CHALLENGE SPECS

CHALLENGE 1
Improved Barrier Layers: Keeping Food Fresh in Space
Award: $15,000

CHALLENGE 2
Mechanism for a Compact Aerobic and Resistive Exercise Device
Award: $20,000

CHALLENGE 3
Data-Driven Forecasting of Solar Events
Award: $30,000

CHALLENGE 4
Coordination of Sensor Swarms for Extraterrestrial Research
Award: $20,000

CHALLENGE 5
Simple Microgravity Laundry System
Award: $25,000

CHALLENGE 6
Augmenting the Exercise Experience with Audio-Visual Inputs
Award: $20,000

CHALLENGE 7
Augmenting the Exercise Experience with Audio-Visual Inputs
Award: $20,000

NASA Johnson Space Center ran an initial pilot of seven Challenges with InnoCentive.

Selecting the Challenges:

Five of the seven Challenges were in a significant technology gap area identified during a portfolio mapping exercise by NASA. These gaps represented problems that the teams had, in some cases, been working on for many years. In the case of the Forecasting of Solar Events Challenge, it was a 30-year-old problem. These Challenges represented a significant value opportunity if solved or advanced in a unique direction not previously considered. The sixth Challenge was a collaboration between Johnson Space Center and Glenn Research Center for exploration of methods to track medical supplies in space and had been deeply explored through traditional NASA trade studies over the last 18 months. The seventh Challenge, Sensor Swarming submitted by Langley Research Center, was dissimilar and provided a unique opportunity to test the use of Challenge Driven Innovation in a relatively green field of research looking for a possible new and lower cost direction to complete exploration initiatives. It resulted in bringing unique approaches, and ultimately new Solver community connections, in a field of research that NASA is growing into.

Results: Solutions

In total, the seven Challenges attracted over 2,900 Solvers from over 80 countries and 221 solutions were delivered to the NASA Challenge owners for evaluation. The Solvers' unique view of the Challenges, in light of their experiences and background, provided the team with many solutions to consider. NASA ended up making an award for each of the seven Challenges.

A Solver survey was conducted following the completion of the pilot, which found:

- One in four respondents solved for a living, which suggests winning solutions are often found outside the traditional corporate workplace.
- A significant number and percent of NASA Solvers, and winning Solvers, reported that their expertise is not directly within the Challenge discipline, which reinforces the value proposition of diversity in solving NASA's Challenges.
- While almost 60% of NASA Solvers surveyed reported spending less than twenty hours working on a solution, 16.3% spent more than forty hours, of which 3.6% spent more than 120 hours. Utilizing the hours estimated by the 394 survey respondents only, the responding Solver community invested over 82 man-months on the seven NASA Challenges.

"The winning submission was very thorough. It addresses the Challenge requirements and exceeds them with respect to forecast confidence and random prediction. Questions posed back to the Solver were thoroughly addressed."

Dr. Dan Fry
Scientist, Space Radiation Analysis Group

This Challenge Example is based on excerpts from a public report produced by InnoCentive and the NASA Pilot Program team. Neither the Challenge Example nor report is an endorsement of InnoCentive. The full report is available here.

Results: Benefits

Each NASA Challenge Owner stated that the awarded solutions brought quantifiable value to their projects and not only were they able to find solutions, but also identify new collaborators.

The Challenge Owners, Executive Sponsor, and Program Champions described six major benefits that they received from the use of InnoCentive's Open Innovation Marketplace:

1. Delivered cost savings associated with new and rapid problem solving techniques
2. Promoted effective use of established resources
3. Increased diversity of thinking through access to an expanded network of experts
4. Brought an efficient process for Intellectual Property transfer
5. Fostered a more innovative culture
6. Improved ability to frame problem statements or research needs

The NASA Challenge Owner and Program Team expanded upon some of these key benefits in further interviews:

Reduced internal resource burden and efficient IP transfer process

A significant burden was lifted from the NASA Challenge Owners by the InnoCentive Client Services team allowing the Challenge Owners to focus their time on other pertinent and important NASA tasks and on the key part of the pilot program: solutions evaluation. The success of each of the Challenges was improved greatly by the professional support from InnoCentive's Client Services team in applying their extensive experience and skills in Challenge Driven Innovation methodologies to supporting NASA, the Challenges, and the Solvers. Additionally, legal resources from NASA were not required to create the contracts and agreements with the Solvers, resulting in significant cost savings to NASA.

Enhanced ability to define and frame research Challenges for outside solution finding

NASA Challenge Owners were assigned an InnoCentive Challenge Design Expert to learn best practices for open innovation, Challenge Development, and the process for finding solutions in the global innovation marketplace. Through the workshops, professional development and training, and one-to-one consulting, InnoCentive helped NASA with their approach and ability to frame research problems outside of the traditional "NASA way." Culture of Innovation

The NASA community and Challenge Owners as a whole agreed that, through this process, innovation is a priority. The foundation for creating a repeatable and predicable innovation mindset comes through a structured methodology. Ultimately, this system of innovation is built on the ability to proactively surface, prioritize, and frame Challenges. Once this cultural mindset is established, NASA will be able to leverage every means of finding powerful solutions through open innovation.

Following this successful pilot, NASA has continued to work with InnoCentive. Other Challenges include 'Strain Measurement of Kevlar Webbing', the case study for which can be viewed here.