

“NASA Squares”

Speech to the AIAA National Capital Section

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Thanks for that great introduction and good afternoon everyone. It is a pleasure to speak with you all. It has been another wonderful week at NASA.

We just had a beautiful test launch of Ares I-X on Wednesday. With more than 700 instruments on board the rocket during the test, we should receive very helpful and informative data. Also this week, NASA's Fermi Gamma Ray Space Telescope capped its first year of operations and has mapped the extreme sky with unprecedented resolution and sensitivity. The Fermi telescope captured a measurement that provided rare experimental evidence about the very structure of space and time—what an achievement.

I mention these accomplishments because I am so proud of NASA, but I know I am not telling you anything new. You are all “famous” in our community and you all know a lot about NASA and about aerospace overall. So, for this talk I am going to turn the tables. I would like for you to help me answer the key questions of the day, sort of like our own Hollywood Squares, or NASA Squares. I do not know who among us would be our Paul Lynd or Charro, but we do not need to decide that now. I wish I could give out prizes, but you know we are under a Continuing Resolution and it’s not in our current operating plan. In any case, I hope this will be fun.

So, here is question one. Please feel free to shout out the answer...

1. How many international agreements does NASA currently have?

- NASA currently has 448 active international agreements. NASA has concluded over 3500 agreements with over 100 nations during its 50 years.

1a. Which Mission Directorate at NASA has the most current international agreements?

- It is the Science Mission Directorate with 250 agreements. Space Operations has 30 agreements, Exploration has 24, and Aeronautics has 18. The remaining agreements are crosscutting or are related to the GLOBE program.
- The Augustine review emphasized international cooperation as an important component of our future exploration plans. I am looking forward to enhanced

discussions with our international partners as decisions are made regarding exploration so that we can increase this number of international agreements even further.

- Additionally, right now, ten international partners account for 50% of our current agreements (France, Germany, ESA, Japan, the UK, Italy, Canada, Russia, Australia, and Spain). You can see the focus on the industrialized world and particularly on Europe. These are important partners. However, NASA's Office of External Relations and the Mission Directorates are working to find more ways to cooperate with non-traditional partners in Africa, the Middle East, Asia, and Central/South America in low cost, high impact ways.

2. And now for question two. How many commercial and intellectual property agreements does NASA have in place?

- Approximately 900 that are currently active. 1200 new inventions were disclosed in 2009, and 188 patents were issued.

Here are some examples of great work in intellectual property transfer that has resulted from such agreements and inventions:

1. A water filtration system providing safe, affordable drinking water throughout the world is the result of work done by Marshall Space Flight Center engineers who are creating the Regenerative Environmental Control and Life Support System, a complex system of devices intended to sustain the astronauts living on the International Space Station. The devices, now available through Water Security Corporation Inc., of Sparks, Nevada, make use of the available resources by turning wastewater from respiration, sweat, and urine into drinkable water.
2. A low-cost, lightweight parachute developed with Small Business Innovation Research (SBIR) assistance from Langley Research Center is being used to lower small airplanes safely to the ground in emergency situations. Manufactured by Ballistic Recovery Systems Inc., of St. Paul, Minnesota, the parachute has been credited with saving 242 lives.
3. Video Imaging Communication and Retrieval software developed by the Jet Propulsion Laboratory laid the groundwork for a project that applied the same methodology to medical ultrasound imagery. The result was a diagnostic system with the ability to accurately predict heart health. The software is being used by Medical Technologies International Inc., of Palm Desert, California, in a test that uses ultrasound image-capturing and analysis software to noninvasively identify the risk for the major cause of heart attack and strokes. This technology is now in use in all 50 states and in many countries throughout the world.
4. A bacterial spore-detection system developed at the Jet Propulsion Laboratory for cleaning Mars-bound spacecraft is now employed by Universal Detection Technology of

Beverly Hills, California, as an anthrax detection system. It requires very little in the way of operating costs, and has a high reliability factor, with low susceptibility to false alarms. The Anthrax Smoke Detector is in use worldwide in government buildings, offices, airports, convention centers, hotels, casinos, and postal facilities.

These are great examples of how NASA is working together with small businesses and other industry partners to develop and expand technologies to help life here on Earth. The issue that we all know is that we need to do a better job at letting the public and our stakeholders know about all this amazing work.

3. What percentage of NASA's budget funds NASA civil servants?

- 15% of the budget in FY2009 funded NASA's 18,000 civil servants. The civil servant costs, which includes all personnel and travel costs, totaled about \$2.6 billion dollars. The remaining 85% of NASA's FY09 budget of \$17.8 billion dollars funded contracts, grants, cooperative agreements, and space act agreements. However, the grants and cooperative agreements are only about \$900M to \$1B out of this amount and so the majority of the 85% is for contracts. Additionally, all \$1B of Recovery funding will be utilized on contracts, some cooperative agreements, and Aeronautics research announcements.

4. What percentage of NASA's budget is spent on R&D?

- About 60%. This includes civil servant labor as well as funding for contractors. NASA is considered an R&D agency. That being said, a large amount of our funding goes for manufacturing and operations that do not fall under the broad definitions of R&D that are commonly used by the federal government. For instance, much of Shuttle and Space Flight Support is not considered R&D at this point, nor is most of Cross-Agency Support for center and agency operations and management.

The majority of NASA's R&D, about is developmental in nature. This would include the major project developments in Exploration & Science in particular. About \$1.8B, or 10% of the budget, is estimated as basic research – a lot of the Announcements of Opportunity and peer-reviewed research sponsored or performed by SMD. And about \$1B, or 6%, is categorized as applied research. About half of this applied research is Aeronautics, with other funding in ESMD, SMD and Cross-Agency Support.

5. What percentage of Americans knows that the Shuttle will be retiring?

- Only 19% of those polled knew that the Shuttle is retiring. Additionally, 80% of those polled have not heard about the gap issue. This polling occurred through a market research study commissioned by NASA. The study, which included both focus groups and a national survey, was a follow-up to a similar project conducted in 2007.

5a. What percentage of those polled knows that the last human Moon landing occurred in the 1970s?

- Only 24%. Additionally, 45% of the general public thinks we have flown astronauts to the Moon since the 1990s.

NASA has its work cut out for it to inform the public more fully. When asked what product, device, or contribution to society comes to mind that NASA helped develop through its research, the answer most frequently given was “Tang,” a product that NASA had no involvement in developing. NASA needs to communicate better regarding its contributions to society. But the news isn’t all bad. NASA has some great communications tools, which leads me to my next question.

6. What document states that NASA “provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof?”

- It is the Space Act of 1958. And NASA is abiding by this law. We have a myriad of on-going public affairs and outreach activities at NASA. One can find an impressive amount of wonderful information on NASA.gov. For instance, if you click on the “collaborate” tab on the NASA.gov home page, it takes you to links to social networking sites and sharing sites such as Facebook, Flickr, YouTube, and Twitter. The collaborate tab also has links to 3D NASA images and models, to ISSEarthKam which is a NASA sponsored program that provides stunning, high quality photographs of our planet taken from the Space Shuttle and International Space Station, and a link called, “My NASA Data.” My NASA Data links you to live access to Earth science data, to information about grants, and to educational resources on ways to use the My NASA Data tool in the classroom.

Here are some questions for you on our information dissemination activities.

6a. What was the second most popular trending topic on Twitter between 8 a.m. and 11:30 a.m. on Wednesday?

- It was Ares I-X...it got that much attention. The most popular topic was “This Is It,” a film about Michael Jackson. And during the STS-125 Hubble repair mission, NASA reached as high as the 4th most popular Twitter account. I had the pleasure of doing the introduction at an ISS Tweet-Up last week and the attendance was amazing.

6b. Out of the top 100 Twitter accounts, where does NASA This Week fall?

- NASA This Week is the 16th most popular and influential Twitter account. NASA is the only federal agency in the top 100 Twitter accounts and is two positions higher than the White House.

6c. How many times has NASA Television’s You Tube channel been the most popular channel on the entire You Tube site?

- Twice—the first time was the week of the STS-125 Hubble repair mission. The second time was during the recent LCROSS lunar impact. NASA TV usually places in the top 40 of all You Tube channels on a weekly basis.

6d. What is the second most-watched live event on the Internet?

- It was the launch of STS-114, the Shuttle’s return to flight. It had 438,000 concurrent TV streams. NASA holds several spots in the top ten live events in the history of the Internet. The LCROSS impact event was the fifth most-watched live event on the Internet, with 391,000 streams.

We are doing many things to engage the public, but we can do better. The Augustine report called for us to establish a space program that can be sustained through active public engagement. A space program designed from the start with ways to excite the next generation, and foster inspiring ways to keep America engaged year after year. If we are to be successful in that effort, we will need to think much more creatively and openly. We will need to structure a more open NASA, more transparent in its operations and flexible in its approach to outreach. As Norm Augustine might put it, we need a program built on a sustainable trajectory.

As a down payment on that intent, I’m pleased to announce today the appointment of Morrie Goodman as our new Associate Administrator for Public Affairs. Morrie is a tough and seasoned PR and news professional with experience at CNN and many government agencies as well as senior strategic communications experience in industry.

The Heads of Public Affairs, Legislative Affairs, and Education will now report directly to the Administrator and Deputy Administrator without an added layer so that we can strengthen these functions and make them more productive. And within Public Affairs, I am pleased that Alan Ladwig will be the Deputy in charge of public outreach and many of the other types of communication activities we have described here today.

When you think about it, communicating NASA’s story should be a no brainer, right? We explore the universe, send American heroes into space, learn new things everyday about our home world, and routinely do cool stuff that makes the impossible look easy. With each mission we also strengthen America’s economy and give every family something new that enriches their lives and improves their world. But these stories are not sufficiently heard. But I am determined to change that picture – and I’d like each of you to be part that process.

We're on a new mission: find new ways and new places to explain NASA's story. Think of creative ways, like more participatory exploration and better use of social networking tools that so many of us use so frequently and well. Some of my colleagues at NASA use twitter in ways that make my kids envious. There are so many more ways we can make our missions more participatory to those of all generations, but we need to work together to figure out the best way to do that.

We also need to tell more engaging stories told with personal impact, color and simple explanations of complex technical subjects. Simple explanations? Now, that's a challenge to our engineers! But we can do it.

Our professional, advocacy, and educational organizations total between 100 and 200,000 people. Rather than work as 100,000 individuals, we need to stick together and work towards the common goals of NASA.

I know there has been a lot of talk about change, and that change is painful. I do not think that is the case. I would like to go back to our principal document, the document that created NASA. The Space Act of 1958 as amended reminds us of those common goals.

A few of the objectives stated in the Space Act are:

- (1) The expansion of human knowledge of the Earth and of phenomena in the atmosphere and space;
- (2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;
- (3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;
- (4) The establishment of long-range studies of the potential benefits to be gained from, the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;
- (5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;
- (6) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and,
- (7) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment.

These objectives continue to be critical today. We need to work together towards these goals.

All the questions and answers that we discussed show that NASA is doing incredible things in international leadership and cooperation, in contributions to innovation and developing new businesses, and in our missions themselves. But they also show that we can do better.

I strongly believe that America is a great nation because we are willing to be open and honest and transparent. We are willing to improve as we learn new information and as we gain new capabilities. As demonstrated by the Augustine review, this Administration thinks NASA is important, and as demonstrated by the Augustine findings, we need to get on a more sustainable trajectory. That will entail some change. We do not yet fully know what that will mean, but we need to be able to assess the current situation and “swim in our sea.” NASA should be a symbol to this Nation and to the world of what our country is all about.

And we have to communicate better regarding what our overall goals for NASA are. We have those goals in the Space Act. Using the best available technology, we can make the story of space come alive and be real and accessible no matter where you live. Even if a NASA center is far away, if we work at it, the story of space can be everywhere people gather, work and play. We need to work together as a community to get that message out. We cannot ignore the fact that our arguments and differences have in many cases been more public than what we agree on. Debate is healthy but divisiveness is not. We’re at a point where we need to band together to keep this Nation’s space program going. We need to find ways to work together to do this. You all have proven to be the experts through this NASA Squares game. Now we need your expertise to get the good word out about our common goals to make space programs sustainable by making them accessible to as many people as possible.

Thank you.