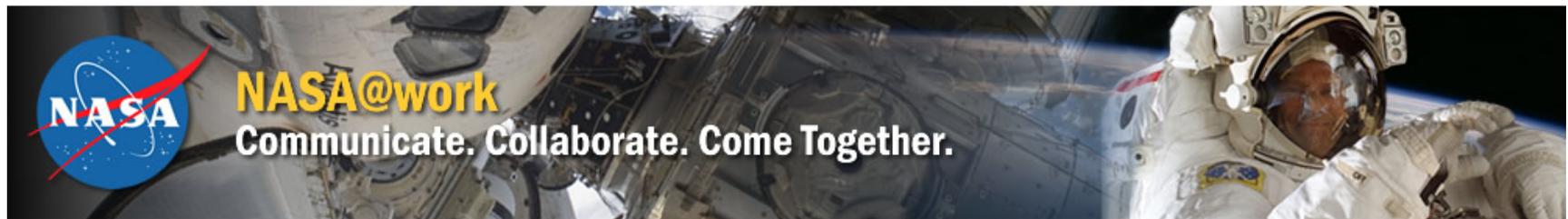




Open Collaboration: A Problem Solving Strategy That *Is* Redefining NASA's Innovative Spirit



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Strategy

- With an increasing focus on an open and collaborative government, NASA is redefining what it means to be innovative problem solvers
- Efforts are being made to maximize the use of expertise found within NASA's 10 centers and globally by connecting each center in novel ways
- Internet based tools are helping to foster inclusion through collaboration resulting in innovative solutions and ideas



Collaborative and Innovative Methodologies

- NASA experimented with a number of collaborative and innovative tools and methodologies including:
 - Public crowdsourcing,
 - Consortium and partnership building, and
 - an internal crowdsourcing platform, NASA@work
- NASA@work is an internal collaborative and challenge based internet platform
- The goal of utilizing these open innovation techniques is to leverage the power of groups
- Specifically, to help solve problems, new and novel ideas, and foster innovation through collaboration



NASA@work Pilot Program Facts

- Over 6,000 joined NASA@work in less than 3 months
 - Over 1,700 joined in the first 2 Days
- 90% of the Challenge Owners agreed they tapped into personnel they would never have consulted
- On average, each Challenge generated 22.9 discussion posts
- 89% of all the Discussions came from outside the Challenge Owners Center.

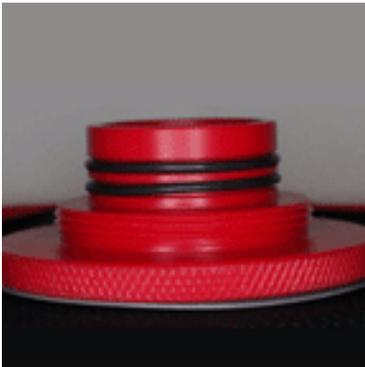


Solver Community By Center

Center	Challenges Posted	Registered Solvers	Discussion Posts	Challenge Participants
Ames	3	310	18	11
Dryden	0	146	13	9
Glenn	1	467	12	9
Goddard	2	564	101	13
Jet Propulsion Laboratory	2	1	0	0
Johnson	3	1380	46	29
Kennedy	2	1067	73	39
Langley	4	425	31	12
Marshall	0	700	23	14
Stennis	2	148	22	5
Head Quarters	1	267	15	9



Example: JSC Challenge



The Participation:

17 Participants from 7
Centers

20 Discussion Posts

The Challenge:

***Non-Invasive Means to Detect
Internal Leakage***

This Challenge asked Solvers to identify technologies and/or concepts which will provide monitoring of the pressure in a small volume between seals (or valves) non-invasively.



Non-Invasive Means to Detect Internal Leakage

The Solution:

A solver from Marshall applied a Wireless Ceramic Pressure Sensor that he had tested and experience using in Structural Health Monitoring applications.

Challenge Owner Feedback:

"Half of the Solutions were deemed by the team to be of sufficient quality to consider for an award. My team chose to award the Solvers for their 'Wireless Ceramic Pressure Sensor' concept which holds promise."

"I hope that NASA adopts this platform as an ongoing tool. It provides the opportunity to break down the "silos" that all too often impede the open flow of solutions."



Example: GSFC



The Participation:

3 Participants from
2 Centers
12 Discussion Posts

The Challenge:

Alternate in design/material approach for electron radiation protection

The Owners were searching for new material systems/approaches for shielding electronics equipment and personnel from ionizing radiation, specifically electrons.



Alternate approach in design/material for electron radiation protection

The Solution:

- Solvers from Goddard provided a very detailed description on the use of Tungsten Dust to provide the protection.
- A solver from Johnson proposed a solution from a 1967 reference document that given technology advances are possible to manufacture today.

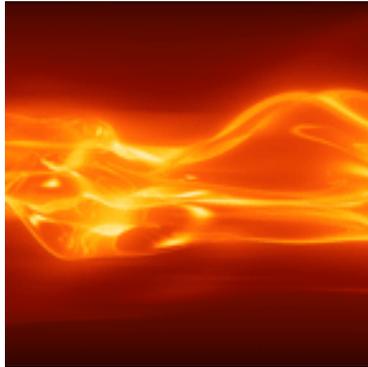
Challenge Owner Feedback:

"It was useful to tap into historical knowledge. A newer person like myself may not know what happened back in the 1960's in this area. In this sense, NASA@work is also useful as a knowledge capture and dissemination mechanism."

"It is a great way to knowledge share. I would participate again."



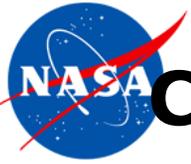
Example: SSC



The Participation:
14 Participants from
7 Centers
29 Discussion Posts

The Challenge:
*Cooling of a Self-Contained
Portable HSDAS Unit*

The Challenge Owner is looking for a method to cool down outdoor electronic equipment by reducing the external heat and removing the heat that is generated by the HSDAS system.



Cooling of a Self-Contained HSDAS Unit

The Solution(s):

- A solver from Glenn provided a method of cooling the HSDAS unit through the use of a commercially available Stirling Cycle cooler.
- While the solution is feasible and only addresses half the problem, it was awarded a partial solution.
- Unfortunately the project is not funded and the solution cannot be tested.



Solver Community Feedback

- “I think it’s a great idea to identify and expose, within NASA, problem areas that need solving or improvement.”
- “I find it VERY satisfying to come up with solutions that seem easy after they are found, but difficult for most to come up with.”
- “I believe it could be a cost effective tool to tap into the brain power in the space industry, including subcontractors.”
- “It improves collaboration and efficiency at NASA...why not see if someone else at NASA can address a challenge in a new and effective way?”

I also think this platform creates a stronger sense of unity between NASA centers.”



Results

Results

- Laterally connected 10 NASA centers (peer to peer)
- Connected areas of expertise previously untapped,
- Enthusiasm for the pilot and willingness to use again
- Positive feedback about NASA trying a new business model
- Solid solutions for some technical problems
 - 17 out of 20 challenges awarded
 - Full solutions and new ideas



Results Cont'd

Five Themes Emerged:

- NASA@work provided a new mode of interaction fostering innovation through collaboration and inclusion
 - Demonstrating the agency community is interested in collaborating to solve problems and share knowledge
- The timing is right to foster a collaborative environment
- Networks and communities of practice can be identified via the platform
 - Expanding the existing network of experts for further collaboration
- NASA possesses a large degree of tacit experience because of its size and diversity
 - Draw upon these experiences and leverage untapped expertise to current technological and research needs
- Within the organization lays undocumented knowledge from the past 50 years of spaceflight experience
 - This tool provides a mechanism to share and benefit from that knowledge across the agency



Thank-you

- Questions?