

12th IAA SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FUTURE (D4)
Contribution of Space Activities to Solving Global Societal Issues (2)

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GRAND CHALLENGES AS A DRIVER AND UNIFIER OF THE GLOBAL INNOVATION SYSTEM

Abstract

We live in an age where individuals and organizations are more connected and problems more complex than ever before. Methods of work are evolving, expertise is distributed, innovation systems are dynamic, and problems are highly linked and multi-faceted. In this environment, today's systemic, multi-sector challenges are largely beyond the reach of any single organization to address. However, this environment also presents an opportunity for achieving ambitious, transformative goals of global importance through new collaborations with distributed traditional and non-traditional partners that could be game changing.

NASA has begun to explore how Grand Challenges—bold, but achievable science, technology, and innovation goals—might unify public and private constituencies around a clear “call to action” and spur significant developments in a wide range of domains. NASA is exploring how a new era of challenges that demand the best in us, as global citizens, might ignite collaborative partnerships with individuals and organizations that aren't in our existing gravity field.

Grand Challenges are not just science or technology endeavors; they are social concepts: unlocking vast amounts of human capital, fueled by a shared sense of ambition and a unique sense of participation. To achieve its objectives, a Grand Challenge needs to attract new partners. It also needs to provide outcomes that benefit all - and a way of measuring outcomes: to do this it needs to be co-designed with potential partners. Potential partners abound for high-impact, multi-disciplinary collaborations including governments, industry, universities, non-profits, philanthropists, entrepreneurs, space enthusiasts, and the world's premier scientists, engineers, citizens, and businesses.

Grand Challenges have been in use by the private and nonprofit sectors for many years. The US Department of Energy, USAID, Grand Challenges Canada, Gates Foundation, National Academies of Engineering, and others have developed Grand Challenge approaches to catalyze breakthroughs in a variety of areas of global importance. NASA announced its first Grand Challenge to “find all asteroid threats to human populations and know what to do about them” in June 2013. This paper will address the following questions: (1) How can Grand Challenges act as both a driver and catalyst for innovation? (2) What is the role for Grand Challenges in space-related activities? (3) How might a Grand Challenges approach enable more progress in space activities than traditional approaches alone? (4) What impact has the Asteroid Grand Challenge had within its first year?