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IT Talk

April - June 2012 Volume 2 • Issue 2

JPL Mobile Apps

Taking IT to New Heights!

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In this Issue

Message from the CIO

By Linda Cureton

The Office of the Chief Information Officer community has a challenging mission. But we are inspired by a common vision and guided by core principles and values. We are transforming the state of IT at NASA and modernizing government IT in the process. This will enable more effective and efficient mission results across NASA. NASA's Information Resources Management (IRM) Strategic Plan identifies four IT goals and their underlying strategic objectives to be accomplished over the next three to five years in support of advancing our Agency's mission and vision. In this issue we'll highlight what Centers are doing to meet these goals.

Also we recently marked the end of an era in NASA computing. Marshall Space Flight Center powered down NASA's last mainframe, the IBM Z9 Mainframe. In this issue we'll look back at its history. And we'll take a closer look at how some of our NASA Centers are teaming up to evaluate and test federated search for the agency.

—Linda

PS. In case you have not heard, the OCIO has moved to 1225 and 1201 I (Eye) streets NW. The move is part of a renovation project at NASA Headquarters over the next three years. The I Street facilities are two miles away from NASA HQ. By car this is a 10-minute drive or a 15-minute Metro ride from McPherson Square or Metro Center. To walk from HQ to the new location would take about 35 minutes. Shuttle services are available to and from Headquarters. In addition, some organizations have relocated to another area within the HQ building. For more information about the HQ renovation project visit http://www.hq.nasa.gov/office/fasd/bldg_renovate.html.

JPL Mobile Apps: Taking IT to New Heights!

By Sandy Gutheinz, Anil Natha, and Whitney Haggins, Jet Propulsion Laboratory, California Institute of Technology

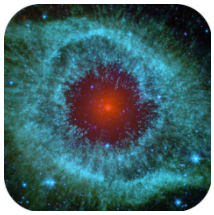
The JPL Mobile App team in the Office of the CIO has partnered with JPL missions and programs since 2010 to launch internal, iTunes, Android Market, and Windows Azure DataMarket mobile apps that have revolutionized the way we share data and learn on a global scale. JPL-developed mobile apps are used by thousands of students, educators, scientists, and astronomy and space enthusiasts worldwide, and represent a new chapter in telling the JPL and NASA story. The data gathered from these programs has provided insights to our own lives and changed the way we view our world.

From the time an app is written, it takes up to one month to publish. During that time, the team works with the missions/programs to ensure data accuracy, and prospective apps must undergo extensive reviews and obtain key approvals before being submitted to the mobile marketplace.

For the eight JPL-developed mobile apps already in the marketplace, the public response has been overwhelmingly positive. The JPL team is thrilled that their efforts have increased interest in space and our home planet, and enjoy reading about the many ways their apps are being implemented in schools and daily life.

The Earth-Now app, developed by the Earth Science Communications, Visualization Technology Applications and Development Teams at JPL, with support from NASA Headquarters, and published by JPL OCIO, was included in the iTunes Feature section and was downloaded 100,000 times in just one week. The Space Images app, designed and developed through JPL's Office of Communications and Education, was featured as an iTunes Staff Pick and was recently named as the top Astronomy iPhone app by PC Advisor. With over 780,000 downloads so far, the Space Images app continues to grow strong on the iPhone, iPad and Android platforms

To learn more about JPL mobile apps, visit iTunes or the JPL Mobile App website: http://www.jpl.nasa.gov/apps



Space Images
Spectacular images and videos of earth galaxy and beyond! Learn about each image and share them with your friends.

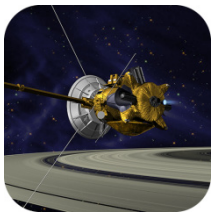
iPhone *iPad* *Android*

Earth Now
View stunning visualizations of climate change data on a 3-D model. It allows the user to visualize recent global climate data from Earth Science satellites, including surface air temperature, carbon dioxide, carbon monoxide, ozone, water vapor, gravity and sea level variations.

iPhone

Aquarius
Learn about NASA's Earth satellite mission to measure global sea surface salinity, a major factor of climate change. This app features news updates and scientific data from the mission.

iPhone



Cassini
The Saturian system is at your fingertips with a visual overview of its current activities, including present position, flybys and latest images.

iPhone

Satellite Insight

A super fun game based on NASA's GOES-R satellite series on Earth's weather data. It puts players in the hot seat, bundling identical blocks of data as they're collected by a virtual spacecraft.

iPhone

Grail

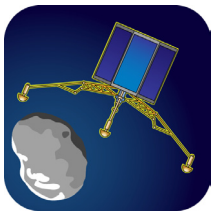
Keep updated with this amazing mission! Get specific information about the science and purpose of the GRAIL Mission by following the pair of mirror-identical spacecraft to the Earth's Moon.

iPhone

Be a Martian

Explore the Martian world by viewing images, participating in Q&A forums and even tagging craters and other surface features on real Mars images from NASA spacecraft exploring the Red Planet.

Windows Phone 7

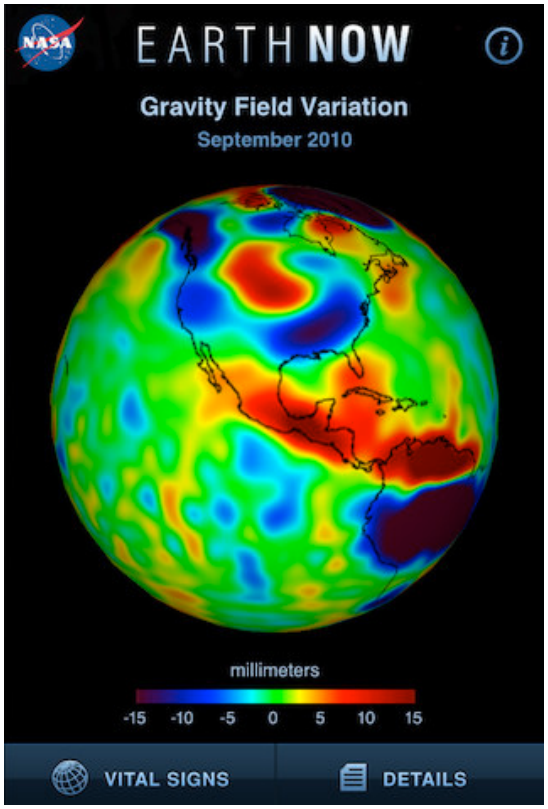


Comet Quest

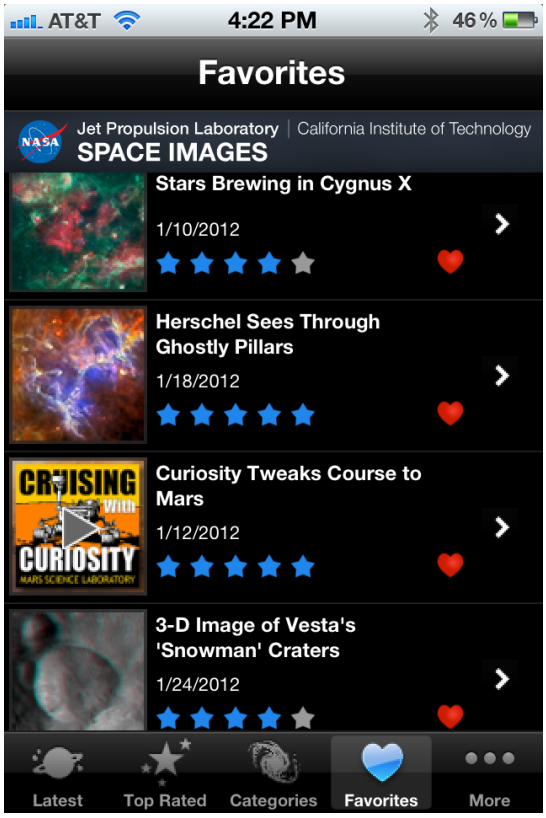
As a player, you get to drop a lander on Comet 67P while learning about the mysterious comet by observe and record interesting events as they occur.

iPhone

Earth Now



Space Images



On the Lookout: JSC's Search Enhancement Team

By Debbie V. Nguyen, Johnson Space Center

The most common way people look for information today is to search the Web. Ensuring that Johnson Space Center (JSC) employees can search all the information required to do their work is the mission of the JSC Information Resources Directorate's Search Enhancement Team.

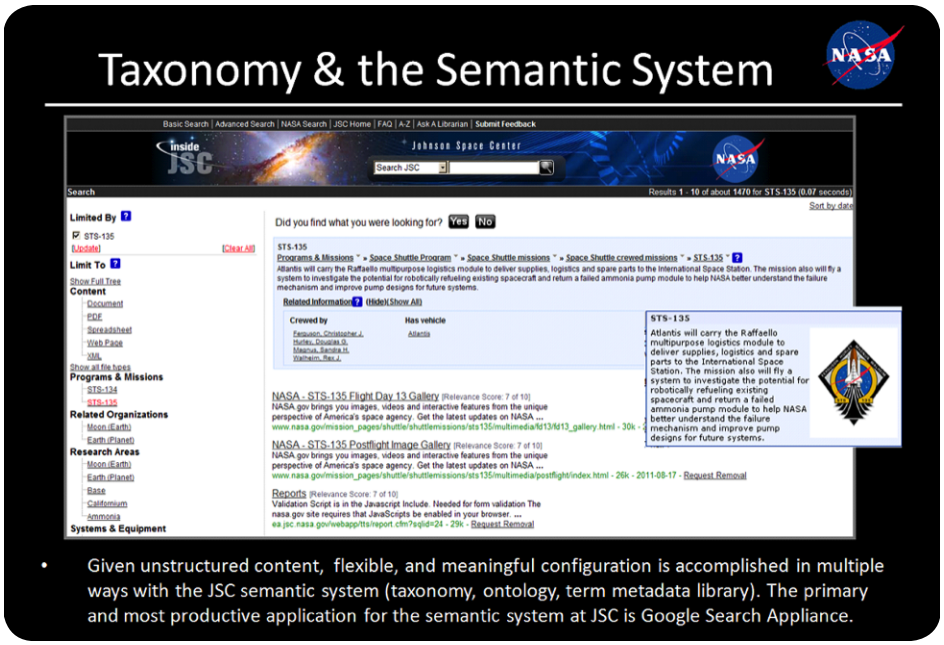
"Our goals are to make information findable, reduce the time it takes to find something, and to make sure the information found is useful to the employee performing that search," said Allan Stilwell, JSC Search Project Manager.

To make search results relevant can be difficult. For example, if two employees are looking for information on the STS-135 crew, one employee may type in the word "Shuttle," while the other types "crew."

That's when you need to build taxonomy to automatically classify, organize, and connect information. The JSC Search Enhancement Team has partnered with JSC's Chief Knowledge Officer, Jean E. Engle, to work with subject matter experts (SMEs) in every organization to help build JSC's taxonomy, which essentially serves as the search tool's dictionary. The real key to the taxonomy's effectiveness is connecting the information together.

"These information silos are rich in historical data useful to new projects and programs," said Sarah Berndt, JSC Taxonomist. "The growing need for access to this information necessitates a solid foundation for users to easily locate JSC content. To that end, the Chief Knowledge Officer has championed the development of the JSC semantic system: a combination of taxonomy, ontology, and term metadata library. Semantic search at JSC means seamless integration of disparate information sets into a single interface. The primary and most productive application for the semantic system at JSC is Google Search Appliance (GSA), http://google.jsc.nasa.gov."

For the past 7 years JSC has been using the Google Search Appliance, beginning with an index of roughly 100,000 JSC documents. Since then, that number has grown to more than 3.5 million documents, presentations, and Web pages. The team also integrated keyword matching and existing acronym applications to enhance search results. Now, when a user does a search for "PKI," the searches will contain results for "PKI" and "Public Key Infrastructure."



However, not all information is in electronic form and searchable. To bridge that gap, another key partnership is the Agency-wide Ask A Librarian at NASA (AALN) Project, which also has its own integrated Web tool called "Ask a Librarian."

"The Scientific and Technical Information Center (STIC) librarians work with the Search Team by providing the Search Team with the most common questions asked by NASA customers," said Christa George, the JSC Scientific and Technical Information Center Supervisor. "We provide feedback based on requests the STIC has received in the past. The ability to analyze the search terms, phrases, and statistics allow[s] the librarians to understand what the JSC community is doing and to provide library services accordingly."

The integration of taxonomy, auto-classification of content, Ask a Librarian, and the help of SMEs at the publication stage of categorizing new Web sites is having a huge and positive impact on the service that the GSA provides to its customers, said Stilwell.

The team is working with LaRC, JPL, HQ, other NASA Centers and Google to evaluate and test a federated search for the Agency as well as working a new license deal with Google to broker the Agency's current 17 search appliances. To test this capability, the team is also working with Headquarters IT Labs on a pilot called "Collaboration Search Portal". The hope is that the collaboration search portal will reach all collaborated related content within the Agency and one day make all types of content available at your fingertips.

For more information, please see the following Web sites: Agency Search Collaboration Site: http://collaboration.ndc.nasa.gov/google JSC Search: http://google.jsc.nasa.gov

Ask a Librarian: https://askalibrarian.nasa.gov

To Search For Words Where No One Has Searched Before...

By Tom Soderstrom, CTO, Jet Propulsion Laboratory, California Institute of Technology

Responding to a request from the NASA engineering community to search NASA videos for relevant dialogue, the Jet Propulsion Laboratory's Office of the Chief Information Officer (OCIO) has partnered with Microsoft to bring the Microsoft Research Audio Video Indexing System (MAVIS) to market. With MAVIS, users can search for specific words and find all the videos—and the place in the videos—where those words were spoken.

A NASA IT Labs prototype has been successfully completed and demonstrates the MAVIS technology using videos from the NASA IT Summit 2011. Try it out by going to http://goto.jpl.nasa.gov/VideoSearch.

The project now moves into its next phase: to secure additional funding to streamline the process, initiate a pilot to the NASA community, and integrate with search efforts. MAVIS has the potential to revolutionize how school children and the public learn about science, technology, and NASA's current and upcoming space missions. It could also augment how NASA personnel research and find relevant discussions and lessons learned by searching through thousands of NASA-internal videos in seconds.

We invite you to try it out and imagine the ways you could leverage this evolving technology.

NASA Google Federated Search

By Manjula Ambur, NASA Langley Research Center

The Langley Research Center (LaRC) successfully implemented federated search using Google technology several years ago, providing a one-stop, integrated search of key internal and external Web sites, databases, document repositories, and e-journals for Langley scientists and engineers. The main driver was "findability," enabling easy access to key information in order to save valuable time and enable mission success. Langley's federated search using Google is a valuable tool that has been in continuous use for about 4 years.

Leveraging this experience, in 2010, Langley led a team consisting of Johnson Space Center (JSC), Marshall Space Flight Center (MSFC), and Headquarters/eTouch personnel to successfully develop a NASA-Google federated search prototype. The goal of this prototype was to demonstrate integrated search and access of digital project repositories that existed at different Centers to enhance technical information "findability" across the enterprise. For the prototype, approximately 40,000 documents were included from Apollo (JSC), high-speed research (LaRC), microgravity (MSFC) and the NASA Engineering Network (Headquarters/eTouch). Although only a fraction of NASA's total content was used, the prototype successfully showed that it is possible to connect Google Search Appliances and document repositories from multiple NASA Centers and produce a single search interface to access content across the Agency.

As in any enterprise project, the team faced numerous challenges, including ensuring consistency of network configuration settings, resolving differences in IT security policies, and developing common settings on the search appliances. The effort has provided NASA with a much better understanding of issues associated with enterprise search federation and optimization and has resulted in a number of next steps that include:

- Identifying potential collaboration opportunities with missions and the Office of the Chief Engineer.
- Working with Google to continue to refine and optimize the federated system.
- Determining which high-value repositories to include.
- Forming, possibly, a community of interest around federated search capabilities.

OCIO IT Strategic Goals

Information Technology at NASA has been, and will remain, a critical enabling capability for our Agency and the Nation. The NASA IT organization must ensure excellence in every mission in order to achieve success within our complex environment. NASA's Information Resources Management (IRM) Strategic Plan identifies four IT goals and their underlying strategic objectives to be accomplished over the next 3 to 5 years in support of advancing our Agency's mission and vision. These goals define a common future ideal, such as providing affordable information technology and enhanced IT security, so that our IT workforce can collaboratively accomplish the IT strategy—within the constraints of the forecasted IT budget environment.

IT Talk has asked several NASA Centers what they are doing to meet these goals.

AMES

Ames Research Center's IT Directorate (ARC IT) has significant experience developing innovative and industry-leading enterprise security programs, especially within the construct of supporting NASA's space and science missions.

Putting the "I" in innovation to meet and exceed OCIO Strategic goals, ARC IT continuously looks at new ways to enhance and strengthen both physical and virtual security, achieve an integrated and adaptive enterprise security posture, and deliver innovative solutions that protect NASA's data assets.

ARC IT is focusing on managing and streamlining the following three key areas of IT innovation during 2012:

1. Computational Services, which include the industry-leading work accomplished with cloud computing via NASA's Nebula (http://nebula.nasa.gov) program. ARC IT took inspirational steps in creating open systems and partnering with OpenStack and key business and Government thought-leaders to usher in a new generation of cloud computing. With cloud computing becoming more pervasive and commoditized, ARC IT is now looking at the next generation of Nebula. Plans include developing an open test-bed environment, tackling security-in-the-cloud concerns, and continuing collaboration with OpenStack and the open-source community.

2. IT Security, which continues to be the single-most critical factor ensuring mission and Agency success. With malicious attacks becoming more sophisticated than ever before, the Ames-hosted

NASA IT Vision

The NASA IT organization is the very best in government

NASA IT Mission

To increase the productivity of scientists, engineers, and mission support personnel by responsively and efficiently delivering reliable, innovative and secure IT services.

NASA IT Principles

Mission-Enabling, Innovative, Teamwork, Secure, Affordable, Integrated, Effective, Efficient

Strategic Goal 1	Strategic Goal 2	Strategic Goal 3	Strategic Goal 4
Transform NASA's IT infrastructure and application services to better meet evolving stakeholder needs and support mission success.	Enhance and strengthen IT Security and Cyber security to ensure the integrity, availability, and confidentiality of NASA's critical data and IT assets.	Identify, test, and adopt new information technology that will make NASA's missions more capable and affordable.	Provide enterprise resources and processes that foster mission success and allow NASA to attract and retain a highly performing IT workforce.
3-5 Year Objectives	**3-5 Year Objectives**	**3-5 Year Objectives**	**3-5 Year Objectives**
• Ensure a positive end-to-end computing experience for stakeholders. • Achieve efficiencies in providing IT services, e.g., Data Center Consolidation and Enterprise Service Desk (ESD). • Empower the mobile workforce (anytime, anywhere, securely). • Provide enterprise applications that support the Agency's business and information needs, with new initiatives and enhancements focused on improving business and management practices. • Enhance mission success by providing efficient and effective access to enterprise information and collaborative functionality.	• Improve NASA's capability to prevent, or to quickly and effectively respond to, any potential IT security incidents and centrally manage outcomes and the Agency's response. • Achieve a risk-based balance between security, system operability, and the user's experience. • Nurture a culture of security awareness that improves the accountability of IT resources and "bakes" security into IT solutions and everyday work habits. • Achieve an integrated and adaptive enterprise security posture by increasing interoperability, visibility, and innovation across NASA's enterprise security architecture.	• Develop effective architectural roadmaps for each NASA domain that reflect future mission requirements and provide an effective management tool for identifying and selecting new information technology. • Expand partnerships with other Government Agencies and commercial partners to identify best practices in the acquisition, development, and maintenance of new IT, particularly in light of the proposed commercialization of space travel. • Identify innovative information technologies and create active participation opportunities for NASA scientists and engineers to collaborate on missions.	• Align NASA IT workforce competencies with desired competency levels, and provide career enhancing opportunities and training to all IT employees. • Utilize innovative methods, including social media, to attract a productive IT workforce focused on efficiently achieving NASA's IT mission. • Develop and improve enterprise best practices for governance, shared services, capital planning, IT project management, and performance management. • Improve two-way communications with our internal and external customers regarding the IT services we provide.

Major Activities:

I3P ~ IT Security ~ Data Center Consolidation, Cloud & Green IT ~ Enterprise Business Systems ~ Innovation Labs ~ Enterprise Architecture Improvements ~ STI Program ~ Workforce Education and Competency

NASA Cyber Security Operations Center (SOC) is implementing new cyber-security features, remaining ever-vigilant, and innovating to stay ahead of the well-funded malicious-hacker community.

3. Mission Networks, which were developed by ARC IT in concert with the Multi-Mission Operations Center (MMOC) to enable cross-Agency collaboration, keep mission teams (e.g., the Interface Region Imaging Spectrograph [IRIS], the Lunar Atmosphere and Dust Environment Explorer [LADEE], and Kepler) in touch with key facilities, and provide a reliable, secure, and flexible network for users. Innovative productivity enhancements include MMOC support via centrally managed services. Mission teams no longer need to independently maintain their own networks and are provided tailored network security to address each mission's unique requirements.

ARC IT is all about enabling new ideas and collaborative efforts while always considering and supporting the next generation of IT innovation.

DRYDEN

Dryden Flight Research Center (DFRC) is working to strengthen its security posture commensurate with the objectives of Strategic Goal 2. Dryden's approach has been to satisfy mission needs while evolving consistent architecture via technical solutions and proactive customer engagement.

We've collaborated with Marshall Space Flight Center to implement the NASA Common Border Infrastructure and enable centralized monitoring and management. We're consolidating audit logs to a central server that is interoperable with the Kennedy enterprise data warehouse, thus enabling the next level of anomaly detection and auditing automation.

Dryden is piloting improvements to its Center proxy and content filtering service. The value will be improved mitigation of Web-based virus threats while fully eliminating direct exposure of Dryden systems to remote Web sites. Network-based Smartcard authentication service improvements are in the planning stage. The goal here is to transparently authenticate Dryden users on the intranet with their NASA-issued Smartcard, thus increasing the trustworthiness of the systems attached to the Dryden intranet.

Finally, Dryden IT is proactively engaging local mission projects such as the Stratospheric Observatory for Infrared Astronomy (SOFIA), Global Hawk, and G-III, collaborating with mission teams on the design and implementation of their highly specialized IT systems. By directly integrating with the project team, we add value by improving systems design and documentation while reducing overall project risk.

GODDARD

At Goddard Space Flight Center (GSFC), Adrian Gardner, Chief Information Officer and Director of the Information Technology and Communications Directorate (ITCD), has spent the last 18 months devising, developing, and communicating his plan for the Center's Information Technology. Gardner's 2011 Strategic Plan (http://itcd.gsfc.nasa.gov/SAC/index.html) for IT at Goddard is comprised of two volumes. Book 1, The Vision, sets the stage for needed change, and Book 2, The Tactical Implementation, defines timelines and future projects for the Center. Collectively, these plans lay out the framework for the future direction of Goddard's IT portfolio, based on input and demands from Goddard's stakeholders and end users, and outlines current and potential future activities within the GSFC ITCD in support of the Center's IT requirements.

Overall, Gardner's seven strategic goals matrix to the NASA IRM goals and objectives that were defined by the Agency CIO in 2011 and were also defined to enable and support the NASA 2011 Strategic Goals. The seven goals are:

1. Increase agility
2. Modernize Physical Assets
3. Enhance productivity
4. Capture the potential of big data
5. Set the stage for project management success
6. Provide ready access
7. Strengthen the Enterprise Network

The successful execution of these coordinated strategies will ensure IT at Goddard is optimized to enable Agency-wide IT and NASA mission requirements. Projects and efforts currently underway include "big data" segment architecture; IT Storefront, a Web-based application for ordering IT services and products; and an automation and integration working group, formed to help determine areas to be automated for cost-saving improvements.

HEADQUARTERS

The NASA Headquarters Information Technology and Communications Division Strategic Plan aligns with the OCIO's goals and incorporates a Center-focused vision of delivering "reliable, innovative, and respected IT solutions." One aspect is ITCD's goal of further positioning itself as a trusted partner by developing, maintaining, and strengthening relationships with customers and stakeholders.

As we transition to the Agency-wide IT Infrastructure Integration Program (I3P), it is critical to build relationships and maintain an open dialogue with stakeholders at all levels. ITCD utilizes Headquarters IT governance processes to fully engage stakeholders, which includes organizational IT Points of Contacts (IT POCs) and the Customer Advisory Council (CAC). With these partners, we are able to effectively implement IT initiatives to all users, tailored to the requirements of each organization. Our Customer Service Project Review (CSPR) meetings are an example of how ITCD engages with customers, providing a face-to-face exchange, which in turn garners trust and confidence in the services provided. Formal processes are in place for obtaining, analyzing, and implementing customer feedback, along with a proactive communications and outreach program. These efforts, combined with ITCD's goals, will ensure that the NASA IT organization will indeed be "the very best in Government."

JOHNSON

"JSC's Information Resources Directorate's [IRD's] mission is to enable our customers' missions. One of those missions is to help achieve' the OCIO's goal to '…identify, test, and adopt new information technology that will make NASA's missions more capable and affordable'," said Lynn Vernon, IRD's Technical Integration Manager.

IRD is currently assessing the following services and tools:

- Desktop Video: JSC is prototyping VSee as a potential desktop video collaboration solution to provide users the capability to perform video teleconferences with multiple individuals across the Agency to reduce travel costs.

- Project Management Tool: IRD is collaborating with Ames Research Center's Electronic Project Management System (EPMS) to fulfill customers' needs for better ways to manage their projects.

- LifeSize: LifeSize, an existing video teleconference capability, provides a more realistic presence. IRD is currently working to reallocate many units that were bought originally for the Constellation Program. The repurposing of these units to key organizations could potentially reduce travel costs as well.

- The Cloud—Infrastructure as a Service (IaaS): IRD is looking into IaaS solutions to provide a more flexible, responsive, and cost-effective solution to our customers who require computing services. The goal is to improve management, performance, and utilization tracking; chargeback reporting; and provisioning.

KENNEDY

The Kennedy Space Center (KSC) IT directorate is currently establishing a SharePoint 2010 infrastructure to facilitate collaboration with NASA's external partners. The Ground Systems Development and Operations (GSDO) program commissioned this project after encountering difficulties with granting U.S. Air Force personnel access to institutional SharePoint sites. The project team is actively pursuing the creation of trusts with the Air Force, universities, and several Department of Defense contractors (Lockheed Martin, Northrop Grumman, Boeing, etc).

This project is in line with the OCIO Strategic Objectives that encourage effective and efficient collaboration by providing enterprise applications to support the Agency's business and information needs. The establishment of trusts with external partners such as the Air Force relieves NASA from having to support much of the account life-cycle management functions for logical access by partners, thus reducing operations and maintenance costs for Agency programs and projects. Essentially, Identity Federation allows NASA to trust external partners to perform identity management and/or credential management services for partner individuals who access NASA assets. The SharePoint 2010 project intends to implement this capability locally at KSC first, with plans to transition to an Agency-level service as interest and awareness grow.

LANGLEY

The need to collaborate across NASA Centers and with non-NASA partners continues to grow, while at the same time, Federal travel budgets are expected to continue declining. Langley's Office of the CIO, in collaboration with NASA MSFC, is testing enterprise-class desktop videoconferencing that could make it far easier for employees to quickly and easily establish video-based communication with partners across the country. By supplementing the existing NASA Video Teleconferencing Service (ViTS) room and conference room videoconferencing capabilities already in wide use across the Agency, high-definition desktop-based videoconferencing technology can provide a more convenient and easy-to-use collaboration option for on-demand, remote, face-to-face collaboration for small groups and individuals. While not completely replacing the need for in-person interaction, being able to remotely meet with counterparts and easily share documents and images in real-time via desktop videoconferencing may make it possible to reduce the amount of travel required, saving both time and money. In addition, videoconferencing technology is maturing to the point where standards can allow solutions from different vendors to interoperate, enabling interaction even with partners outside of NASA using systems made by different manufacturers. This effort, led by Langley Chief Technology Officer Ed McLarney, supports the CIO strategic goal of identifying, testing, and adopting new information technology that will make NASA's missions more capable and affordable. Technology evaluation and testing are expected to continue through the summer.

MARSHALL

Marshall Space Flight Center (MSFC) has placed an emphasis on the goal of providing integrated tools and solutions and enabling a more collaborative culture.

MSFC has emphasized "a more collaborative culture" by starting ExplorNet, an internal social networking tool. All employees, both civil servants and contractors, at MSFC are given access to ExplorNet. It is used to find answers to questions, share information, find expertise, and collaborate. In its first year, 68 percent of MSFC employees used ExplorNet, while 21 percent have contributed information. One of the concerns about a tool like ExplorNet is that it is a "social tool" and not for "getting work done," but at MSFC, 90 percent of the groups, or virtual work units, are for business purposes. Many of the groups also allow for cross-collaboration throughout the Center's workforce and increased process streamlining. Future plans for ExplorNet include a major upgrade that will make receiving notifications/information easier and encourage the use of groups across MSFC organizations.

MSFC has also emphasized "providing integrated tools and solutions" by adding SharePoint 2010. So far, 11 Web sites from SharePoint 2003 and one from SharePoint 2007 have been migrated. This has enabled the retirement of servers and allowed the use of virtual environments to conserve energy and floor space in the data center.

STENNIS

For several years now, Stennis Space Center (SSC) has continued in its commitment to create a comprehensive virtualization of the Stennis Data Center (SDC) to allow for provisioning of computing services to SSC programs and institutional and administrative offices. This achievement supports NASA's Information Resource Management goal to transform NASA's IT infrastructure and application services to better meet evolving stakeholder needs and support mission success.

SSC's OCIO has virtualized the SDC server environment and is now making significant strides toward implementing storage virtualization in the data center. This virtual environment sets the foundation for a highly available private cloud that services SSC's Propulsion Test Complex and science and technology programs. SDC's capability is delivered to customers through an extensive storage area network (SAN) fabric that now extends to all test control centers in the Test Complex. These systems allow engineers to centrally store large quantities of test data, including digital video data and high/low-speed data acquisition system (DAS) content.

In addition to the SDC's hosting services, the center also provides housing services for mission customers. Systems residing in the SDC include the Beowulf Cluster supporting propulsion testing and systems utilized by SSC's Applied Science and Technology Project Office.

SSC's programs have and will continue to work collaboratively with the OCIO on implementing new data center technologies and ensuring shared use of those resources to achieve efficiencies and enable mission success.

Mainframe Shutdown… A Bittersweet Time

By Kim Edmondson, Marshall Space Flight Center

The Mainframe Decommission Team: Bobby Rafuse, John Hall, Sittra Battle, Clarence Golson, Dave Kroll, Leonard Haga, Lori Martin, Doug Hubbard, and John Givan.

How many of us have depended on mainframes to do our jobs over the years? We perform development, administration, and operational support, and then one day it is time for the mainframe to be shut down due to a high cost to operate and not being a part of the NASA future enterprise architecture. The IBM Z9 Mainframe located at the NASA Data Center at Marshall Space Flight Center has just gone full circle. This mainframe had to be shut down by the end of the Shuttle Program; specifically, 6 months after the last Shuttle landing. A team began decommission efforts in mid-2008. "The January 26, 2012, shutdown marked the end of a very successful and lengthy effort by Sittra Battle, Project Manager, and her team to plan, execute, and complete an orderly shutdown," said Neil Rodgers, NASA Enterprise Applications Competency Center (NEACC) Manager.

The team had to work with Centers to identify applications for migration or retirement and identify applications that needed to be converted to some other alternative. The scope included 11 Centers with approximately 166 identified applications. These were not all just Shuttle applications. Many communities across NASA were impacted and had work to do to accomplish this NASA mission. For example, the NEACC lead projects (such as the Materials Management Project and Integrated Asset Management—Property Plant and Equipment) had to remove applications like the NASA Equipment Management System (NEMS), NASA Property Disposal Management System (NPDMS) and NASA Supply Management System (NSMS). Battle and her team worked not only with these projects, but with all the impacted Centers to decommission their administrative applications and data successfully.

Neil Rodgers, NEACC Manager, commended, "It was a huge coordination effort and yet another example of the project management and technical competencies demonstrated by the NEACC to support NASA's mission."

The NASA Engineering Network Builds Agency-Wide Connections

By Ann Bernath, Jet Propulsion Laboratory, California Institute of Technology

The NASA Engineering Network (NEN) Website, available within the NASA firewall, provides many features to help engineers discover contacts and experts at all locations within NASA. The *Organization Charts* tool provides a resource for discovering who is responsible for engineering at each NASA Center. Using an integrated employee lookup feature, pulling details from the NASA Directory as well as NEN's user profiles, engineers can discover more information about each individual without leaving the chart display. Within each discipline-specific *Community of Practice*, such as Avionics, Guidance, Navigation, and Control, and Structures, to name only a few, engineers can access contact and member lists to find others with particular areas of expertise. User profile photos allow engineers to put faces to names. Also, an *Employee Locator* integrated into NEN's search capability locates NASA employees using the NASA Directory.

As Cynthia Null of Ames Research Center (and the NASA Technical Fellow for Human Factors) explains, NASA needs "to put the best minds on the problem and the best minds are spread out all over the Agency." Lorraine Fesq of JPL (and Fault Management community leader) concurs. "We were desperate for a way to reach out and connect to other practitioners in the field from other Centers." Designed to bring engineers together, the NEN provides discipline-specific communities of practice, organization charts, user profiles, and employee locators to help engineers reach out and connect with their NASA peers.

Making Connections Improves Engineering Disciplines

Engineers can keep connections current by making direct connections with peers and sharing expertise with others by joining a Community of Practice. *Join this Community* keeps members abreast of important technical information, news, and discipline-specific events. The Fault Management community recently collaborated to define key terminology within their discipline. Human Factors added a *Spotlight* feature to their Community of Practice to highlight individual members. Engineers can also contribute to the resources on the NEN site and become subject-matter experts themselves to help expand the knowledge base of engineering disciplines at NASA.

Seeking advice from and sharing knowledge with others can also be achieved using *Ask an Expert*. Engineers can submit questions to a particular community's vetted, subject-matter experts and can expect to see one or more responses within a few days. One engineer, for example, submitted a question to experts within the Avionics Community and received nine responses from experts at GRC, GSFC, JSC, and his own Center - MSFC. All questions and answers are archived and available for other engineers to reference.

Improving User Engagement

This year, NEN plans to enhance the site's capabilities to allow engineers to post events, resources, assets, and documents directly. The site improvement will also give users the ability to provide comments and to rate information posted to the site by others, enhancing the connections among participants.

NASA Engineers no longer need to face challenges alone. While taking advantage of resources such as *Lessons Learned* and a 40-repository, 3 million asset search capability, an engineer from any Center can seek out and connect with others at NASA, find experts, share their knowledge and expertise, and participate in an Agency-wide community using the NASA Engineering Network. Visit https://nen.nasa.gov.

I3P Update

ACES End-User Services

The Agency Consolidated End-user Services (ACES) contract began March 1, 2012 at Wave 3 Centers (Ames, Johnson, and Langley) which complete the transition from the previous Outsourcing Desktop Initiative for NASA (ODIN) contract at all NASA Centers. Hewlett-Packard Enterprise Services (HPES), the ACES service provider, had already assumed responsibility for Agency-wide services such as e-mail, calendaring, instant messaging, conferencing, and directory services in November 2011.

Deployment of new ACES seats is based on refresh eligibility (a standard 3-year life cycle) and replacing oldest devices first. This strategy will allow the transition to proceed more efficiently and effectively.

HPES will deploy software to the ODIN seats that have not been refreshed in order to effectively manage the environment with a consistent set of tools.

Despite delays in the transition implementation, HPES remains fully committed to completing an orderly transition to the ACES solution. To learn more about ACES, visit https://aces.ndc.nasa.gov/.

EAST

The Enterprise Applications Services Technologies (EAST) contract completed its first year of support to the NASA Enterprise Applications Competency Center (NEACC) on January 31, 2012. A benefit of the EAST contract is the way it tracks work at an application level. This provides information that is critical for operations management and useful for strategic planning purposes. Our contractor workforce is organized by service areas (development, quality assurance, etc.) while our work is organized by Lines of Business (procurement, logistics, financial, human capital and workforce, etc.).

The EAST tracking system allows us to gauge the capacity (from the service areas) utilized for maintenance and enhancement efforts by Line of Business. To execute this tracking capability, new tools and processes were introduced to the entire workforce last February, and we have worked hard over the past months to tweak our processes, train our workforce, and improve our internal tools in order to maximize this capability and optimize operations. We invoked a stabilization period that is drawing to an end and has allowed us to improve our assessment criteria (which is used in assigning application points to the work), and define more effective workflows to ensure proper authorizations and accountability.

We still have many improvements to make, and several currently underway, which will, over time, give us better data that will generate even further enhancements. EAST is a 2-year, fixed-price contract with options to extend it to 5 years. We are currently at the point where the first Option Decision Package due date is approaching.

ESD

The Enterprise Service Desk (ESD) has continued to manage a growing NASA customer base with increased efficiency and improved performance. The ACES Wave 2 and Wave 3 Centers completed transitions in January and March, greatly increasing the volume of help tickets to the ESD. Centers have also begun relying on the ESD's Web support and Tier-1 helpdesk support for NASA Integrated Communications Services (NICS). One final NICS transition (Kennedy Space Center) awaits in April, after which, all NASA Centers will be utilizing ESD for NICS support as well.

One week following the final ACES transition, the ESD is averaging 1,072 help tickets a day (Monday–Friday), with roughly 81 percent of tickets being generated through phone calls to the helpdesk. A growing number of employees are utilizing the Web site (https://esd.nasa.gov) for easy, online ticket submission (around 15 percent). ACES calls continue to represent the bulk of the traffic, but the helpdesk staff is becoming more adept at resolving issues, with about 60 percent of tickets now finding resolution without elevation to an IT Infrastructure Integration Program (I3P) provider. The average speed to answer calls continues to trend upward, exceeding defined metrics on most weekdays, and the abandoned call rate continues to diminish (also exceeding the defined metrics).

Customer satisfaction numbers continue to be high. The ESD generates a survey following every help ticket. Since go-live, about 8 percent of the surveys sent for tickets resolved by the ESD have been completed and returned by customers. The first survey question confirms that the issue has been resolved. If customers respond "No," then their tickets are automatically reopened for investigation. If customers answer "Yes," then they are presented with additional questions. Since go-live, 96.7 percent of respondents state that the ESD gave them an accurate response; 94.1 percent say that the response was timely; and 94.3 percent state that the ESD was overall effective.

The ESD team credits the improved performance on several factors. The team increased the number of call agents available during peak hours, which has driven faster service. New employees have had a chance to learn, mature, and grow more efficient. I3P providers and Center subject matter experts (SMEs) have continued to work tirelessly to build a valuable library of knowledge, which has helped agents quickly find answers. Also, knowledge articles are being refined for Center-specific concerns, making searching for specific needs easier for the user. System enhancements have enabled customers to view their service orders as they move through the system approval process. Additionally, customers themselves are growing more acquainted with the new processes and resources. Lastly, feedback that the ESD team has received from customers has driven change, such as the simplification of the phone tree, once the ESD is reached. Lastly, the ESD sent out tiger teams to train key personnel at each Center on the functionality of the ESD self-help Web site. Over 2,000 NASA employees were trained. Providing face-to-face training has greatly expanded expertise at each Center.

While the progress is promising, the ESD team recognizes that much work remains and many opportunities for improvement exist. Currently, the team is working on enhancements that once implemented will simplify usage for end users, approvers, and Center CIO points of contact. Soon, IT assets for each employee will be captured within the system, simplifying the process of generating tickets over the phone or online. There is much more to do to realize the vision of I3P.

NICS

The NASA Integrated Communications Services contract started on June 1, 2011. The Communications Services Office (CSO) has been established to manage all NASA communication services, including those provided by NICS and other Center-based contracts. NICS-provided services have been transitioned into the contract on time at all NASA Centers. The remaining Center, KSC, was transitioned on April, 1, 2012. For the first time, NASA now has one contract responsible for end-to-end network connectivity.

The challenges associated with this endeavor are enormous. At the heart of this challenge is our ability to listen to Center management teams, understand their concerns, and work together for a common solution. Clearly, this is our most important challenge to overcome. Collectively, our solutions will benefit NASA through the standardization of architectures, economies of scale, and an efficient workforce aligning resources with our customers' communications service needs.

The main focus of NICS during this nearly first year of operations is to successfully transition the Centers without disruption to existing processes and service delivery. After a period of stable operations, NICS will then focus on transformational initiatives that align with I3P and CSO goals and objectives."

WEST

Currently, Web services are continuing under the current vendor whose contract has been extended through April of 2013. Current services include:

- Web content delivery
- Web site development
- Content management

- Bandwidth management
- Search capabilities
- Collaboration tools/services
- Web hosting

The new WESTPRIME Request for Information (RFI) and draft Statement of Work (SOW) was advertised on FedBizOpps from February 6 through March 6, 2012. The NASA Office of the Chief Information Officer (OCIO) and the NASA Office of Procurement are finalizing the procurement timeline. NASA now expects to release the Request for Proposals (RFPs) for WEST by June 30 and make an award selection by April 30, 2013.

The goals of the WESTPRIME contract are to:

- Provide web services that meet the needs of NASA's diverse Web community.
- Improve the current system, provide a technology refresh, and apply the industry's best practices.
- Improve agility in adoption of tools and implementation of services.
- Provide diversity of options for users while managing cost and scope.

Special Note

The I3P IT Operations Handbook (ITOH) is now available for use by I3P support personnel. The handbook covers a variety of topic areas including; I3P Governance, operations management and communications. The ITOH contains links to many supporting documents in order to provide timely information. IT and resource approvers will find the handbook especially helpful as it outlines critical areas that support their work. The handbook is always evolving and we appreciate input. You may send your feedback to Corrine Irwin or John Kasmark. The document is available at http://ocio.ndc.nasa.gov/public/I3P%20ITOH/Forms/AllItems.aspx.

I3P Benefits

By Eldora Valentine, OCIO Communications Manager, Headquarters

Under NASA's IT Infrastructure Integration Program (I3P), the Agency is consolidating five separate contracts and adding more and newer technology capabilities. NASA is already seeing some benefits for I3P. Gary Cox, NASA's Associate Chief Information Officer for Enterprise Services and Integration, says that under the Agency Consolidated End-user Services (ACES) contract, employees are getting daily backup services and better security tools, including data-at-rest. "We've been without refreshes for quite a while. Now users are getting new hardware, and it's pretty robust. NASA expects to see significant cost reductions from ACES over the next year and a 30-percent discount on products under the vendor's catalog," Cox says. But the benefits do not end with ACES.

NASA has switched from a cost-plus to a firm-fixed-price contract under the Enterprise Applications Service Technologies (EAST) contract, which provides a better idea of the costs necessary to support applications. Additionally, the EAST contract allows for more innovation in software development. The Human Capital Information Environment (HCIE) is one of the more than 60 applications and services covered by the EAST contract. Jeri Buchholz, Assistant Administrator for the Office of Human Capital Management, says she is impressed with how robust the human capital environment is today under EAST. "There's a broad range of capabilities in this area. For example, the data we pull from the HR [Human Resources] portal is unique because of its single sign-on. You don't have to use passwords each time you need to log into a NASA application. It's like running HR on the Starship Enterprise. Because of these functionalities, our telework capability is enhanced, which allows us to access HR systems anytime and anywhere."

Another contract under I3P, called NASA Integrated Communications Services (NICS), creates a single incident tracking system for network problems. "NASA is focused on catching the services at each of the Centers, picking up their local area network, and, in some cases, telecommunication and cable plant services. We want to make sure we don't drop any of those," Cox says.

Work is still under way to put the Web Enterprises Services Technologies (WESTPRIME) contract in place. NASA now expects to release the request for proposals for WEST by June 30 and make an award selection by April 30, 2013. Under WEST, public Web sites and other external applications would be hosted in the cloud.

The goal of the WESTPRIME contract is to provide a consistent, capable, and agile, cloud-based enterprise infrastructure that provides Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS) for internal and external Web applications and sites using an interoperable, standards-based and secure environment. Using the cloud will help NASA align with the Federal Government Cloud First Policy (http://www.cio.gov/documents/federal-cloud-computing-strategy.pdf).

NASA has a diverse and complex Web environment that requires integration into mobile applications and social media technologies, vigorous search capabilities, and diversity in the technologies used across the Agency. The WESTPRIME contract will provide a cost-efficient hosting environment that offers flexibility and open-source technologies to meet NASA's needs.

ACES FileNet eForms

By John Sprague, End User Service Executive, and Fran Teel, eForms Manager, Office of the CIO

The Agency Consolidated End-user Services (ACES) service provider, HP Enterprise Services, is delivering Windows-based computer systems that continue to allow end-users to open, fill, sign (as applicable), and save NASA and Center forms designed via FileNet, the Agency eForms software. There were a few problems early in the ACES Windows deployment that required a patch for full operability, but those systems have been addressed and there should be no ACES Windows systems with FileNet eForms' issues. Any end-user experiencing issues with eForms should call the Agency Help Desk at 1-877-677-2123. ACES Windows systems will continue to include and run FileNet eForms software for the foreseeable future.

Apple end-users running Mac Operating System (OS) 10.6 (Snow Leopard) can continue to open NASA and Center forms designed in FileNet. Apple end-users with new ACES machines running Mac OSx 10.7 (Lion) cannot open NASA and Center forms designed in FileNet. Some, but not all, NASA and Center forms are available in PDF format, which Mac users can access.

HQ/Capital Planning and Governance Division, HQ Enterprise Services & Integration Division, and GRC/ETADS representatives are evaluating available options (e.g., local virtual machine, Citrix via ACES/HP) for alternative delivery of FileNet eForms to the growing Mac Lion user base. Also, plans are underway to purchase a new Agency-wide eForms solution in FY13 to replace FileNet, with a transition window extending through FY14. In the interim, refreshed Mac users should be advised of the issues, and use a PDF version of NASA and/or Center forms when available.

For more information on ACES, please visit the I3P Web site at: http://insidenasa.nasa.gov/ocio/i3p/ACES/index.html

Kennedy Data Center Consolidation—A Smart Move

By Charles Kilgore, Director of the Kennedy Data Center Consolidation Project

"What have YOU moved for the Kennedy Space Center (KSC) lately?" That is the clarion call issued by the Kennedy Data Center Consolidation (KDCC) Project team to the KSC Information Technology systems owners. The KDCC project is responsive to and aligned with:

- The U.S. Office of Management and Budget (OMB) Agency Data Center Consolidation Initiative of February 2010 establishing data center consolidation as a Federal Government-wide priority.
- The Presidential Memorandum of June 2010 mandating Federal Government data center consolidation and reduction in numbers.
- The NASA CIO memo of August 2010 articulated an Agency-wide initiative to "reduce the overall cost of data center services by leveraging newer and more efficient technologies, reducing power consumption and consolidating locations to increase space usage densities, and decreasing the real estate footprint of Federal data centers" with the support of Mission Directorate Associate Administrators and Center Directors.

Throughout most of KSC's 50+ years of serving as the world's premier space-launch facility, the supporting infrastructure, including IT, has been installed and operated in a geographically dispersed model, commensurate with the Center's more than 200-square-mile campus. The ensuing IT sprawl resulted in today's environment, which spans five data centers and more than 300 smaller server rooms and closets. Those areas occupy over 179,000 square feet of facility space, and they host and house approximately 2,400 physical assets to be individually assessed and scheduled for consolidation.

In addition to becoming compliant with the Federal data center consolidation mandates, the incremental progress and final results will provide tangible financial benefits to NASA and KSC in the following representative areas:

- A reduction in costs for the procurement, operations, and maintenance of duplicative infrastructure (UPS; generators; and heating, ventilation, and air conditioning systems) that are required by IT systems at numerous locations.
- A decrease in server life-cycle costs as systems are consolidated and virtualized into fewer servers.
- A scaling down of power consumption as more servers are virtualized and excessed,, resulting in lower energy costs.

Consolidation candidates are individually assessed and assigned into one of three categories:

1. Consolidate—These assets have no technical obstacle(s) that would preclude their relocation or virtualization into a consolidated environment. KSC has implemented a three-phase plan for these assets based on the following dates:
   - Short-term consolidation—To be consolidated prior to end of year (EOY) 2012. These systems are ready now and have no constraints other than recipient data center scheduling and preparation.
   - Mid-term consolidation—To be consolidated prior to EOY 2014. These systems are in the planning stages and have constraints projected to be resolved within their allocated timeframe.
   - Long-term consolidation—To be consolidated prior to EOY 2015. These systems present significant technical issues and/or cultural resistance to consolidation and have been deferred while the issues are resolved.
2. Excess—These assets are no longer functionally required, are obsolete, or provide redundant capability. Once determined to be in this category, they are powered down and excessed per NASA procedures.
3. Out-of-Scope—The assets meeting this definition are exempt from consolidation and are typically in situ and provide specialized support requiring their placement to remain static. As technologies and capabilities continue to evolve, these assets will be reassessed, as appropriate.

The KDCC project is measuring progress via several metrics that include:

- The number of servers relocated/ consolidated, virtualized, or excessed.
- The total power savings (kilowatthour [kWh]) realized from server consolidation and excess.
- The amount of facility space (square footage) returned to the Center Operations Directorate for reassignment or closure.

The KDCC project team is committed to working with system owners to ensure a successful consolidation of IT infrastructure and services at KSC. The team utilizes tools and methods that minimize risk to systems and services during transition while providing outstanding post-consolidation service and support.

The KDCC project is endorsed by KSC Director Bob Cabana and KSC Chief Information Officer Mike Bolger as a key strategic initiative in the Center's transformation into the launch complex of the future. They are both vocal advocates and have successfully enlisted the support and cooperation of the entire Center's senior leadership team.

The cumulative effect of the benefits mentioned previously have a common result: save NASA and KSC funds that can be applied to our core mission—space flight programs.

HDI Visits NASA Headquarters

By John D. Sprague, End User Service Executive, Office of the Chief Information Officer

Members of the Help Desk Institute (HDI) Capital Area local chapter visited NASA Headquarters on March 6, 2012, and had one of their most heavily attended monthly meetings in recent memory. The topic was "Power of Metrics," with guest speaker Malcolm Fry giving a training class on the subject. Sandy Seroskie, the chapter's President Emeritus, said, "Thank you to NASA for hosting the inaugural tour of this workshop and to BMC Software, Service Now, and Serena Software for sponsoring the workshop, enabling the chapter to offer it to attendees at no cost." Seroskie closed the meeting by thanking Fry for giving attendees a riveting metrics presentation. Rick Joslin, HDI's Executive Director for Certification and Training, remarked that this meeting and training were great examples of bringing Government and industry together for the betterment of both. HDI is the world's largest IT service and technical support membership association.

Speaker Malcolm Fry discussing metrics at the NASA Headquarters Glennan Assembly Room.

Photo of the HDI attendees taken on the roof at NASA Headquarters.

NASA Deputy CIO Receives Federal 100 Award

By Eldora Valentine, OCIO Communications Manager, Headquarters

Deborah Diaz, NASA's Deputy Chief Information Officer (CIO), has received the Federal 100 Award, which recognizes individuals in Government and industry who are making significant contributions to Federal information technology.

A panel of high-ranking Government and industry leaders chose Diaz to recognize her passion, spirit, and positive impact toward progressive transformation of Federal information technology. Federal Computer Week presented the Federal 100 Awards at a gala in Washington, DC, on March 28, 2012.

As Agency Deputy CIO, Diaz provided transformational leadership in the investment and development of next generation technology and adoption of new pilot programs. She was pivotal in developing the NASA Open Government strategy (ranked No. 1 in Government) and significantly increased full mission participation and infused new innovative techniques, such as Forward Maker, Idea Scale contests, and the Liquid Galaxy, to directly connect and interact with NASA's stakeholders.

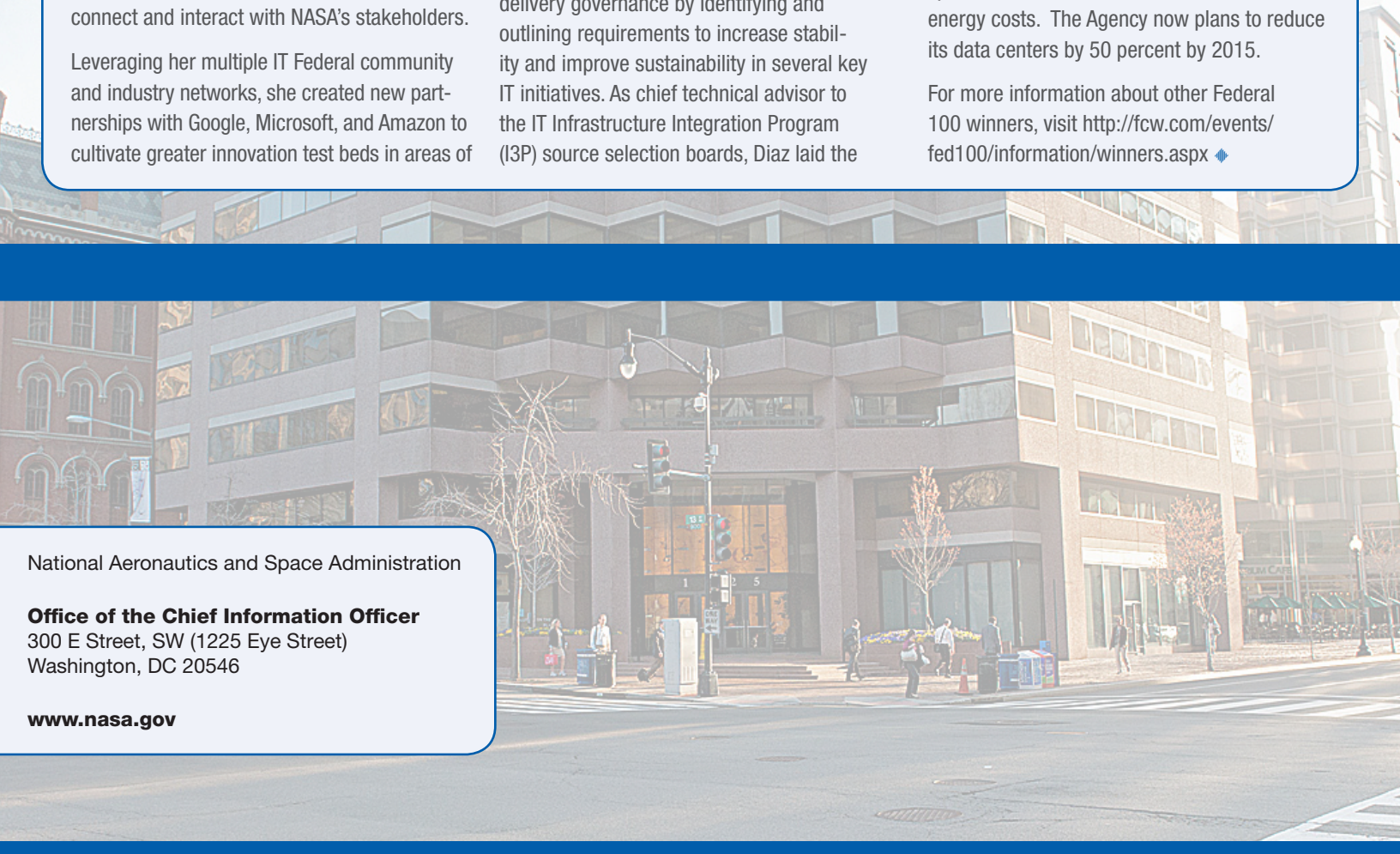
Leveraging her multiple IT Federal community and industry networks, she created new partnerships with Google, Microsoft, and Amazon to cultivate greater innovation test beds in areas of big data, collaboration tools, and 3D and mobile applications. As a catalytic Chair of the October Federal Open Government Community Forum, she produced the most successful open government global event ever held with more than 160,000 virtual Government and private sector participants engaging in worldwide idea generation to introduce new technologies to NASA.

Diaz's collaborative work on the June Random Hacks of Kindness succeeded in influencing more than 1,500 participants (virtual and worldwide) to produce 74 solutions with 48 functional demonstration projects and 23 working IT solutions. Her insightful introduction of monitoring technologies into NASA's data centers along with the implantation of the final data center strategy resulted in reduced system duplication and common system standards across NASA.

Diaz expertly strengthened the Office of the Chief Information Officer's program management, and she improved service delivery governance by identifying and outlining requirements to increase stability and improve sustainability in several key IT initiatives. As chief technical advisor to the IT Infrastructure Integration Program (I3P) source selection boards, Diaz laid the groundwork for the rapid awarding of I3P contracts worth $4.3 billion this year.

She also continued to advocate for better discovery tools on NASA networks that would locate, compile, and categorize existing Agency IT assets. Diaz deployed an Enterprise Discovery Tool to automate the collection of IT inventory data and conducted an automated application assessment in 79 data centers, mapping all NASA centers. This greatly improved IT inventory control and application data architecture to reduce duplication and improve system security. NASA recouped 22,300 square feet of building space and more than $387,000 in annual energy costs. The Agency now plans to reduce its data centers by 50 percent by 2015.

For more information about other Federal 100 winners, visit http://fcw.com/events/fed100/information/winners.aspx



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