

MICROGRAVITY SCIENCES AND PROCESSES (A2)
Microgravity Processes onboard the International Space Station and Beyond (7)

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PRIZES AS A TOOL FOR ENGAGING RESEARCHERS AND STUDENTS

Abstract

Introduction: The mission of the X PRIZE Foundation is to bring about radical breakthroughs for the benefit of humanity. In doing so the organization has fostered innovative, high profile competitions that motivate individuals, companies and organizations across all boundaries to solve the grand Challenges that are currently restricting humanity's progress. To accomplish such innovation, the organization has adopted the concept of Prizes. Incentive Prizes attract outside investment and are a proven instrument for innovation particularly when the path to a solution is unclear. They are most effective where progress is blocked and where market forces, government, and non-profits cannot readily solve a problem. **Background:** The applicability of incentive prizes to the international aerospace community has been demonstrated for decades, most recently with the successful Ansari X PRIZE for suborbital Spaceflight and the Northrop Grumman X PRIZE Lunar Lander Challenge. Importantly for the research and education markets, recent Lunar Lander winners Armadillo Aerospace and MastenSpace are already in the process of developing their technologies for carrying scientific and other payloads to the "ignoreosphere", and the \$30M Google Lunar X PRIZE remains a substantial carrot for private development of complex space systems, engaging both industrial and university partners. **REM Prizes:** This paper will describe the ways that Incentive Prizes can be used to attract high quality payloads for suborbital research and education missions (REM). This concept challenges students, young professionals, and entrepreneurs to think creatively about breakthroughs to complex problems, creating opportunities for suborbital research and private investment. We will present a variety of potential future competitions intended to engage participants from middle school through post-graduate studies, as well as professional researchers in both academia and industry. Incentive Prizes and other models of Open Innovation may be used to foster both the development of new payload systems, as well as the novel use of existing hardware, software, and data streams. Besides educating within our industry, with this approach we hope to engage other participants by removing the very constraints they find most limiting, and encouraging them to invest every intellectual and financial resource at their command to tackle the challenges offered by suborbital flight. This is a concept that might be well adopted by other aerospace entities searching for innovation and success across the industry.