

The Rise of Commercial Space Businesses in Asia
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Google Lunar XPrize: Introduction and background

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The “XPRIZE”



- ◆ **Foundation created by Peter Diamandis (M.D.) in 1995**
 - ◆ **Other creations include Singularity University, Planetary Resources (**asteroid mining**), Zero Gravity Corp. (**weightless flight operations**), Space Adventures (**space tourism**), International Space University, Rocket Racing League, Students for the Exploration and Development of Space (SEDS)**
- ◆ **(XPRIZE.org) designs and manages public competitions intended to encourage “radical breakthroughs” that could benefit humanity**
 - ◆ **Should have “an audacious goal” (focus on problem believed to be unsolvable or with no clear path to solution)**
 - ◆ **Should set terms winnable by small team within 2 – 7 years**
 - ◆ **Should give birth to a new industry or transform/revitalize an existing one with long-lasting benefits**

Current and recent XPRIZES

Prize	Total of prizes	Registered teams	Start / announced	Prize(s) awarded
Anu & Naveen Jain Women's Safety XPRIZE	\$ 1M	85, from 18 countries	Reg. deadline 4/28/2017	6/2018
Water Abundance XPRIZE	1.75M	98	Reg. deadline 4/28/2017	8/2018
IBM Watson AI XPRIZE	5M	142	Ann. at TED 3/20/2014	Grand prize at TED2020
Shell Ocean Discovery XPRIZE	7M	21	12/14/2015	12/2018
NRG, COSIA Carbon XPRIZE	20M	23 semifinalists to Round 2	9/29/2015	3/2020
Barbara Bush Foundation Adult Literacy XPRIZE	7M	8 semifinalist	6/08/2015	1/2019
Global Learning XPRIZE	15M	5 finalist	9/2014	4/2019
Qualcomm Tricorder XPRIZE	10M	2 winners from 300	5/10/2011	4/12/2017
Google Lunar XPRIZE	30M	5 finalists	9/13/2007	3/2018

Google Lunar XPRIZE



- ◆ **Three main goals that must be met**
- ◆ **1. Land a craft on the moon (with advance notice of launch & intended landing site to XPRIZE)**
- ◆ **2. Move craft a distance of at least five hundred meters below, on, or above the lunar surface**
 - ◆ “Along an interesting path in a deliberate manner”
- ◆ **3. Transmit two “Mooncasts” from surface**
 - ◆ 8 min of high-resolution video plus real-time low-rez video
 - ◆ Include 360 degree panoramic view (that shows part of craft & payload)
- ◆ **Government funding must not exceed 10% of total mission cost**
 - ◆ Cap does not count goods and services that team buys from government sources at market price

Teams in Google Lunar XPRIZE

Out of the competition

Continuing to next phase

Astrobotic	USA
Team Italia	Italy
Stellar	International
IndependenceX	Malaysia
Omega Envoy	USA
Eurolunar	International
Part-Time Scientists	Germany
Team Puli	Hungary
Spacemeta	Brazil
Plan B	Canada
Angelicvm	Chile

SpaceIL	Israel
Moon Express	USA
Synergy Moon	International
Team Indus	India
HAKUTO (ispace)	Japan

Google Lunar XPRIZE Milestone Prizes

To teams that demonstrate (via actual testing and analysis) robust hardware and software to overcome key technical risks in the areas of imaging, mobility and lander systems

SUMMARY OF MILESTONE PRIZE WINNERS

Landing (\$1 Million each)

Astrobotic (US)

Team Indus (India)

Moon Express (US)

Mobility (\$500,000 each)

Astrobotic (US)

Hakuto (Japan)

Part-Time Scientists
(Germany)

Imaging (\$250,000 each)

Astrobotic (US)

Moon Express (US)

Part-Time Scientists
(Germany)

Some key questions



- ◆ **How does the Lunar XPRIZE impact the emergence of commercial space businesses?**
- ◆ **What does the competition show about the emergence of space business ecosystems in our countries of interest?**
- ◆ ...