

UNITED STATES OF AMERICA

PROMOTING INNOVATION THROUGH INTERNATIONAL COLLABORATION

'Innovation is bottom-up, decentralized and unpredictable', explains the SpaceApps team at National Aeronautics and Space Administration (NASA). In what turned out to be the largest hackathon in history, the International SpaceApps Challenge brought together space agencies and citizen technologists, scientists and developers to contribute to space exploration missions using publicly released data. The event proved to be a trailblazer in setting up a novel way for government-citizen collaboration to solve global challenges.

FEATURES OF THE INITIATIVE

The complexity of solutions that emerge and the sheer number of participants are a testament to the importance of the International SpaceApps Challenge. The participants use NASA's massive datasets and open source software technology to respond to over 50 challenges designed around software and hardware development, citizen science and data visualization. In this year's event, an incredible 770 solutions were submitted. A panel of judges consisting of representatives from NASA, government and civil society organizations evaluated and awarded the top solutions in five categories, featured in **Box 1**.

How does one organize the world's largest hackathon? For this 2-day event, NASA collaborated with its 400+ partners around the globe to organize their communities' participation. For example, SpaceApps Rome was led by the

European Space Agency in partnership with the US Embassy in Rome, while the event in Pretoria was led by the World Bank's mLab in South Africa. This federated model allows countries to contextualize the experience and is also key to ensuring the event's success. This year over 9,000 global citizens in 44 countries and 83 cities engaged directly with NASA, signifying a huge jump over the 2012 event, which saw 2,000 participants in 17 countries and 25 cities. Over 2,000 participants also connected virtually from less formal locations.

FACING CHALLENGES

Although now considered a successful initiative, the road to the implementation of the International SpaceApps Challenge was far from smooth. The adoption of the OGP National Action Plan along with the America COMPETES

Reauthorization Act of 2010, which granted all Federal agencies authority to conduct prize competitions to spur innovation, had already provided the impetus to do things differently within government. But it was a bold risk for NASA to be collaborating with hundreds of organizations with whom they had not previously worked, and with open data and open source software. Naturally this generated some resistance within NASA regarding the value of Hackathons. Nick Skytland, Program Manager of NASA's Open Innovation Program notes that although government agencies are mandated to be transparent, they couldn't see the value of that transparency in practice. "The exciting part of open government wasn't just putting data out there, it was using the data in innovative ways", Alicia Llewellyn, project manager of the International SpaceApps Challenge chimes in.

BOX 1

BEST OF CLASS AWARDS IN 2013

- Best Use of Data: Sol
<http://2013.spaceappschallenge.org/project/sol/>
- Best Use of Hardware: ISS Base Station
<http://2013.spaceappschallenge.org/project/iss-base-station/>
- Best Mission Concept: Popeye on Mars
<http://2013.spaceappschallenge.org/project/pom/>
- Galactic Impact: NASA Greener Cities Project
<http://2013.spaceappschallenge.org/project/street-view-for-climate-data/>
- Most Inspiring: T-10
<http://2013.spaceappschallenge.org/project/t-10/>

EARLY RESULTS

With the enormous success of the 2012 International SpaceApps Challenge, the Open Innovation Program was able to prove to NASA the benefits of embracing openness as a catalyst to innovation. Traditionally, the process of developing new products means forming a large team, determining funding, creating a project plan and producing a detailed roadmap for product development. But mass collaboration in a condensed period of time cuts through the rigid process and lengthy timelines. By giving unprecedented access to their raw data, software and technology, the International SpaceApps Challenge introduced rapid iteration and prototyping to the innovation process.

The diversity of the 770 submitted solutions this year shows that the investment paid off. [OpenROV](#) is a great example of a low-cost, open-source underwater robot that was tested in an existing NASA mission. NEEMO is a NASA analog mission that

“It’s odd you don’t normally think about hackathons from government organizations. It was the first time I’ve seen a government organization reach out in mass to the public and say build what you want, we are not going to put restrictions on you, and on top of it we will give you access to as much data as possible.”

- Mike Wilson,
Developer of Sol,
Award winner for Best Use of Data

sends groups of astronauts, engineers and scientists to live in Aquarius, the world’s only undersea research station. Its habitat offers a useful equivalent for space exploration. By incorporating [OpenROV](#), NASA aimed to involve public contributions to their missions and inspire citizen scientists to experiment in their own backyards. [T-10](#), recipient of the Most Inspiring award, is a prototype mobile app that can be used by astronauts wishing to photograph specific points on Earth. [T-10](#) alerts them shortly before the International Space Station is set to fly over that location, if the current weather permits photography.

MAXIMIZING OPPORTUNITIES

The International SpaceApps Challenge marks a radical shift in the way NASA interacts with the public and conducts its exploration mission. Skytland and Llewellyn identify three factors that made this transition possible. First, the advocacy efforts of Deborah Diaz, the Chief Information Officer was key in pushing through the barriers at NASA, especially in the post sequestration period with a limited budget. Second, being a small team of five gave them agility to put plans to action in a short timeframe. Third, the design of the Hackathon facilitated collaboration of all the right people who share a common vision and passion in space exploration challenges. Civil society evaluators declared that the continued growth and effectiveness of the International SpaceApps Challenge shows that NASA intends this to be a meaningful and sustainable effort and even called it a ‘model’ that can be leveraged for other trans-national issues on environment, defense or diplomacy.



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