Lockheed Martin:
USB Hub Mounting Bracket

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4/ 26/16
Lockheed Martin

● Four main areas
  ○ Aerospace and Defense
  ○ Information Technology
  ○ Space
  ○ Emerging Technologies

● Priorities
  ○ Product performance
  ○ Talent competitiveness
  ○ Supplier sustainability
  ○ Resource efficiency
  ○ Information security
Overview of Project

**Overall project goal:** To determine the accuracy of the 3-D printers by comparing the printed prototype with the expected results.

**Primary goal for the new USB bracket:**

To reduce the total number of parts for easier production

**Additional goals:**

- Increased capacity
- Vertical mount
Specific Needs/Qualifications

- Fewer parts than model in current use
- Must support 7 port hubs
- Must stack 3 hubs (Shown to the right)
- Vertical and horizontal mount
- 4 point screw mount
- Cable retention for power cables
- Minimize material and waste

(Current USB Hub used by Lockheed Martin)
Existing Products

Notional Prototype for dual-stacked, 4-port Hub:

Total Unique Part Count: 7
Total Part Count: 38

- Base Hub Enclosure: Qty 1
- Power/USB Up-link Retention Bar: Qty 2
- USB Retention Bar: Qty 1
- Screw: Qty 10
- Washer: Qty 10
- Lock Washer: Qty 10
- Nuts: Qty 4
Bracket for Plugable 7-Port USB Hub

Benefits:
- Very few parts
  - Two bracket pieces
  - 4 Screws
- Can stack 3 USB Hubs
- Able to mount

Concerns:
- Ability to experience vibration
- Overall stability
- Ease of use

(Designed by Justin Taylor)
Our Product

Group 1

USB Bracket

REV A project2
Meeting Qualifications

- Holds up to 3, 7-port USB hubs
- Vertical mount
- Raised design for shock resistance, along with rubber inserts
- Easy to remove hubs without unmounting bracket
- Less parts than original design
- Cable retention through bottom
Holds 3 USB Hubs and Vertical Mounting
Shock Resistance
Removing Hubs Without Unmounting
Less Parts

Total Unique Part Count: 4

New Part Count: 8
Current Part Count: 38

- Body: Qty 1
- Lid: Qty 1
- Screw: Qty 4
- Nuts: Qty 2
Cable Retention
Conclusion

Difficulties

- Maximizing shock absorption
- Company expectations changed part way through design

Take-away

- Fully understanding needs/expectations before design
- Be able to adjust when changes are made
Thank you for your time.
Any questions?