Proposal for the IAC Business Cluster
62nd IAC Cape Town, South Africa

Crowdsourcing for Challenging Technical Problems – It Works!

Proposal: The NASA Johnson Space Center Space Life Sciences Directorate (SLSD) and Wyle Integrated Science and Engineering (Wyle) will conduct a one-day business cluster at the 62nd IAC so that IAC attendees will understand the benefits of open innovation (crowdsourcing), review successful results of conducting technical challenges in various open innovation projects, and learn how an organization can effectively deploy these new problem solving tools to innovate more efficiently and effectively.. Results from both the SLSD open innovation pilot program and the open innovation workshop conducted by the NASA Human Health and Performance Center will be discussed. NHHPC members will be recruited to participate in the business cluster (see membership http://nhhpc.nasa.gov) and as IAF members.

Background: Crowdsourcing may be defined as the act of outsourcing tasks that are traditionally performed by an employee or contractor to an undefined, generally large group of people or community (a crowd) in the form of an open call. The open call may be issued by the organization wishing to find a solution to a particular problem or complete a task, or by an open innovation service provider on behalf of that organization.

In 2008, the SLSD, with the support of Wyle, established and implemented pilot projects in open innovation (crowdsourcing) to determine if these new internet-based platforms could indeed find solutions to difficult technical challenges. These unsolved technical problems were converted to problem statements, called "Challenges" by some open innovation service providers, and were then posted externally to seek solutions to these problems. In addition, an open call was issued internally to NASA employees Agency wide (11 Field Centers and NASA HQ) using an open innovation service provider crowdsourcing platform to post NASA challenges from each Center for the others to propose solutions).

Results: From 2008 to 2010, the SLSD issued 34 challenges, 14 externally and 20 internally. The 14 external problems or challenges were posted through three different vendors: InnoCentive, yet2.com and TopCoder. The 20 internal challenges were conducted using the InnoCentive crowdsourcing platform designed for use internal to an organization and customized for NASA use, and promoted as NASA@Work.

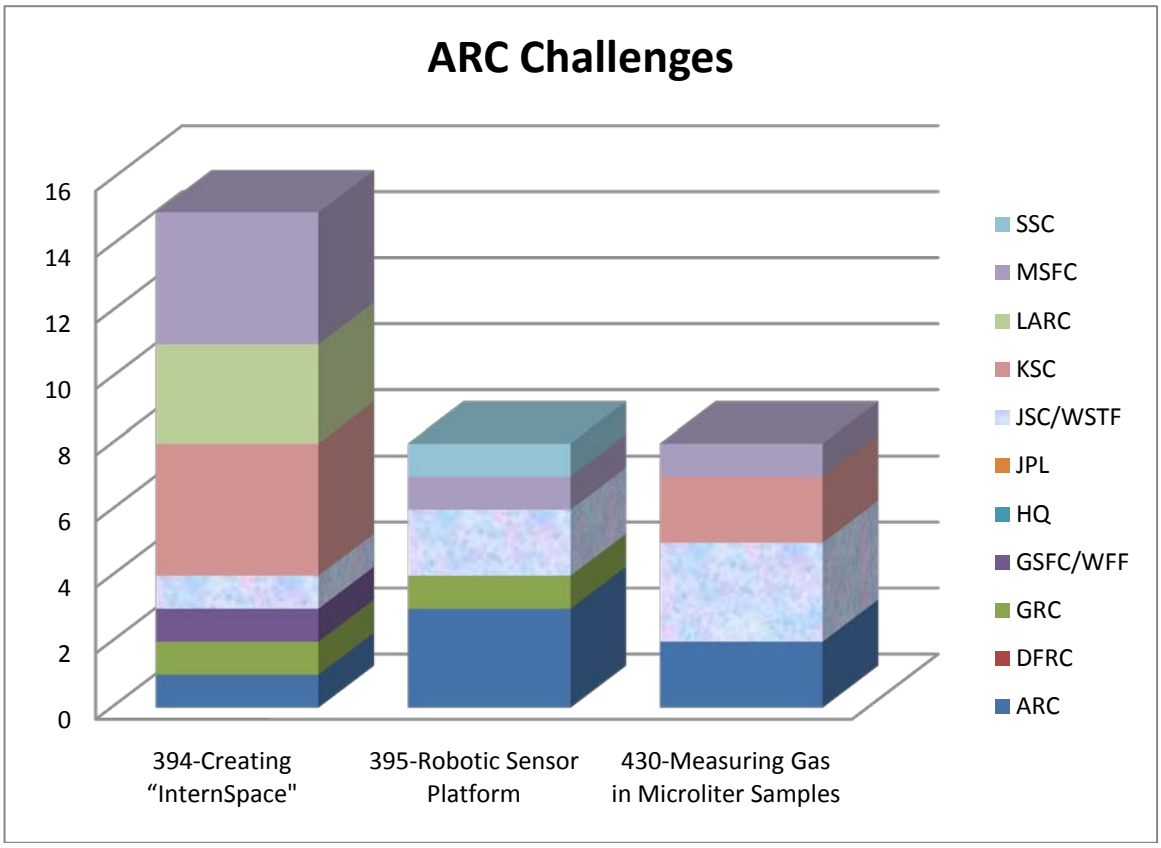
The results were significant. Of the seven InnoCentive external challenges, two full and five partial awards were made in complex technical areas such as predicting solar flares and long-duration food packaging.

InnoCentive Pilot: Challenge Data and Statistics

Challenge Title	Ctr	Posted	Deadline	Proj Rms	Sub	Award Date	Award Amount
Improved Barrier Layers … Keeping Food Fresh in Space	**JSC - SLSD**	**12/18/2009**	**2/28/2010**	**174**	**22**	**5/7/2010**	**$11,000**
Mechanism for a Compact Aerobic Resistive Exercise Device	JSC - SLSD	12/18/2009	2/28/2010	564	95	5/14/2010	$20,000
Data-Driven Forecasting of Solar Events	**JSC - SLSD**	**12/22/2009**	**3/22/2010**	**579**	**11**	**5/13/2010**	**$30,000**
Coordination of Sensor Swarms for Extraterrestrial Research	LRC	2/27/2010	4/26/2010	423	37	6/4/2010	$18,000 (3)
Medical Consumables Tracking	**GRC**	**5/17/2010**	**7/27/2010**	**365**	**56**	**in progress**	**$15,000 (3)**
Augmenting the Exercise Experience	JSC - SLSD	5/27/2010	7/27/2010	229	18	9/20/2010	$10,000
Simple Microgravity Laundry System	**JSC - EA**	**5/27/2010**	**7/27/2010**	**598**	**108**	**9/21/2010**	**$7,500**

Similarly, the TopCoder challenge yielded and improved optimization algorithm for optimizing a lunar medical kit, and the yet2.com challenges yielded many new industry and academic contacts in bone imaging, microbial detection and even the use of pharmaceuticals for radiation protection.

The internal challenges through NASA@Work drew over 6000 participants with significant participation across all NASA centers. An example for three challenges conducted by the Ames Research Center demonstrates the rapid and efficient participation from employees at multiple centers to contribute to problem solving:



Finally, on January 19, 2011, the SLSD will conduct a conference on open collaboration and innovation best practices and implementation through its newly established (October 18, 2010) NASA Human Health and Performance Center (NHHPC), with five speakers and participating members contributing to an exceptional panel facilitated by the GSA and aimed at crowdsourcing and running effective challenges (Harvard Business School, Mozilla, General Mills, Proctor & Gamble, NASA, InnoCentive, and Yet2.com). The findings from this workshop, ***including the ability of the NHHPC to enable public-private partnerships,*** will be available for the business cluster. One of the findings [will be] for a traditional aerospace organization (NASA) to effectively form partnerships with non-traditional partners. Others will be communicated following the workshop. At present, the NHHPC membership includes ESA (pending approval),JAXA, DLR, FAA AST, FAA CAMI, Wyle and many more (see http://www.nasa.gov/offices/NHHPC/members/index.html) NASA will recruit NHHPC members to support the business cluster and as IAF members as well.