

## **Testimony to the House Science Committee**

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Chairman Boehlert and members of the Committee, thank you for permitting me to submit this testimony on the use of inducement prizes for advances in hydrogen technology. My name is Peter H. Diamandis. I am the Founder, Chairman, and CEO of the X PRIZE Foundation.

Founded in 1995, The X PRIZE Foundation fosters innovation in a unique way. Rather than awarding money to honor past achievements or directly funding research with uncertain outcomes, the X PRIZE Foundation creates high profile competitions that attract and motivate creative solutions to important problems. Our mission is to bring about radical breakthroughs for the benefit of humanity utilizing prizes.

Incentive prizes have a history stretching over several hundred years, with successful prizes having dramatic effects. One of the most famous – and the one that personally inspired me to start X PRIZE – was the Orteig Prize, won by Charles Lindbergh in 1927 for his dramatic non-stop flight from New York to Paris in 1927. This \$25,000 prize caused nine teams to spend \$400,000. Lindbergh's, the most unlikely of the nine teams, won the purse and ignited an aviation renaissance.

The huge crowd that mobbed Lindbergh in Paris was just the first indicator of the impact his achievement would have. Within eight months of his flight, the number of airplanes in the U.S. quadrupled, the number of pilots tripled and the number of individuals buying airline tickets increased 30-fold from 5,700 to nearly 180,000.

Lindbergh's success in winning the Orteig Prize gave a jump-start to commercial aviation. It was the efficiency of the Orteig Prize and the tremendous leverage it offered that drove me to create the Ansari X PRIZE to solve the problem of private spaceflight.

Since the age of 9, my passion has been spaceflight. I'm a child of the Apollo vision that this country once had. However, as I watched the aerospace industry develop over the past few decades, it was evident to me that innovation in spaceflight had stalled. During the past 40 years the cost of spaceflight has gone up, but the reliability has not

improved. To disrupt these trends, I created an international competition with a \$10M purse, for the first privately-funded team to develop and fly a 3 person, reusable spaceship to 100 kilometers altitude, twice within two weeks. The prize was announced under the arch in St. Louis, 10 years ago next month (May 18<sup>th</sup>, 1996), along with 20 astronauts, the NASA Administrator, the FAA Associate Administrator and the Lindbergh Family. During the following decade I raised the \$10 million purse, recruited 26 teams from seven countries to compete and built a world-class team of individuals who became expert in how to create, manage and award Inducement Prizes.

As you may know, the Ansari X PRIZE was won on Oct 4<sup>th</sup>, 2004, by Mojave Aerospace Ventures, led by designer Burt Rutan and financier Paul Allen. The competition caused teams to spend over \$100 million to win the \$10 million purse, and attracted over 5 billion media impressions that changed the public paradigm that spaceflight is only for government employees. The winning spacecraft – SpaceShipOne – now hangs next to the Spirit of St. Louis and the Wright Flyer in the Smithsonian National Air & Space Museum.

The long term effects won't be known for years, but it's already clear that X PRIZE helped spawn a new industry with dramatic technological, social and investment opportunities. Richard Branson paid \$121M for the winning technology, and thousands of consumers have paid deposits for space tourism tickets. Several other commercial spaceflight companies were spawned by the X PRIZE competition and are still operating.

Inducement prizes are fundamentally different than conventional R&D funding. Inducement prizes define a problem and pay for successful solutions – they do not pay for the work itself, they do not define or pre-judge technical approaches, and they do not pre-judge qualifications.

Successful prizes are well-designed, well-timed, appeal to a broad audience, and offer potential rewards – prestige, publicity, and future business – far in excess of the purse itself. Inducement prizes have a unique ability to efficiently drive research that leads to high-leverage breakthroughs. The return-on-investment can be huge; the Ansari X PRIZE leveraged seed capital 50-fold. Why is that? Why can inducement prizes work

so well? There actually is a science to this process, something with the X PRIZE Foundation has spent 10-years learning. Following are some the important reasons:

1. **Prizes Attract Alternate Funding Sources**: Prize teams are able to attract risk-taking capital which is put up by corporate sponsors or wealthy individuals who actually encourage risk-taking because they seek the publicity and desire to win. Prizes tap into the \$20 billion pot of money spent each year on event and sports-related sponsorship.
2. **Media Spotlight**: The intense media spotlight and opportunity to become a global hero, drives teams to work around the clock. Incentive prizes cause these teams to work harder than any employment contract could ever achieve. If leveraged correctly, the media can also play a key role in educating the public about each team and their breakthroughs.
3. **Bypassing Bureaucracy**: Many brilliant individuals abhor bureaucracy and would rather not go through the paper work and peer-review process that would completely and totally frustrate them. Prizes set up a clear process: Solve the problem, by what-ever means, and you win the money and the fame.
4. **Crossing Disciplinary & National Boundaries**: Most importantly, prizes encourage innovators from outside the typical fields or nations to address your problem. Breakthroughs typically come when a fresh mind, without pre-conceived biases, looks at the challenge.

Creating and managing successful inducement prizes is much harder than it looks. There have been many attempts in the past which have failed. Prizes must not be about technology alone, they must be structured to create and follow heroes, have dramatic and demonstrable conclusions, and must be something the public and media are made to care about. Success requires a carefully structured and balanced approach that involves expertise in many areas, including science, technology, rules & competition design, event management, arbitration, financing, sponsorship, media relations, public relations, and government relations.

Since the awarding of the \$10 million Ansari X PRIZE we have focused on building the X PRIZE Foundation into a world-class prize institute using best practices and its

300 man-years of experience, to create, administer and award prizes that will help change the world. We are currently working on inducement prizes in several areas, including automotive, genetics, education, entrepreneurship, and – of course – space.

In closing I would like to highlight our work with NASA, since I believe it provides a useful model for the type of prize creation and management contemplated by the H-Prize Act. In 2003, prior to the winning of the Ansari X PRIZE, the leadership of NASA asked the X PRIZE to conduct a study on how prizes could be used to support their mission. Under contract to the Agency, we came up with over 100 prize ideas and helped them structure the Centennial Challenges Program, which is now funded annually to approximately \$10 million per year. The X PRIZE Foundation now works closely with NASA assisting and advising, and in a number of cases managing their larger prizes. In this situation, NASA puts up the prize purse and the X PRIZE Foundation is responsible for raising the sponsorship funds to manage the prize, writing the rules, attracting the teams, and following through to a successful conclusion.

It is important to note that NASA does not manage the prizes themselves; they identify the prize area and secure the prize purse. They depend on an independent partner like X PRIZE to write the rules and implement the competition. In my view this separation of responsibilities is fundamentally important. The prize organization must often act quickly, with authority, and must be able to assure potential competitors that they will be treated fairly and without political bias. Thus, for example, once a particular prize has been established and the management plan approved, one should avoid mixed responsibilities for rule-creation, committee selection, judging, and arbitration.

Inducement prizes are well-suited to stimulate innovations in the fields of both energy and transportation, and for that reason towards the long-term goal of a hydrogen economy. Technology advances are plausible, large markets are possible, investors are poised, and there would be great public interest in fundamental breakthroughs. The multibillion dollar question, of course, is what are the prize rules, who will compete, and when will it be won. The H-Prize Act would hasten the needed breakthroughs, and The X PRIZE Foundation is ready to help.

Thank you for your time and attention.