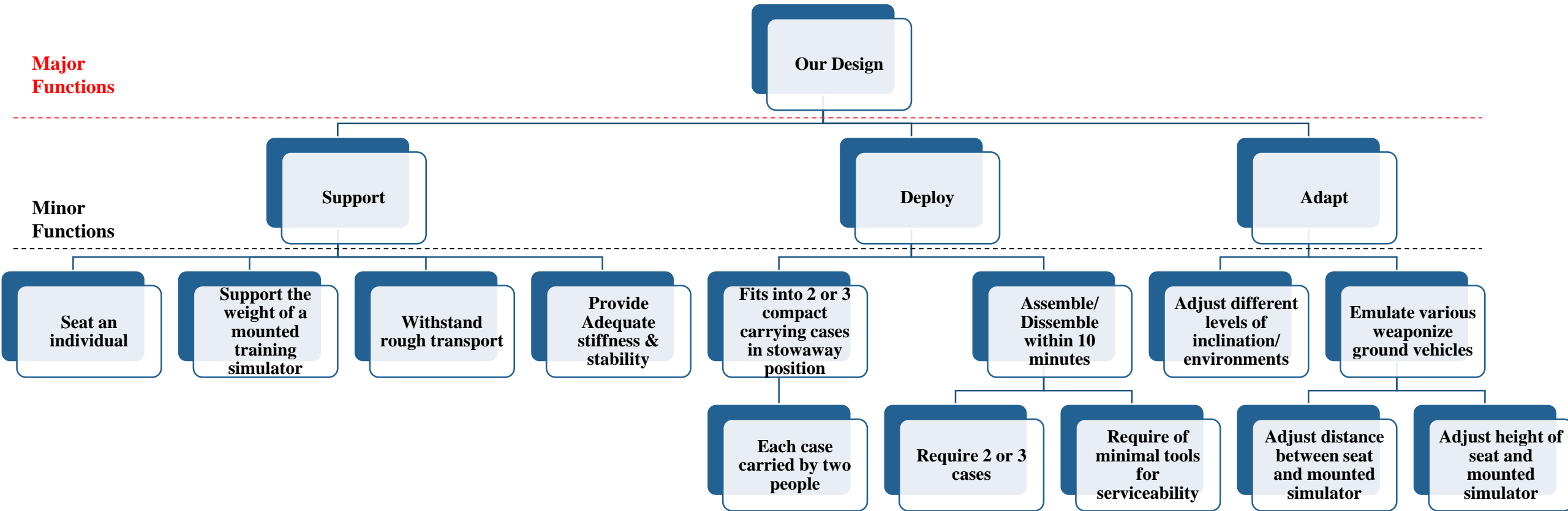
- Jeffrey Payne, PE
- Shayne McConomy, PhD.
- Patrick Hollis, PhD.
- FAMU-FSU College of Engineering
- Lockheed Martin Electronic Equipment Designers
- United States Military Personnel

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Functional Decomposition

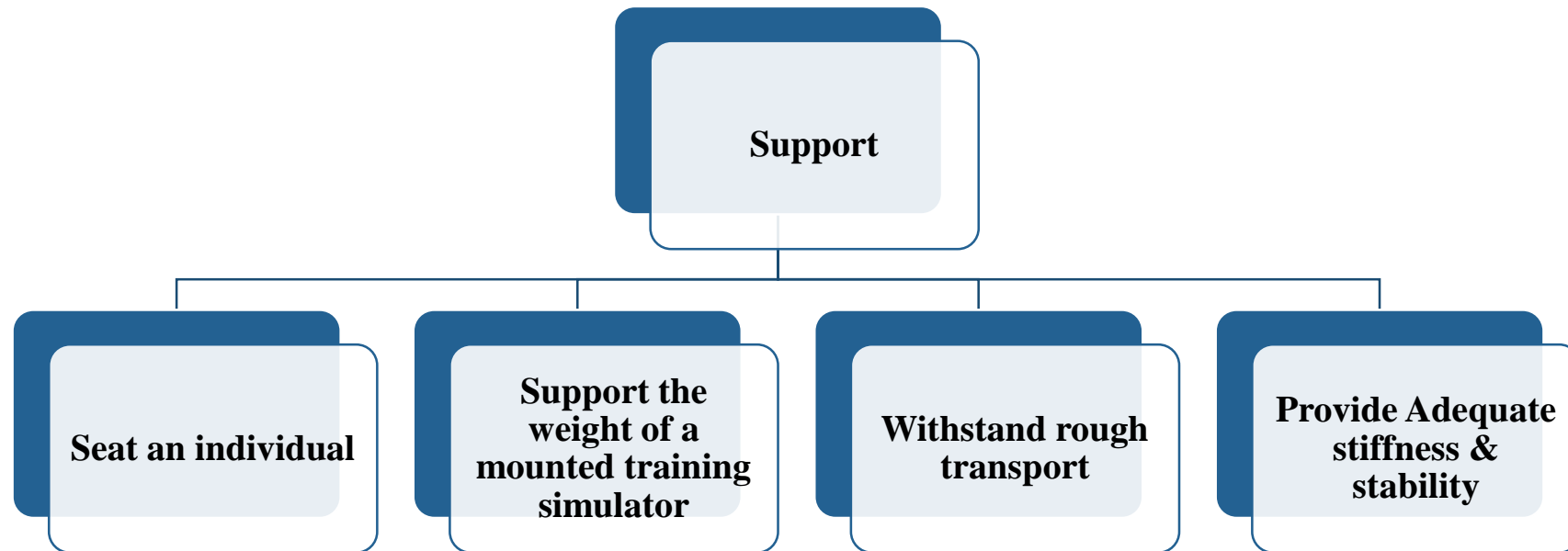
Major Functions

Minor Functions



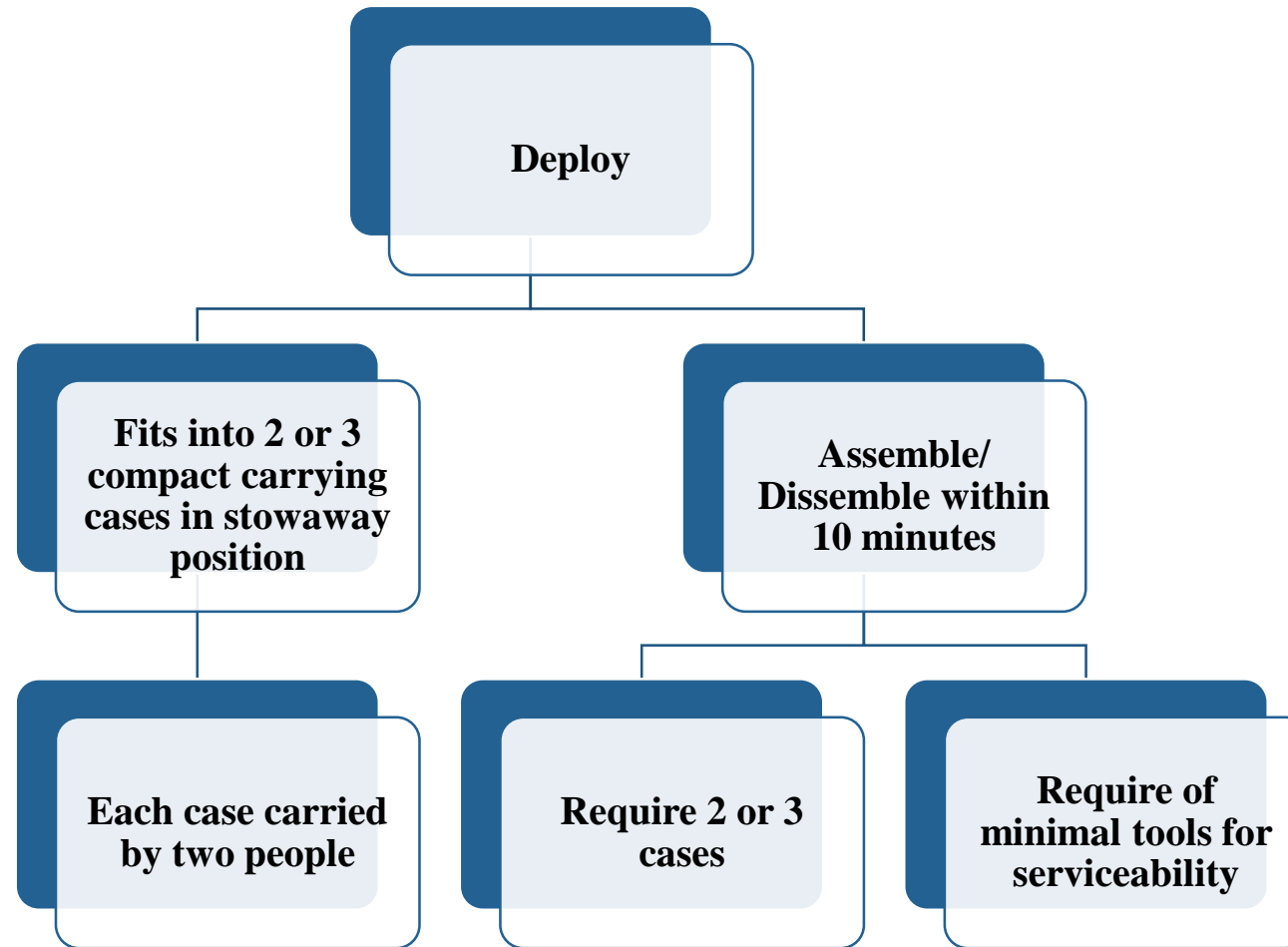
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Functional Decomposition



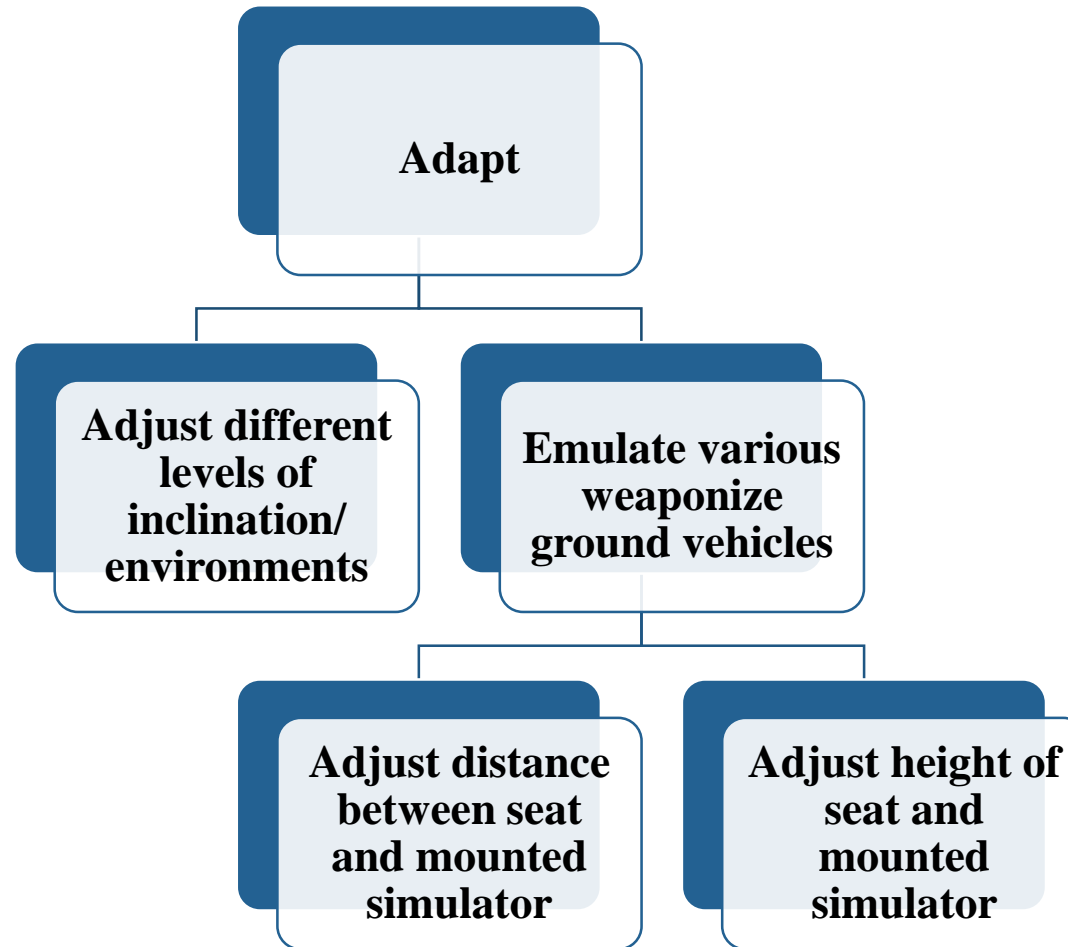
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Functional Decomposition



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Functional Decomposition



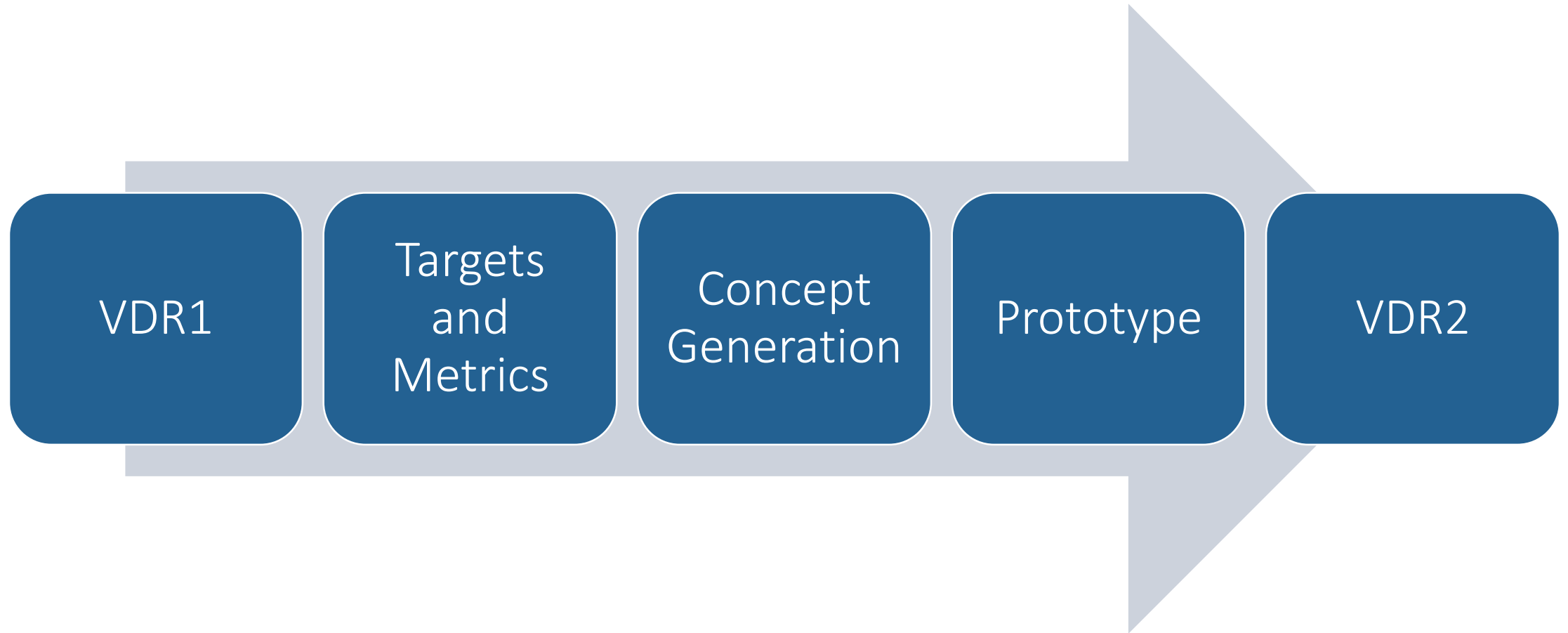
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Five Most Important Points from this Presentation

1. Understand what aspects of your design make it unique to the designs of other competitors.
2. Arranging the product functions in a hierarchal list of importance gives a clearer perspective of how the product should operate.
3. Establishing a set of customer requirements that can be quantifiable will make it easier to identify the design parameters, variables, and constraints.
4. Become familiarized with the set(s) of specifications and guidelines that need to be incorporated into the design.
5. Fully utilize resources provided by FAMU/FSU databases to find relative information pertaining to the project.

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Future Work



Christian Gonzalez

References

1. Irwin, R., Gonzalez, C., Nelson, K., & Darrow, J. (n.d.). Team 515: Evidence Manual.
2. (2011–2019). Zoro. Retrieved from <https://www.zoro.com/pelican-protective-case-black-31-1932-inl-1660-wlwf-blk/i/G6214607/>
3. Lockheed Martin logo. Digital image. *Lockheed Martin* , www.lockheedmartin.com

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“The Pessimist Sees Difficulty In Every Opportunity. The Optimist Sees Opportunity In Every Difficulty.” – Winston Churchill