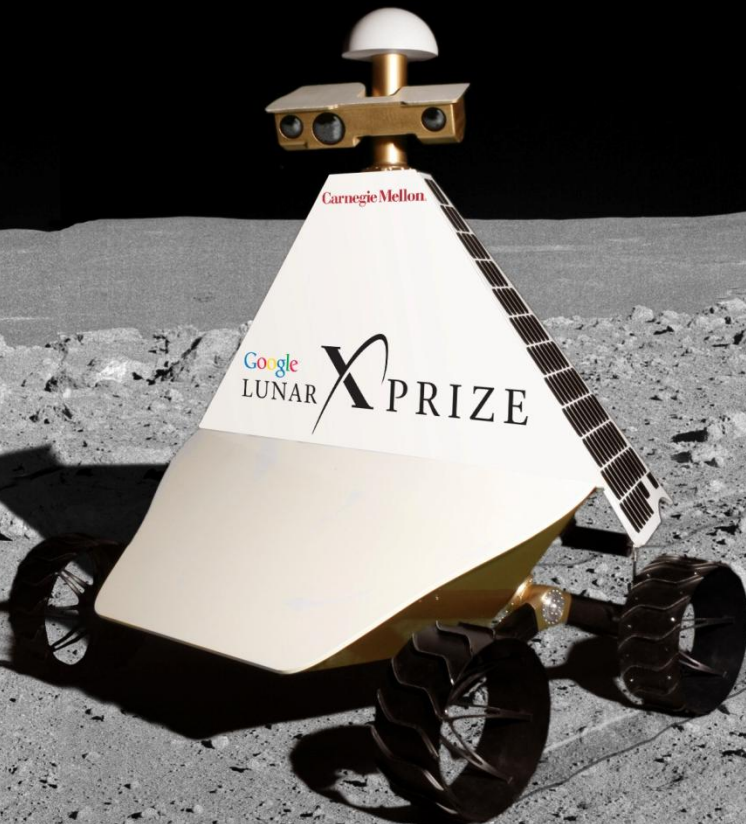


Enterprising Exploration

Carnegie Mellon University and its
spinoff Astrobotic Technology

David Gump
President

John Thornton
Chief Engineer



Launch Dec. 2012

Win Google Lunar X Prize

Deliver
payloads

- 20 kg mobile
- 80 kg stationary



Tranquility*Trek*



Returns to Apollo 11

Google
LUNAR **X** PRIZE

Up to \$24 Million incl. bonuses



Tranquility*Trek*[™]

Or, peeks into lunar skylight

Google[™]
LUNAR *X* PRIZE

Up to \$24 Million incl. bonuses

LROC NAC M114328462
NASA/GSFC/Arizona State University

Designed to Falcon 9

4.5m

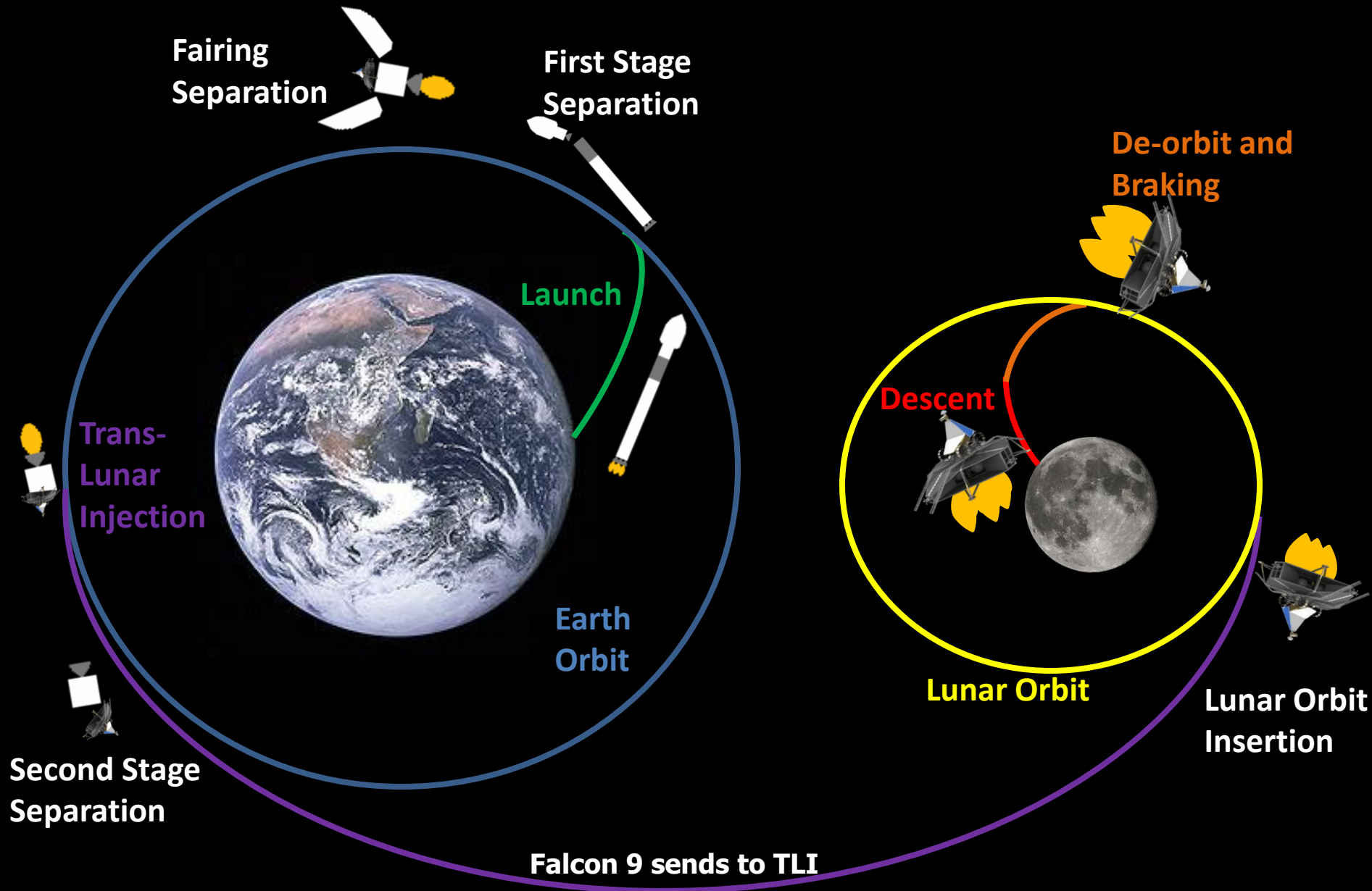


13.9m

2225kg to TLI
(10% margin allowed)



Serial Missions Starting December 2012



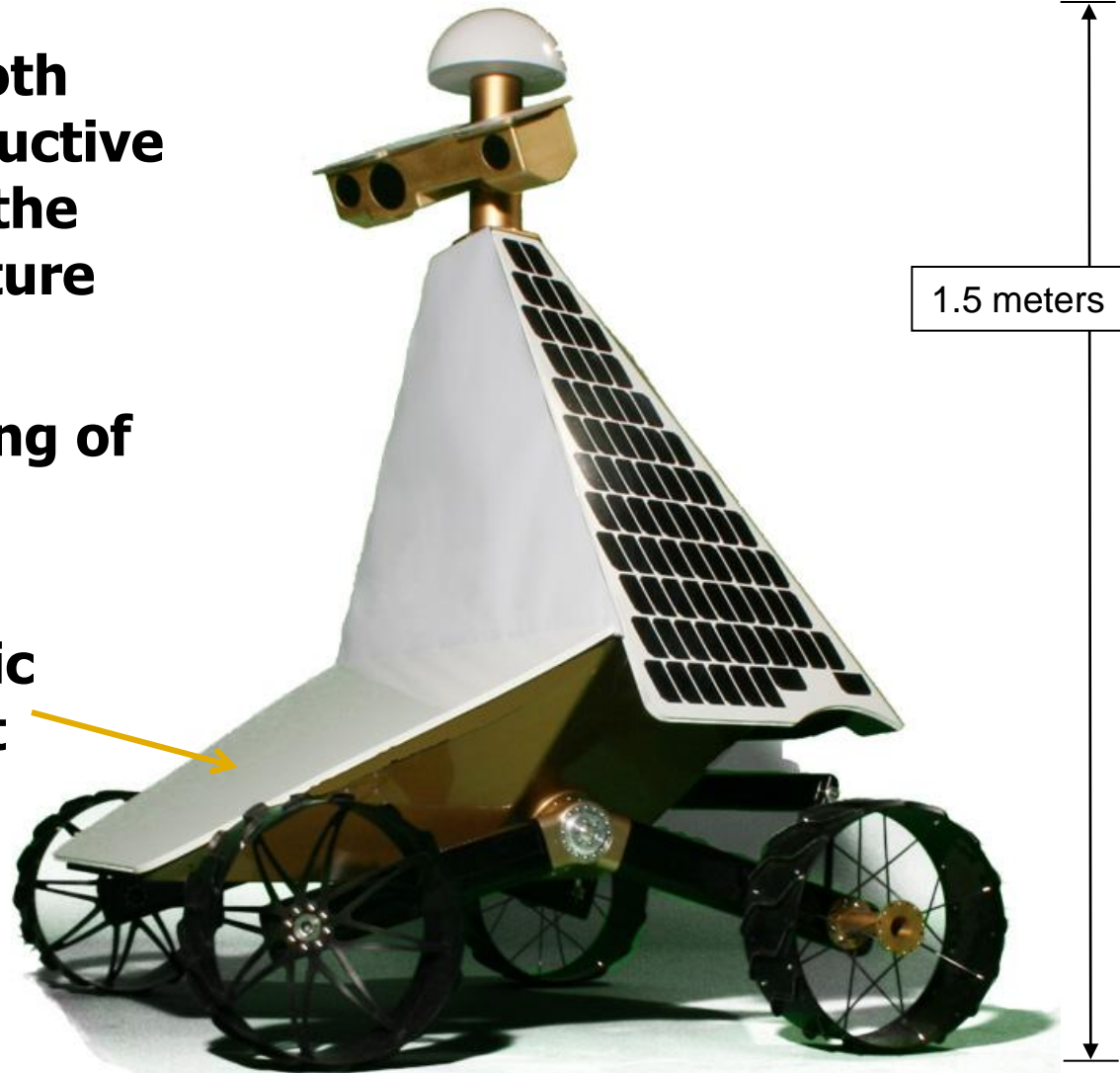
Passively Cooled Carbon-Fiber Rover



Composites provide both structure and highly conductive thermal paths to beat the Moon's 230 F temperature

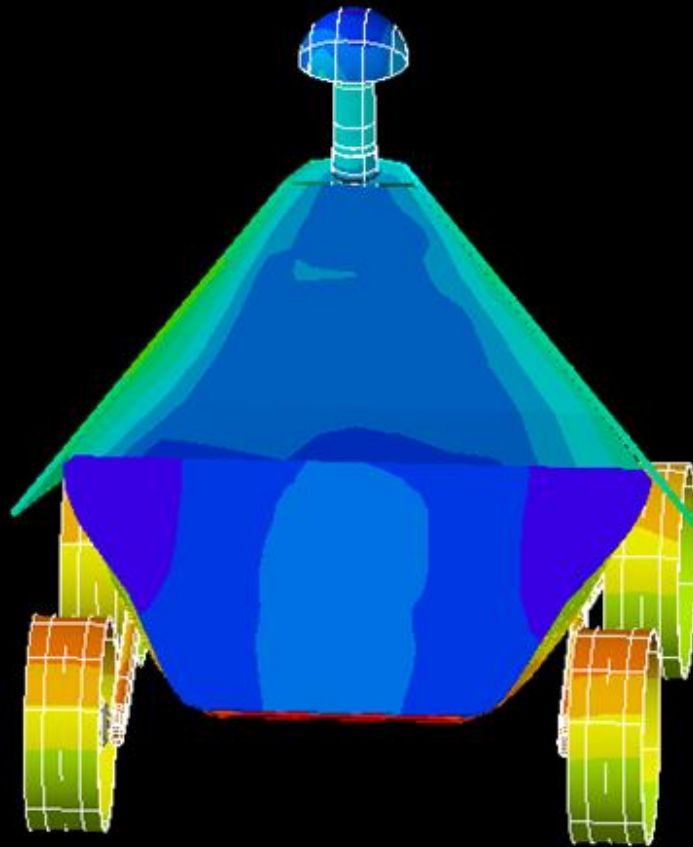
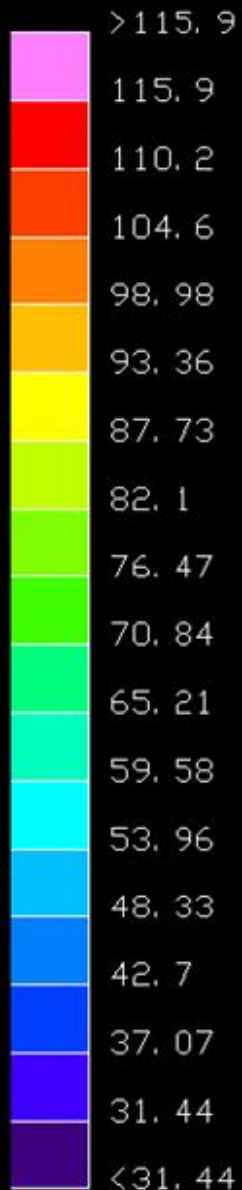
No deployment or pointing of solar, radiator

Generous, asymmetric radiator dumps heat

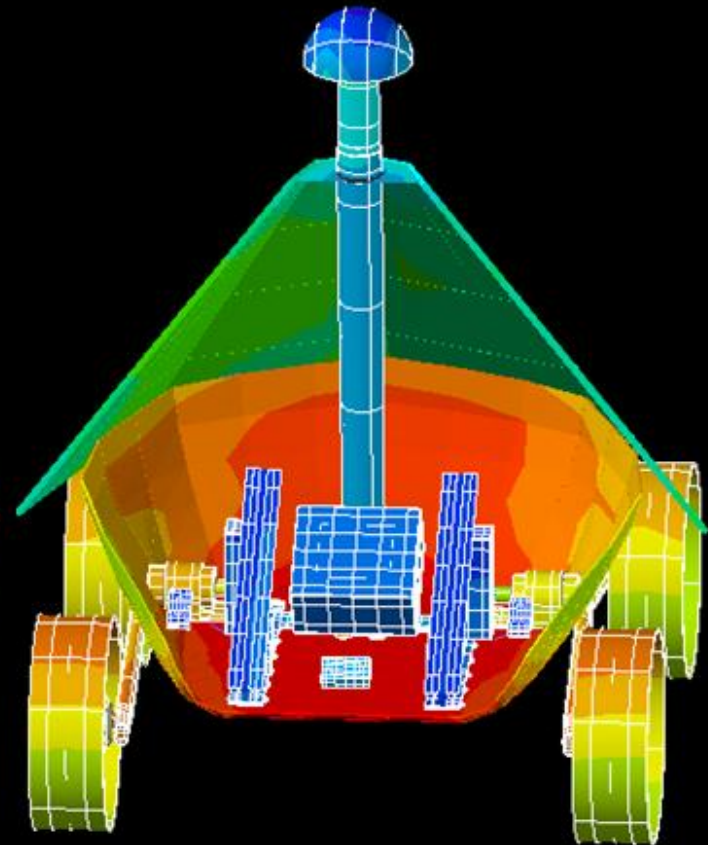


Only two drive actuators – internal, chain drive to wheels

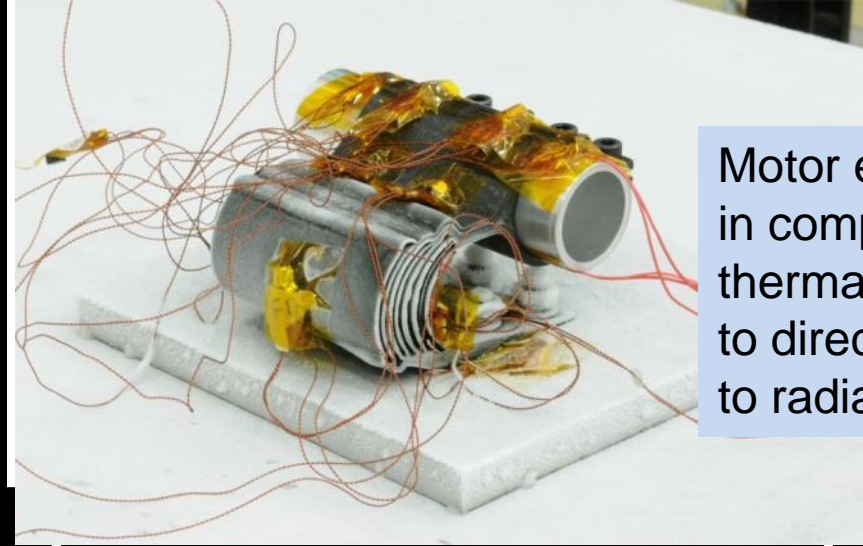
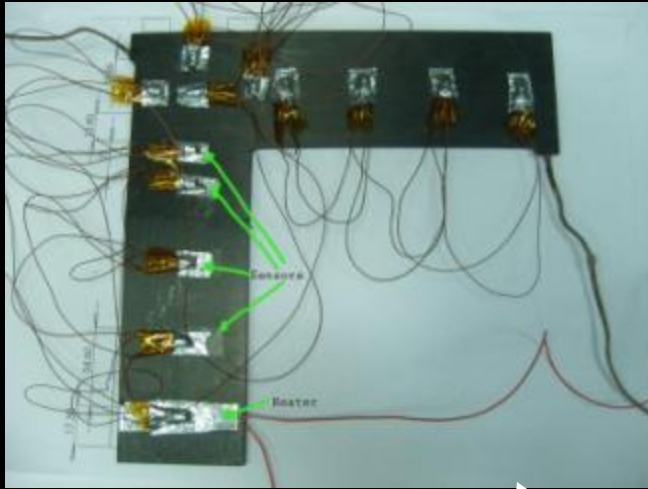
Composites Conduct Heat to Radiator While Providing Structure, Stiffness



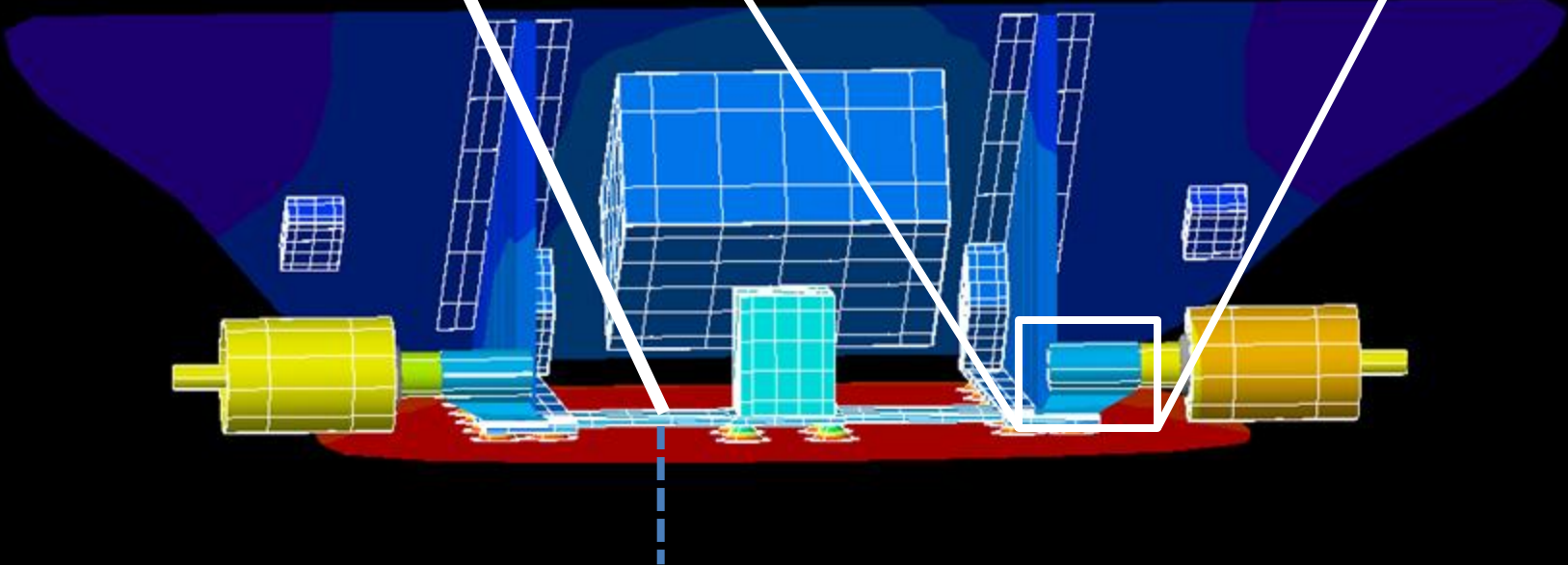
External View



Internal View



Motor encased in composite thermal strap to direct heat to radiator

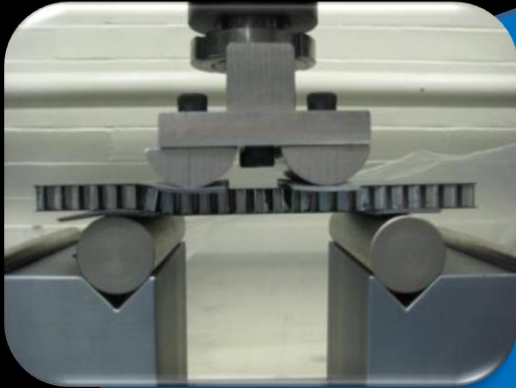


Tests of composite thermal straps along base show conductivity better than copper

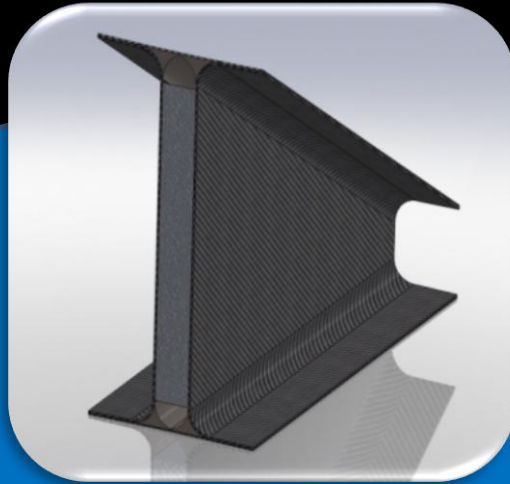
Lithium Iron Phosphate cells found cryo tolerant



Composites



Testing



Design



Analysis



Baking



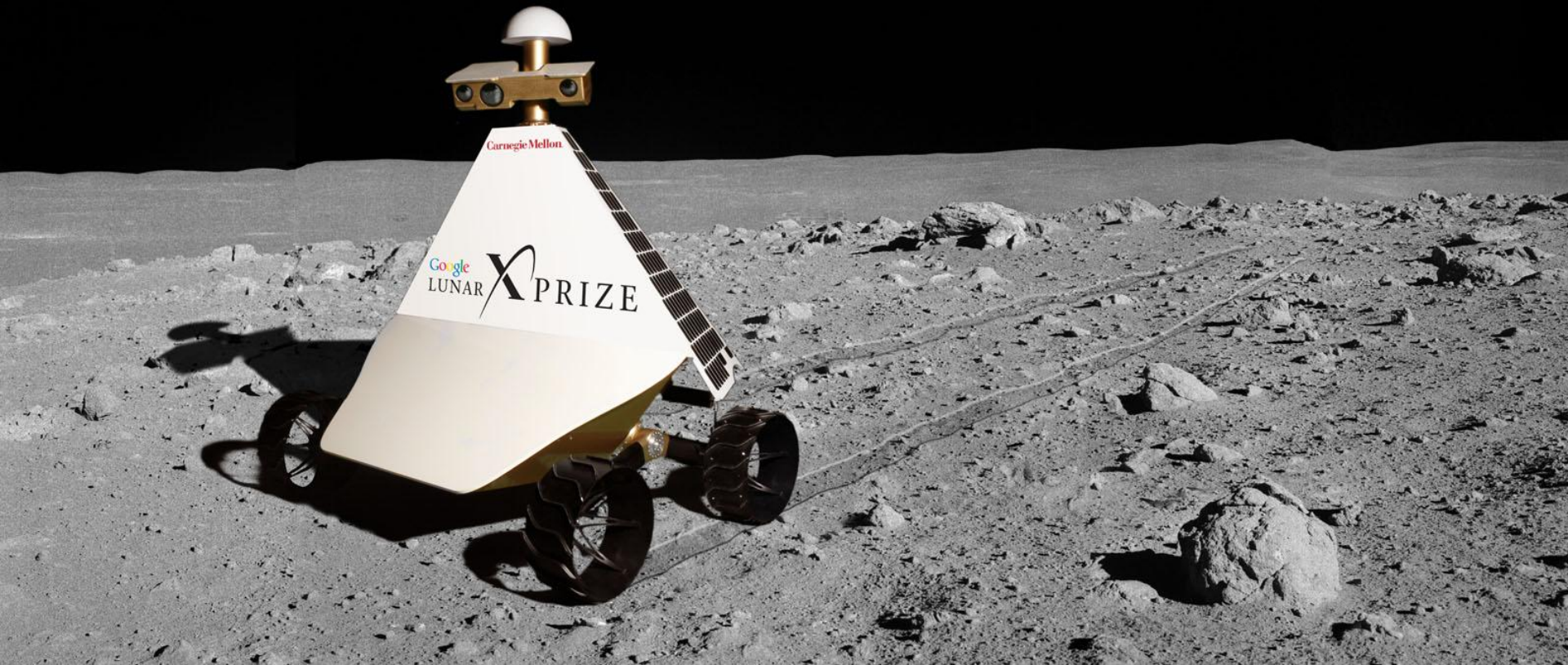
Layup



Mold Machining

Delivering the Interplanetary Internet

- ▶ New – live interaction not possible with Mars robots
- ▶ Rover sends 3D HD video as it explores
- ▶ A social robot – blogs and chats individually



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