What’s Next: Cutting Edge Technology

53rd Robert H. Goddard Memorial Symposium

Matt Peterson, Hardware Integration Solution Architect
March 11th, 2015
Inspiring the Next Generation of Explorers

STS-26 RTF

12.063 Hickman
Disruptive Technologies with Promise 5 to 10 Years

- Reduced Launch Costs
- Autonomous Systems
- Virtual Personal Assistants
- CubeSat
- Additive Manufacturing
- Robotics
- Computer Aided Engineering
Additive Manufacturing: Builds parts point by point, layer by layer, as defined by a 3D model, binding the material together.
Time Lapse Video

Actual print time approx. 2 hrs.
# Unique Capabilities of Additive

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<th>Complexity is free!</th>
<th>SWAP Optimized</th>
<th>Increased Sustainment</th>
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<td>Changing Manufacturing Locations</td>
<td>Low Production Quantities</td>
<td>Accelerating Development</td>
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Where you can Use Additive Manufacturing

Rapid Prototyping
- Concept Visualization, Form, Fit, Function
- Mockups

Ted Gull, NASA GSFC

Rapid Tooling
- Assembly Aids, Trim and Drill Templates, Molds for Tools, etc...

ISS Expedition 42 Commander Barry Wilmore

End Use Parts

NASA Tests 3d Printed Rocket Injectors
Problems and Potentials

- Qualification of parts
- Speed
- Quality assurance standards
- Analysis lags manufacturing capability for first time
- Material standardization
- Material availability
- Intellectual Property
- Integrated Electronics
- Batteries
- LEDs
- Clothes
- Smart Structures
- Human Tissue
- Human Organs
- Medicine
"Don’t Worry, Be Happy"

Conclusion
“The Futures So Bright I Gotta Wear Shades”

We take for granted common place technologies that have long been the stuff of Science Fiction