



ASTROBOTIC
TECHNOLOGY, INC.

David Gump / President

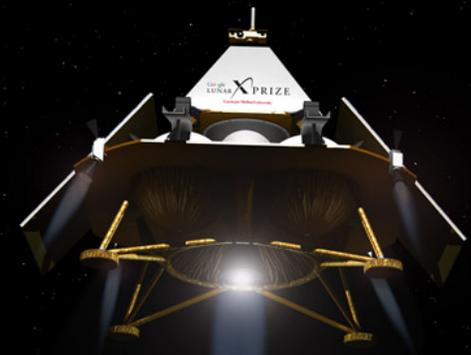
In cooperation with

Carnegie Mellon University

High costs are our primary challenge

- New technology is only part of the answer

“Moon Next” designed with strong commercial role is the other part

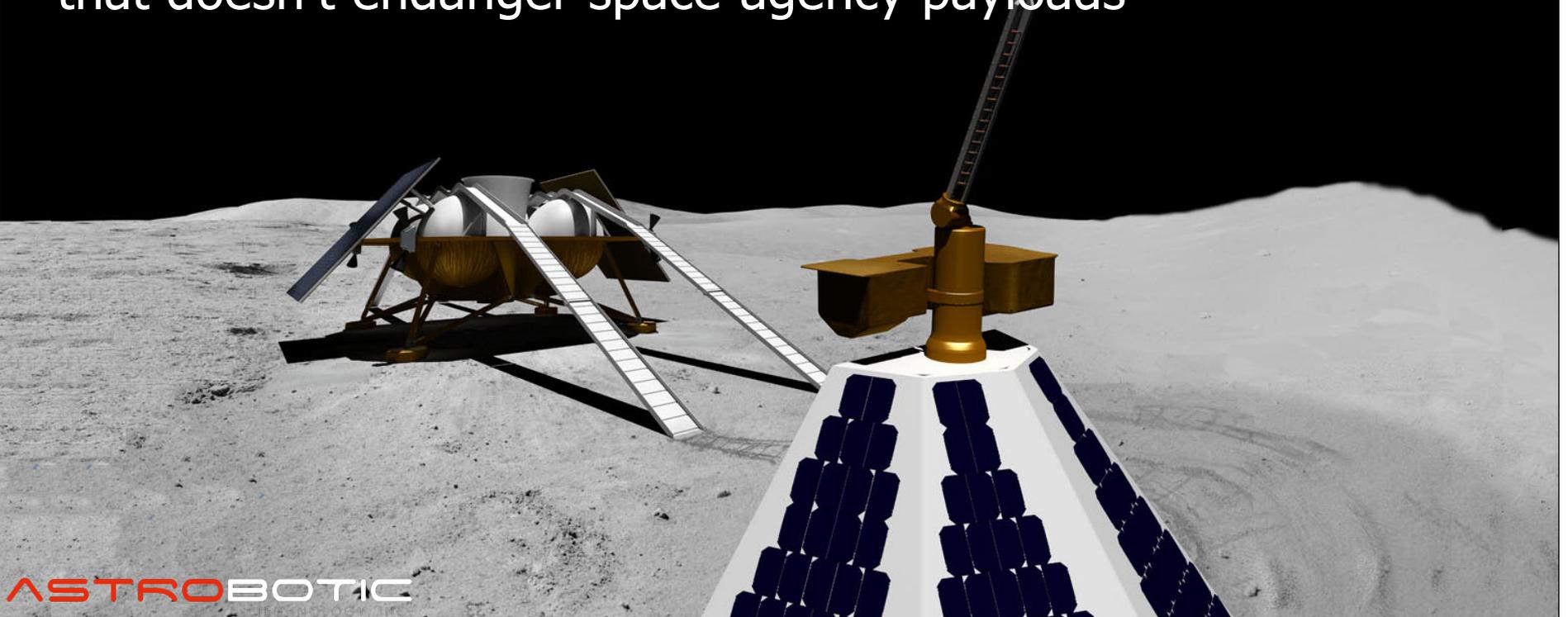


A definition of “commercial”

Government contracts are **fixed price**, not cost plus

Also substantial **non-government** revenue

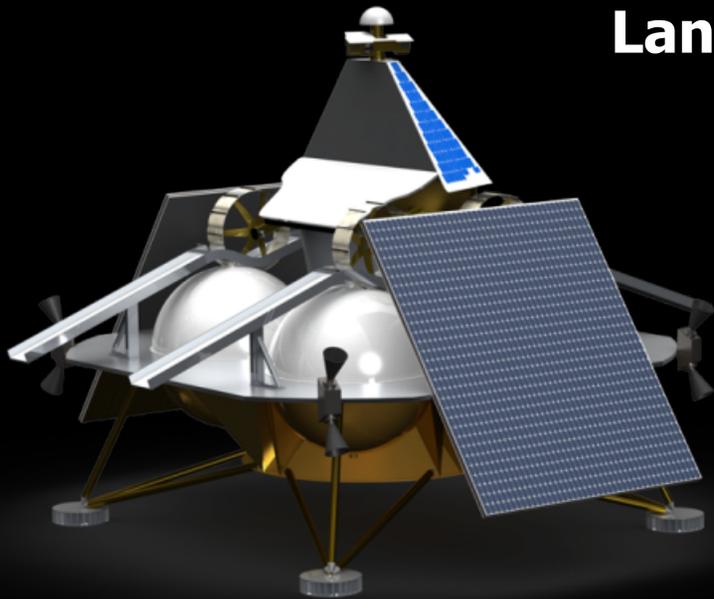
Company is free to do anything
that doesn't endanger space-agency payloads



An example

Commercial Design Reference Mission

- Solar power for initial lunar day
- Hibernate with cryo-tolerant battery/avionics
- Invest modestly in ability to awake at dawn

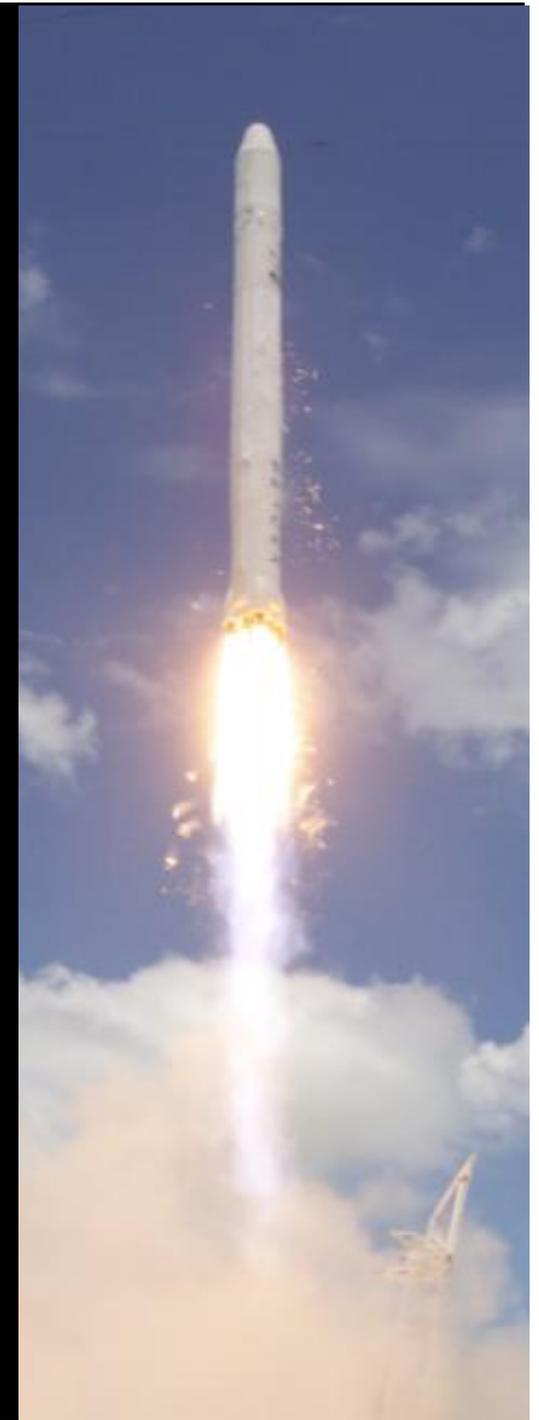


Landed mass - 760 kg

Rover – 100 kg

Payload – 110 kg

Falcon 9 TLI capability: 2500 kg



“Moon Next with Commercial Role” attacks high costs several ways

Companies are rewarded for cost savings (as profit),
vs. contractors that see a reduced cost-plus profit

Profit motive enforces focus on total mission cost,
vs. getting *this year's* budget authorized

Companies will invest in infrastructure for future savings,
vs. focus on keeping *this year's* budget low

Companies will bring in **new money**



Example: Need batteries to survive lunar night

Instead of creating new technology, we screened existing cells



Used cryo-freezer from eBay to show cells from A123 with water-free electrolyte work perfectly



“Moon Next with Commercial” infrastructure

- Comm relays on orbit and on surface
- Lunar-source propellant plants
- Reusable landers and habitats-for-rent
- Specialized landers & rovers from earlier missions (power stations, manipulators, cranes...)



New money from “Moon Next w/CR”

Corporate marketing budgets

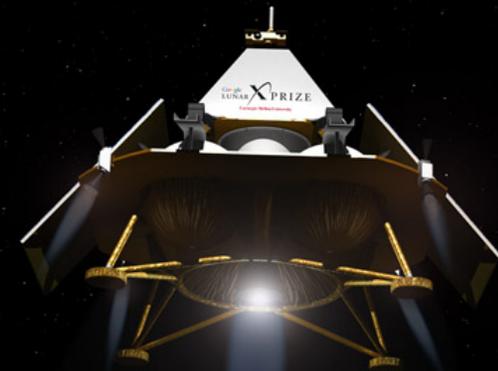
- Contests to drive rovers, art events, TV reality shows

Direct sales to the public

- Send postcards from the Moon, cremains, projects not disclosed

Foundations & Philanthropists

Reduced costs will enable foundations to fund lunar science, such as far-side radio observatories



Benefits: Lower government costs

NASA	Astrobotic	
148	148	NASA payload development
703	100	Launch, land, mobility, power, etc.
851	248	Total cost to NASA (in millions)

Source: NASA costs from the March 2011
"Lunar Polar Volatiles Explorer Mission Concept
Study," National Academy of Sciences



Only “Moon Next” works commercially

- Many missions needed, for on-going market
- Always present, so no years-long gaps
- Incentive to build infrastructure
- High-bandwidth & interactivity needed for public involvement



Suggestion for the GER

Remove focus on “human-size” landers & rovers

- “Human size” raises costs of precursors
- Need many precursors to test diverse technologies and applications at several landing sites

This enables large “lunar workforce”
tele-operating rovers in Tokyo & Toronto,
many more than will ever travel to the Moon



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