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Meet Them Where They Gather:
An Analysis of NASA's Communications Approach for the 21st Century

By

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MEET THEM WHERE THEY GATHER: AN ANALYSIS OF NASA'S
COMMUNICATIONS APPROACH FOR THE 21ST CENTURY

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University of Nebraska, 2013

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Since the National Aeronautics and Space Act of 1958, the National Aeronautics and Space Administration (NASA) has been tasked with not only governing the United States' space activities, but also sharing those efforts and subsequent findings with the American public. When President Barack Obama issued the Open Government Directive in 2009, NASA was well positioned to meet the objectives. Today, the administration has built one of the most successful web-based information-sharing presences by government agency, largely by tailoring communications efforts to reach the public on popular social media platforms.

This paper will explore how NASA has utilized two-way symmetrical communications through social media to maintain collaboration, participation and transparency, and demonstrate to the public the value of a robust U.S. space program.

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Chapter 1: Introduction

A. Background

NASA's history has been marked with highs and lows. The world stood captivated when Neil Armstrong first stepped foot on the moon. And the country watched helplessly as the Space Shuttle *Challenger* broke apart mere moments after liftoff, killing its seven-person crew. Behind those triumphs and tragedies were the communications professionals of NASA's public affairs office.

Today, the administration boasts one of the most successful social media presence by a government agency, and the sheer number of platforms on which the agency is operating is a testament to their commitment to reach the public where it already gathers.

Just as innovation took men to the moon, and dreamers envisioned days when Mars would be within reach, so too did a small group of believers at NASA see the potential in using social media to re-engage members of the public, this time more finely tuning in to their individual interests and needs. Incorporating social media into the public affairs model has helped NASA reach a broader audience and open up the agency to the two-way symmetrical communications model touted today by public affairs professionals.

The agency has won numerous awards for its social media presence, and has been ranked as the top government place to work by a poll conducted by the Partnership for Public Service. NASA has garnered more than 2 million followers on Twitter, and 1.7 million friends on Facebook. It has a presence on multiple communication and social media platforms, has reached out to new demographic groups through strategic partnerships with Rovio Entertainment and singer will.i.am, and has invited members of

the public to their research centers for one-on-one access to NASA scientists and engineers.

By 2013, NASA was operating on as many as ten social media platforms, with hundreds of accounts across the board. With such a large organization, and often sensitive information, one would expect NASA to have a comprehensive, iron-clad policy for external communications through social media. Instead, the administration has taken a largely hands-off approach to managing its web presence, giving the individual centers' public affairs officers the leverage to draw on the expertise and creativity of its people.

NASA has limited social media policies, but has managed to give the individual centers responsibility for controlling the content and voice of their own pieces of the NASA social media presence. I propose that an organization of that scale has little choice but to empower their individual public affairs personnel to represent the NASA mission and voice as best they can while drawing in the expertise of their respective center.

NASA's space activities may no longer routinely make it to newspaper front pages, but through the utilization of various communications platforms, NASA is the headliner on its own messages. NASA now takes its message directly to members of the public, engaging them in conversation, drawing on their excitement and input to tailor its outreach to meet the needs of the people and the changing technologies.

In recent years, public affairs officers worldwide have had to adjust their styles of communication to reach the people where they already gather. NASA, too, has had to make those changes and has done so as a government agency with unparalleled success.

There have been plenty of failures, to be sure, but the key to communication is making your content visible and available.

1. A History of NASA

In 1958, following the Soviet Union's launch of the artificial earth satellite *Sputnik*, the U.S. House Select Committee on Aeronautic and Space Exploration drafted the National Aeronautics and Space Act. Signed by then-President Dwight D. Eisenhower, the Act established the National Aeronautics and Space Administration (NASA) from what was previously called the National Advisory Committee for Aeronautics (NACA), and charged the agency with overseeing the United States' aeronautical and space activities.

Among a subsection in the Act, titled "Functions of the Administration," was the following charge: "The Administration, in order to carry out the purpose of this chapter, shall [...] provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."¹

The administration absorbed three NACA laboratories -- Langley Aeronautical Laboratory, Ames Aeronautical Laboratory, and the Lewis Flight Propulsion Laboratory - - in addition to the Washington D.C. headquarters.

At the time of the establishment of NASA, the staff of almost 8,000 had an annual budget of \$10 million, and wasted no time in launching its first spacecraft, *Pioneer 1*. NASA also moved swiftly in drawing on the expertise of a group of engineers from Langley who would become the Space Task Group (STG), responsible for ushering in America's era of manned space flight. John "Shorty" Powers served as the first public

¹ "National Aeronautics and Space Act." *NASA*. National Aeronautics and Space

affairs officer for the Space Task Group. The STG later became the Manned Spacecraft Center, and then, in 1972, was named the Lyndon B. Johnson Space Center (JSC). Today JSC, located in Houston, Texas, houses the mission control center for NASA's manned space-flight missions.²

Under the guidance of the STG, Project Mercury was born, and the group of seven military test pilots selected to be the first Americans in space became known as the Mercury 7. The tension of the space race with the Soviet Union created an urgency to get men into orbit, and the astronaut group – made up of seemingly average Americans -- were made into an overnight media sensation. Public outreach, in addition to being charged as NASA's responsibility by the 1958 Space Act, is also an important component of any administration that relies on the public's interest to keep the cause of space exploration and innovation alive and funded.

Early on, experts were abuzz about the impact of the space policy and how NASA would fulfill the myriad responsibilities placed on it under the Space Act. One 1959 report, which looked closely at the "Information Objectives and Programs at NASA," suggested that NASA address the communication side of the Space Act by maintaining "close contact with groups of the public through 'museums of space,' science clubs, amateur hobbyists of a technical bent, assistance to school systems, service to teachers' groups, etc." The communications technologies of the time were limited in accessibility and scope, and direct contact with the public was largely coordinated through the media.

² Dethloff, Henry C., and Paul Dickson. *Suddenly, Tomorrow Came: The Nasa History of the Johnson Space Center*. Mineola, NY: Dover Publications, 2012. Print.

This trend continued up to and through the beginning of the most recent manned space program.

“While the agency has also spread its messages through publications, reports, congressional testimony, and other means, using the media has enabled NASA to reach a large audience at little cost to either NASA or the recipients,” writes Mark Byrnes in his 1994 book, “Politics and Space.” “Whatever information the public receive from and about NASA has generally media.”³

The media connection began near the inception of the agency. The days of Mercury 7 were exciting for the country, and NASA relied heavily on the media to share the stories of the seven pilots who would become the first Americans to venture to space. No media outlet followed the seven as closely as Life Magazine, which locked America’s new heroes into a \$500,000 contract for unfettered access to their lives and those of their families, beginning with the September 14, 1959 issue that introduced them to the world.⁴

Project Gemini followed Project Mercury, and, with its two-man crews, brought its own milestones and accomplishments for NASA. But it was the Apollo program that would result in one of the most widely viewed broadcast television events of its time.

At the time of the Apollo program, which became the first manned space program to successfully send men to the moon and return them to earth, members of the public were largely uninterested in achieving what they perceived to be a costly, unnecessary feat. But with the momentum of the space race lingering, politicians were anxious to achieve what had never been done before. Then-President John F. Kennedy made a

³ Byrnes, Mark Eaton. *Politics and Space: Image Making by NASA*. Westport, CT: Praeger, 1994. 147. Print.

⁴“Magnificent Seven: America’s Mercury Astronauts.” *LIFE Magazine*. Time LIFE, 12 Feb. 2013. Web. 10 Mar. 2013.

rousing and memorable speech at the Rice University Stadium in 1962, calling on Americans to get behind the idea of sending men to the moon, drawing on the public's sense of nationalism, the lure of new jobs, and the idea that the United States should be the leader in space ventures⁵:

It is not surprising that some would have us stay where we are a little longer to rest, to wait [...] This country of the United States was not built by those who waited and rested and wished to look behind them. This country was conquered by those who moved forward -- and so will space.

The point was clear: If the United States didn't lead in space exploration, someone else would. This point, emphasized by the Soviet's early launch of Sputnik, built on the fear and uncertainty of the American public during the Cold War. The 1958 Space Act set the stage for what would be a continued mission of U.S. dominance in space. The potential for space exploration was limitless, and the combination of fear and pride, with or without public support, would continue to propel the space programs in the future.

The media carried the story on July 21, 1969, that two American astronauts, Neil A. Armstrong and Col. Edwin E. Aldrin, Jr. had gone where no men had before. As the New York Times explained, "a television camera outside the craft transmitted his every move to an awed and excited audience of hundreds of millions of people on earth."⁶

⁵ Kennedy, John F. "Moon Speech." September 12, 1962. Rice Stadium. 12 Feb. 2013. Speech.

⁶ Wilford, John. "Men Walk on Moon." *The New York Times* [New York] 21 July 1969: 1. Print.

An estimated six hundred million people tuned in around the world⁷ as Armstrong spoke of the “giant leap for mankind,” and in that moment, as those close to the mission recalled it, it felt like the eyes of the whole world were watching.

“I think probably Apollo 11 in the space program was the first time that everybody around the world was glued to the news and glued to their television sets watching this happen,” said NASA Astronaut Jack Lousma. “It didn't matter what country one lived in or what the culture was or the language or the religion or anything. These [astronauts] were people who represented all of mankind, so to speak, and they wanted them to be successful. It didn't matter who it was, as long as someone or humans like them were involved in this.”⁸

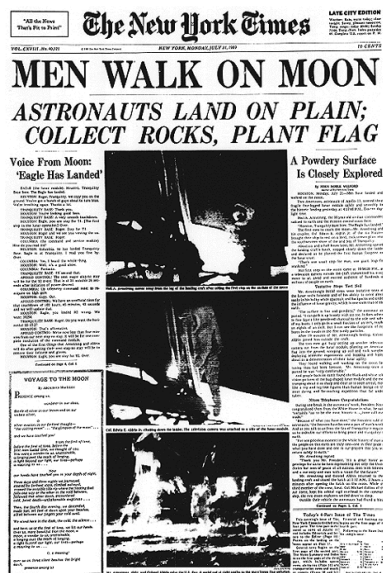


Figure 1.1 New York Times Headline

⁷Chozick, Amy, and Cecile Rohwedder. "The Ultimate Reality Show." *The Wall Street Journal*. N.p., 17 Mar. 2011. Web. 12 Feb. 2013.

⁸Lousma, Jack. "NASA Johnson Space Center Oral History Project." Interview by Carol Butler. *NASA Oral History Project*. NASA, 7 Mar. 2001. Web. 10 Mar. 2013.

Most accounts, by media and those who watched the moon landing and the attention that followed, described the Americans who set foot on the moon as heroes, fulfilling a mission on behalf of the country who stood behind them. But public opinion polls at the time revealed that nearly half of Americans believed that the government was spending too much on space. While NASA has maintained, in general, a largely favorable reputation with the public, public support for funding such projects as Apollo has consistently fluctuated in the administration's fifty-year history.⁹

The longest-running manned spaceflight program – NASA's Space Shuttle Program -- provided the most consistent picture of the agency's highs and lows, as the administration oversaw more than one hundred thirty missions over a thirty-year period. Under that program, a fleet of space shuttles carried to low earth orbit components of the International Space Station. The International Space Station was built, with the collaboration of fifteen partner nations, reflecting the significant shift in space activities away from that of a race to be won, toward a collaborative environment for research and exploration.

From Mercury through to the Space Shuttle Program, and the unmanned programs in-between, NASA's public affairs personnel have been behind the release of information to the public. The methods have changed significantly over the past fifty years, but the objective has not.

Even since the start of the Space Shuttle Program in 1981, the way the public consumed information has changed, and NASA's public affairs office began to explore

⁹ Launius, Richard. "Public Opinion Polls and Perceptions of U.S. Human Spaceflight." *Space Policy* 27 (2011): 240-46. 29 Sept. 2011. Web. 9 Mar. 2013. <www.elsevier.com/locate/spacepol>.

ways to engage the public in the conversation more than ever before. Newspaper readership has dropped significantly since the Mercury era, and people are looking to the Internet for free, instant access to information. NASA was quick to join the digital age with one of the earliest government agency websites in the early '90s.¹⁰

In 2003, MySpace gave mainstream social networking traction, and it was followed a year later by Facebook¹¹ – one of the social media platforms on which NASA has built its most successful following. For everything from satellite images to video clips, the Internet revolutionized the way the world accessed NASA's extensive collection of data and information.

Social media has given NASA's smaller, lesser-known offices and projects their own platform on which to build a following. At any given time, NASA teams throughout the organization are working on as many as a hundred different missions, each with its own exciting elements and milestones. This makes it impossible for all of the projects to get air time on the NASA social media accounts, although they are all catalogued on the main NASA website, with links to the individual websites. And to give more current, up-to-date details of the missions and projects, many teams look to social media.

NASA Headquarters – The Social Media Epicenter

The public affairs office at NASA headquarters in Washington, D.C., oversees many of the official, NASA-wide communication platforms, and the content on them. For the administration's central accounts, they determine what gets tweeted or shared on Facebook. It is through these official channels that the public can follow the day-to-day

¹⁰ Diaz, Deborah. "+NASA on Google+." *Open.NASA*. 14 Nov. 2011. Web.

¹¹ Bennett, Shea. "A History of Social Media." *All Twitter: The Unofficial Twitter Resource*. Media Bistro, 19 Oct. 2012. Web.

happenings of the administration, on a wide range of missions and topics – from sharing interesting new satellite images and exciting scientific updates to a look at life aboard the International Space Station.

The social media and public affairs team that oversees these main accounts is also responsible for keeping track, as much as possible, of the ever-growing list of NASA’s “official” social media accounts across platforms. Because of the cost-effective, informal nature of social media, and the scale of some of the projects that might not get much airtime in official NASA communications, the administration does not discourage individual teams or offices from establishing their own social media presences. They are asked, however, to check in with headquarters to determine if a legitimate need exists to create an entirely new account or if the project or group might be better suited as part of an existing account.

All accounts must go through the headquarters office to be listed as an official account of NASA, and be included on the NASA Social page – the “directory” of sorts for those interested in engaging NASA on social media platforms. When important information is released through the main NASA accounts, it is often distributed to the various research centers to share with their own audiences, allowing the administration to reach a wider demographic.

2. NASA’s Digital Presence Today

According to a study by the Pew Research Center, seventy-eight percent of Americans use the Internet regularly, up more than one hundred fifty percent from 2000. Data from August 2012 indicated that forty-five percent of Americans have a Smartphone, meaning greater opportunities to reach members of the public at home, work

or while they are on the go.¹² Rather than the pre-Internet public outreach efforts, which relied heavily on releasing information to the media, NASA is now able to reach its audience directly, without the middleman. More direct contact means more control over the message.

In the early days of the Internet, NASA was among the first government agencies to establish a strong web presence, and today it has expanded exponentially; it changes continuously. The administration's website serves as a hub, linking visitors with the individual pages of the research centers, projects and programs under NASA. Through the NASA website, the public can access NASA photos, research data, mission reports and historical documents, among countless other resources. The sheer amount of information buried in the many nooks and crannies of the NASA website might be enough to deter those who only want a quick glimpse of NASA's milestones, innovations and day-to-day operations. This is where NASA's social media presence becomes invaluable. In 2007, NASA unofficially launched their @NASA Twitter account.

As an administration of scientists, technologists and innovators, it should come as no surprise that NASA's social media presence humbly began as a grassroots effort by a small group of researchers who believed in the potential of emerging communications platforms. It was all very new for the administration, and many who worked there were unsure how effective a government agency could be at telling its story on such a new platform, one hundred forty characters at a time, to an audience yet to be really

¹² "The Demographics of Social Media Users," Pew Internet and American Life Project. Pew Research Center. 14 Feb. 2013. Online. 10 March 2013. <
<http://pewinternet.org/Reports/2013/Social-media-users.aspx>>

understood. But they persisted. Around the time of NASA's Twitter launch in 2007, polls showed fifty-eight percent of the public had favorable opinions of NASA.¹³

Today, NASA has more than a hundred Twitter accounts across the administration, including the research centers as well as individual projects and astronauts. The administration's main account, @NASA, is run by the staff at the agency's headquarters in Washington D.C. While the administration has codes of conduct and informal policies in place for those speaking on behalf of NASA, the individual research centers and their public affairs offices are largely left to oversee their own social media accounts and determine their own content for release.

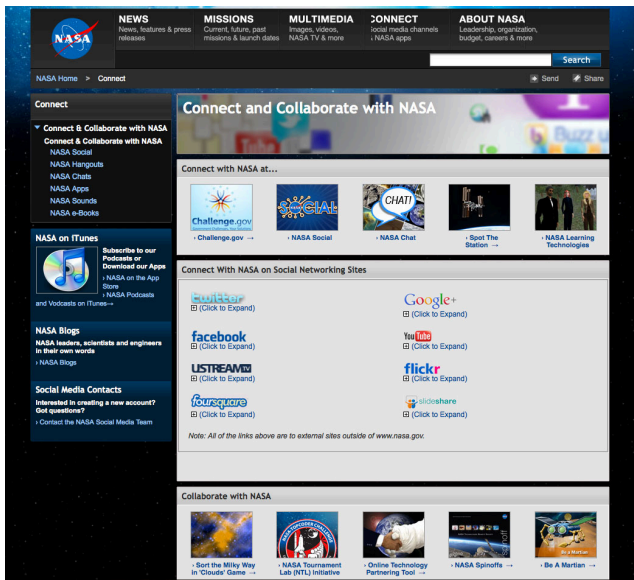


Figure 1.2 NASA Connect Website

Interest in the Twitter community has grown exponentially, with the main NASA account reporting a thousand followers in 2009, up to more than 3.4 million followers in 2013. NASA has utilized Twitter not only to share information, photos and updates with

¹³ Lanian, 244

its followers and the public but also to reach out to the public with opportunities to visit NASA facilities and meet scientists and astronauts in person. The events, today known as “NASA Social” events, are exclusive to followers of NASA social media accounts. The first NASA Social, at the time called a Tweetup, was hosted at NASA’s Jet Propulsion Laboratory in Pasadena, Calif., in 2009.¹⁴

In the early days of NASA’s Twitter presence, with few followers to engage in the kind of dialogue it had hoped, the administration saw the Tweetups as an opportunity to reach a wider audience by inviting 150 active users of social media to experience the science and excitement of JPL and to share their experience with their followers. From there, @NASA’s following grew. As it turned out, people liked to hear about NASA from other social media users who had experienced it firsthand, without the stuffy press releases and predictable mainstream media stories: real-time, firsthand accounts from real social media users. Making social media use a prerequisite for attending the Tweetups meant a greater possibility of reaching a more diverse population than the traditional space enthusiasts.

Twitter also provided a unique platform for something that had never been done before. Astronauts were able to reach millions of followers directly from space with tweets of their own. Tweeting from the International Space Station was tried out first on May 12, 2009, when American astronaut Mike Massimino sent a message from the ISS to be tweeted to his account by the NASA team back on earth. The first live tweet from space came from Flight Engineer T. J. Creamer on January 22, 2010. The tweet read:

¹⁴ "NASA Celebrates Anniversary of First NASA Tweetup." *NASA Events*. NASA, 18 Jan. 2013. Web. 10 Mar. 2013.
<http://www.nasa.gov/connect/social/tweetup_anniversary.html>.

“Hello Twitterverse! We r now LIVE tweeting from the International Space Station -- the 1st live tweet from Space! :) More soon, send your ?s’.”¹⁵

NASA’s use of social media has been recognized often in recent years, earning the administration’s team a Shorty Award in 2009 for its use of Twitter for the Mars Phoenix Lander mission and again in 2012 for best government use of social media.¹⁶

But the administration has looked to more than just Twitter and Facebook, the obvious social media platforms, to fulfill its responsibility to inform and engage the public. The administration has branched out, establishing a presence on Google +, YouTube, Flickr, Instagram, and even FourSquare – “With NASA and Foursquare you can check in to explore the universe and discover Earth.”¹⁷ Wherever the public is, NASA has demonstrated an interest in reaching them.

NASA in Pop Culture

Part of NASA’s goals for public outreach is to engage younger generations in conversations of science and technology. In addition to being the ones who will replace today’s space community, the younger generations will be the ones voicing their support or dissent for space programs of the future.

One way in which NASA could reach these demographics is through pop culture references and collaborations. In late 2012, a song and dance by Korean musician Park Jae-Sang captivated the country. The song, “Gangnam Style,” and the awkward dance that accompanied it, created a cult following. The parodies that followed were too

¹⁵ Bilton, Nick. "First Tweet From Space." *Bits*. The New York Times, 22 Jan. 2010. Web. 10 Mar. 2013. <<http://bits.blogs.nytimes.com/2010/01/22/first-tweet-from-space/>>.

¹⁶NASA. Headquarters. *NASA's Twitter Account Receives Shorty Award*. 1. 27 Mar. 2012. Web. 10 Mar. 2013.

¹⁷ NASA. *Foursquare*. <https://foursquare.com/nasa>.

numerous to count, but possibly one of the more unlikely and creative ones was produced and posted to YouTube by a group of intern volunteers at NASA's Johnson Space Center -- with the approval of the center's public affairs office. The video, titled "NASA Johnson Style," featured members of NASA's research labs, administrators and astronauts dancing along to a jingle about the many things taking place at NASA's Johnson Space Center.

The lyrics are both catchy and informative: "Orbiting earth, international space station/Where we work and live in space with a crew from several nations/Got Japanese, and Russians, that European charm /Throw them up, like the Canada Arm."¹⁸

The video very quickly became NASA's most popular ever, topping 4.5 million views in months, and bumping two Mars Curiosity Rover videos to second and third place. The viral nature of the video required little legwork on NASA's end, garnering more than two million views in a single week. In an interview with *The Los Angeles Times*, NASA Administrator Charles Bolden lauded the video as being not only informative: "It tells a tremendous story about NASA and the vision for exploration, and it's also entertaining. It's one of the best that I've seen in a long, long [time]. So if you have a moment ... it's worth it."¹⁹

The video again demonstrated the PR power of drawing on the creativity of the diverse NASA community, and empowering individuals, even student interns, to be part of bringing NASA to the public. While the video received plenty of critical comments

¹⁸ *NASA Johnson Style (Gangnam Style Parody)*. Perf. Mike Massimino, Clay Anderson. *YouTube*. NASA Johnson Space Center, 14 Dec. 2012. Web. 10 Mar. 2013. <<http://www.youtube.com/watch?v=2Sar5WT76kE>>.

¹⁹ Khan, Amina. "NASA Chief Touts 'Gangnam' Parody, 'NASA Johnson Style'" *Los Angeles Times*. N.p., 21 Dec. 2012. Web. 10 Mar. 2013.

from viewers suggesting such creative projects waste taxpayer dollars, the number of people who have viewed the video would suggest that it was successful in at least delivering information on NASA's work and missions – albeit in an unconventional way. But perhaps goofy but informative YouTube videos will be just what it takes to reach previously untapped demographics. NASA social media director John Yembrick explains that sometimes creativity is the perfect approach to teaching the public about what NASA does in day-to-day operations:

It tells the story in a fun way. Sometimes NASA sucks the cool out of things by being too technical in how we communicate, and this is something a bunch of people probably sat around their computers, watched and they learned something from it.²⁰

NASA has been designing its own digital games and mobile apps for years, but in 2012, the administration lent its expertise to the popular online game, *Angry Birds*, created by Rovio Entertainment. The wildly popular game has been downloaded and purchased more than a billion times across platforms and is geared to engage gamers of all ages.

NASA partnered with Rovio on *Angry Birds Space*, incorporating environmental factors such as microgravity, to give gamers an idea of how objects in space travel differently than those under the influence of earth's gravity. The game was later updated to incorporate components of NASA's Mars mission, such as rovers and landers. More

²⁰ Berger, Eric. "A Rap Video Becomes NASA's Most Popular Ever." *The Houston Chronicle*. N.p., 10 Jan. 2013. Web. 10 Mar. 2013.

than ten million copies of Angry Birds Space were downloaded in less than three days following the game's launch.²¹

In a press release issued Aug. 2, 2012, NASA explained its decision to partner with Rovio: "NASA participated with Rovio on Angry Birds Space under a Space Act Agreement to share the excitement of space with the Angry Birds community, educate players about agency projects and programs, and collaboratively create interactive informational experiences for the public."

David Weaver, associate administrator for communications at NASA Headquarters in Washington, added: "Rovio is teaching huge new audiences about NASA's missions to Mars thanks to this collaboration. It's a great way to introduce both kids and adults to the wonders of the planet in a fun and entertaining way."²²

B. Purpose

The purpose of my research is to evaluate the National Aeronautics and Space Administration's use of social media to maintain a two-way symmetrical model of communication with the public. NASA has established a comprehensive digital presence and is among the top government users of social media platforms. I will explore how such a large administration -- with ten research centers, no official social media plan, and the restrictions of a government agency -- is able to utilize social media within their public affairs responsibilities. Additionally, I will propose additional research that could

²¹ Paul, Ian. "Angry Birds Space Hits 10 Million Downloads In Less Than 3 Days." *PCWorld*. N.p., 26 Mar. 2012. Web. 10 Mar. 2013.

²² NASA. Headquarters. *Epic Struggle Between Birds And Pigs Goes On With A Martian Twist*. N.p., 23 Aug. 2012. Web. 9 Mar. 2013.

be done to help NASA better understand the impact their social media presence might have on public opinion.

C. Research Questions

- How are the National Aeronautics and Space Administration's public affairs offices fulfilling the administration's responsibility as charged in the 1958 Space Act?
- How has the utilization of modern communication platforms changed the public's access to NASA?
- How has social media enabled NASA to be collaborative, participatory and transparent with the public?

Chapter 2. Research and Findings

A. Case Study Selection

The case studies selected for this analysis encompassed some of the major challenges and opportunities that face government public affairs organizations today.

B. Literature Review

The 1958 Space Act, Sec. 20112, under the subhead “Functions of the Administration,” states: “The Administration, in order to carry out the purpose of this chapter, shall [...] provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.”²³

In an effort to explore the past and current role of the National Aeronautics and Space Administration’s (NASA) public affairs offices in fulfilling this charge, a number of the agency’s own historical documents help establish the framework.

Additional mandates have been passed down since the inception of the Space Act and the Freedom of Information Act, some by NASA, others by federal mandate. In 2003, amid rumors of attempts by NASA public affairs personnel to keep scientists from speaking openly with media about global warming, then-NASA administrator Michael Griffin released a new policy outlining the administration’s policies for handling media and public inquiry.

The “NASA Policy on the Release of Information to News and Information Media” was released to address, both internally and externally, the accusation that scientists were being censored. The policy strictly applied to “public information, which

²³“National Aeronautics and Space Act”
http://www.nasa.gov/offices/ogc/about/space_act1.html

is defined as information in any form provide to news and information media, especially information that has the potential to generate significant media, or public interest and inquiry.”²⁴

A more recent focus on transparency was enacted with President Barack Obama’s Memorandum on Transparency and Open Government, issued, January 21, 2009.²⁵ In an explanation of the initiatives, Peter Orszag, director of the Office of Management and Budget under President Obama, explained the reasoning behind the three pillars of the Open Government Plan:

The three principles of transparency, participation, and collaboration form the cornerstone of an open government. Transparency promotes accountability by providing the public with information about what the Government is doing. Participation allows members of the public to contribute ideas and expertise so that their government can make policies with the benefit of information that is widely dispersed in society. Collaboration improves the effectiveness of Government by encouraging partnerships and cooperation within the Federal Government, across levels of government, and between the Government and private institutions.

²⁴ “NASA Policy on the Release of Information to News and Information Media,” NASA, March 30, 2006.

²⁵ Orszag, Peter. “Open Government Directive,” Dec. 8, 2009.

<http://www.whitehouse.gov/open/documents/open-government-directive>

The Open Government Directive encouraged the agencies to volunteer the information that members of the public might be interested in, rather than making them hunt it down. Modern technologies such as digital databases and search engines, no doubt made the effort easier. NASA has a number of resources available to the public, including technical databases, raw data from satellites, and historical administrative documents. Public access to those is encouraged.

In 2010, in response to President Obama's Open Government Directive, NASA released its Open Government Plan, with the goal of improving transparency, participation and collaboration across the administration and with the public. The plan included specific goals and objectives, and identified specific actions that would be taken to ensure the President's directive was met:

The Open Government Directive calls on NASA to do what it does best—innovate. In our history, we have achieved seemingly impossible goals, from reaching the Moon to advancing fundamental knowledge about our place in the universe. In the past we would create the technologies to achieve these goals through internal teams and collaborations. NASA must now innovate how we innovate, focusing on technologies that advance humanity into space while more directly involving citizens and public-private partnerships. The Open Government Directive also calls on us to change the way we do business, and as a result turn us into a twenty-first-century space program for a twenty-first-century democracy.²⁶

²⁶ "Orszag, 5

In the 2010 plan, the “NASA Public Affairs Web Initiatives” section outlined a series of goals, including: “increase opportunities for public to directly connect with NASA experts through channels such as NASA chats; work to streamline Internet operations and continue to explore new initiatives to connect with users interested in NASA; and release a policy on Social Media at NASA if appropriate.”²⁷

The 2010 Open Government Plan also addressed the idea of implementing a social media policy. At the time of the document’s release, it specified that NASA was working to establish a sound presence on various social media sites, including Facebook and Twitter:

A social media policy is under consideration. So far different programs and NASA Centers have issued guidance for their employees. We have relied on our professional staff to use appropriate decorum and understand that social media is just another communications medium. An approach that involves trusting our workforce, learning from missteps, and celebrating successes will continue with whatever policy is issued.²⁸

The 2010 plan has since been updated, with the 2012 version, Open Government Plan Version 2.0, introducing a new initiative that “focuses resources on creating an accessible, participatory and transparent web environment based on open and interoperable standards.”²⁹ The 2012 update to the policy noted that the Public Affairs

²⁷ 41

²⁸ 41

²⁹ "NASA Open Government Plan 2.0." *NASA Open Government Plan 20 Introduction Comments*. N.p. Web. 10 Mar. 2013.

and Web segment of the 2010 plan was, by NASA's assessment, one hundred percent completed.

NASA also includes communications in their Strategic Plan, outlining public engagement as a priority, through various programs, libraries and museums, as well as digital platforms such as forums and social media. Beyond just informing, collaboration brings members of the public into the conversation and draws on their ideas, experiences and expertise to enrich the communications. The agency's Strategic Plan explains:

Opening pathways for the public to actively participate in NASA's activities is a new focus consistent with the philosophy of government transparency. Participatory engagement seeks to include the general public in the adventure and excitement of our activities and tap into individual creativity and capabilities to enhance our work in science, discovery, and exploration.³⁰

The document goes on to explain the administration's outreach efforts, and the purpose for them:

At NASA, sharing information is a mandate within our founding legislation. Throughout our history, it has been a priority to make data from scientific missions, research and other discoveries available for the benefit of the nation. Our missions are a natural means of interacting with

³⁰ "2011 NASA Strategic Plan," Washington, D.C.: NASA Headquarters, 2011. Print. 32.

the public and supporting students and teachers. Through the excitement of missions and activities, we help stimulate student-interest and achievements in science, technology, engineering and mathematics fields [...] As we continue our traditional means of outreach through print, television and live events, we also have adopted emerging technologies and media that allow greater access and participation by the public, students, and teachers. Virtual events, live streaming video, online chats and social media are some of the tools we use to broadly share our message and encourage active participation. Our online presence also has become an essential tool for fostering transparency in our operations and management practices, and we will continue to share information with the public on how we work.³¹

The emphasis on transparency today stems from NASA's responsibilities as a federal agency. A report by the Pew Research Center reveals trends in how the public accesses information on government websites, and the expectations the public has come to expect as a result of the president's Open Government Plan. The report reveals that eighty-two percent of Internet users have, at least once in the preceding year, sought out a government website for information or to conduct a specific transaction.

While NASA's primary purpose in informing the public is for transparency of federal spending, public support – defined as American voters supportive of NASA's programs and research -- could be a beneficial byproduct.

³¹ “2011 NASA Strategic Plan,” 30

Research by various organizations over the span of the administration's history has revealed varying levels of public support and approval. While NASA's funding has remained below one percent of the federal budget for all but three of the last thirty-seven years, it has certainly seen significant fluctuation.

In "Public Opinion and Social Effects of Space Activity," Joseph M. Goldsen notes that NASA really had to build its own fan following from the ground up, unlike other agencies under the federal government. Goldsen noted that it takes time and information to share:

At the present time, NASA does not have as clear-cut a body of followers and supporters as the military arms. Behind the several armed services are present and former members of the armed forces, their associations, publicists, industrial contractors, and enthusiasts with powerful voices, united on one broad objective despite internecine disputes over budget allocation and assignment of missions. NASA, in the years to come, will develop a body of support drawn from special sectors of the population – scientists, engineers, the more adventure-minded youth, industrial suppliers, and others who believe in the contribution that civilian-run space activities can make to the achievement of peace, economic, well-being and scientific discovery. Until there is a widespread and firm belief in the contributions which space programs can make to one or another of these objectives, there is likely to be a continuing need to build support for

large-scale space programs through a clustering of diverse objectives which are in some degree interdependent and mutually reinforcing.³²

Research is limited on the correlation between public opinion and funding for NASA, but Goldsen proposes that it is not unreasonable to believe that popular culture and public opinion surrounding NASA's manned and unmanned space programs would influence Congress in allocating funding:

The Congress has tended to view the 'space issue' as a vital matter affecting the peace of the world and the U.S. national security. But there are differences over the best means to achieve shared goals. Resources of money, talent, and scientific knowledge are limited. Other national goals compete for the allocation of these resources. Different evaluations are put on the competing goals as well as on the efficacy of alternative means for reaching them. In the end, compromises rather than a consensus lead to decision – or to indecision and inaction. The public is a party to the debate in so far as it expresses its preference and has the means for convincing the decision-makers in the Congress and in the Executive offices of its desires. It seems to be generally understood that “public opinion” will follow if leadership takes the lead.³³

³² Goldsen, Joseph M. *Public Opinion and Social Effects of Space Activity*. Rep. Santa Monica: Rand Corporation, 1959. Print. 8.

³³ Goldsen, 8.

As Glen Wilson wrote in the appendices to an oral history workshop on the legislative origins of the Space Act, the early days after the launch of Sputnik had more than a few politicians anxious about where the U.S. stood in the space race.

The workshop proceedings seem to suggest that the main directive for the “public information” segment of the Space Act was twofold – the first purpose was political, and the second was to ensure public fears were addressed. Space was still uncharted territory, and the idea of the Soviet Union being dominant--and what sort of danger satellites could mean for the U.S.--was on everybody’s mind. Proceedings from an oral history workshop entitled “Legislative Origins of the National Aeronautics and Space Act of 1958” explains:

In George Reedy [Assistant, Press Secretary (and general factotum as most of us were) to Lyndon Johnson] wrote an extremely perspicacious memo to the Senator on Oct. 17, in which he pointed out the potential political payoff to Johnson, but most importantly, strongly recommended that the “...immediate need is for gathering the facts and presenting them to the public—without hysteria, without elaboration and definitely without partisanship” and, as it developed, looking for solutions for what needed to be done to help solve the problem, rather than looking for scapegoats.³⁴

³⁴ "Legislative Origins of the National Aeronautics and Space Act." *Proceedings of an Oral History Workshop*. Monographs In Aerospace History, Washington, D.C. Vol. 8.: NASA History Office, 1992. 50. Print.

Reedy stated, “I think that if there is a father to the Space Act it was probably Charley Brewton, of whom very few people have ever heard. Charley had been Senator Lister Hill’s administrative assistant. I had never known him to be wrong in judging the public. He came down to see me, and said that the Space Act was so tremendous. It could first of all clobber the Republicans, secondly lead to tremendous advances, and, third, elect Lyndon Johnson as president. Well, I told him that Lyndon Johnson was not interested in running for the presidency. He said that was all right with him, he would settle for clobbering the Republicans. He was a Democrat.”

In “Public Opinion polls and Perceptions of U.S. Human Spaceflight,” Smithsonian Institute National Air and Space Museum Division of Space History Director Roger D. Launius assessed the research done on the correlation between public opinion and space policy.³⁵

Launius pointed out that public opinion polls of the 1960s reveal that the public felt less attached to the Apollo program than those who had a stake in the program’s success – the media took advantage of the moon landings as an opportunity to increase reader and viewership, politicians and leaders saw the program as a critical opportunity to surpass the Soviet Union in the space race, and the smiling faces of the astronauts employed by NASA represented the wholesome American dream. All of the pieces were perfectly aligned for a country completely behind an expedition to the moon. But the historical feats of the Apollo program were not achieved because of the passion of the

³⁵ Launius, Richard. "Public Opinion Polls and Perceptions of U.S. Human Spaceflight." *Space Policy* 27 (2011): 240-46. 29 Sept. 2011. Web. 9 Mar. 2013. <www.elsevier.com/locate/spacepol>.

public, but because the social, political and financial interests in reaching the moon outweighed public opinion.

Public opinion polls between 1961 and 1995 show that of the eight different times the public was polled in the span of thirty-four years, only once did the public's favor for government-funded manned missions to the moon outweigh their opposition to them.³⁶ Considering the timeline of events, this would mean that public opinion showed stronger opposition than support for government-funded manned missions to the moon even before the Apollo program was initiated, and that opposition continued to outweigh support in all but one of the subsequent polls during and beyond the Apollo program. This data would suggest little correlation between public opinion and, at the least, government funding for high-profile programs with greater underlying purpose – be it national security, economic incentive, international relations, political agenda, etc.

Polls show that even when the value of the programs was acknowledged, many polled at various points in the shuttle program's thirty-one-years felt that too much funding was being given to NASA. While there have been very few points in NASA's history when the administration's budget exceeded one percent of the federal budget, polls suggest that the public perceived the NASA budget to make up a far greater percent of the federal budget than it has in even its most expensive years. "In 1997, the average estimate of those polled of NASA's share of the federal budget was 20%, as compared to the actual budget of less than 1%. This lack of knowledge is important to keep in mind

³⁶ Launius, 244

when evaluating public opinion, since it is likely from the aforementioned statistics that many opinions will be poorly informed ones.”³⁷

Alan Steinberg explores the idea further in “Space Policy Responsiveness: The relationship between public opinion and NASA funding,” drawing on Launius’ findings and general social survey data to propose that the public’s tolerance for spending on the space program is not in line with increases and decreases in the NASA budget. He suggests this may be in part due to the fact that it takes time for politicians to be able to enact budget changes, and the timing of such budget changes might be out of line with the public opinion due to delays in control over policy.

He explains in his findings: “Congress is catering to both side of the issue. For the overall population, which seems to favor a reduction of spending, the government is reducing funding for NASA as a percentage of the budget. However, the government is also responding to supporters of the space program through increasing funding in real dollars during times when tolerances towards such actions are higher.”³⁸

While NASA had begun lobbying Congress for a reusable shuttlecraft [he continued], a permanently inhabited space station and a mission to Mars, Congress was reluctant to fund such ventures because of changes in the political mood. Members of Congress were now acting responsively towards their constituents,

³⁷ Launius, 244

³⁸ Steinberg, Alan. "Having Their Moon Pies and Eating Them, Too: Analyzing Public Interest in NASA Spending." *The Space Review*. The Space Review: Essays and Commentary about the Final Frontier, 5 Nov. 2012. Web. 07 Feb. 2013.

with an unwillingness to fund a program that no longer had a presidential mandate and had lost public favor [...] Legislators representing states with NASA facilities were arguably supporting funding in order to promote economic growth and employment, regardless of specific aspects of space policy. There is little information available to know if such support and opposition spurred from specific aspects of public opinion, or whether space policy played only an enabling role to domestic policy outcomes.³⁹

Beyond the potential to translate public support into funding, NASA's communications help feed the culture of America that seems to expect that space exploration is always present, and will continue to function on even an unrealistically minimal budget.

Public Relations Theories

In "Excellence Theory in Public Relations," James Grunig explains the excellence theory, developed over a fifteen-year period based on communications best practices, as a way of gauging an organization on its handling of input from the stakeholders, assuming that if the stakeholders are dissatisfied with the way the organization has addressed their concerns, the stakeholders "will either pressure the organization to change or oppose it in ways that add cost and risk to organizational policies and decisions."⁴⁰

³⁹ Steinberg, 242

⁴⁰ Grunig, James E. *Excellence in Public Relations and Communication Management*. Hillsdale, NJ: L. Erlbaum Associates, 1992. Print.

The Grunig theory of excellence in public relations defined excellence as “a set of characteristics of a public relations function that were correlated with organizational effectiveness. We defined organizational effectiveness as occurring when an organization achieves goals chosen in consultation with stakeholders – goals that serve the interest of both the organization and these strategic constituencies. We define excellence in public relations as a set of attributes and practices that helped to ‘build quality, long-term relationship with strategic constituencies.’”⁴¹

Grunig outlines the seventeen characteristics of excellent public relations programs. They include, as follows:

- I. Program Level
 1. Managed strategically
- II. Departmental Level
 2. A single or integrated public relations department
 3. Separate function from marketing
 4. Direct reporting relationship to senior management
 5. Two-way symmetrical model
 6. Senior public relations person in the management role
 7. Potential for excellent public relations, as indicated by:
 - a. Knowledge of symmetrical model
 - b. Knowledge of managerial role
 - c. Academic training in public relations
 - d. Professionalism
 8. Equal opportunity for men and women in public relations
- III. Organizational Level
 9. Worldview for public relations in the organization reflects the two-way symmetrical model
 10. Public relations director has power in or with the dominant coalition
 11. Participative rather than authoritarian organizational culture
 12. Symmetrical system of internal communication
 13. Organic rather than mechanical organizational structure
 14. Turbulent, complex environment with pressure from activist groups
- IV. Effect of Excellent Public Relations
 15. Programs meet communication objectives
 16. Reduces cost of regulation, pressure, and litigation

⁴¹ Grunig, 86

17. Job satisfaction is high among employees ⁴²

Characteristic five notes the importance of a two-way symmetrical model for public relations. Grunig and Grunig (1992) explain:

In practice, professional public relations involve both asymmetrical (compliance-gaining) tactics and symmetrical (problem-solving) tactics. However, we hypothesize that the most effective public relations, excellent public relations, will fall more toward the symmetrical end of the continuum than the asymmetrical end. ⁴³

In the 2007 journal article “The Government Communication Decision Wheel: Toward a Public Relations Model for the Public Sector,” Brooke Fisher Lui and J. Suzanne Horsley argue that public relations models are not “one size fits all” and that the two-way symmetrical model does not take into consideration that the public sector might have a need for some components of the two-way asymmetrical model in certain circumstances.

In a study by Brook Fisher Liu and J. Suzanne Horsely (2007), it was concluded that public sector public relations practices fall outside of the traditional public relations models, and should be evaluated based on a different set of parameters, proposed by the researchers to be called the government communications decision wheel.

Liu and Horsely proposed that private sector PR personnel were limited in their interaction with the public by politics, purpose of promoting the public good, legal

⁴² Grunig, 28

⁴³ Grunig, 312

constraints, media scrutiny, devaluation of communication, poor public perception, lagging professional development and federalism. Incorporating elements of the five public relations models – model of the government communication process, synthesis model of public sector crisis communication, public relations process model, two-way symmetrical model and contingency theory – the government communication decision wheel model “identifies four coexisting, complementary microenvironments: multilevel, intragovernmental, intergovernmental, and external. The model also highlights eight environmental characteristics that affect government communication and proposes how these characteristics operate in each of the four micro- environments.”⁴⁴

Liu and Horsely propose that government public relations professionals face additional hurdles in having to work within the parameters of government communications, noting that at the time of their research, both public and private sector organizations were held to the same public relations models. They argue that the public sector does not fit into the parameters of existing models, and instead propose their own model for public sector communicators.

In the article, Liu and Horsley quote Richard D. Waters and Jensen M. Williams as pointing to the notion that “government agencies, nonprofit organizations, and for-profit corporations were unlikely to become interactive on the web unless they were called to protect their organization’s reputation in the wake of an institutional crisis.”⁴⁵

⁴⁴ Liu, Brooke Fisher, and J. Suzanne Horsley. "The Government Communication Decision Wheel: Toward A Public Relations Model For The Public Sector." *Journal Of Public Relations Research* 19.4 (2007): 377-393. Business Source Complete. Web. 4 Feb. 2013. 384

⁴⁵ Liu, 384

Waters and Williams analyzed the findings of a study of a random selection of government Twitter accounts, including NASA, and the way that they used the social media site for public affairs. The study compared the random selection of thirty tweets to see which of the four models of public relations the tweets represented – press agency, public information, two-way asymmetry or two-way symmetry.

Waters and Williams note that all of the models are routinely used in public affairs practice:

Although evolved from public relations practice, the four models of public relations have been found to have significant impact on how public affairs specialists carry out their day-to-day activities. Grunig (1992) argued that public affairs was a specialization of public relations and that the four models of public relations were applicable to all of the public relations specializations. He noted that although public affairs specialists may be involved in fewer communication activities than public relations practitioners who work in fundraising, media relations or integrated marketing communications, they still use all four models routinely.⁴⁶

Their findings revealed that while the tweets represented the full range of the PR models, the most common type was public information, the four models are not mutually exclusive, and that a mix of models may be utilized in government public relations. They

⁴⁶ Waters, Richard D., and Jensen M. Williams. "Squawking, Tweeting, Cooing, and Hooting: Analyzing the Communication Patterns of Government Agencies on Twitter." *Journal of Public Affairs* 11.4 (2011): 356. Print.

found that even single tweets might share characteristics of multiple models, contradicting the claim by many scholars that the two-way symmetrical model exclusively is the most effective:

Organizations are not inclined to sacrifice the one-way distribution of messages to mass audiences in order to spend more time and resources to have many one-on-one symmetrical conversations. Likewise, organizations are not going to abandon the control that they maintain in one-way communications for give-and-take conversations on issues where external stakeholder input is not warranted. However, public relations scholars have slowly pushed these issues to the periphery in favor of focusing solely on relationship-building approaches and dialogue.⁴⁷

Waters and Williams noted that Twitter is popularly used for releasing information directly to followers, but it also has the potential to facilitate two-way communications with the public as well.

They proposed that perhaps the symmetry model is being pushed in a profession whose purpose is not entirely symmetrical. The study resulted in a list of ten proposed best practices, which I will later use to analyze NASA's social media presence. The best practices include:

- Personalize the account's Twitter page with a personalized background, and information about who is maintaining the account – including logo and website
- Follow other users

⁴⁷ Waters and Williams, 359

- Give users content that makes the account worth following – useful information
- Release the appropriate amount of information – not too much, not too little. Update 1-2 times a day.
- Reply or acknowledge follower's comments within 24 hours
- Be sure to not over-use the press agency model – it can come across as contrived. Be genuinely involved and engaging.
- Don't focus exclusively on yourself. Re-tweet and share information from others. Reply to as many direct tweets as possible.
- Ask questions to engage followers and stimulate conversation, and solicit feedback
- Link social media accounts to broaden the public following – blogs, Facebook, YouTube
- Dedicate the time to maintaining the social media account. This is critical for one- or two-way communication models.⁴⁸

⁴⁸ Waters and Williams, 360-361

Chapter 3: Case Studies

A. LCROSS: Early Social Media, Small Scale

In the early days of NASA's social media presence, the Lunar Crater Observation and Sensing Satellite (LCROSS) Project was underway, managed by a team out of NASA's Ames Research Center in California. The LCROSS mission involved propelling a Centaur rocket, moving at roughly twice the speed of a bullet, into the South Pole of the moon, at which time a support craft would gather the material from the plume created by the impact. Analysis of the debris was expected to confirm the presence or absence of ice in the permanently shadowed crater.⁴⁹

A report, titled "LCROSS and Social Media," submitted by the team following the completion of the LCROSS mission, reviewed the social media efforts, launched in 2008 and carried out by the handful of NASA personnel working on the mission. The report explained the genesis of the LCROSS social media presence, noting that that there was "'some perceived pressure' by social media people to 'get on the wagon' since other missions (e.g., LRO, Mars Phoenix) were using these social media sites."

LCROSS was a relatively small mission, and in the early days of the project, social media was not yet widely accepted across the administration. The LCROSS Twitter and Facebook accounts were launched in June 2008 and maintained in their early days largely independent of the NASA public affairs office. The mission report noted

⁴⁹ "LCROSS - Mission." *LCROSS - Mission*. NASA, n.d. Web. 16 Apr. 2013.

“the LCROSS Twitter and Facebook experiment pre-dated NASA embracing these approaches into social media.”⁵⁰

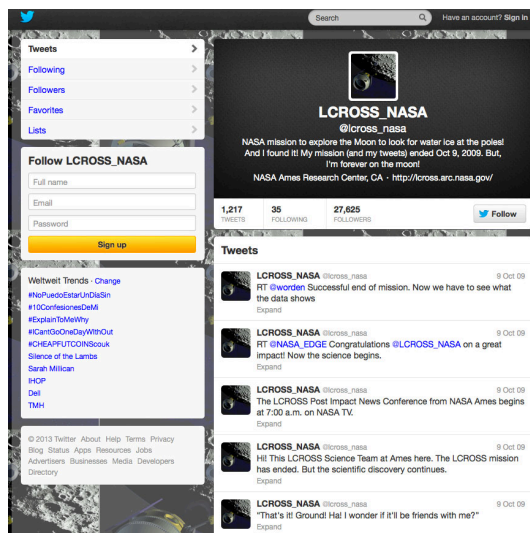


Figure 3.1 LCROSS Twitter Page

As their report explains, the team’s project manager outlined some basic guidelines under which the team was expected to operate on social media. The guidelines included: “Continue to make it interesting and fun to read; Try to avoid making predictions on future schedule; Only show performance data that are schedule, dollar or technical if it is public info; and Try to avoid statements that could be misconstrued as indicating that we are hurrying or struggling.”⁵¹

Before the launch of the satellite on June 18, 2008, updates on Facebook and Twitter by the LCROSS team included details about the project’s test phase and goals.

⁵⁰ Ennico, Kimberly, Jennifer Heldmann, Linda Conrad, and Alexander Van Dijk. *LCROSS & Social Media*. Rep., 1: NASA Ames Research Center History Office Lunar Crater Observation and Sensing Satellite (LCROSS) Project Collection, 2010.

⁵¹ Van Dijk, Alexander. *LCROSS Social/new Media Lessons Learned*. Rep. N.p.: NASA Ames Research Center History Office Lunar Crater Observation and Sensing Satellite (LCROSS) Project Collection, 2010. Print.

On launch day, the team released a number of prepared facts and figures, as well as real-time tweets of the action. The team’s accounts collected 5,442 new Twitter followers and 3,387 Facebook fans within twenty-four hours of launch. While the team made a point to update the Facebook page often, they encouraged their followers to track the mission “minute by minute” on Twitter.



Figure 3.2 LCROSS Facebook Page

The LCROSS team used the 112-day mission to share with the public the day-to-day operations of a NASA mission, culminating in the main event, the craft slamming into the moon. Through Twitter, the team opted to update from the perspective of the spacecraft, giving the mission a ‘personality’ perspective beyond just facts and figures. Initially the accounts were managed and updated by a five-person team, but messaging and voice began to veer from the original plan. With that, two primary users were given control of the “official LCROSS voice,” making a consistent message and tone easier to manage. This was a choice worked through by the team, as they explored what was or was not successful in their social media efforts.

One thing that the team noticed was that many LCROSS fans became part of the conversation, addressing potential controversy or inaccurate claims made by other followers (including chastising NASA for “bombing the moon”), without the NASA team ever having to get involved. They noted in their assessment of the social media campaign a hesitation to respond immediately to criticism, instead waiting to see how the NASA fan base would share their own perspectives and information with critics. They noted that the moderator of the LCROSS Twitter account would also lend comment when more information could be provided.

The team also experienced significant backlash on Twitter, as a “Dear NASA” meme caught on, largely joking, at NASA’s expense, about ‘bombing’ the moon.



Figure 3.3 Follower Questions for NASA LCROSS Twitter

Periodically throughout the mission, the team would address questions and concerns from their followers:

For about an hour leading up to the actual impact, the trend on Twitter was largely negative, but at a certain point, someone (not on the project) opened a new account on Twitter pretending to speak as the voice of the

moon saying all was good. This was retweeted many times and seemed to bring some sense back into the conversation. Around the impact itself, the conversation on Twitter regained a more balanced format and the “Dear NASA” meme died down.⁵²

The team opted to shut down the @LCROSS_NASA Twitter account at the time of impact, and continue to maintain the Facebook account to keep followers updated on the findings after impact. It was decided that the resources necessary to maintain the Twitter presence once the mission was completed were simply not available.

⁵² Ennico et al. 7

B. Mars Curiosity Rover: Large-scale Social Media Campaign

NASA attracted a significant amount of attention for the Mars Science Laboratory's (MSL) Curiosity Rover, which landed on the surface of Mars on August 5, 2012. The rover is equipped with the most advanced payload to ever be used on the Mars surface.

A team out of NASA's Jet Propulsion Laboratory (JPL) leads the Curiosity rover's social media presence, and has been tweeting "first person" accounts on behalf of the rover since before it was even complete. In the years leading up to the launch and landing, the three-man team that releases the tweets have been refining the Curiosity rover's "personality," and finding new ways to make complex scientific concepts both interesting and educational.



Figure 3.4 NASA Curiosity Mars Rover Facebook

The Curiosity Rover Twitter and Facebook accounts are consistently updated, often multiple times a day, with pictures from the red planet, Mars-relevant news updates, and explanations of the purposes of various components of the rover.



Figure 3.5 Curiosity Rover Twitter Photo Reply to Follower Question

Centered at JPL, the MSL project's Curiosity Twitter page had 150,000 followers before the rover's landing, and had topped 700,000 a day after the landing. Today, that account boasts 1.2 million fans, with a unique first-person tweeting style that has given the Curiosity a personality all its own. The social media team also engages the rover's fans in conversations on Twitter.



Figure 3.6 Curiosity Rover Twitter Follower Reply

Another piece of the Curiosity outreach blitz came in the form of a song by musician will.i.am, titled “Reach for the Stars.” The song became the first to be broadcast from the surface of Mars, and NASA events surrounding the song’s premiere brought together students and NASA scientists to discuss the Curiosity rover’s purpose and findings.

The hype surrounding the song’s 700-million-mile journey from earth to the surface of Mars and back, helped reach potentially untapped audiences, with the help of the popular singer. “Today is about inspiring young people to lead a life without limits placed on their potential and to pursue collaboration between humanity and technology through STEAM education,” said will.i.am. “I know my purpose is to inspire young people, because they will keep inspiring me back.”⁵³

The singer is a member of the popular music group The Black Eyed Peas, and founder of the i.am.angel Foundation, aimed at giving underprivileged children opportunities in education. Will.i.am announced plans to incorporate the Mars Curiosity Rover into a new initiative dedicated to promoting science, technology, engineering and mathematics.⁵⁴

The Curiosity project had a bit of a youthful, hip vibe early on, and the public seemed to get in on the excitement of the Curiosity landing. That excitement transcended science when, during the tense moments of the Curiosity landing, live coverage of the NASA JPL Mission Control team introduced the world to NASA engineer and flight

⁵³ Trotta, Ann Marie. “Curiosity Rover Plays First Song Transmitted From Another Planet.” *Mission News*. NASA, 28 Aug. 2012. Web. 10 Mar. 2013.

⁵⁴ NASA. Headquarters. *NASA Joins Musician Will.i.am, Discovery Education for Premiere of Song from Mars. News Releases*. NASA, 24 Aug. 2012. Web. 10 Mar. 2013.

director Bobak Ferdowski, known to many as “Mohawk Guy.” The image of a stuffy mission control was seemingly disrupted by Ferdowski’s youthful star-themed hairstyle.



Figure 3.7 JPL Engineer and Flight Director Bobak Ferdowski

What began as chatter among NASA fans reached mass media when President Obama acknowledged the haircut during a congratulatory phone call to the JPL team. "I've in the past thought about getting a Mohawk myself. My team keeps discouraging me," Obama said in his call to the JPL team. "It does sound like NASA's come a long way from the white shirts, dark-rimmed glasses and pocket protectors."⁵⁵

Significant media coverage followed, and it seemed that “Mohawk Guy” might represent the new generation of NASA scientists and engineers. Ferdowski became a sensation.⁵⁶ He represented the individuals that made NASA successful, and demonstrated a potentially more relatable side to the space agency.

⁵⁵ Hooda, Samreen. "Obama Calls Mars Curiosity Rover Team To Congratulate Them On Successful Landing." *The Huffington Post*. TheHuffingtonPost.com, 13 Aug. 2012. Web. 10 Mar. 2013.

⁵⁶ Judkis, Maura. "NASA's 'Mohawk Guy': 5 Reasons the Internet Is Obsessed with Him." *Washington Post*. The Washington Post, 08 Aug. 2012. Web. 10 Mar. 2013.

Another component of the Curiosity mission that had people abuzz was NASA's second most widely viewed video, "Seven Minutes of Terror." The video features NASA scientists discussing the process of successfully executing the rover mission's most critical step, the seven minutes it takes to get the rover through the Mars atmosphere and onto the planet's surface. The video shows the last stage of Curiosity's journey to the surface, step by step, with compelling computer generations and tense background music. The simplified but informative explanation gives the video potential to be a valuable tool in explaining to the public the complexity of a Mars landing.

C. Doomsday 2012: Crisis Management

Another important, albeit not as common role played by NASA is that of myth-debunker. It's not uncommon to hear claims by religious groups or conspiracy theorists about impending natural disasters on an apocalyptic scale. As a general rule, NASA does not often join those conversations, until it becomes an issue of public safety, as was the case in 2012, when claims of an ancient Maya prophesy foretelling the end of the world scared many into considering suicide or mercy killings in the days leading up to December 21. NASA public affairs officers were flooded with frantic e-mails and messages through social media, as many believed the world would end.

With some of the worlds leading scientists on staff, NASA officials felt a responsibility to share with the public the science behind the apocalypse myth, and quell rumors that might lead people to physically harm themselves or others. For this, they created a website dedicated to answering questions surrounding the alleged Mayan prophesy prediction, drawing on science to explain why such an event was not plausible. The site included video interviews with NASA scientists, links to additional resources on the topic, as well as a link to a Google+ event they hosted to address the topic.

The Google+ Hangout, held on November 28, 2012, included five NASA scientists from across disciplines, as well as a science professor from a California college, all to discuss the viral doomsday rumors. Thousands viewed the conversation, and members of the public were able to send in their questions using the hashtag #askNASA on Google+ and Twitter for the scientists to discuss.

NASA Jet Propulsion Laboratory Asteroid Scientist Don Yeomans summed up the need for such a conversation. "It's interesting to point out that on the Internet, there

are no referees, there are no filters. There are no reality checks, so it's a Wild West out there and folks who hear about extraordinary claims have to look for the extraordinary evidence that's required to support those claims."⁵⁷

In addition to helping ease the minds of the public, the Google+ Hangout also served as an opportunity to inform the public about some of the lesser-known work being done at NASA. The scientists were able to point out that NASA is constantly monitoring the skies for any threats, such as asteroids, and has the equipment necessary to detect and track any objects of concern. Additionally, participants in the chat stressed that all of NASA's tracking information is made available to the public to review, and there is no secrecy on NASA's part to 'cover up' any near-earth objects.

David Morrison, astrobiologist from NASA's Ames Research Center echoed that point. "There is a wide international astronomical community. In the case of something like Nibiru [a fictional planet that some conspiracy theorists claimed would collide with earth], there were at least a hundred thousand astronomers, amateur and professional in over a hundred different countries that could have been looking. So there is no possibility of hiding something that is in the sky."

In addition to the Google+ chats, NASA also addressed the topic of the doomsday prophecies on Facebook and Twitter. Over a period of weeks, the main NASA Twitter account, @NASA, was flooded with questions from followers about what would happen on December 21, the date the Mayan calendar ended.

⁵⁷ "Beyond 2012: Google+ Hangout with NASA." Online Video Clip. *YouTube*. YouTube, 28 Nov. 2012. Web. 10 Mar. 2013. <<http://www.youtube.com/watch?v=KHXW9bZtgpC>>.



Figure 3.8 NASA Twitter Apocalypse Response

As many scientists noted, the calendar, much like the twelve-month calendar today, is cyclical. The end date signaled the start of a new cycle. To ease the minds of Twitter followers, NASA social media administrators directed the public to a website where the scientific truth behind the rumors was addressed. When December 21 came, they also noted on social media that all was well with planet earth.



Figures 3.9 and 3.10 NASA Facebook and Twitter Response to Dec. 21, 2012

D. Tweeting From Space: Exclusive Outreach Opportunities

NASA found an entirely unique opportunity to reach the world through a free social media platform. On May 12, 2009 marked the first time messages had been “tweeted” from space. At that time, the shuttle crews had no access to the Internet, and limited opportunities to send e-mails.

Mike Massamino, mission specialist for the STS-125 mission aboard the shuttle Atlantis, emailed a tweet down to earth, where the ground crew shared his tweet with his 247,000 followers. “From orbit: Launch was awesome!! I am feeling great, working hard, & enjoying the magnificent views, the adventure of a lifetime has begun!”⁵⁸

On January 22, 2010, NASA issued a press release announcing Internet connectivity aboard the International Space Station. For NASA fans, that meant tweets directly from space, in real time. It was a first, and proved one of the few social media milestones that could only be achieved by those with the resources to go to space.



⁵⁸ "Mike Massimino Becomes the First to 'Tweet' From Space." *NASA*. N.p., 13 May 2009. Web. 10 Mar. 2013.

Figure 3.11 First Live Tweet from Space

E. Meteor over Russia: Panic and Curiosity

On the morning of February 15, 2013, a small asteroid entered earth's atmosphere over the Russian region of Chelyabinsk. The energy of the asteroid's entry and resulting debris caused significant structural damage and injured more than a thousand people. The asteroid was coincidentally timed with the passing of the large near-earth asteroid 2012 DA14, which NASA scientists noted was unrelated to the fireball in Russia. While it is not uncommon for asteroids to pass by earth, or for the occasional small meteor impact, the timing of the two had many buzzing about the correlation. NASA's main Facebook and Twitter accounts saw a relatively significant jump in their followings in the aftermath of Russia's meteor incident.

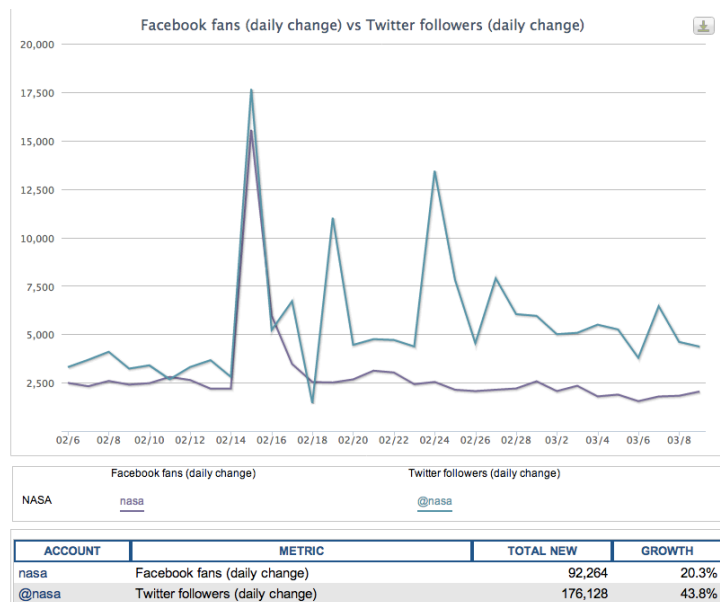


Figure 3.12 NASA Twitter and Facebook New Followers Following DA14

The main NASA account released the highest number of tweets and @replies for the month in the hours following the incident (see Figure 3.13). Outgoing tweets from the

@NASA Twitter account were largely related to the 2012 DA14 asteroid, and the fireball over Russia. The two space rocks even earned their own hashtags, #2012DA14 and #RussianMeteor, used by those involved in the conversation.

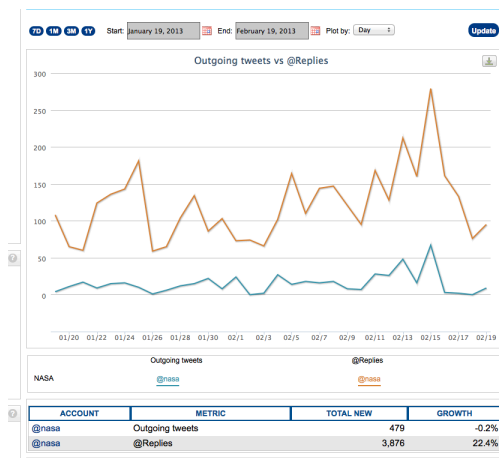


Figure 3.13 NASA Outgoing Tweets and Replies Following DA14

This jump in social media followers suggests that when space incidents occur, the public knows to look to NASA for information. That event brought in new followers, and based on the data from the few days since the incident, NASA has retained those followers and then some.

Chapter 4: Analysis

The 1958 National Aeronautics and Space Act assigned NASA the responsibility of providing “for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof.” The Open Government Directive reinforced and supported this call for transparency and provided a new definition for what sort of “dissemination” was expected of NASA and all government agencies.

Given that the common purpose of the Space Act and the Open Government Directive is and has always been to inform the public of where the U.S. stands in space capabilities to address fear or concern and to inform the public of where the taxpayers’ dollars are being spent, the information NASA releases should be aimed at addressing those issues. In 1958, “dissemination” by the public affairs offices occurred largely through press conferences and releases. The media was heavily relied upon to relay information to the American public.

The communication technology of the time may have limited the reach of NASA’s message, but the strong, confident astronauts selected to lead the country in the space race served as the public face of NASA, and their stories said more than the agency ever could. The LIFE Magazine contract for the Mercury astronauts and their families allowed the public unique access into the lives of the new American heroes. It appeared to be an effort independent of NASA’s public affairs office, but in reality, NASA was working behind the scenes to strategically manage the press exposure of the astronauts. They were the pop culture icons of their time, and that image was far too valuable to NASA to not be utilized.

But the scientists and engineers behind space exploration were left largely out of the limelight.

Enter 21st century communications. The agency has, in recent years, relied heavily upon social media to maintain a two-way symmetrical dialogue with the public, at times unknowingly turning NASA engineers into pop culture icons for a new generation. And by most accounts, NASA's social media presence rivals that of some of the largest and most successful government entities, including the White House.

Increasingly, public relations practitioners are expected to maintain two-way symmetrical communications with their "stakeholders." Among the characteristics of an organization that fulfills Grunig's excellence theory of public relations, are two-way symmetrical communications, and successfully meeting "the communications objectives."⁵⁹ These tenets mirror the Open Government Directives of collaboration, participation and transparency:

An organization that uses the two-way symmetrical model [...] uses research and dialogue to manage conflict, improve understanding, and build relationships with the public. With the symmetrical model, both the organization and publics can be persuaded; both may also change their behavior.⁶⁰

The major vehicle by which the two-way conversation takes place is through digital communication. NASA utilizes its website, forums and social media platforms to

⁵⁹ Grunig, 39

⁶⁰ Grunig, 39

disseminate to and receive information from the public. The use of social media has made such two-way symmetry easier, even for an organization as large as NASA – sensitive information, government restrictions, and complex concepts are all obstacles that the administration has found ways to overcome.

In the 2010 study of social media presence among government agencies, NASA scored the highest “Digital IQ,” when rated on its website, social media, marketing and mobile apps. The report evaluated a hundred government agencies in four categories, each comprising a designated percentage of the final score granted for the agency’s “Digital IQ”: Site (forty percent), Digital Marketing (thirty percent), Social Media (twenty percent), Mobile (ten percent). NASA earned the highest score of all evaluated, followed by the White House and the People for the Ethical Treatment of Animals. A classification of each of the agencies into one of five categories based on level of mastery for digital communications showed that only five percent of the agencies fell into the highest category of digital users. The group with the lowest scores was also the largest group (see Figure 4.1).

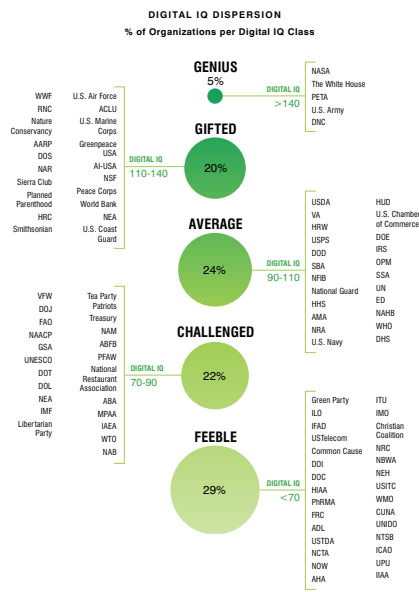


Figure 4.1 L2 Study – Digital IQ Dispersion

Independent of any obligation to communicate mission and findings with the public, those platforms would be nothing significant. But if used to maintain a two-way dialogue with the public, specifically to disseminate “information concerning its activities and the results thereof,” a digital presence on the scale of NASA’s would be fulfilling its dual Space Act/Open Government obligations far more efficiently, and on a much larger scale, than ever before. The question then becomes, are the platforms being used to collaborate, participate and maintain transparency?

To explore that question, I will first look at two of the main platforms, as evaluated by L2, through which these objectives can be met: website and social media. Strategically, communications are most effective when they reach members of the public where they already gather. As the Internet increasingly becomes a staple in daily life, public affairs practitioners are no longer restricted to the traditional avenues for releasing information to the public. While press conferences and exclusive media access were

common practice in NASA's early days, the agency today can increasingly reach the public directly, bypassing the media to share the day-to-day details of their work.



Figure 4.2 L2 Study Methodology

Website

The NASA website has many, many dimensions. It serves as a portal to the full gamut of NASA resources – from mission and project data to educational programs and press releases. The site encompasses all of the elements required of both the Space Act and the Open Government Initiative. NASA's Open Government Plan 2.0 website explains the goals of NASA's web presence. By its own definition:

NASA's web environment is well known for providing an unparalleled wealth of information to the public and is critical in fulfilling the agency's statutory requirement to disseminate information about its programs 'to the widest extent practicable.' To external audiences, NASA's Web capabilities provide direct access to agency programs and information,

allowing them to participate in the excitement of research and exploration. Internally, NASA personnel use web sites and services to support NASA's core business, scientific, research, and computational activities.⁶¹

The agency boasts more than two hundred fifty social media accounts across platforms, all of which can be accessed on the NASA Connect website, established to provide a comprehensive and easy-to-access resource for the public. The NASA site also has a mobile component, allowing for easier access to the site on a range of mobile platforms.

NASA established an IdeaScale forum to solicit feedback from the public on ways to improve its digital presence, with suggestion boards for design, social media, mobile, functionality, content and other topics. The website incorporates the "collaborative" element of the Open Government Initiative by providing a forum for the public to voice its suggestions, but since it is an open and largely unregulated forum, there are also posts that are completely irrelevant or nonsensical.⁶²

The main NASA website connects visitors with nearly every imaginable piece of NASA-related information one could need, broken down into several main categories: News, Missions, Multimedia, About NASA, For Educators, For Students, Mission Directorates, Connect, and NASA Facilities and Centers.⁶³

⁶¹ "NASA Web Environment." *NASA Open Government Plan 2.0*. NASA, n.d. Web. 10 Mar. 2013. <<http://open.nasa.gov/plan/nasa-web-environment/>>.

⁶² NASA. Headquarters. *NASA Seeks Public's Input on Improving Digital Communications*. N.p., 26 Nov. 2012. Web. 10 Mar. 2013.

⁶³ "Site Map." *NASA*. NASA.gov, n.d. Web. 10 Mar. 2013. <http://www.nasa.gov/sitemap/sitemap_nasa.html>.

Social Media

It is not enough for agencies to have a social media presence. They must also be able to utilize the various platforms for the purposes outlined in the Open Government Initiative. Social media platforms, such as Facebook, Twitter, YouTube and Flickr make appealing options for public affairs practitioners because not only are they free, but they are already being heavily utilized by the public. In their December 2012 Investor Reports, Facebook boasted 1.06 billion monthly active users. Twitter reached over five hundred million registered users by March 2012. Additionally, some of the most widely used social media platforms today have mobile app components, making it easy for the public to access communications wherever they go. L2 explains its findings of NASA's "Digital IQ":

NASA, the agency that brought us many of the most inspiring moments of the 20th century also continues to inspire online. In L2's seven Digital IQ studies (including Auto, Specialty Retail, and Pharmaceuticals), never has one organization established such a clear lead. NASA has pioneered efforts on every platform, demonstrating that the agency's innovation orientation extends well beyond its space program. Its technology-rich site attracts over three million unique visitors per month, and the organization boasts more than 600,000 Twitter followers and 150,000 Facebook fans, confirming the power of strong content.⁶⁴

⁶⁴Galloway, Scott, and Doug Guthrie. *L2 Digital IQ Index: Public Sector*. Rep. New York: 32, 2010. Print.

In a tie-in to the earlier assessment that NASA's start, unlike the armed forces with a built-in support network, largely started with no fan following, the L2 study pointed to the Marine Corps Facebook page, which averaged more than five thousand "likes" per day between September and October of 2010. That community garnered the social media following by calling on its supporters (likely at least somewhat comprised of active duty military, families and veterans) to gather more followers, throwing in a little friendly competition in hopes of surpassing the Army's Facebook following.

NASA has taken advantage of this sort of network-building opportunity through the NASA Social events. By relying on the existing fan-base to experience NASA's work firsthand and share it with their own personal friends and followers, the increase the chances of reaching an untapped segment of the public.

At the time of the L2 study, NASA's Twitter account was at 621, 991 followers. The popularity of the social networking platform has grown exponentially since then. More recent metrics compiled by OhMyGov shows that little has changed in the way of NASA and the White House dominating in government social networking.⁶⁵ NASA's most active and arguably most engaging communications take place on Twitter. In a review of government social media users, Richard Waters explains the role Twitter can play in two-way symmetrical communications:

In two-way asymmetrical communication, feedback enters the process.

Much like the fanciful representations of an owl hooting, 'Who, Who?'

⁶⁵ "National Aeronautics and Space Administration," OhMyGov Inc.

two-way asymmetrical communication seeks to have questions answered. Information is gathered from an organization's publics and is used to develop messages to send back to these publics. Although the practice is most often present in focus groups and interviews with stake-holders, the model is easily adaptable to Twitter.⁶⁶

Based on my analysis of Twitter activity for some of NASA's more prominent accounts over the period of thirty days from January 21, 2013 to February 21, 2013, the agency has successfully adhered to the social media best practices outlined by Waters and Williams, when compared to the public sector independent agencies ranked on the L2 "Digital IQ" Index. NASA's Twitter presence is widespread and it is difficult to draw boundaries on which accounts exactly make up their "presence."

According to NASA social media manager John Yembrick, social media sites become officially recognized upon processing a request through the public affairs office. This does not necessarily mean, however, that all of the accounts being operated by NASA personnel are official. Given the freedom and ease afforded by social media, particularly Twitter, many NASA groups and departments have established their own unofficial presence to reach their target audience. The accounts I will refer to here, as comprising NASA's Twitter presence, include just a handful of the 80+ official NASA Twitter accounts.⁶⁷

⁶⁶ Waters and Williams, 356

⁶⁷ "NASA Connect." *NASA*. NASA.gov, n.d. Web. 10 Mar. 2013.
<<http://www.nasa.gov/connect/>>.

Because of the research-based nature of NASA's work, as compared to those major-return on investment departments with built-in loyal followings⁶⁸ such as the U.S. Marine Corps, I will compare them alongside only the sixteen other independent agencies in the one hundred-agency study. Using Walter and Williams' proposed best practices for social media, I will breakdown how well the case studies and social media presence demonstrate NASA's use of these practices:

Personalization

The @NASA Twitter page has a personalized background that changes frequently. As of January 2013, the page featured the agency's main website on both the background image and in the headline section. Similarly, the Twitter page for NASA deputy administrator Lori Garver features a photo background and includes icons to show that NASA followers can also access information for the agency on YouTube, Facebook and Flickr. The strength of the main NASA account is the use of the agency's logo as the main account image, allowing the tweets to be easily recognized as being from NASA. This logo is also used by a number of the research centers' Twitter accounts, including Johnson Space Center.

JSC and the Mars Curiosity Rover utilize background images unique to their particular projects and facilities and include in the descriptions both informative and identifying details. For example, the @NASA_Johnson account describes, "NASA's JSC is the lead center for the International Space Station and the Orion spacecraft, and the home of the Mission Control Center and NASA astronaut corps. "Similarly,

⁶⁸ Goldsen, Joseph M. *Public Opinion and Social Effects of Space Activity*. Rep. Santa Monica: Rand Corporation, 1959. Print. 8

@MarsCuriosity states, “NASA's latest mission to Mars. I arrived at the Red Planet, Aug. 5, 2012 PDT (Aug. 6 UTC).”⁶⁹

In contrast, the National Science Foundation (NSF), which took fourth place on the Digital IQ scale among the category of Independent Agencies, has little identifying or informative information in its background image or Twitter bio, which states “Where Discoveries Begin.” NSF also offers no links or indications of additional social media accounts. It does, however, include its web address, and utilize its logo as its profile image. It could be argued that the NSF staff of fewer than two thousand doesn’t have the manpower to focus so extensively on a social media presence. An agency more closely in line with NASA’s employee count would be the General Services Administration, which, perhaps surprisingly, scored a fifty-three on the L2 Digital IQ scale, despite having significantly more manpower on staff than the NSF.

Follow other users

@NASA was, as of February 2013, following one hundred ninety-three other Twitter accounts, including mostly those for NASA astronauts and others operated by NASA personnel and various agencies within the space community.

Some of the individual research centers’ Twitter moderators have taken more liberties in their following, opting to follow some of their own followers. NASA Ames, for example, follows more than four hundred fifty other Twitter accounts, including many accounts for individuals who work behind the scenes at NASA. At the other end of the spectrum, NASA’s Johnson Space Center has a relatively small following and, in return, is following only thirty-five other Twitter users.

⁶⁹ @NASA_Johnson Twitter, https://twitter.com/NASA_Johnson

Giver followers useful content

Followers of the @NASA account have access to a wide range of information and photographs related to NASA missions and projects. Often they are inclined to comment on a matter of popular opinion, to provide answers to the questions sparked by rumor, as was seen with the December 2012 apocalypse “predictions.” Similarly, @LCROSS_NASA used their Twitter account to address questions of potential dangers posed by crashing a satellite into the moon. This served to not only answer questions from naysayers, but also to get ahead of potential rumors or misinformation by releasing accurate ahead of any questions that could arise. This component helps feed NASA’s commitment to transparency.

One advantage to operating a social media account for the individual missions or projects is that the public can instantly access information tailored to that particular subject. The focus is narrower, and the public can expect to find mission-relevant information in one place. The individual research centers frequently use their accounts to share details of events and projects specific to their center. In 2012, when the Space Shuttle Endeavour was being relocated to the California Science Center, the shuttle was fixed to the top of a carrier aircraft and toured across the state of California for the public to see.

At that time, NASA Ames Research Center opened its doors to the public for a flyover viewing. The Endeavour relocation website encouraged Twitter followers to use the hashtags #spottheshuttle and #OV105 to share their images and sightings with others tracking the shuttle’s journey. The @NASAAmes Twitter account also provided updates

on the viewing event as well as details of the shuttle's delays along its path. It provided up to the minute updates for those looking for that information.

Release the appropriate amount of information. Don't overuse the press agency model. Be genuine.

Based on Walter and William's prediction that one to two tweets a day is an appropriate amount, it would seem that NASA has far too many projects and missions going on any given day to stick to that guideline. Based on the significant number of followers the administration maintains, more than two tweets a day doesn't seem to be off-putting. Many of NASA's tweets are one-way public information releases, used to inform followers of details related to upcoming features on NASA TV, or deadlines for NASA Social events. But NASA also takes opportunities to share random bits of information about various programs. A tweet on March 1, 2013 read, for example, "[@NASA] is working hard to crack the code on icing in jet engines. Guess why at the new Test Your Knowledge Question: go.nasa.gov/bzyWFH."

For NASA to give all of the projects and centers the attention they deserve on the primary NASA account is simply impossible. Based on major findings or missions on any given day, NASA releases what it deems to be the most interesting, important or widely relevant information. Often, that means veering from the traditional science and technology-relevant information model and directing followers to some of their more lighthearted happenings.

The YouTube video, "NASA Johnson Style," was one of NASA's most widely viewed of all time, alongside informational Mars Curiosity videos. It presented the day-to-day of NASA's Johnson Space Center through fresh lyrics to a popular song and

dance. The video went viral, and while it drew some responses that criticized JSC for “wasting” time and money on something not strictly space-related, it did pleasantly surprise some who saw a lighter, hipper side of NASA. While this sort of engagement with the public veers from the traditional NASA public affairs model of the past, it seemed to completely align with their goal of using social media and popular culture to reach a younger demographic – the future generation of NASA scientists, engineers, astronauts and supporters.

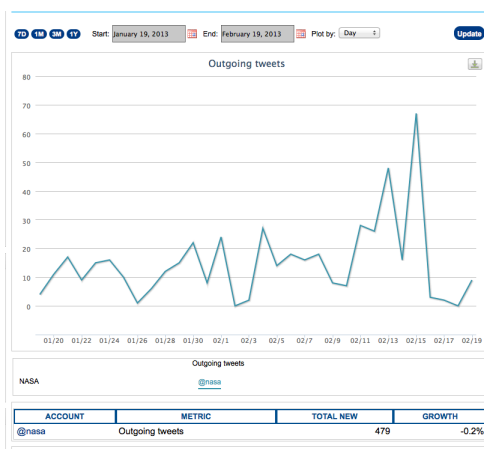


Figure 4.3 OhMyGov @NASA Twitter Replies

Reply promptly and to as many as possible

In the “LCROSS & Social Media report compiled by the LCROSS team following the mission’s end in 2010, the team noted the extensive commitment required to keep up-to-date on Twitter replies and comments. They noted in their findings that while the two-way communication model is preferred, it is certainly requires time and manpower to maintain:

Most NASA outreach/public affair efforts can be typically categorized as one-way, where information about events or data is “posted” or “updated”

to websites or other media (newspapers, radio, etc.). The presence of blogs, where comments are solicited, accepted, and posted, as well as the Twitter/Facebook social media tools, opens up potential “two- way” communication with the public, but there are limitations. Clearly one does not respond to 100% or 0% of the comments. The former is impossible unless you staff your social media channels 24/7. The later approach is “old-school” and not taking advantage of the new communication channels these social media tools are promoting.⁷⁰

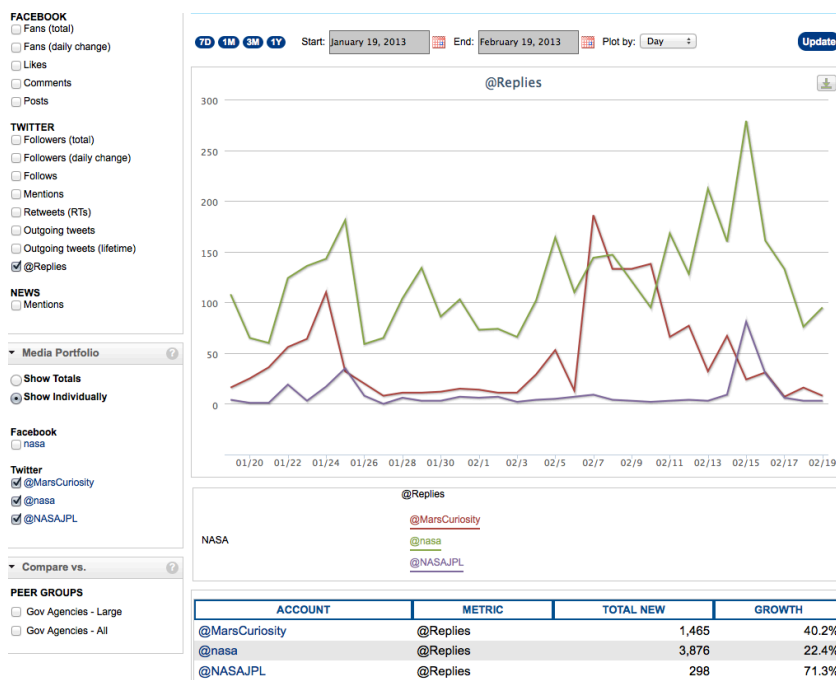


Figure 4.4 NASA Twitter Replies – Curiosity, NASA, JPL

The figure shows a spike in @NASA replies to followers in the wake of the meteor over Russia on February 15, 2013. Many members of the public had questions

⁷⁰ Ennico, et al. 26

related to the meteor, and the ill-timed asteroid, 2012 DA14, that was also passing by earth. Many wondered if there was a correlation, and what should be expected to follow.

Replies to individual tweets were numerous, and NASA was quick to quell rumors and fears about 2012 DA14. The responses, similar to those released in the days leading up to the rumored “apocalypse” in 2012, directed individuals to a fact sheet on the NASA website to learn more about the hard facts behind natural phenomena. They responded to dozens of followers, most asking the very same questions. It seemed that they developed a standard response, but the variations in wording showed their public affairs officers took the time to individually respond to as many of the concerned followers as possible.

The replies allowed NASA followers to see that their concerns and voices were heard by what many have viewed in the past as an untouchable organization. With thousands of employees and ten research centers across the country, it is important that NASA connect with the public on an individual level and build a reputation for being responsive to their stakeholders.

As the @MarsCuriosity team demonstrated in tweeting a photo to a mother looking to explain the rover components to her sons, addressing individual questions helps build public excitement and support for the NASA projects and programs.

Engage followers and stimulate conversation

One of the more prominent and exciting ways in which NASA has engaged the public in recent years has been through their NASA Social meet-ups. The events bring NASA social media followers together with the agency’s scientists, engineers and astronauts for behind-the-scenes visits and opportunities for access to NASA facilities.

The meet-ups were started to get experienced social media users with an interest in space opportunities to share their excitement with their followers, broadening the agency's reach and giving the public an inside perspective from everyday people. The social events have been widely received, and since they are so exclusive, only a few dozen are selected from the hundreds or thousands who apply.

Link social media accounts to broaden the public following

Many of the NASA tweets and Facebook posts link followers to other agency sites and social media platforms, not only connecting the public with the information they are either looking for or didn't know they didn't know, but also helping introduce them to the full spectrum of NASA's communications. If they prefer Facebook to Twitter, or the mobile web platform over apps, there is something for everyone.

The agency is relatively comprehensive in consistently exposing its followers to all of the other platforms. Almost daily, the @NASA account tweets numerous links to their website, for a range of information including "Image of the Day," social events on Google+, Q&A with NASA astronauts, etc.

Dedicate the time to maintaining the social media account. This is critical for one- or two-way communication models.⁷¹

Not everyone agrees with the lighter side of NASA, where student interns and astronauts appear side by side in music video parodies about space research, and an engineer with a mohawk is the unofficial face of the Mars Curiosity Rover program. Mixed amid the positive feedback on social media are certainly comments about whether there is room in a government agency for anything other than strict business.

⁷¹ Waters and Williams, 360-361

What those detractors fail to see is that many Americans want to connect with the space program in a way they understand. NASA's use of social media has really opened doors to tailored communications for various segments of the population who may have previously been uninterested or unsure that there were so many different components to the space agency. It's easy to be onboard for cutting budgets to a federal agency that you see as having no immediate and direct impact on your life or future. In that element of "mystery" lies caution and skepticism.

I would argue that more valuable than the social media presence and the frequent press releases is the relatability that NASA has established, however informally, in recent years. The curtain has been drawn back, and it turns out that the serious scientists and agency leaders are the kinds of regular people that the public had arguably been looking to see there. The agency has worked to bring its research, programs and passion to platforms on which dialogue already exists. The likelihood of garnering support through these information streams is greater than the risk of turning supporters into critics. Social media has given NASA a more youthful, energetic image, and made the administration feel more accessible.

Conclusion

NASA's communications practices have changed significantly from the days when it relied on mass media to disseminate information to the public. Today, the agency has established a comprehensive web and social media presence that has succeeded not only in fulfilling its responsibilities as outlined in the 1958 Space Act, but also by adhering to President Obama's 2010 Open Government Initiative. Digital information, delivered on the platforms that the public had already chosen to adopt, helped put NASA

in the public eye with limited additional effort and manpower. Today, the web and social media efforts are largely built-in to the traditional public affairs activities, and more than two hundred and fifty social media accounts across platforms allow the agency to delivered tailored information to relevant and interested audiences in unprecedented ways.

Studies have shown that the agency is among the top government digital communicators, but its proficiency extends beyond simply a web and social media presence. NASA has managed to utilize the various platforms in a way that delivers quality information. Its two-way symmetrical communications could serve as a model for all government agencies equally committed to participation, collaboration and transparency.

Further Research

I would propose a study further exploring public opinion of NASA's funding and the value of its programs since the administration adopted social media. It would be valuable to conduct a telephone or Internet poll in which respondents are asked 1) if they use social media, 2) if they "follow" NASA on any social media platform, and 3) how they feel about the current level of NASA funding and 4) how they rate NASA's value.

It would be particularly valuable to see how the public perceives NASA at a time when the agency has no operational vehicle for manned space flight, as a positive public opinion would mean that the agency has conveyed their current and future programs sufficiently to maintain public trust and confidence.

Appendix A

NASA Policy on the Release of Information to News and Information Media

March 30, 2006

This directive sets forth policy governing the release of public information, which is defined as information in any form provided to news and information media, especially information that has the potential to generate significant media, or public interest or inquiry. Examples include, but are not limited to, press releases, media advisories, news features, and web postings. Not included under this definition are scientific and technical reports, web postings designed for technical or scientific interchange, and technical information presented at professional meetings or in professional journals.

Applicability.

- (a) This policy applies to NASA Headquarters, NASA Centers, and Component Facilities.
- (b) In the event of any conflict between this policy and any other NASA policy, directive, or regulation, this policy shall govern and supersede any previous issuance or directive.

Principles.

- (a) NASA, a scientific and technical agency, is committed to a culture of openness with the media and public that values the free exchange of ideas, data, and information as part of scientific and technical inquiry. Scientific and technical information from or about Agency programs and projects will be accurate and unfiltered.
- (b) Consistent with NASA statutory responsibility, NASA will "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof." Release of public information concerning NASA activities and the results of NASA activities will be made promptly, factually, and completely.
- (c) To ensure timely release of information, NASA will endeavor to ensure cooperation and coordination among the Agency's scientific, engineering, and public affairs communities.
- (d) In keeping with the desire for a culture of openness, NASA employees may, consistent with this policy, speak to the press and the public about their work.
- (e) This policy does not authorize or require disclosure of information that is exempt from disclosure under the Freedom of Information Act (5 U.S.C. § 552) or otherwise restricted by statute, regulation, Executive Order, or other Executive Branch policy or

NASA policy (e.g., OMB Circulars, NASA Policy Directives). Examples of information not releasable under this policy include, without limitation, information that is, or is marked as, classified information, procurement sensitive information, information subject to the Privacy Act, other sensitive but unclassified information, and information subject to privilege, such as pre-decisional information or attorney-client communications.

Responsibilities.

(a) The Assistant Administrator for Public Affairs is responsible for developing and administering an integrated Agency-wide communications program, establishing Agency public affairs policies and priorities, and coordinating and reviewing the performance of all Agency public affairs activities. The Assistant Administrator will develop criteria to identify which news releases and other types of public information will be issued nationwide by NASA Headquarters. Decisions to release public information nationwide by NASA Headquarters will be made by the Assistant Administrator for Public Affairs or his/her designee.

(b) NASA's Mission Directorate Associate Administrators and Mission Support Office heads have ultimate responsibility for the technical, scientific, and programmatic accuracy of all information that is related to their respective programs and released by NASA.

(c) Under the direction of the Assistant Administrator for Public Affairs, public affairs officers assigned to Mission Directorates are responsible for the timely and efficient coordination of public information covering their respective programs. This coordination includes review by appropriate Mission Directorate officials. It also includes editing by public affairs staff to ensure that public information products are well written and appropriate for the intended audience. However, such editing shall not change scientific or technical data, or the meaning of programmatic content.

(d) Center Public Affairs Directors are responsible for implementing their portion of the Agency's communications program, adhering to Agency policies, procedures, and priorities, and coordinating their activities with Headquarters (and others where appropriate). They are responsible for the quality of public information prepared by Center public affairs officers. They also are responsible for the day-to-day production of public information covering their respective Center activities, which includes obtaining the necessary Center concurrences and coordinating, as necessary, with the appropriate Headquarters public affairs officers.

(e) Center Directors have ultimate responsibility for the accuracy of public information that does not require the concurrence of Headquarters. (See "Public information coordination and concurrence," section (d).)

(f) All NASA employees are required to coordinate, in a timely manner, with the appropriate public affairs officers prior to releasing information that has the potential to generate significant media, or public interest or inquiry.

(g) All NASA public affairs officers are required to notify the appropriate Headquarters public affairs officers in a timely manner about activities or events that have the potential to generate significant media or public interest or inquiry.

(h) All NASA public affairs employees are expected to adhere to the following code of conduct:

(1) Be honest and accurate in all communications.

(2) Honor publication embargoes.

(3) Respond promptly to media requests and respect media deadlines.

(4) Act promptly to correct mistakes or erroneous information, either internally or externally.

(5) Promote the free flow of scientific and technical information.

(6) Protect non-public information.

(i) All NASA employees are responsible for adhering to plans (including schedules) for activities established by public affairs offices and senior management for the coordinated release of public information.

(j) All NASA-funded missions will have a public affairs plan, approved by the Assistant Administrator for Public Affairs, which will be managed by Headquarters and/or a designated NASA Center.

(k) Public affairs activities for NASA-funded missions will not be managed by non-NASA institutions, unless authorized by the Assistant Administrator for Public Affairs.

(l) The requirements of this directive do not apply to the Office of Inspector General regarding its activities.

Public information coordination and concurrence.

(a) General. All NASA employees involved in preparing and issuing NASA public information are responsible for proper coordination among Headquarters, Center, and Mission Directorate offices to include review and clearance by appropriate officials prior to issuance. Such coordination will be accomplished through procedures developed and published by the NASA Assistant Administrator for Public Affairs.

(b) Coordination. To ensure timely release of public information, Headquarters and Center public affairs officers are required to coordinate to obtain review and clearance by appropriate officials, keep each other informed of changes, delays, or cancellation of releases, and provide advance notification of the actual release.

(c) All public information shall be coordinated through the appropriate Headquarters offices, including review by the appropriate Mission Directorate Associate Administrator and mission support office head, or their designees, to ensure scientific, technical, and programmatic accuracy, and review by the Assistant Administrator of Public Affairs or

his/her designee to ensure that public information products are well written and appropriate for the intended audience.

(d) Centers may, however, without the full coordination of Headquarters, issue public information that is institutional in nature, of local interest, or has been deemed not to be a Headquarters release. (The Assistant Administrator for Public Affairs or his/her designee will determine which public information will be issued nationwide by NASA Headquarters.) These releases must be coordinated through the appropriate Center offices and approved by the Center Director and Center Public Affairs Director. The Center Public Affairs Director is required to provide proper notification to the NASA Office of Public Affairs, Headquarters, prior to release. (The Assistant Administrator for Public Affairs shall publish guidelines for the release of public information that may be issued by Centers without clearance from Headquarters' offices.)

(e) Dispute Resolution. Any dispute arising from a decision to proceed or not proceed with the issuance of a news release or other type of public information will be addressed and resolved by the Assistant Administrator for Public Affairs with the appropriate Mission Directorate Associate Administrator, mission support office head, Center Director, and others, such as Center Public Affairs Directors, as necessary. However, the appropriate Mission Directorate Associate Administrator shall be the arbiter of disputes about the accuracy or characterization of programmatic, technical, or scientific information. Additional appeals may be made to the Chief of Strategic Communications and to the Office of the Administrator. When requested by a Center Public Affairs Director, an explanation of the resolution will be provided in writing to all interested Agency parties.

Interviews.

(a) Only spokespersons designated by the Assistant Administrator for Public Affairs, or his/her designee, are authorized to speak for the Agency in an official capacity regarding NASA policy, programmatic, and budget issues.

(b) In response to media interview requests, NASA will offer articulate and knowledgeable spokespersons who can best serve the needs of the media and the American public. However, journalists may have access to the NASA officials they seek to interview, provided those NASA officials agree to be interviewed.

(c) NASA employees may speak to the media and the public about their work. When doing so, employees shall notify their immediate supervisor and coordinate with their public affairs office in advance of interviews whenever possible, or immediately thereafter, and are encouraged, to the maximum extent practicable, to have a public affairs officer present during interviews. If public affairs officers are present, their role will be to attest to the content of the interview, support the interviewee, and provide post-interview follow up with the media as necessary.

(d) NASA, as an Agency, does not take a position on any scientific conclusions. That is

the role of the broad scientific community and the nature of the scientific process. NASA scientists may draw conclusions and may, consistent with this policy, communicate those conclusions to the media. However, NASA employees who present personal views outside their official area of expertise or responsibility must make clear that they are presenting their individual views – not the views of the Agency – and ask that they be sourced as such.

(e) Appropriated funds may only be used to support Agency missions and objectives consistent with legislative or presidential direction. Government funds shall not be used for media interviews or other communication activities that go beyond the scope of Agency responsibilities and/or an employee's official area of expertise or responsibility.

(f) Media interviews will be "on-the-record" and attributable to the person making the remarks, unless authorized to do otherwise by the Assistant Administrator for Public Affairs or Center Public Affairs Director, or their designees. Any NASA employee providing material to the press will identify himself/herself as the source.

(g) Audio recordings may be made by NASA with consent of the interviewee.

(h) NASA employees are not required to speak to the media.

(i) Public information volunteered by a NASA official will not be considered exclusive to any one media source and will be made available to other sources, if requested.

Preventing release of classified information to the media.

(a) Release of classified information in any form (e.g., documents, through interviews, audio/visual, etc.) to the news media is prohibited. The disclosure of classified information to unauthorized individuals may be cause for prosecution and/or disciplinary action against the NASA employee involved. Ignorance of NASA policy and procedures regarding classified information does not release a NASA employee from responsibility for preventing any unauthorized release. See NPR 1600.1, Chapter 5, Section 5.23 for internal NASA guidance on management of classified information. For further guidance that applies to all agencies, see Executive Order 12958, as amended, "Classified National Security Information" and its implementing directive at 32 CFR Parts 2001 and 2004.

(b) Any attempt by news media representatives to obtain classified information will be reported through the Headquarters Office of Public Affairs or Installation Public Affairs Office to the Installation Security Office and Office of Security and Program Protection.

(c) For classified operations and/or programs managed under the auspices of a DD Form 254, "Contract Security Classification Specification," all inquiries concerning this activity will be responded to by the appropriate PAO official designated in Item 12 on the DD Form 254.

(d) For classified operations and/or information owned by other Government agencies

(e.g., DOD, DOE, etc.), all inquiries will be referred to the appropriate Agency public affairs officer as established in written agreements.

Preventing unauthorized release of sensitive but unclassified (SBU) information/material to the news media.

(a) All NASA SBU information requires accountability and approval for release. Release of SBU information to unauthorized personnel is prohibited. Unauthorized release of SBU information may result in prosecution and/or disciplinary action. Ignorance of NASA policy and procedures regarding SBU information does not release a NASA employee from responsibility for unauthorized release. See NPR 1600.1, Chapter 5, Section 5.24 for guidance on identification, marking, accountability and release of NASA SBU information.

(b) Examples of SBU information include: proprietary information of others provided to NASA under nondisclosure or confidentiality agreement; source selection and bid and proposal information; information subject to export control under the International Traffic in Arms Regulations (ITAR) or the Export Administration Regulations (EAR); information subject to the Privacy Act of 1974; predecisional materials such as national space policy not yet publicly released; pending reorganization plans or sensitive travel itineraries; and information that could constitute an indicator of U.S. government intentions, capabilities, operations, or activities or otherwise threaten operations security.

(c) Upon request for access to information/material deemed SBU, coordination must be made with the information/material owner to determine if the information/material may be released. Other organizations that play a part in SBU information identification, accountability and release (e.g., General Counsel, External Relations, Procurement, etc.) must be consulted for assistance and/or concurrence prior to release.

(d) Requests for SBU information from other Government agencies must be referred to the respective Agency public affairs officer.

Multimedia materials.

(a) NASA's multimedia material, from all sources, will be made available to the information media, the public, and to all Agency Centers and contractor installations utilizing contemporary delivery methods and emerging digital technology.

(b) Centers will provide the media, the public, and as necessary, NASA Headquarters with:

(1) Selected prints and original or duplicate files of news-oriented imagery and other digital multimedia material generated within their respective areas.

(2) Selected video material in the highest quality format practical, which, in the opinion of the installations, would be appropriate for use as news feed material or features in pre-produced programs and other presentations.

(3) Audio and/or video files of significant news developments and other events of historic or public interest.

(4) Interactive multimedia features that can be incorporated into the Agency's Internet portal for use by internal and external audiences, including the media and the general public.

News releases concerning international activities.

(a) Releases of information involving NASA activities, views, programs, or projects involving another country or an international organization require prior coordination and approval by the Headquarters offices of External Relations and Public Affairs.

(b) NASA Centers and Headquarters offices will report all visits proposed by representatives of foreign news media to the public affairs officer for the Office of External Relations for appropriate handling consistent with all NASA policies and procedures.

Appendix B

Official NASA Social Media Accounts

Facebook

- › NASA
- › Deputy Administrator Lori Garver
- › Women@NASA

NASA Centers and Facilities

- › Ames Research Center
- › Dryden Flight Research Center
- › Glenn Research Center
- › Goddard Space Flight Center
- › Independent Verification & Validation Facility
- › Jet Propulsion Laboratory
- › Johnson Space Center
- › Kennedy Space Center
- › Langley Research Center
- › Marshall Space Flight Center
- › NASA Shared Services Center
- › Stennis Space Center
- › Wallops Flight Facility

NASA Missions and Programs

- › International Space Station
- › NASA's Hurricane Web Page
- › Aura Spacecraft | › Chandra
- › Mars Rovers | › Curiosity
- › Desert RATS | › Discovery & New Frontiers
- › Earth Observatory | › eClips
- › EPOXI Mission | › J-2X Engine
- › Juno Mission | › Kepler Mission
- › Landsat Mission | › LCROSS Mission
- › Little SDO | › Lunar Reconnaissance Orbiter
- › MESSENGER | › MMS | › Multi Purpose Crew Vehicle
- › NASA 360 | › NASA CORE
- › NASA Centennial Challenges
- › NASA Chief Information Officer
- › NASA Crew and Thermal Systems Division
- › NASA Edge | › NASA Meteor Watch
- › NASA Rain | › NASA STI Program › NASA Spinoff | › NASA Students
- › NASA's Great Moonbuggy Race |
- › NASA Robotic Lander
- › NASA2Explore | › NPP Mission
- › Orion Spacecraft | › SciJinks

- › Space Launch System | › Space Math @ NASA
- › The Space Place | › Sun-Earth Day
- › James Webb Space Telescope
- › NASA Crew and Thermal Systems Division

Twitter

- › NASA News
- › NASA Astronauts
- › Deputy Administrator Lori Garver
- › Women@NASA
- › NASA Social

NASA Centers and Facilities

- › Ames Research Center
- › Dryden Flight Research Center
- › Glenn Research Center
- › Goddard Space Flight Center
- › Independent Verification & Validation Facility
- › Jet Propulsion Laboratory
- › Johnson Space Center
- › Kennedy Space Center
- › Langley Research Center
- › Marshall Space Flight Center
- › NASA Shared Services Center
- › Stennis Space Center
- › Wallops Launch Information

NASA Missions and Programs

- › APPEL | › AsteroidWatch | › Cassini
- › Centennial Challenges
- › Chandra X-Ray Observatory
- › Commercial Crew Program | › Curiosity
- › Desert RATS | › Earth Observatory
- › Earth Sciences Data and Information Services Center
- › Earth Vital Signs | › eClips | › Environmental Topics
- › Eyes on the Earth and Solar System
- › Hubble Telescope | › Hurricanes | › Ice and Snow
- › International Space Station Research
- › James Webb Space Telescope | › JPL Education
- › J2X Engine | › NASA Datasets | › Launch Services
- › Juno | › Kepler | › Landsat
- › LRO | › Mars Rovers | › Mighty Eagle | › NASA360
- › Meteor Scientist | › NASA Airborne
- › NASA Astrobiology Institute
- › NASA Blueshift | › NASA CORE
- › NASA Education | › NASA Edge | › NASA History

- › NASA Human Health | › NASA Goddard Images
- › NASA Kids | › NASA MMS | › NASA Rain
- › NASA ScienceCast | › NASA STI
- › NASA Technology
- › NPP | › Open Gov
- › Orion Spacecraft | › O/OREOS | › Robonaut2
- › SciJinks | › SDO | › SOFIA
- › Space Apps Challenge | › Space Launch System
- › Spinoffs | › Sun Earth Day | › Tech Gateway
- › Techbriefs | › Viz iPad App
- › Voyager | › What on Earth

YouTube

- › **NASA Television**
- › Ames Research Center
- › Analogs
- › Chandra X-Ray Observatory
- › Little SDO HMI
- › NASA BlueShift
- › NASA eClips
- › NASAconnect
- › NASA Explorer
- › NASA Glenn
- › NASA JPL News
- › NASA Kennedy
- › NASA Langley
- › NASA Marshall
- › NASA MMS
- › ReelNASA
- › NASASciFiles
- › NASA ScienceCasts
- › Spinoff
- › NASA STI
- › NASA Sun Earth Day
- › James Webb Space Telescope