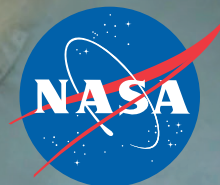




National Aeronautics and Space Administration



**Academy of Program/Project
& Engineering Leadership (APPEL)**

Annual Report

Fiscal Year 2012

www.nasa.gov

*Fully functional, 1/6th scale model of the
JWST mirror in optics testbed.*

Photo Credit: NASA

ON THE COVER



*In the grasp of the International
Space Station's Canadarm-2,
JAXA's Kounotori-2 H-II Transfer
Vehicle is moved from the space-
facing side of the Harmony node
back to the Earth-facing port of
Harmony.*

Photo Credit: NASA

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About the Academy

Mission

The NASA Academy of Program/Project & Engineering Leadership (APPEL) supports NASA's Chief Knowledge Officer in enabling access to critical knowledge and promoting excellence in program/project management and engineering.

Goals

- 1 Provide a common frame of reference for NASA's program/project and engineering workforce.
- 2 Provide and enhance critical job skills.
- 3 Support engineering, program, and project teams in the field.
- 4 Promote organizational learning across the agency.
- 5 Supplement formal education programs.

Leadership Team



Dr. Edward Hoffman

As the founding director of the Academy of Program/Project & Engineering Leadership, Dr. Hoffman is responsible for the development of program and project leaders and teams within NASA. In FY 2012 he was also named NASA's Chief Knowledge Officer.



Mr. Roger Forsgren

As deputy director of the Academy of Program/Project & Engineering Leadership, Mr. Forsgren is responsible for the contractual and financial management of the Academy. He manages the business and operations of the Academy, and leads the development of new discipline engineering training courses.



Ms. Christine Williams

Ms. Williams manages the Academy's systems engineering training and development activities, including the Systems Engineering Leadership Development Program (SELDP) and Project HOPE (Hands-On Project Experience).



Mr. Stephen Angelillo

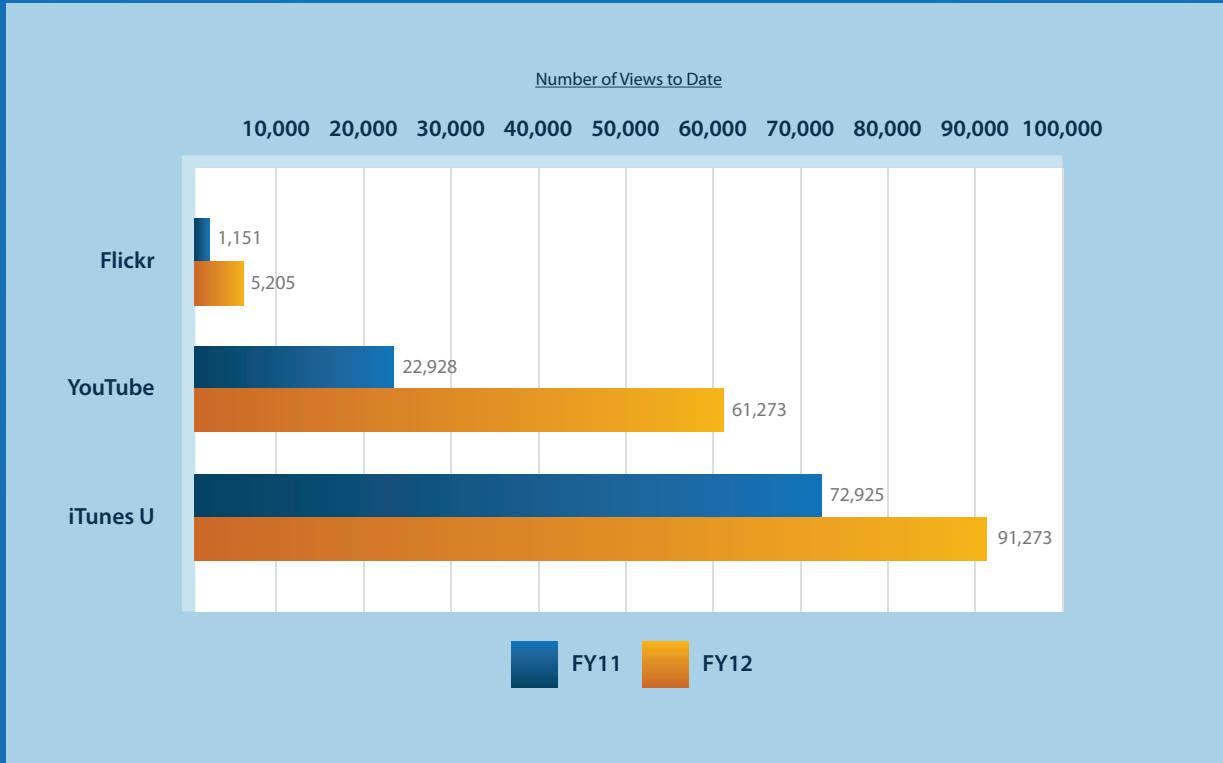
As the managing director of the Academy Center for Excellence at Kennedy Space Center, Mr. Angelillo oversees all aspects of the management and operations of the facility.

Executive Summary

In Fiscal Year 2012, NASA and its partners executed missions that demonstrated new levels of capability in air and space. The dramatic landing of the Curiosity rover, the largest and most complex spacecraft ever sent to Mars, riveted the attention of the world. The Suomi National Polar-orbiting Partnership brought online a new generation of Earth observation instruments. The successful docking of the SpaceX Dragon spacecraft with the International Space Station pointed toward a new commercial model for supporting human spaceflight. The first flights of the X-48C Blended Wing Body research aircraft marked the next phase in the development of quieter, more efficient aircraft.

The Academy of Program/Project & Engineering Leadership (APPEL) was well positioned to anticipate and support new and emerging needs of NASA's workforce in a number of areas:

- Innovative offerings for helping to meet NASA's strategic goals for sustainability in space
- New activities to support young professionals at NASA and across the aerospace enterprise
- Digital solutions that make knowledge available to NASA practitioners 24/7
- Continuing engagement with international and industry partners



The Academy saw a dramatic increase in its reach through digital media such as YouTube, iTunes U, and Flickr from 2011 to 2012.

Developing Strategic Capabilities in Advance of Need

NASA Strategic Plan Overarching Goals	Academy Activities in FY 2012
Investing in next-generation technologies and approaches to spur innovation	<ul style="list-style-type: none">➤ Added 4 online course offerings➤ Published first iBook of training course materials
Inspiring students to be our future scientists, engineers, explorers, and educators through interactions with NASA's people, missions, research, and facilities	<ul style="list-style-type: none">➤ Co-facilitated international young professional workshop➤ Expanded coverage of events geared toward young professionals
Expanding partnerships with international, intergovernmental, academic, industrial, and entrepreneurial communities	<ul style="list-style-type: none">➤ First-ever workshop on lessons learned with international partners➤ Opened Academy Center for Excellence at KSC to enhance partnering
Committing to environmental stewardship through Earth observation and science, and the development and use of green technologies and capabilities in NASA missions and facilities	<ul style="list-style-type: none">➤ Piloted "Introduction to Sustainable Facilities" course➤ Decreased print run of <i>ASK Magazine</i> by 30%; increased online subscription base by 45%
Securing the public trust through transparency and accountability in our programmatic and financial management, procurement, and reporting practices	<ul style="list-style-type: none">➤ Initiated identification of key performance indicators to strengthen accountability➤ Incorporated event management software to capture customer metrics and feedback

Several new Academy activities aligned with overarching goals outlined in NASA's Strategic Plan.

Core Business

In FY 2012, the Academy achieved the following in its core areas of activity:

- Facilitated the process for meeting the Office of Management and Budget requirements for the Federal Acquisition Certification for Program/Project Managers (FAC-P/PM), resulting in the certification of 38 new program/project managers, bringing the total to 151 at NASA.
- Trained 2,895 participants in 113 course offerings.
- Provided yearlong hands-on development opportunities for 9 civil servants through the Systems Engineering Leadership Development Program (SELDP) and one project through Project HOPE (Hands-On Project Experience).
- Provided support to 246 project and engineering teams.
- Reached 676 participants in six knowledge sharing events.
- Published *ASK Magazine* quarterly (3,475 paper copies and 64,436 e-subscribers) and the *ASK the Academy* e-newsletter monthly (68,348 e-subscribers).
- Provided distance learning through 91,273 views on iTunes University and 63,352 views on YouTube.

Innovations

The Academy continued to expand and improve its activities and offerings in FY 2012.

- Introduced new in-depth courses:
 - Advanced Earned Value Management (revised)
 - Control Account Manager (online)
 - Creativity and Innovation
 - Earned Value Management Systems (online)
 - Executive Presence and Skills
 - Integrated Baseline Review (online)
 - Planetary Protection: Policies and Practices
 - Scheduling Virtual Learning Lab (online)
 - Understanding Earned Value Management (revised)
- Published first iBook on orbital debris management as supplementary course materials for Orbital Debris Mitigation and Reentry Risk Management.
- Opened the Academy Center for Excellence (ACE), a multidisciplinary learning center for NASA civil servants and partners in industry, government, and academia, at Kennedy Space Center.
- Revised its integrated competency model in recognition of the importance of earned value management, and revamped its earned value management curricula:
 - Offered the Earned Value Management Systems course online
 - Revised Understanding Earned Value Management and Advance Earned Value Management courses
- Employed event management system software for courses and knowledge events, which enables the Academy to collect and report enhanced customer metrics and feedback.
- Worked with NASA's space agency partners in the International Project Management Committee (IPMC) to hold a first-of-its-kind workshop to compare best practices at identifying, capturing, and disseminating lessons learned.
- Partnered with Rocket University to enhance the technical and systems engineering capability of the NASA workforce.

Recognition for Quality

The Academy received recognition for the quality of its programs and the excellence of its people.

- The International Association for Continuing Education and Training (IACET) awarded the Academy its 2012 Exemplar Award for Internal Training. IACET is the only organization with a continuing education and training standard approved by the American National Standards Institute (ANSI).
- Ranked first in a global benchmarking study of project academies conducted by Human Systems.
- The White House awarded NASA a GreenGov Presidential Award based on nine NASA projects that were nominated, including the Academy's "Green Engineering" course.
- Daniel Daly, Tony Maturo, Faith Rahman, and Donna Wilson were awarded the NASA Group Achievement Award as members of the Agency Project Management Certification Group, for establishing a NASA program and project managers certification program to ensure the workforce is qualified to achieve mission success.
- Matthew Kohut received the NASA Special Service Award for work in support of NASA's strategic goals.

Measuring Effectiveness

The Academy measured its effectiveness in FY 2012 in five primary ways.

- **Accreditation**

Registered Education Provider of Professional Development Units (PDUs) for Project Management Institute—all participants in project management courses receive PDUs; American Council on Education recommends granting graduate credits for 12 Academy courses; Authorized Provider status with the International Association for Continuing Education and Training (IACET).

- **Assessment and Testing**

Workforce needs analysis; baseline and post-service assessment results for teams and individuals, including 360-degree feedback.

- **Customer Feedback**

Utilization metrics and user surveys, demand for courses and project team services; new assignment data and supervisor interviews; meetings with senior leaders at NASA centers and mission directorates; requests from senior leadership for studies, papers, articles, case studies and lessons learned.

- **External Validation**

Benchmarking with organizations such as Human Systems (UK), General Motors, Aerospace Corporation, Perot Systems, MIT, and the Management Operations Working Group.

- **Alignment with NASA Policies and External Requirements**

Office of Management and Budget approval of project management certification process; activities supporting NASA's Corrective Action Plan to remove NASA Acquisition Management from the General Accountability Office's (GAO) High Risk List; briefings to NASA management councils and senior leaders.



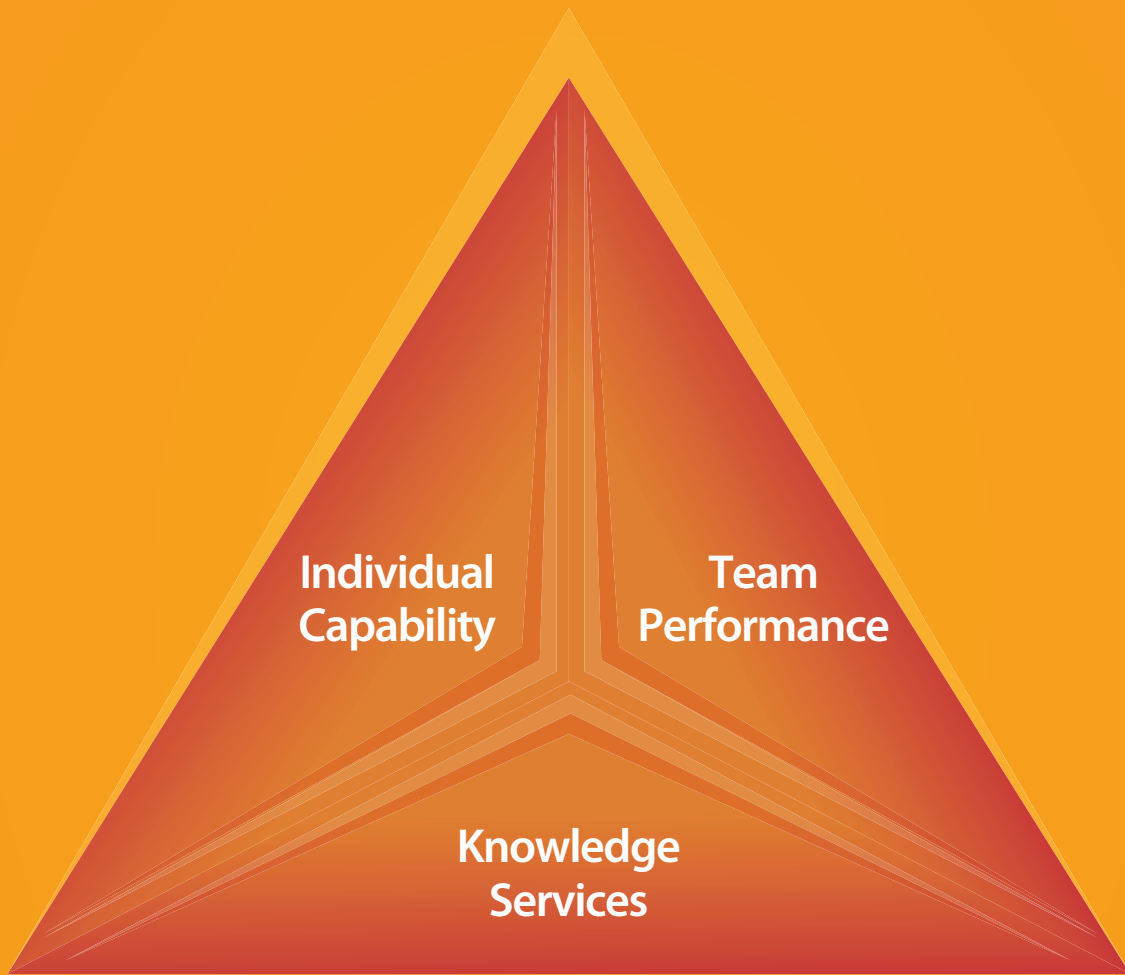
Engineers in the final stages of assembling NuSTAR.

Photo Credit: NASA/JPL-Caltech/Orbital

Advancing Development on Three Levels

In FY 2012 the Academy focused its learning activities at three levels: individual practitioners, project teams, and agency-wide knowledge services.

- **Individual practitioners:** competency-based training, developmental assignments, and hands-on opportunities to help individual practitioners develop their skills at each level of their careers.
- **Project teams:** online assessments measuring team performance, workshops focusing on team effectiveness, technical life-cycle support, and intensive coaching, mentoring, and consulting with expert practitioners.
- **Knowledge services:** forums, publications, and multimedia that emphasize the power of stories in order to help create a community of reflective practitioners who are geared toward sharing.



The Academy develops workforce capability on multiple levels.

Building Individual Capability Through Training

The Academy's training curriculum enables NASA's technical workforce to develop NASA-specific expertise and capability in project management and engineering. It is intended to supplement an individual's academic and professional work experience. The curriculum draws extensively on best practices and the knowledge of NASA subject-matter experts to ensure it addresses the needs of the agency's practitioners. The courses are developed following established instructional design processes and include rigorous annual audits and revisions and incorporation of participant feedback.

The Academy's project management and systems engineering competency model provides the basis for all course objectives. The model, which aligns with NASA standards, policies, and requirements, consists of five project management competency areas, three systems engineering

competency areas, and five competency areas common to both project management and systems engineering. The Academy revised its competency model in 2012 in recognition of the growing importance of earned value management.

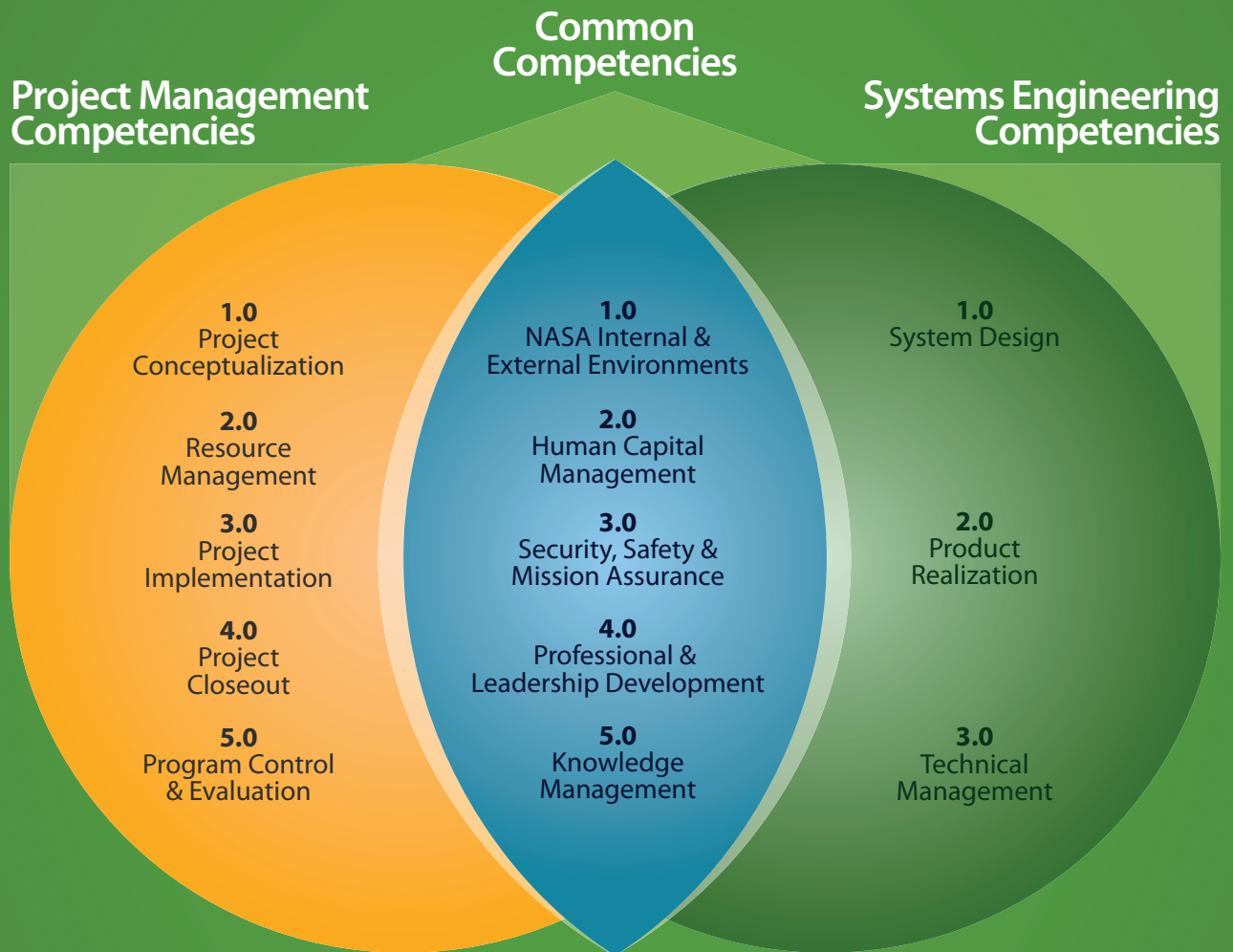
The curriculum includes both core courses and in-depth offerings. Core courses offer a comprehensive, integrated approach to learning and are designed to help participants expand their thinking—to make connections among many systems engineering and project management principles and concepts, see the big picture, and understand the context and interrelationships of the topics. The Academy also offers a wide variety of in-depth courses in five domains: project management, systems engineering, engineering, communication and leadership, and earned value management.

Innovative Offerings

The Academy continued to innovate and address new and emerging needs through its in-depth offerings, introducing the following new courses in FY 2012:

- Executive Presence and Skills
- Control Account Manager (online)
- Earned Value Management Systems (online)
- Integrated Baseline Review (online)
- Scheduling Virtual Learning Lab (online)
- Planetary Protection: Policies and Practices
- Creativity and Innovation

The Academy also revised "Understanding Earned Value Management," "Advanced Earned Value Management," and "Risk Management II."



The Academy employs an integrated competency model that addresses project management, systems engineering, and shared competencies.

Learning Through Hands-On Experience

NASA's vision and mission demand a workforce with the ability to design, develop, and execute one-of-a-kind projects in aeronautics research, space exploration, and scientific discovery. Formal development programs and hands-on learning provide early and mid-career professionals with on-the-job learning experiences that accelerate their professional development and readiness to lead.

Systems Engineering Leadership Development Program (SELDP)

The Systems Engineering Leadership Development Program (SELDP) grew out of a need identified by NASA leadership and the Office of the Chief Engineer for an agency-wide leadership development program that would help identify and accelerate the development of high-potential system engineers, with a focus on specific leadership behaviors and technical capabilities that are critical to success in the NASA context. The program aims to develop and improve systems engineering leadership skills and technical capabilities within the agency.

In June 2012, nine systems engineers representing a cross-section of NASA centers graduated from SELDP. Directed by Christine Williams, SELDP selects candidates through a rigorous competitive application process. Once participants complete baseline assessments that identify

strengths and areas for development, they embark upon a year of learning, developing, and practicing the qualities of a systems engineering leader: creativity, curiosity, self-confidence, persistence, and an understanding of human dynamics. Program activities include a developmental assignment at a new field center, mentoring and coaching, technical training, leadership development exercises, benchmark site visits, and forums.

The core of the SELDP experience is a hands-on developmental assignment away from the participant's home center and area of expertise. Participants take on systems engineering roles that expand their horizons by challenging them to develop new knowledge and skills in an unfamiliar organizational setting.



Project HOPE

Project HOPE (Hands-On Project Experience) is a cooperative workforce development program sponsored by the Academy and the Science Mission Directorate (SMD). Project HOPE provides an opportunity for a team of early entry NASA managers and engineers to propose, design, develop, build, and launch a suborbital flight project over the course of a year. The purpose of the program is to enable practitioners in the early years of their careers to gain the knowledge and skills necessary to manage NASA's future flight projects.

High Energy Replicated Optics to Explore the Sun (HEROES) is a balloon-borne hard X-ray telescope that is intended to observe solar flares with 100 times better sensitivity and 50 times more dynamic range than the best solar observations

to date. This novel instrument will also provide new views (improved angular resolution and sensitivity) of hard X-ray astrophysical targets. The HEROES team, which includes civil servants at both Marshall Space Flight Center (MSFC) and Goddard Space Flight Center (GSFC), is working to modify and fly the HEROES telescope to perform solar observations while taking advantage of nighttime for astrophysical observations. This effort takes advantage of the experience at MSFC gained from past HEROES flights as well as the experience at GSFC to develop instrumentation for solar observations and perform quality solar data analysis. It will also pave the way for future generations of both solar and astrophysics space-borne hard X-ray imager missions and the scientists and engineers to support them.

Increasing Team Effectiveness

Since most learning at NASA takes place within project teams, the best opportunity for facilitating project success is at the team level. The Academy's services increase a project's probability of success by delivering the right support to a project team at the right time. Through one-on-one assistance, focused workshops, or large group sessions, these activities achieve immediate project goals while enhancing long-term team capabilities.

In FY 2012 the Academy supported 246 project and engineering teams across NASA. Team support can include a variety of tools and services:

- Online assessments measuring team performance
- Workshops focusing on team building, team effectiveness, and leadership
- Technical life-cycle support
 - Requirements development
 - Planning and scheduling
 - Program control analysis
 - Systems integration support
 - Risk management
 - Software management
 - Technical review support
- Coaching
- Mentoring
- Expert practitioner consultations

The Mars Science Laboratory entry, descent, and landing instrument (the black box in the middle left of the photo) will measure heat-shield temperatures and atmospheric pressures during the spacecraft's high-speed, extremely hot entry into the Martian atmosphere.

Photo Credit: NASA/JPL-Caltech/Lockheed Martin



Promoting a Learning Organization Through Knowledge Services

Like all large, knowledge-intensive organizations, NASA faces continuous challenges identifying, capturing, and sharing what it knows. In January 2012, NASA appointed Academy Director Dr. Ed Hoffman as the agency's first Chief Knowledge Officer (CKO) in response to a recommendation by the Aerospace Safety Advisory Panel that NASA "establish a single focal point (a Chief Knowledge Officer) within the Agency to develop the policy and requirements necessary to integrate knowledge capture across programs, projects, and Centers." Dr. Hoffman will publish a Letter from the Chief Knowledge Officer to document developments that took place during 2012.

The Academy's knowledge services are agency-wide resources that promote the development of a community of practitioners who are reflective and geared toward sharing. By facilitating agency-wide knowledge sharing through forums, publications, and multimedia offerings, the Academy helps ensure that critical lessons and knowledge remain accessible. The Academy's knowledge network extends beyond NASA to include expert practitioners from industry, academia, other government agencies, research and professional organizations, and international space agencies.



Principal Investigator Team Masters Forum 4

The Academy conducted its fourth Principal Investigator (PI) Team Masters Forum in November 2011 in Annapolis, Maryland. The forum, a collaborative effort between the Academy and NASA's Science Mission Directorate, brought together teams from the announcement of opportunity (AO) process for Explorer missions and missions of opportunity to gain a better understanding of the role of a Principal Investigator at NASA. A requirement to participate in PI Team Masters Forums has been codified in NASA Science Mission Directorate Policy Directive SPDF-13b. Master practitioners from past science missions shared stories, perspectives, lessons learned, and best practices with their colleagues.

Masters with Masters

Masters with Masters events bring together two expert practitioners to share insights, stories, lessons learned, and best practices in a moderated conversation. The Academy develops videos of the events that are distributed through multiple channels, including its website, YouTube, and iTunes University. The Academy facilitated three Masters with Masters events in FY 2012:

- Charles Bolden, NASA Administrator, Jean-Jacques Dordain, European Space Agency (ESA) Director-General, and Johann-Dietrich Wörner, Chairman of the German Aerospace Center (DLR) Executive Board (in collaboration with the International Astronautical Federation)
- Adigun Abiodun of Nigeria, former Chairman of the United Nations Committee on the Peaceful Uses for Outer Space, and Peter Martinez, the division head for Space Science & Technology at the South African Astronomical Observatory and chair of the South African Council for Space Affairs (in collaboration with the International Astronautical Federation)
- Jack Boyd, a 65-year veteran of Moffett Field who served as the former NASA associate administrator and acting deputy center director at Ames Research Center, and Hans Mark, former NASA Deputy Administrator and Ames Center Director (in collaboration with Ames Research Center)

Engaging Leaders and Knowledge (ELK)

On June 5, 2012, the Academy facilitated its first “Engaging Leaders in Knowledge” event, with Mark Langley, President and CEO of the Project Management Institute (PMI), at Goddard Space Flight Center (GSFC).

Langley presented the results of the 2012 PMI “Pulse of the Profession” study to an audience of NASA practitioners. The annual global survey gathered feedback from over 1,000 practitioners and project managers from a variety of industries and disciplines. Key themes included talent management, portfolio management, risk management, and the increasing demand for innovation.

The event also featured a panel consisting of Eleanor Silverman, Associate Director of the Earth Science Projects Division and Program Manager for Earth Systemic Missions at Goddard; David Scheve, Deputy Director of Flight Projects at Goddard; and Ed Hoffman, NASA Chief Knowledge Officer and Director of the Academy of Program/Project & Engineering Leadership (APPEL). Ed Rogers, Goddard Chief Knowledge Officer, facilitated the discussion about the current state of project management at NASA, the applicability of lessons from outside organizations, and the anticipated capabilities required of future managers.

Agency-Wide Case Study Series

The agency-wide case study series is an initiative of the Chief Knowledge Officer to support and promote knowledge sharing through the case study discussion methodology. The goal of the case study series is to enhance NASA’s technical workforce’s ability to (1) make critical decisions based on contextual analysis; (2) understand the impact of human factors on decision making; and (3) recognize the relationship between the execution of simple practices and mission/project outcomes. Toward this end, the NASA CKO will support case study discussion sessions at NASA centers, as requested by Center CKOs and Knowledge POCs.

On July 24, 2012, the first event in this series, “The Pursuit of Images of *Columbia*” was hosted by Glenn Research Center and facilitated by Ed Rogers, Goddard Chief Knowledge Officer. Audience members included 48 practitioners, project managers, and senior leaders. The discussion revolved around the lessons learned from the *Columbia* shuttle accident.

FY12 Knowledge Event Summary

Event	Live Attendance	Video Views through CY12
Masters with Masters #10: Dordain, Wörner, and Bolden	280	218
Masters with Masters #11: Abiodun and Martinez	40	819
PI Team Masters Forum #4 (multiple videos)	72	3,910
Engaging Leaders in Knowledge (ELK)	126	216
CKO Case Study #1: <i>Columbia</i>	48	n/a
Masters with Masters #12: Boyd and Mark	110	169

Learning and Working Through International Collaboration

Space exploration and the application of space systems have always been international endeavors. In recognition of the increasing importance of international collaboration in space, and in consideration of the mutual benefit of sharing experiences and best practices, the Academy is continuing to learn from and collaborate with NASA's international partners.

International Project Management Committee (IPMC)

The International Program/Project Management Committee (IPMC) organized under the auspices of the International Astronautical Federation provides a forum to promote sharing experiences, information, and approaches to enhance successful collaboration on international projects.

In March 2012, the space agency members of the IPMC organized a first-of-its-kind workshop to compare best practices at identifying, capturing, and disseminating lessons learned. ESA hosted the event at the European Space Research and Technology Centre (ESTEC) in Noordwijk, the Netherlands. Participating organizations included the Centre National d'Etudes Spatiales (CNES), the German Aerospace Center (DLR), the Japan Aerospace Exploration Agency (JAXA), the European Space Agency (ESA), NASA as well as the Czech Space Office, Astrium (Germany), COMAU (Italy), and Thales Alenia Space (Italy).

NASA and its partners in the IPMC also continued to collaborate in the conduct of the NASA APPEL International Project Management course during FY 2012. This highly

rated APPEL course – that focuses on cultural, legal, negotiation and communications challenges facing international project teams – includes lectures and panel discussions conducted by senior project managers from NASA's space agency partners in Asia, Europe and the Americas. Forty-two NASA employees joined with 30 international participants from space agencies and organizations in 12 countries joined to attend the FY 2012 International Project Management courses, which were held at the Kennedy Space Center from February 26 through March 3 and from July 16-20, 2012.

In September, NASA and the other members of the IPMC organized a Young Professionals workshop that took place in connection with the 2012 International Astronautical Congress. (See "Meeting the Needs of Young Professionals.")

The IPMC members also supported NASA's efforts to conduct several Masters with Masters sessions during FY 2012. (See "Promoting a Learning Organization through Knowledge Services.")

International Track at PM Challenge

During the 2012 PM Challenge event in Orlando, Florida, the Academy organized the third “international track” featuring practitioners from several space agencies as well as representatives from the global aerospace industry. With international cooperation and collaboration playing an increasing role in NASA’s future, this event provided an opportunity for NASA to bring together partners from around the world to share perspectives, challenges, and opportunities. Sessions included participants from: Canadian Space Agency, Centre National d’Etudes Spatiales, European Space Agency, European Space Research Institute, German Aerospace Center, INVAP (Argentina), Japan Aerospace Exploration Agency, Korea Aerospace Research Institute, Project Management Institute, and the University of Florida.



The International Space Station Payload Operations Center at Marshall Space Flight Center.

Photo Credit: NASA / Marshall Space Flight Center.

Meeting the Needs of Young Professionals

With half of its workforce eligible for retirement, NASA faces a “grey-green” challenge: it needs to bridge the gap between veterans with decades of experience and a new generation of young professionals. The Academy’s young professionals initiative focuses on building relationships and promoting understanding of the professional development needs of NASA’s young professionals. Specific activities include an ongoing collaboration with *Aviation Week*, profiles of young professionals in *ASK the Academy*, and networking activities with agency-wide young professional groups such as NASA Forward and NASA FIRST.

IPMC Young Professionals Workshop

On September 28, 2012, more than forty young professionals from government, academia, and industry came together from around the world to engage in a workshop about their futures. Delegates participated in pre-workshop sessions through Skype and teleconferences, and collaborated through a Facebook group before attending the workshop, which was held in Naples, Italy just before the 2012 International Astronautical Congress.

Organized by the International Project Management Committee (IPMC), the workshop focused on opportunities and challenges young professionals face, mentors and mentorship programs, exchanges and rotational assignments, motivating factors for young professionals, and the link between technical and managerial career paths. Workshop delegates shared stories, insights, and data about their work experiences and developed recommendations to begin addressing these challenges.

NASA and the other IPMC participants that organized the workshop hope the results of these discussions will help them consider what today’s space organizations can do to develop and empower the workforce of tomorrow.

Survey of Young Professionals in Aerospace

The Academy collaborated with *Aviation Week* and industry leaders on the third annual Young Professional Study. This year’s study found that benefits, opportunity, geographic location, salary and technological challenge were the most important factors for young professionals when considering a job. These factors have changed since the survey began three years ago when participants ranked technological challenge as their number one factor, followed by the ability to contribute and the reputation of an organization as top factors for choosing a job.

Young professionals from the around the world listen to the opening presentations at the International Project Management Committee Young Professionals Workshop at the 2012 International Astronautical Congress on September 28, 2012.

Image courtesy of Armonica Film.

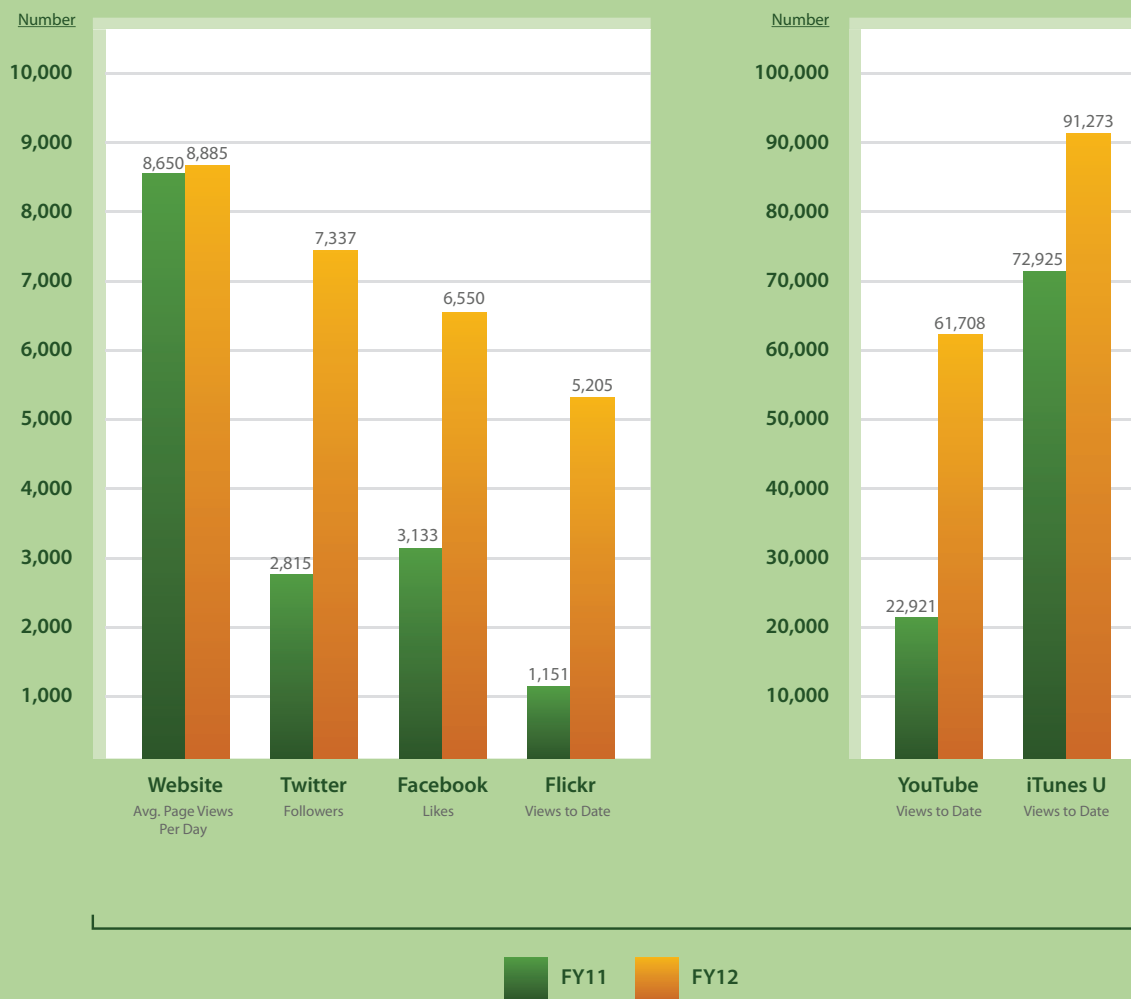


Facilitating Open Communication and Dialogue

Communication is central to all leadership and management challenges. The complexity of NASA's programs and projects demands an open, vigorous culture in which communication is continuous, empowering individuals at all levels to ask questions, share information, and raise concerns. The Academy is committed to promoting open communication through a number of channels.

ASK the Academy, a monthly e-newsletter, serves as a means of regular communication with the agency's technical workforce about best practices, lessons learned, and new developments at NASA and throughout the world. In 2012 it reached more than 68,000 online subscribers. *ASK Magazine* delivers insight each quarter with stories recounting real-life experiences that communicate important practical wisdom and best practices. Reaching 3,500 print subscribers and more than 64,000 online subscribers, *ASK* allows NASA managers, scientists, and engineers, as well as global practitioners, to share valuable experience-based knowledge and foster a reflective community.

2012 also marked the debut of the Academy's first video case study, which told the story of the Terrain-Relative Navigation and Employee Development (TRaiNED) project. TRaiNED was the first team selected for Project HOPE. (See "Learning through Hands-On Development.") Its mission built upon a 2006 initial development test conducted on a sounding rocket flight. The previous flight had collected analog ground imagery during the descent portion of the rocket's trajectory and inertial measurement unit (IMU) and GPS data from launch to landing in order to further develop terrain-relative navigation computer algorithms. The TRaiNED project expanded on the initial mission to include exo-atmospheric imagery in addition to descent imagery. TRaiNED was part of the Jet Propulsion Laboratory's Phaeton Early Career Hire Development Program. The Academy captured the TRaiNED team's experiences, challenges, and insights on video throughout the year.



The Academy uses digital media to share critical knowledge and learning resources and spark conversations with communities ranging from project managers to young professionals to international and industry partners. Different communities engage with content in different ways—watching videos, flipping through image galleries, sending 140-character messages, or sharing status updates—which drives the Academy to use a variety of digital platforms. The goals of these activities are to increase the circulation of knowledge and learning resources, encourage communities to share content, and inspire conversations, questions, and feedback.



Website

Over the past year, appel.nasa.gov has transformed from a static resource into a dynamic one. Significant improvements, including a complete redesign of the home page based on user feedback, have improved the overall experience of visiting the site. With the inclusion of an APPEL-specific search engine and a robust RSS feed, users can now find and browse content more easily than ever before. These improvements, coupled with more extensive use of social media, have led to significant increases in pageviews throughout the year.



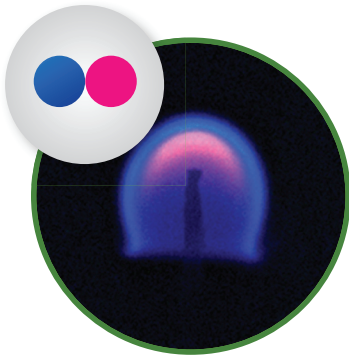
Twitter

In FY 2012, @NASA_APPEL more than doubled its following and live-tweeted several events, including a Masters with Masters at Ames Research Center, Project Management Challenge 2012, a training event co-sponsored by the Project Management Institute, and a Principal Investigator Team Masters Forum. APPEL also responded to feedback and questions from the community about stories, videos, courses, and other knowledge resources through this platform.



Facebook

Facebook allows for longer messages, asynchronous conversations, and an ongoing timeline that is easy to browse. Through this platform, the Academy has a strong following among students and young professionals (ages 18-34) around the world. Visitors were more likely to share, like, or comment when APPEL posted interesting images with a short description and a link back to the larger story on appel.nasa.gov. This strategy continues to prove effective for community engagement and increasing APPEL exposure.



Flickr

The APPEL Flickr photostream told project and training stories through images, often presenting different or lesser-known angles, such as the relationship between Project Lunar Orbit and Landing Approach (LOLA) the Lunar-Orbit Rendezvous decision and planning. Specific photo sets were used to illustrate written stories, create galleries used for courses, and capture the progression of training and knowledge sharing events. This platform enhanced APPEL's ability to integrate visual content with written content as it is easily embedded into pages on appel.nasa.gov. The site nearly doubled the number of pageviews it had from last year.



YouTube

The APPEL YouTube Channel hosts over 250 videos that vary in length and content. Videos from Masters with Masters, Principal Investigator Forums, APPEL course modules, special speakers, and video case studies are often organized into specific playlists or tagged with specific keywords. This platform nearly doubled the total number of views from the previous year, with its strongest following among users ages 45-64.



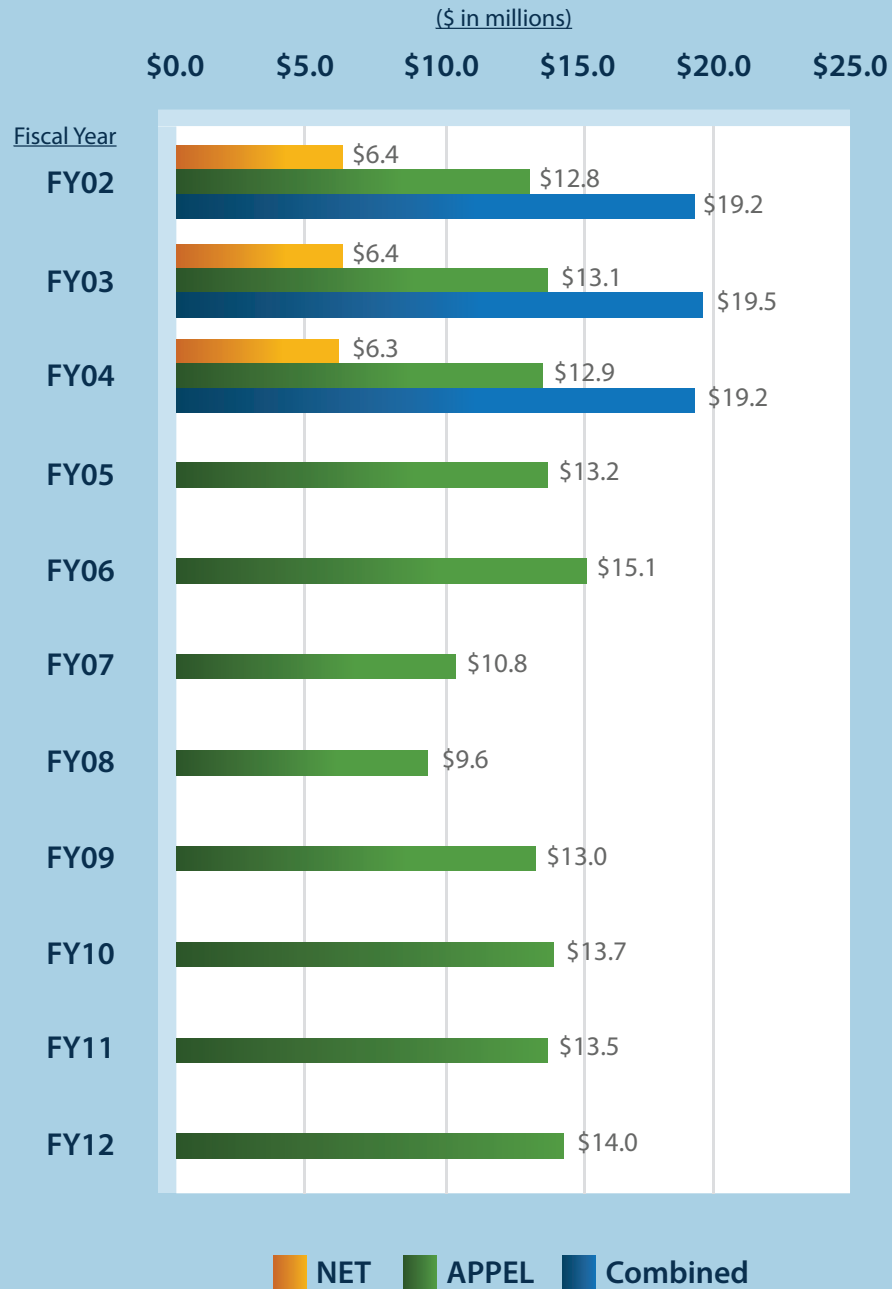
iTunes U

The Academy added to its library of videos and podcasts from thought leaders, master practitioners, and innovative thinkers on a variety of topics including green engineering, policy and politics, systems engineering, leadership development, and international collaboration. Most notably, the site hosted the first APPEL iBook and iTunes U course, which tackled the topic of orbital debris. Other new content included downloadable versions of *ASK Magazine* in both PDF and EPUB formats, a video case study of the first Project HOPE team, and lectures from course instructors.

Financial Review

The Academy's funding in FY 2012 enabled it to respond to 33 percent of requests from NASA centers for course offerings. Demand for team support and knowledge sharing forums also outstripped available resources.

The Academy's long-term ability to meet the needs of NASA's workforce continues to call for investments in technology-enabled learning. Strategic investments in this area are already increasing the Academy's reach, as seen with several online course offerings introduced in FY 2012. Further investments like this will enable greater participation among civil servants as well as international partners and address the needs of young professionals for more interactive and immersive learning.





APPEL | Academy of Program/Project & Engineering Leadership

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