Presentation to

JUSTSAP 2010

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Commercial Opportunities

For Settlements Beyond Low-Earth Orbit

Lots of Current Interest and Future Opportunities In Space

Make:
technology on your time
Build a Freeze Frame Photo Rig
page 90 »
10 DO-IT-YOURSELF SPACE PROJECTS
FAST, CHEAP, AND FUN!
» LAUNCH YOUR OWN SATELLITE INTO ORBIT
NXT
PLUS:
26 COOL THINGS YOU CAN BUILD!
MythBusters' Adam Savage Teaches Moldmaking
Ping Pong Gun
Dizzy Robot
Analyze Galaxies for $20: Easy Spectrograph
Lego NXT satellite prototype built by college students and NASA
O'REILLY
makezine.com

WELCOME

BY DALE DOUGHERTY

Open Sourcing Space

With one exception, Silicon Valley lacks monumental landmarks that signify its importance as a world capital of technology innovation. That exception is Hangar One at Moffett Field in Mountain View, Calif., which is the home of NASA Ames Research Center.

Hangar One stands out like a Great Pyramid visible from Highway 101. Built to house airships called dirigibles or zeppelins, Hangar One opened in 1933. The floor inside this freestanding structure covers eight acres, and its enormous clamshell doors were designed for the passage of these airships. The hangar reputedly creates its own climate inside, bringing rain unexpectedly to parties that were organized there, back before it was closed.

> The U.S. space program that I grew up with is gone. Yet our fascination with space is not.

NASA controlling everything, Pittman says, then Space 2.0 depends upon "massive participation," harnessing enthusiasm and expertise in places around the globe.

Space 2.0 represents the open sourcing of space exploration, a new model that could lead to faster, cheaper ways to develop space technologies.

It's also a call for makers to participate in research and development. Just as we're seeing

One cause for hope is that the future of space exploration doesn't depend solely on NASA. Bruce Pittman, who works in the Space Portal group at NASA Ames, calls this future "Space 2.0." If Space 1.0 was a "one-size-fits-all" approach with

That's all you really need. The future, if you're so inspired, is up to you.

Dale Dougherty is the founder and general manager of Maker Media.

themselves as part of the space program, follow-

outside the agency. We look at how to build your

Google Lunar X PRIZE

Emerging Space Partners

Google

SPACEX

Virgin GALACTIC

XCOR AEROSPACE

Lunar Transportation Systems Inc

ECLIPTIC

PARAGON SPACE DEVELOPMENT CORPORATION

Masten SPACE SYSTEMS

ASTROBOTIC Technology, Inc.

ODYSSEY MOON

Blue Origin

SCALED COMPOSITES

CISCO

What are effective ways to engage this interest and these activities to further US and International goals in Space?

First, What are US Goals in Space?

The National Space Policy

June 28, 2010

The United States is committed to a robust and competitive industrial base. In support of its critical domestic aerospace industry, **the U.S. government will use commercial space products and services in fulfilling governmental needs, invest in new and advanced technologies and concepts, and use a broad array of partnerships with industry to promote innovation**. **The U.S. government will actively promote the purchase and use of U.S. commercial space goods and services within international cooperative agreements**.

The National Space Policy

June 28, 2010

The United States will engage in expanded international cooperation in space activities. The United States will pursue cooperative activities to the greatest extent practicable in areas including: space science and exploration; Earth observations, climate change research, and the sharing of environmental data; disaster mitigation and relief; and space surveillance for debris monitoring and awareness.

Human Space Flight and Exploration

"The long term goal of the human space flight and exploration efforts of NASA shall be to

expand permanent human presence beyond low-Earth orbit

and to do so, where practical, in a manner

involving international partners."

(Excerpts from PL 111-267 Sec. 202(a))

How do we effectively engage commercial interests and activities to help meet these goals?

Using a simple three step process...

Step #1

Determine areas of space activities where there are commercial options

Step #1 (cont.)

Determine areas of space activities where there are commercial options

By identifying where significant private capital is being put at risk to establish new space capabilities

23 Teams Currently Competing for the Google $30M Lunar Xprize

Research has shown the winning team will typically spend 2 to 5 times the prize purse in reaching their goal

Conclusion: A lot of private capital being risked chasing the Google Lunar Xprize

Question: What is the business strategy for the companies pursuing the Google Lunar Xprize, after the prize is won??

Question (cont.): What is the business strategy for the companies pursuing the Google Lunar Xprize, after the prize is won??

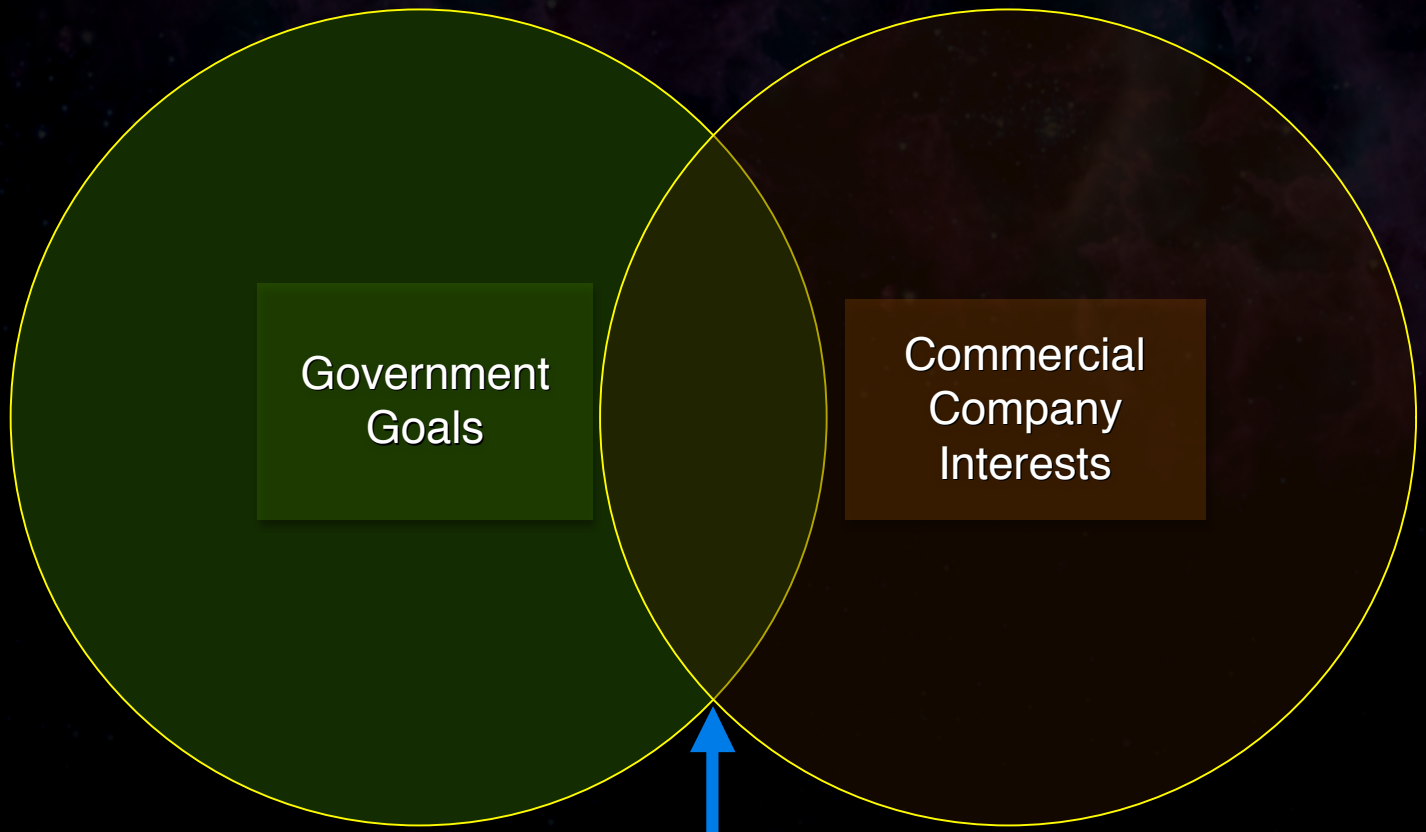
How might these companies' post-prize business strategies align with the proposed lunar research park??

Step #1 (cont.)

Determine areas of space activities where there are commercial options

By identifying where significant private capital is being put at risk to establish new space capabilities

Or where there are established companies with interests aligned with Government needs



Activities of Common Interest

Example:

Government: Lunar Settlements, which require robotic capabilities for site development

Caterpillar: Development of automated and remote operator earth moving technologies

Step #2

Secure government funds (QED*)

** - Quite Easily Done*

Step #3

Establish effective government public/private working arrangements to pursue common interests

Effective Government Public/Private Working Arrangements:

Cooperative Agreements, Funded Space Act Agreements, Grants, Firm Fixed Price Contracts, IDIQ Contracts.

Note: Cost Plus Contracts are often ineffective and should be used only as a last resort (often lead to misalignment of business objectives between customer and supplier).

This Three Step Process has (in effect) been used to establish:

1. NASA Commercial Orbital Transportation Services (COTS) program (Funded SAA)
2. NASA Commercial Resupply Services (CRS) contracts (FFP Contract)
3. NASA Innovative Lunar Demonstration Data (ILDD) Program (IDIQ Contract)
4. NASA Commercial Reusable Suborbital Research (CRUSR) program (FFP Contracts)
5. NASA JUSTSP/PISCES Support (Grants)

Using this Simple Three Step Process,
or "Road to Inspiring Space Exploration (RISE)"

we can look forward to...

TRANQUILITY SHORES
INDUSTRIAL PARK
LUNOX CORP.
EDC
He3 LTD.
LUNACOMM INC.
LUNOX
LUNARIJ
THE NEW SOURCE FOR RESEARCH,
because we will not cease our exploring.
Pat Rawlings '89