

Testimony of

Christopher Frangione
Vice President, Prize Development, XPRIZE

Before the
United States House of Representatives
Committee on Science, Space and Technology
Subcommittee on Research and Technology

“Prizes to Spur Innovation and Technology
Breakthroughs”

April 9, 2014

Introduction

On behalf of XPRIZE, I'd like to thank the committee, Chairman Buschon and Ranking Member Lipinski, for the opportunity to testify today. XPRIZE welcomes the attention the committee is giving to prizes as an economically efficient way for the Federal government to incent innovation, economic growth and solutions to some of the biggest problems facing our nation today. I'm Chris Frangione, Vice President of Prize Development. I am responsible for overseeing the design of XPRIZES from conception to launch.

Background

XPRIZE is the global leader in the creation of incentivized prize competitions. As a 501c(3) not-for-profit organization, our mission is to bring about radical breakthroughs for the benefit of humanity, thereby inspiring the formation of new industries and the revitalization of markets. XPRIZE works to accelerate the pace of innovation across sectors with prizes that are audacious, yet achievable. XPRIZE looks across industries to find "white spaces" where a breakthrough can lead to an exponential shift.

Founded in 1995, we are the recognized world leader for creating and managing large-scale, global, incentive prize competitions that stimulate investment in research and development worth far more than the prize itself. To date, XPRIZE has successfully awarded four prizes with combined purses of over \$23 million. These prizes covered multiple sectors, including Progressive Insurance Automotive XPRIZE for highly fuel-efficient vehicles, the Wendy Schmidt Oil Cleanup XCHALLENGE for better surface oil cleanup technologies, the Northrop Grumman Lunar Lander XCHALLENGE, and of course the Ansari XPRIZE for commercial space flight. In most of these competitions we collaborated with the U.S. government.

We also have four active prizes with combined purses of over \$44 million. These include the \$30 million Google Lunar XPRIZE that challenges teams from around the world to land a rover on the Moon and send back live video to the \$10 million Qualcomm Tricorder, and the XPRIZE for handheld health diagnostics to the \$2 million Wendy Schmidt Ocean Health Prize - a competition to create breakthrough pH sensors that can help us begin the process of healing our oceans.

Upcoming prizes explore topic areas such as literacy, personal aerial transport, energy density, Alzheimer's, and organogenesis.

The XPRIZE Prize Model

XPRIZE believes we can make the impossible possible by creating an infrastructure where our world's innovators create breakthroughs that both catalyze industries and have a measureable benefit to humanity. We do this via large-scale incentive prize competitions.

Prizes are useful tools for solving problems for which the objective is clear, but the way to achieve it is not. By attracting diverse talent and a range of potential solutions, prizes draw out

many possible solutions – many of them unexpected – and steer the effort in directions that established experts might not go, but where the solution may nonetheless lie.

Prizes are powerful tools that have been around for centuries. In fact, 2014 marks the 300th anniversary of one of the most famous early prizes - the Longitude Prize – established by the British government in 1714 to reward the precise determination of a ship's longitude.

Prizes are powerful for many reasons, the most important of which include leveraging your investment, democratizing innovation, and reducing risk.

Throughout the course of a competition, teams spend their own money to compete for the prize. We find that teams spend research and development dollars that, aggregated across all teams, is four to ten times the value of the prize purse. So, you could give a grant or contract worth \$5 million and get \$5 million worth of research and development, or you can put out a prize with a purse of \$5 million and get upwards of \$20 to \$50 million worth. In a time of fiscal constraint, prizes are an extremely efficient tool to help spur innovation.

At XPRIZE we say, “Why find the needle in the haystack when that needle can find you?” Hosting a prize does just that. Prizes inspire teams from around the world to compete to achieve your goal – and often those that are inspired are not the current industry incumbents. Some solvers are from tangential fields and have a solution that could be tweaked to solve the challenge at hand, while others possess little to no experience at all. A prize does not care if someone has 20 years of experience or 20 days of experience – as long as they meet the goal of the competition. Using a traditional grant or contract, you would be very unlikely to find such innovators. Your focus would fall on the known players who comprise your target audience. Let me give you some examples. In the 1714 Longitude Prize, everyone assumed it would be a ship's captain or astronomer who would win. But it was a clockmaker. In the 1919 Orteig prize for the first person to fly between New York and Paris non-stop, everyone assumed it would be one of the aviation leaders. They all failed because they were too conservative in the design of their planes and how they flew. Instead, it was won by the relatively unknown, 25 year old mail pilot Charles Lindbergh. In our Progressive Insurance Automotive XPRIZE, we had a group of high school students surpass much of the competition. In our Wendy Schmidt Oil Cleanup XCHALLENGE, a tattoo artist made it into the finals. And although his team did not win, it still did better than the industry standard at that time. In fact, in that prize, four of the ten finalist teams were new to the industry. Most likely you would have never given a grant or contract to these innovators because (1) you would have seen it as too risky, (2) you never would have known they existed, and (3) they never knew they had an interest in solving the challenge prior to the prize. To get disruptive innovations, we need to democratize innovation – encouraging anyone from anywhere with any background to help solve our grandest challenges.

Third, prizes reduce risk. What separates prizes from traditional R&D and other funding mechanisms is that the burden of risk is wholly on the teams, since the prize is designed only to reward success. That is, you only pay when a team meets your goal. In a traditional grant or contract, you would award it to the known players because that is less risky for you. But the known players want to be successful, so they are not going to take those risks that are necessary to result in a truly transformational breakthrough. Failure is a necessity of invention, because innovation must build upon unsuccessful attempts. Those competing for the prize are willing to embrace this risk because they have little to lose. As we say at XPRIZE, “The day before anything is a breakthrough, it's a crazy idea!”

As you can see, prizes are extremely powerful and should be one of the tools in your innovation toolkit.

XPRIZE utilizes a proven system of prize design and prize operations to successfully reach near-term goals. XPRIZE undertakes detailed market, stakeholder, and risk analyses to inform both the design of the competition, as well as the associated marketing, media, and education plans. These analyses create the foundation for a sound competition structure and the detailed set of competition guidelines and judging criteria. XPRIZE prize design is focused on collaboration and the ability to bring in ideas from the outside. In doing so, much of the competition design is crowdsourced through expert interviews and comprehensive day-long Visioneering Workshops where XPRIZE concepts come to life.

Once competition guidelines are established, XPRIZE works to announce the competition at a high profile forum, and works to actively recruit a solver community. In addition, XPRIZE works to ensure that we support the solver community by hosting annual mandatory team summits; providing a robust online system for teams to gather and share information; ensuring that teams are meeting competition milestones; and establishing that all teams, regardless of their place in leaderboard standings, are considered heroes and innovators through XPRIZE's marketing and media efforts. Although prizes are about competition, we encourage the inherent collaboration of prize competitions to also shine.

That's what incentivized prize competitions are all about – democratizing innovation by drawing on the talent and ingenuity of people regardless of their experience.

Prizes are One Way to Spark the Innovation Cycle

We strongly believe that the private and public sectors must work together to utilize every tool available to facilitate meaningful innovation that drives economic growth. Prizes are not a replacement to traditional financing mechanisms, but are complements to them. They are one of many innovation tools that agencies and the Federal government should consider utilizing in tandem with other financial mechanisms such as grants, contracts, investments and incentives.

It is important to note that the resulting technology solutions are not replacements for behavioral change. Understanding how and where prizes work best will help ensure that they are used most efficiently and effectively. One of the hallmarks of an XPRIZE is its ability to create and/or catalyze industries. In this regard, the XPRIZE's impact does not begin at its launch, but with its award. As such, prizes are the beginning, not the end, of the innovation cycle, maximizing the impact on emerging industries, scaling new ideas, and ultimately contributing to the economy.

Prizes provide a mechanism to discover breakthroughs that generate, operate and become part of the industrial base. They can catalyze an industry in order to have a real set of benefits for humanity. When an industry undergoes a catalyzing event as the result of a breakthrough, everyone benefits – humanity, industry, and the public perception of what's possible.

Importance of Policy to Send a Signal

The federal government has rightly recognized the power of prize competitions to draw out the latent innovative vision that simply hasn't found the means or the outlet to reach its potential. Following passage of the 2010 America COMPETES Act, which granted agencies the authority

to operate prizes, and President Obama's "Strategy for American Innovation," which called on agencies to use Grand Challenges as an innovation tool, over 55 federal agencies have run more than 300 competitions to engage the public's most creative ideas. In 2013 alone, 25 agencies self-reported a total of 87 prizes – an 85 percent increase year-to-year. Research shows that the aggregate value of prizes more than tripled from 2000 – 2009, from \$125 to \$375 million – and that number continues to grow. These prizes have enabled government agencies to establish ambitious goals, pay only for success, and utilize novel approaches from outside partners to achieve their goals.

Now, Congress has an opportunity to once again use policy as a driver for innovation by including language supportive of prizes in legislation as it did in 2010 with the America COMPETES Act. We believe legislation that provides agencies with guidance to utilize high-impact prizes as an economically efficient way to incent innovation sends a strong signal to federal agencies, and also to the private sector and innovation community, that the federal government believes in the power of prizes as a source of innovation.

The Value of Public-Private Partnerships

At the crossroads of policy-driven innovation and 'garage ideas', I have witnessed remarkable breakthroughs brought about by critical partnerships between the public and private sector. For example, XPRIZE partnered with the Department of Energy to support a \$10 million global competition to inspire a new generation of viable, safe, affordable, and super fuel-efficient vehicles. We brought together government and the private sector, including our lead sponsor Progressive Automotive Insurance. Our top prize-winner, Oliver Kuttner, a commercial real estate developer who loved to tinker with cars since taking auto shop in high school, maxed out his wife's credit cards to invest in chasing his dream – which turned into a four-seat, 830-pound vehicle that ran on a one-cylinder, ethanol-fueled internal combustion engine that achieved 102.5 miles per gallon fuel efficiency. Today, Kuttner's company, Edison2, is continuing to develop extremely light, super fuel-efficient vehicles including an electric version. That is the kind of citizen innovation we take pride in fostering at XPRIZE.

Another ongoing example of government playing a supportive role even without supplying any financial support is a three and a half-year, \$10 million global competition to develop a consumer-friendly, handheld device capable of diagnosing and interpreting a set of 15 health conditions and capturing key vital signs. The Qualcomm Tricorder XPRIZE currently has 30 teams – from the United States, Canada, the United Kingdom, India, Greece, Taiwan and Slovenia – competing for the purse. The U.S. Food and Drug Administration is an integral partner in the effort, which XPRIZE is supporting with funding from our lead sponsor, the Qualcomm Foundation. In addition to assisting teams in preparing for future regulatory clearance post-competition, this prize competition is helping the Federal Drug Administration maximize its own readiness for new regulatory submissions in the direct-to-consumer diagnostics space.

Partnerships such as these have a history of maintaining a commitment to scientific excellence by guiding the conception, safety, and deployment for various technologies that have paved the way for the breakthroughs of today.

Policymakers can continue this great progress in prize-based, public-private partnerships by supporting prize language such as that included in the FIRST Act. Congress' passage of a bill that includes prize language would send a signal to agencies, the private sector and the innovation

community that the Federal government views the prize mechanism as an important solutions driver.

In short, public-private prize partnerships are a win-win: they drive American innovation by coupling unique government resources with the everyday ingenuity and entrepreneurship of citizen innovators to bring about dramatic breakthroughs for the benefit of humanity.

Conclusion

We strongly believe that the private and public sectors must work together to utilize every available tool to facilitate meaningful innovation that drives economic growth. Prizes are one such essential tool that agencies can, and should, employ.

Policy can send a strong signal to federal agencies, and also to the private sector and innovation community, that the federal government believes in the power of prizes as a source of innovation.

We look forward to continuing the dialogue with Congress about the power of prizes.