



Revolution Through Competition

Driving Innovation via Incentive Prizes

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“Classic” Inducement Prizes

- Simple, specific definition of desired outcome
- Purse offered for achieving outcome
- Purse paid only if outcome achieved
- Anyone can try
- Fame and fortune for success, not for trying





Historical Examples

- 1714 – Prize for device to measure longitude
 - Surprise and controversial winner: chronometer
 - Revolutionized navigation; saved lives
- 1783 – Prize to obtain Soda Alkali from Sea Salt
 - Leblanc Process had major economic effects
 - Jump-started the chemical engineering profession
- 1919 – Orteig Prize for trans-Atlantic flight
- 1993 – Super-Efficient Refrigerator Prize
- 1996 – Ansari X PRIZE for reusable private spacecraft
- 2004 – DARPA Grand Challenge for autonomous vehicles



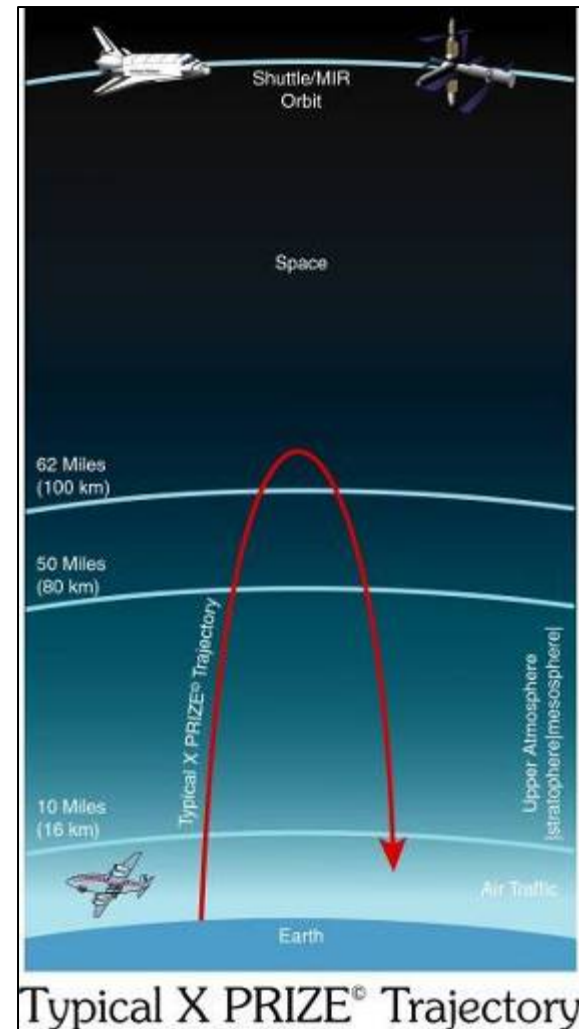
1927 Orteig Prize: New York - Paris

- 1919 Raymond Orteig puts up a \$25,000 challenge.
- 9 Teams register to compete and spent \$400,000 to win the prize
- The underdog, 25 year old Charles Lindbergh wins the prize!
- Within 18 months of his flight:
 - Passenger traffic increased 30x
 - # of aircraft increased 4x
 - Aviation stocks soar



What was the ANSARI X PRIZE?

- **\$10 Million**
- **Privately funded teams**
- **3 person reusable spaceship**
- **100 Km Altitude**
- **Two flights within 2 weeks**



ANSARI



PRIZE®

PRESENTED BY:



ANSARI X PRIZE

RESULTS

\$10M



RESULTS:

- Changed the paradigm that space is only for governments.
- Inspired 26 teams who spent \$100M... only paid the winner
- Public excitement & awareness
- Launched a new industry -- SpaceShipTwo (Virgin Galactic)
- Regulatory reform
- Leveraged sponsor funding 50-fold



Creating History



Mission & Growth of XPF



X PRIZE Board of Trustees Meeting



Mission Statement:
“To bring about radical breakthroughs for the benefit of humanity”

New Board Members: Page, Musk, Venter, Kamen, Kurzweil, Huffington, Tata

Expanded Mission: Space → 5 different verticals

Vision: Change philanthropy → Efficient & highly leveraged
Build a valuable “best practices” prize organization



Hallmark Attributes of Large Incentive Prize Competitions

Donate to a non-profit:	Leverage 1:1	\$
Offer a matching gift:	Leverage 2:1	\$\$
Sponsor a Prize:	Leverage 50: 1	\$\$\$\$\$

1. **High Leverage:** Teams spend roughly 10 - 50 times the value of the purse
 - **Efficiency:** You only pay the winner... pay-for-performance
 - **Encourage Industry Development:** Rather than give rise to a single solution, a prize gives rise to many solutions...



Important Attributes for Prizes

- Large Cash Purse (\$10M >)
- Clear objective & simple rules
- Target areas that are “stuck”
- Define a problem, not a solution
- Attract maverick thinkers from across disciplines (worldwide)
- Change the paradigm of what is possible



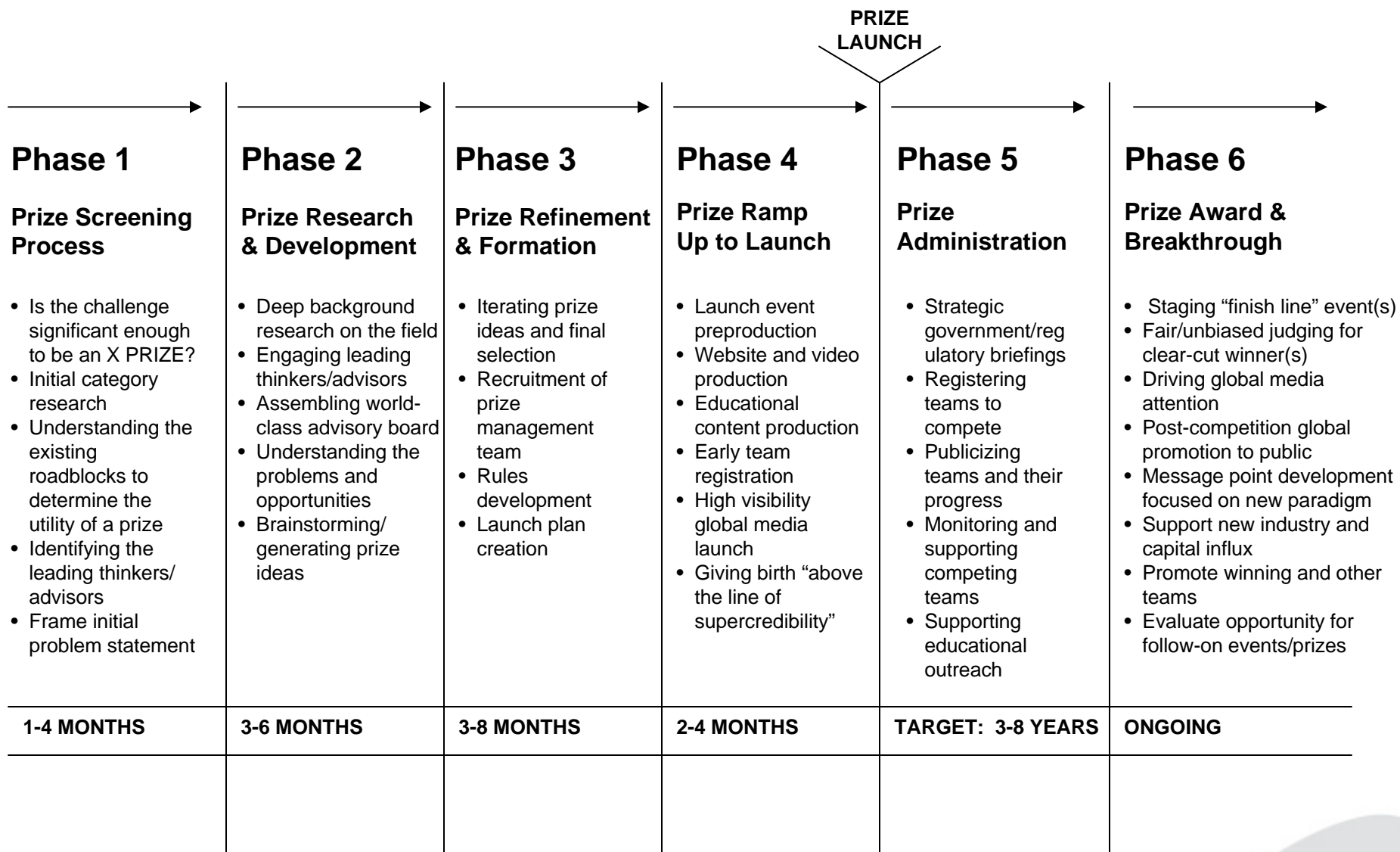
Important Attributes for Prizes

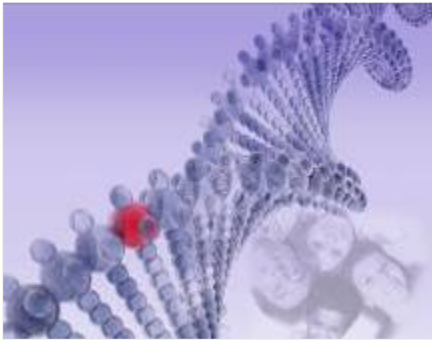
- Make heroes out of the teams
- Ideally are telegenic, open to media, to drive PR engine;
- Educate the public, get them excited and involved.
- Dial “Degree of Difficulty” based on parameters... For an X PRIZE it is 3 to 8 years;
- Encourage taking intelligent risk!





Prize Development Master Process





\$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, production-capable 100 MPGe car www.progressiveautoxprize.org

Active X PRIZES





Progressive Insurance Automotive X PRIZE

Our goal: Inspire a new generation of clean, production-capable, super-efficient (>100 MPGe) vehicles that help break our addiction to oil and stem the effects of climate change.



- **Vehicle Classes**
 - Mainstream (4+ passengers, 4+ wheels, range 200 mi, etc.)
 - Alternative (1+ passengers, 1+ wheels, range 100 mi, etc.)
- **Overall Requirements**
 - Production-capability (safety, features, cost & plan)
 - High fuel economy (> 100 MPGe)
 - Low emissions (< 200 g/mi GHG)
- **How to Win**
 - Qualify... Race...Meet overall requirements
 - Fastest overall time in each class wins



Progressive Insurance Automotive X PRIZE

- Special challenges:
 - Opposite of trying to jump-start an industry; trying to change a huge existing industry
 - Industry very powerful economically and politically
 - Especially important to engage public and media
 - Public education a key goal
 - Help build market for high-efficiency vehicles
 - Value of the prize is the publicity, not the purse
 - Attract investors, partners, acquirers
 - 3rd-party validation to consumers





Broad Base of Support

NGOs,
etc.:



Jay Leno



Al Gore

Government: DOE, Argonne Natl. Lab, EPA, NHTSA, FHWA



Gov. Jennifer Granholm



Gov. Arnold Schwarzenegger



Mayor Michael Bloomberg

PROGRESSIVE AUTOMOTIVE XPRIZE Education Program

- U.S. Department of Energy sponsoring \$3.5M education program
- Program to include:
 - Online knowledge center with games & info on advanced vehicles, alternative fuels, fuel efficiency, climate change, etc.
 - Vehicle telemetry and interactive real-time online race experience
 - National student contest
 - Student activities in Host Cities



Example: Live coverage of Amgen Tour of California



Many Opportunities for Recognition

- **Worthwhile to race, not just for first place**
- **Significant PR exposure to showcase vehicle/technology advantages**
- **Robust online technology**
 - Consumer education
 - Team websites and reporting
 - Real-time, online Race monitoring
- **PIAXP Awards**
 - Special judging panels
 - Honorary, but perhaps with separately-funded purses
 - Possible examples:
 - *Performance*: Highest MPGe, Best Overall Performance,
 - *Application*: Best Commuter, Best Family,
 - *Technology*: Best EV, Best PHEV, Best Diesel,
 - *Broad*: Best Production Vehicle, Best Modified Vehicle, Most Innovative, Most “Green”, People’s Choice, ...





Progressive Automotive X PRIZE – Launch Event @ NY Autoshow





Progressive Automotive X PRIZE – Launch Event @ NY Autoshow



Mayor Bloomberg – 21 March 2008



Jacob K. Javits Convention Center of New York

PROGRESSIVE AUTOMOTIVE X PRIZE

Alexander Karsner
Assistant Secretary
Office of Energy Efficiency and Renewable Energy, DOE

PROGRESSIVE AUTOMOTIVE X PRIZE
The Race for Our Future. Starts Now.

Peter H. Diamandis
Chairman & CEO, X PRIZE Foundation

Autoshow
tickets

FuelVapor Technologies
The Race for Our Future. Starts Now.



How Prizes Drive Innovation

- External investments leverage purse (10X-50X)
 - Large purses not necessary
- Light bureaucracy encourages speed and diversity
 - More entrepreneurial than bureaucratic
 - Traditional qualifications not required
 - Encourages cross-discipline approaches
 - Encourages Out-of-the-box thinking





Federal Government and Inducement Prizes

- Prizes can address disadvantages of traditional R&D funding approaches, but....
- Prizes have disadvantages too
- Balanced approach needed




Disadvantages -Traditional R&D

- Peer-review slow, can be biased, discourages cross-discipline and radical approaches
- Funding can only support a limited number of performers
- Risk averse
 - Rather not pay for failure
 - High probability of some success wins over low probability of a dramatic breakthrough



Disadvantages -Prizes

- Need to fund, not just the purse, but prize development and administration
 - Unlikely to attract highly-capable performers in traditional R&D institutions (work-for-pay model)
 - Prize design can be **very** hard
 - Much-more specific statement of problem and solution criteria
 - Must have domain expertise (can't rely on expertise of potential grantees and peer-review)
 - Different prizes need different expertise
 - Many devils in the details
- 
- A decorative grey curved shape in the bottom right corner of the slide.



Possible Approaches

- Define broad goals and criteria, then fund external institutions to develop and administer prizes (example: NASA)
- Blended approach: establish a general prize, but offer seed funding via traditional R&D contracts to educational and research institutions (example: DARPA Grand Challenge)
 - Analogy with “classic” prize: Government also provides an investment fund
 - Since Government shares risk, perhaps the purse should be reduced if won by team with government investment
- Offer matching funds for investments aimed at winning the prize





Some Resources

- *Alex Schroeder*, “The Application and Administration of Inducement Prizes in Technology”, Independence Institute, 2004
- *Richard Newell and Nathan Wilson*, “Technology Prizes for Climate Change Mitigation”, Resources for the Future, 2005
- *Thomas Kalil*, “Prizes for Technological Innovation”, Brookings Institution, 2006
- NRC Committee on the Design of an NSF Innovation Prize, “Innovation Inducement Prizes at the National Science Foundation”, ISBN: 0-309-66894-8, 2007



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