• The X PRIZE Foundation
• Current & Future X PRIZEs
• Designing an X PRIZE
The X PRIZE Foundation
1927 Orteig Prize

“First team to fly non-stop between NY and Paris…”

- Orteig puts up $25,000.
- 9 Teams spend $400,000.
- Lindbergh, 25 year old underdog wins!
- Results:
  - Top media story of the century
  - Transformed public’s view of Aviation
  - 6,000 → 180,000 passengers in 18 months
What was the ANSARI X PRIZE?

- $10 Million
- Privately funded teams
- 3 person reusable spaceship
- 100 Km Altitude
- Two flights within 2 weeks
ANSARI X PRIZE – The Teams

26 teams from 7 nations spending over $100 million to win $10 million purse

ARCA
Space Transport Corp.

DaVinci Project
Canadian Arrow
Rocketplane

Armadillo Aerospace
StarChaser
Pablo DeLeon

Scaled Composites – SpaceShipOne
Trustees & Vision Circle Members

Eric Anderson - CEO, Space Adventures
Anousheh Ansari - CEO, Prodea
Michael Boustridge - President, BT – N. Am
Sergey Brin - Co-Founder, President, Google
Arianna Huffington - CEO, Huffington Post
Dean Kamen - CEO, DEKA
Ray Kurzweil - CEO, Kurzweil AI
Erik Lindbergh - Vice-Chair, Lindbergh Fndtn
Elon Musk - CEO, SpaceX
Larry Page - Co-Founder, President, Google
Adeo Ressi - CEO, The Funded
Eric Schmidt - CEO, Google
Ratan Tata - Chairman/CEO, Tata Group
Craig Venter - Pres, J. Craig Venter Institute
Will Wright - Video Game God, Maxis
Today’s Grand Challenges are Tomorrow’s X PRIZEs

- Life Sciences
- Energy & Environment
- Global Development
- Education
- Exploration
Current and Future X PRIZEs
Active X PRIZEs

$10,000,000
Launched: 10.04.06
Vertical: Life Sciences

Sequence 100 human genomes in 10 days;
genomics.xprize.org

$30,000,000
Launched: 09.13.07
Vertical: Exploration

Land a robot on the moon, rove 500 meters and send back images;
space.xprize.org

$10,000,000+
Launch: 03.20.08
Vertical: Energy & Environment

Build an affordable, desirable, manufacturable 100 MPGe car
auto.xprize.org

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$10 Million Purse for the first team to:
- Sequence 100 Human Genomes
  in 10 days

Purse funded by: Dr. Stewart & Marilyn Blusson

The Genome 100: Stephen Hawking, Larry Page, Larry King, Richard Branson, Anousheh Ansari...
Genome 100 — the human face of personalized medicine... celebrities, benefactors, and representatives of patient groups.
Google LUNAR XPRIZE
MOON 2.0
Join the Revolution
googlelunarxprize.org
What is the Google Lunar X PRIZE?

- $30,000,000 purse
  - $20M 1st place
  - $5M 2nd place
  - $5M in Performance Bonuses

- Open to world-wide competition

- Privately financed teams must:
  - Land a rover on Moon
  - Explore at least 500m of the lunar surface
  - Return two packages of high definition video and imagery called “Mooncasts”

- Bonuses encourage:
  - Roving further along the lunar surface
  - Visiting man-made hardware
  - Surviving a lunar night
**Grand Challenge:** Inspire a new generation of viable, super-efficient vehicles to break our addiction to oil and stem the effects of climate change

**Vehicles:** Must be manufacturable, have a readily available fuel infrastructure, safe, affordable

**Two classes:**
- Mainstream (4 seat/4 wheels)
- Alternative (at least 2 seat)

**To Win:** The fastest car **under strenuous and diverse testing** while exceeding 100 MPGe

**Purse Sponsor:** Progressive Insurance

**Purse:** $10M total

**Competition Dates:** April-August 2010

**Teams (Jan ‘10):**
- 111 registrants narrowed to 41 teams from 10 nations (17 US states)
- 51 vehicles (25 new / 26 converted)
- 27 Mainstream / 24 Alternative Class
Some of the Competitors...

Aptera Motors
Electric & Hybrid models

Future Vehicle Technologies
Gasoline engine

Tata Motors
Electricity/Petrol
First large automobile manufacturer

Commuter Cars
Electric
COMPETITION TIMELINE

<table>
<thead>
<tr>
<th>Qualifying</th>
<th>Finals</th>
</tr>
</thead>
<tbody>
<tr>
<td>41 Teams (51 Vehicles)</td>
<td>20-35 Teams (25-40 Vehicles)</td>
</tr>
<tr>
<td>15-20 Teams (20 Vehicles)</td>
<td>Winning Vehicles</td>
</tr>
</tbody>
</table>

|----------|------------|----------|----------|----------|----------|----------|

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DOE-Sponsored $3.5M Edu Program

- DASH+ national high school contest to reinvent the vehicle dashboard for eco-friendly driving
  - www.FuelOurFutureNow.com
- To engage students and the public in learning about advanced vehicle technologies, energy efficiency, climate change, alternative fuels, and the science, technology, engineering, and math (STEM) behind efficient vehicle development
- To inspire youth to learn more about and pursue careers in advanced vehicle development and generate enthusiasm about the energy-efficient vehicle options of the near-future
- To showcase the 21st century learning skills needed to succeed in work and life, including creativity and innovation, critical thinking and problem solving, communication and collaboration
Broad Base of Support

Al Gore
Former U.S. Vice Pres.

Jennifer Granholm
Governor, State of Michigan

Michael Bloomberg
Mayor, City of New York

Jay Leno
Host, The Tonight Show

Arnold Schwarzenegger
Governor, State of California

Gavin Newsom
Mayor, City of San Francisco

NHTSA
www.nhtsa.gov

U.S. House of Representatives

U.S. Senate

California Environmental Protection Agency

Air Resources Board

NRDC

Sierra Club
Founded 1892

Union of Concerned Scientists

Global Green USA

CFA

APOLLO Alliance

National Wildlife Federation
X PRIZEs in development

Oceans Exploration

Rapid TB Detection

Bionics
X PRIZE Concepts

Brain-Computer Interface

Carbon Capture

A.I. Physician
X PRIZE Concepts

Education

Clean Water

Energy

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Designing an X PRIZE
Prospective Prizes
• Orteig (Lindbergh)
• DARPA
• X PRIZES

Retrospective Prizes
• Nobel Prizes
• MacArthur Genius
• Friedman Prize

Inspire
• “Can it be done?” becomes “When will it happen?”
• Target categories that are stuck
• Create heroes
• Define a problem, not a solution

Acknowledge
• Accomplishments from years ago
• Rarely create media excitement
• Don’t inspire future breakthroughs
1. **High Leverage**: Teams spend roughly 10 – 50 times the value of the purse

2. **Efficiency**: You only pay the winner... pay-for-performance

3. **Encourage Industry Development**: Rather than give rise to a single solution, a prize gives rise to many solutions...
Finding appropriate targets
Promising Targets

- Areas where capital doesn’t flow because markets are inefficient, blocked, or dominated by monopolies
- Technology demonstrations where a large enough proof of concept can change perception enough to drive investment in taking existing technology to scale
- Behavioral modification, particularly where such modification induces lasting effects, such as hardware or policy changes
- Futuristic technologies where the conversation needs to be shifted from “can it be done?” to “when will it be done?”
Advancing S-Curves

[Diagram showing two S-curves: an earlier one labeled "Prior S-curve" and a newer one labeled "Newer S-curve". The newer curve is shifted to the right with a note indicating "Shift to a new technology".]
Crossing the Chasm
X PRIZE Design Principles

• Solution-Independent Problem Statement
  • Allows for diverse competitors and approaches.

• Clear and Measurable Outcome
  • Quantifiable or unassailable metrics identify a clear winner.

• Finite Period of Competition
  • 3-8 year win desired for PR and investment horizons.

• $10M+ Prize Purse
  • Attracts PR and encourages competitor investment.

• Integrated Media Campaign
  • Provides key incentive above and beyond prize purse.
# Prize Economics 101...

<table>
<thead>
<tr>
<th>Prize</th>
<th>Purse</th>
<th>Amount Invested by Winning Team</th>
<th>Total Invested by All Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orteig</td>
<td>$25K</td>
<td>$10K</td>
<td>$400K</td>
</tr>
<tr>
<td>Ansari</td>
<td>$10M</td>
<td>$26M</td>
<td>$100M</td>
</tr>
<tr>
<td>NASC*</td>
<td>No purse,</td>
<td>$4.1M</td>
<td>$12.3M</td>
</tr>
</tbody>
</table>

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Incentive Stacking

Investment Threshold (with uncertainty)

Existing Incentives

Non-market Incentives

Market Incentives

Total Prize Incentives

Prize purse

Associated market commitments

Media attention

Glory & prestige

Thrill of victory
Portfolio of Incentives for Innovation

Traditional Financing
- Grants
- Advance Market Commitments
- Tax Relief

Prizes
- Intellectual Property
- Subsidies

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“…in these great challenges, the victors may claim the glory, but the world will claim the spoils.”
• Prize definition, development, and testing
• Educational outreach and “junior X PRIZEs”
• Nexus for interdisciplinary innovation
Ideal X PRIZE Profile (Economic)

- Create new markets for unmet needs
  - Developing world diagnostics and therapeutics

- Sufficiently raises NPV in an industry to stimulate new talent and investment
  - Service companies of marginal profitability
  - Ex: Preclinical drug discovery, orphan indications

- Address “Tragedy of the commons”
  - Low direct compensation, positive externalities
  - Ex: platform companies, low barriers to entry

- High degree of economic leverage
  - Capital infusion to win prize
  - Increased investment in sector post-prize
  - Human capital infusion