National Aeronautics and Space Administration

IT Talk

October - December 2014 Volume 4 • Issue 4

3D Printing in Space

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Message from the NASA CIO

We live in a climate of persistent threats and intrusions into our networks and information technology systems. Securing those systems is a responsibility we all share. The nature of NASA's work makes cybersecurity critical to our missions and general infrastructure. During October, I am encouraging everyone in the NASA community to participate in Center cybersecurity awareness activities as part of National Cybersecurity Awareness month.

In this issue, we'll take a closer look at some common sense rules to protect yourself and your organization against cyber threats. We'll also take a sneak peak at the world's first 3D printer in space. It will blast off this month and could change the way NASA does business aboard the International Space Station. This unique technology could help lay the foundation for broader in-space manufacturing capabilities. We'll further highlight some other innovative projects happening at the Centers.

And finally, team members at the NASA Enterprise Competency Center (NEACC) located within Marshall Space Flight Center are working hard to enhance the user experience as part of the Identity, Credential, and Access Management (ICAM) modernization effort. A facelift is on tap for the NASA Access Management System (NAMS). The new look and feel is sure to please everyone.

I hope you enjoy this issue.

~Larry

NASA CIO Leadership Meeting 2014 *(l-r): Leigh Anne Giraldi, Jim Rinaldi, Larry Freudinger, Sean Gallagher, Dana Mellerio, Lara Petze, Dennis Vandertuig, Dinna Cottrell, Annette Moore, Jeff Seaton, Gary Cox, Larry Sweet, Jonathan Pettus, Deborah Diaz, Vanessa Stromer, Terry Jackson, Jim Walker and Victor Thompson*

New Chief Information Officer for Glenn Research Center Named

Mr. Sean M. Gallagher is the new Chief Information Officer (CIO) for the John H. Glenn Research Center (GRC). Mr. Gallagher officially took over the role on July 27, 2014. He previously served as GRC's Deputy CIO and as Acting CIO. Mr. Gallagher's diverse management and IT background enables him to critically evaluate the challenges and opportunities facing the Office of the Chief Information Officer and leverage his experiences to guide his team through the ever-changing IT landscape.

As CIO for GRC, Mr. Gallagher says he envisions an organization that executes the fundamentals of IT and service delivery phenomenally well. Understanding GRC's employees' business processes and requirements, and then delivering quality IT that supports those practices are the fundamentals that he considers critical to the organization's success. One of his goals is to leverage investments in IT to drive efficiencies and enhance business activities across GRC through process improvement, process automation, enhanced reporting, and simplified access to data. Mr. Gallagher recognizes that achieving these goals in a budget-constrained environment is a challenge, but it is one he is ready to take on. He outlines his plan for success: "It really starts with understanding our customers' requirements, helping to represent them, and then identifying how and when to effectively leverage enterprise services, and how and when to tailor localized services specific to their needs."

When asked what motivates him each day, Mr. Gallagher said, "Every day is an opportunity and a challenge and that excites me. My family drives a lot of what I do and the enjoyment I receive from my work and personal lives really motivates me." A significant portion of that motivation also comes from the approximately 3,200 Glenn employees that count on stable IT services to be available everyday for them to perform their work. As Mr. Gallagher notes, "We're a service delivery organization and I highly value the services we can and do provide to our customers."

National Cybersecurity Awareness Month

STOP.THINK.CONNECT—Cybersecurity Best Practices to Protect and Safeguard NASA's Information and Assets

October 2014 marks the 11th Annual National Cybersecurity Awareness Month sponsored by the Department of Homeland Security (DHS). NASA is teaming up with DHS to promote awareness and improve understanding of the importance of cybersecurity in our everyday lives.

It is a shared responsibility that begins and ends with you, the NASA employee. It is critical that we learn how to protect and safeguard NASA information and information systems. By learning best practices, we will be equipped to better protect sensitive information as well as the NASA IT infrastructure. Every small step toward better understanding of effective cybersecurity practices helps to ensure that we are improving our IT security posture.

No country, industry, community, or individual is immune to cyber risks. To protect NASA and its data, members of the NASA community are reminded to STOP.THINK.CONNECT.

STOP: Before you use the Internet, take the time to understand the risks and learn how to spot potential problems. Avoid social engineering and phishing attacks by not giving out sensitive information to anyone unless you are sure they are indeed who they claim to be and should have access to the information.

THINK: Take a moment to be certain that the path ahead is clear. Watch for warning signs, and consider how your actions online could impact your safety. Phishing attacks use e-mail or malicious Web sites to solicit personal information by posing as a trustworthy organization.

CONNECT: Enjoy the Internet with greater confidence, knowing you have taken the right steps to safeguard NASA and your NASA computer.

Headquarters kicked off NASA's awareness activities on October 1, 2014, with the NASA National Cybersecurity Awareness Month Training. During October, everyone in the NASA community is encouraged to participate in Center cybersecurity awareness activities, which are designed to educate the NASA community on its cybersecurity responsibilities. To learn more about cybersecurity awareness, visit *http://www.grc.nasa.gov/WWW/CIO/ec_itsat/index.htm*.

For questions or to report any suspicious IT Security or Cybersecurity incidents, please contact NASA's OCIO Security Operations Center (SOC) available 24x7 at 1877-627-2732 (1-877-NASA-SEC) or *soc@nasa.gov*.

Recognizing and Avoiding *Phishing

By Michael Knight, Incident Response Manager, Information Security, LaRC

What You Can Do to Avoid Becoming a Victim

Regard Unsolicited E-mails with Suspicion

Don't automatically trust every e-mail sent to you, even if you know the sender. Never open an attachment or click links in an unsolicited e-mail.

Treat E-mail Attachments with Caution

E-mail attachments are commonly used to sneak a virus onto your computer. These viruses can help steal important information from your computer or compromise your computer so it is open to further attack and abuse.

Use Common Sense

When an e-mail arrives in your mailbox promising you big money for little effort, accusing you of violating the Patriot Act, or inviting you to join a plot to grab unclaimed funds involving persons you don't know in a foreign country, take a moment to consider the likelihood that this is legitimate.

Learn the E-mail Policies of the Organization

Most organizations doing business online now have clear policies about how they communicate with their customers in e-mail. Many, for instance, will not ask you to provide account or personal information via e-mail.

Configure Your E-mail Client for Security

There are a number of ways you can configure your e-mail client to make you less susceptible to e-mail scams. For instance, configuring your e-mail program to view

e-mail as "text only" will help protect you from scams that misuse HTML in e-mail.

Summary

Ignoring these recommendations may leave you at risk for identity theft, information theft, the abuse of your computer for illegal activity, the receipt of bogus or illegal merchandise, or financial loss.

E-mail is a convenient and powerful communications tool. Unfortunately, it also provides phishers and other malicious individuals an easy means for luring potential victims. The scams they attempt range from old-fashioned operations to schemes using a combination of e-mail and fake Web sites to trick victims into divulging information. To help protect yourself from these, you should understand what they are and what you can do to avoid them.

***Phishing /fiSHiNG/ noun:** the practice of using fraudulent emails and fake websites to extract information from users.*

Utilizing Big Data/Advanced Analytics to Answer the Question: How Secure Are We?

By Les Farkas, Chief Technology Officer, Glenn Research Center

Information Technology security organizations are continually working to improve and evolve their support system for managing information security risk. At NASA, this support is provided to organizations, system owners, management, and program or project managers who are responsible for assessing the risk posture of their IT systems and the information they contain. Providing timely and meaningful information to these decision makers is a fundamental role of the IT security organization. But how should risk be assessed? Are annual IT security plan reviews adequate, or should we provide decision makers real-time updates of their system risks?

Perhaps we should simplify our examination of this situation and ask the question every NASA Center Director should be asking: How secure are we? While the question may be simple to ask, the answer is oftentimes much more complex and a challenge for IT security organizations to answer succinctly. One way to simplify the answer is to utilize the science of Big Data/Advanced Analytics to identify potential risk patterns that, when combined with use of graphical display dashboards that depict heat maps, deliver risk-prioritized actionable insight.

Big Data/Advanced Analytics enables risk managers to uncover previously unseen patterns and to develop sharper insights about the IT security of their environments. The volume, variety, and complexity of information relevant to IT security risk management are growing rapidly. Examples are network packet data, privileged activity monitoring, performance monitoring, transaction monitoring, sensor data, vulnerability information, configuration information, change management information, context-related data, external threat intelligence, identity and access data, user activity monitoring, business value data, Web log data, application monitoring, and compliance monitoring. The confluence of these data elements presents the big picture of risk.

"Heat Map Conceptualization" Source: Gartner (March 2012)

In addition to the back-end analytics, front-end graphical dashboards could be implemented to provide an overall "heat map" visualization of IT systems risk (See conceptual example). Such dashboards could be configured with pushbutton access to IT security personnel for consultation, system administrators for alerts and ad hoc reporting requests, and mouse pointer hover-over pop-up boxes to provide additional detail. Furthermore, system owners could remotely and securely access dashboards via secure authentication and communication mechanisms.

The Department of Homeland Security displays color-coded, easy-to-read threat/risk placards at many NASA Center entrances to indicate our physical security risk posture. NASA should be able to provide this same sort of IT security quick-look for senior management. The science of Big Data/Advanced Analytics enables organizations to gain insight into what has happened and what probably will happen. In the context of protecting our information assets, what could be more important than this insight?

NASA Marshall, Partner Company Develop 3-D Technology to Turn Space into 'Machine Shop'

By Janet Anderson, MSFC Public Affairs Specialist

Suppose an astronaut needed to make a repair on the International Space Station. Rather than carry a few "spares" for the voyage, what if tools and equipment could be made right there in space?

It may seem like an unbelievable feat, but NASA's Marshall Space Flight Center and its partner, Made in Space Inc. of Moffett Field, CA, have developed and tested just that—the first "machine shop" to perform 3-D printing in space.

The 3-D Printing in Zero-G Experiment, or 3-D Print, has been underway since October 2012. It will fabricate components and equipment on demand for manned missions to the space station and other destinations in the solar system.

"The greater the distance from Earth and the longer the mission duration, the more difficult it is to resupply materials," said Niki Werkheiser, 3-D Print project manager in NASA Marshall's Technology Development and Transfer Office. "The space station is an ideal platform to begin changing the current model for resupply and repair to one that is more suitable for all exploration missions."

The 3-D experiment will use extrusion-based additive manufacturing, which builds parts, objects, and tools layer by layer out of plastic deposited by a wire feed through an extruder head. The plastic is melted in the extruder head and deposited through a tiny hole. Parts can be printed from data files loaded on a computer at launch, as well as from additional files uplinked to the computer while in orbit.

The experiment hardware was built by Made in Space Inc. "Our team is extremely excited to have worked with NASA Marshall to develop a 3-D printer to operate in space—something that's never been done before," said Jason Dunn, Chief Technology Officer at Made in Space. "We feel that manufacturing in orbit, rather than on Earth, is a necessary next step toward achieving NASA's vision of sending humans to Mars and beyond."

NASA Marshall's role was to guide the design process and conduct all the reviews for the experiment, including project design and critical design, as well as the environmental and qualification testing to ensure the hardware was flight certified. Testing was done at various Marshall Center facilities.

"The technology to produce parts on demand in space offers unique design options that aren't possible through traditional manufacturing methods, while offering cost-effective, high-precision manufacturing," said Werkheiser. "Additive manufacturing limits the need to stockpile parts, and may alleviate a lot of structural and geometrical constraints caused by launch loads and vehicle stowage requirements."

"We also look forward to using this technology as an educational tool—offering students the opportunity to design and build parts for missions," Werkheiser added.

The 3-D printer effort is a shared investment between NASA's Human Exploration and Operations and the Space Technology Mission Directorates, which together seek to innovate, develop, test, and fly hardware for use in NASA's future missions.

The 3-D Printer, center, will fabricate components and equipment on demand for manned missions to the space station and other destinations in the solar system as a part of the 3-D Printing in Zero-G Experiment conducted by NASA's Marshall Space Flight Center and its partner, Made in Space Inc. of Moffett Field, CA (NASA)

Three Dimensions of a Digital Cutter

By Jaumarro A. Cuffee, JSC I3P Outreach

Printing with 3D technology continues to be an exciting innovation. However, adding dimensions to non-3D printed media offers significant improvements.

Since February 2014, the Information Resources Directorate's (IRD) multimedia services at Johnson Space Center (JSC) has been producing "3D cutouts." Photo Operations Supervisor William Close is hesitant to use the term "3D" when referring to the cutouts, though, because it can be misleading. The images themselves are printed with an inkjet printer, then mounted onto foam board and dissected using a digital cutter with optical recognition. For some of the more popular printed media, the digital cutter introduced three dimensions—safety, speed, and efficiency.

Iconic crew patch plaques are displayed inside the Christopher C. Kraft Mission Control Center, flight crew offices, and various locations in and around JSC. When the IRD multimedia services first took over the fabrication of these plaques from the onsite machine shop, the precise cuts reproducing the patch outline were made by hand with a scroll saw. Each plaque took 45 minutes to create. The shift to the Kongsberg digital cutter made the process hands-free and safer. It also reduced production time from 45 minutes to 15 seconds.

Farewell boards are another popular printed media that typically consist of individually printed NASA images cut down, mounted on a sturdy backing, and framed with a photo mat for signatures and well wishes. With the advent of the digital cutter, multiple images can be printed across a large sheet. The sheet is then mounted onto sturdy backing and the digital cutter is used to create multiple boards with space for signing. The number of steps needed to produce boards is thus reduced. Further adding to the efficiency of the process is the mass production of farewell (or event) boards and other products small enough to space across a 52 by 96 inch sheet.

In addition to introducing safety, speed, and efficiency, the digital cutter has enabled paper figures to stand as full-color crewmember silhouettes. It also allows the International Space Station (ISS) to stand out in narrow spaces as a brilliant image set off from the wall with intricate cuts detailing the edges of various ISS modules and solar arrays.

For traditional media, safety, speed, and efficiency are only three of the dimensions gained by introducing updated technology. Newer technology also offers improved representations and expanding possibilities.

Augmenting our Reality

By Tom Soderstrom, Chief Technology and Innovation Officer, Jet Propulsion Laboratory, California Institute of Technology

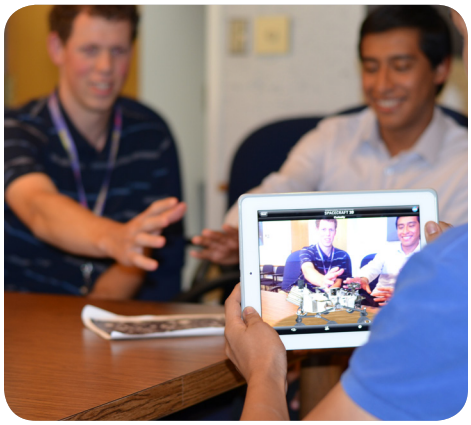
We are hearing more about Augmented Reality (AR) these days. As the Jet Propulsion Laboratory (JPL) studies how we will work in 2025, AR shows up near the top of disruptive game changers. So, how can everyone understand it better?

An excellent way to appreciate the power of AR is to experience it personally through the Spacecraft 3D application, one of NASA's first AR applications. The app was a rapid-fire partnership development from the start between JPL's outreach and IT organization team members: Kevin Hussey, Evan Chan, Paul Doronila, Brian Kumanchik, Kyle Dodge, Jeff Liu, Sandy Erickson, Jason Kang, Phu Kieu, and Christian Hill.

The first version was released just in time for Curiosity's landing on Mars and enabled the public to experience and interact in a completely new way with Curiosity in 3D on their iPhones. This unprecedented capability to view, share, and interact with the rover led to tremendous interest from educators, NASA employees, and the public and also led to several subsequent upgrades.

Today, Spacecraft 3D (downloaded over a million times) runs on iOS and Android devices, as well Google Glass, and can be downloaded from their respective app stores. You can now view and interact with current and future spacecraft destined for all reaches of the solar system (six to Mars, five to other planets, and seven Earth Science spacecraft). In addition, you can experience the wonder of two Deep Space Network antennas and one space telescope.

One of the more exciting enhancements involved eliminating the need for a dedicated "target" card. Spacecraft 3D can now recognize images as the target, a development that is showcased in a recently published National Geographic book about Mars. In addition, users can now interact with all of the spacecraft without a target card, using the app's new 'Manual Mode'. This change will have a positive impact on educators and students of any technical or scientific field.



As you experience the wonders of our NASA developments in Spacecraft 3D, consider what is next for AR. Just as Spacecraft 3D has evolved into a platform through which we can tell the NASA story, we expect that AR will become a platform used for engineering, testing, verification, troubleshooting, and more. In short, it will be a cornerstone of how we work in 2025, and NASA can be a leader in this exciting field.

We invite you to join us in this quest to communicate and augment our reality to reach soaring heights in science, engineering, IT, and outreach. Hint: it will be much sooner than 2025!

PRA NEWS TO USE: Web-based Interactive Technologies: *Data Search Tools, Calculators, and the Paperwork Reduction Act (PRA)*

On September 5, 2014, the Office of Management and Budget (OMB) released new guidance titled "Web-based Interactive Technologies: Data Search Tools, Calculators and the Paperwork Reduction Act" to clarify when and how the Paperwork Reduction Act (PRA) applies to Federal agencies' use of technologies that help the public search for data. Specifically, the OMB memo addressed Web-based data search tools and calculators. It also included a handy list of exclusions to the regulatory definition of "information" under the PRA. The new guidance builds upon OMB's April 7, 2010, memo titled "Social Media, Web-Based Interactive Technologies and the PRA" that clarified the applicability of the PRA to Web-based social media tools, contests, and challenges. Links to the documents referenced above are provided below:

- Web-based Interactive Technologies: Data Search Tools, Calculators, and the Paperwork Reduction Act (September 5, 2014): *http://www.whitehouse.gov/sites/default/files/omb/inforeg/memos/2014/web-based-interactive-technologies-data-search-tools-calculators-paperwork-reduction-act.pdf*

- Exclusions to the regulatory definition of "information" under Paperwork Reduction Act (September 5, 2014): *http://www.whitehouse.gov/sites/default/files/omb/inforeg/memos/2014/appendix-data-search-tools-calculators.pdf*

- Social Media, Web-Based Interactive Technologies, and the PRA (April 7, 2010): *http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/SocialMediaGuidance_04072010.pdf*

Please contact Fran Teel, NASA PRA Clearance Officer, at *Frances.C.Teel@nasa.gov* with comments and/or questions.

Going Paperless

By Steve Simpson, Acquisition Technical Lead, "Work Different Project," and Wayne Wong, Enterprise Apps Software Engineer, Jet Propulsion Laboratory, California Institute of Technology

At NASA's Jet Propulsion Laboratory (JPL), improvements to the business process are as valuable as those that apply directly to the missions. This is especially apparent in the JPL Acquisition Division, which in partnership with the JPL Office of the Chief Information Officer (OCIO), has created the Interactive Acquisition Network (IAN).

In October 2012, the JPL Acquisition Division unleashed the "Work Different" project. The goal of the project was to make the procurement process a completely paperless one. A short 20 months later, the "Work Different" team rolled out the IAN to a trained and invested acquisition division. This strategic partnership between JPL's Acquisition Division and the OCIO enabled the successful development of a paperless system built according to Enterprise-approved systems and architectural standards. Thanks to this system, procurement packages, including all associated documentation, signature requirements, and storage formatting, are electronically managed from requisition to closeout and travel seamlessly through the JPL community. JPL's customers and suppliers will see additional benefits with the rollout of a fully secure Digital Signature solution in 2015.

IAN was subject to a significant number of success criteria. A few nonnegotiable ones were:

1. compliance with contractual requirements,
2. ability to enhance the mobility of the procurement process,
3. ability to improve document management and business continuity,
4. ability to increase data security and data integrity,
5. ability to increase collaboration, and
6. demonstration of hard and soft savings.

After extensive market research, we discovered that we already had the needed software tools in our possession that would allow us to avoid the significant costs of pursuing alternative solutions and their customized development. The IAN architecture is built on Microsoft Office 2013, SharePoint 2013, and OneNote 2013, all of which already reside on the JPLers system. Subcontract packages are built on OneNote template-driven forms, then routed though SharePoint workflow using InfoPath 2013 forms to gather reviews, comments, and approvals. The system allows for reassignments, rework, and resubmittals. Once the approvals have been gathered, the Acquisition Subcontract Manager files the approvals and can then submit the final OneNote package for internal signature workflow—with external signature to be rolled out in the new fiscal year.

IAN creates uniform file storage requirements in SharePoint folders with the files backed up as part of the lab's standard disaster recovery protocol.

By the end of this calendar year, JPL hopes that IAN will accommodate remote auditing, thereby ensuring significant time and cost savings for both JPL and the audit community.

Since June 2014, nearly 200,000 subcontract-associated documents have been uploaded to the system. These documents were previously stored on a shared file server and on the Subcontract Managers' workstations. In a little over 3 months, there have been more than 3,000 subcontract packages created and more than 2,500 routed through the review process.

Click here to view the video presentation, *"IT Heroes Showcase: Paperless Contracting Initiative at Jet Propulsion Laboratory (JPL)."* For further information regarding IAN, please contact Martin Johnson, Manager of the Acquisition Process Improvement Office at *Martin.R.Johnson@jpl.nasa.gov*.

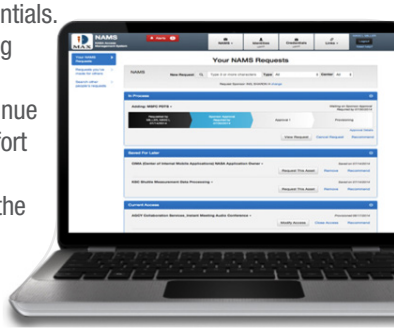
Coming Soon: NAMS 7.0—NAMS Gets a Facelift

Sometimes it seems that just as we get used to something, it changes. Well, here we go again; but this time, it's a welcome change. If you work at NASA, you've likely had to request access to an application, or other asset, via the NASA Access Management System (NAMS). Currently, some users may look upon this process as cumbersome, in addition to finding the system itself a little less than user friendly. If you are one of these users, you'll be happy to learn that the folks at the NASA Enterprise Competency Center (NEACC) located within the Marshall Space Flight Center are working to enhance the user experience as part of the Identity, Credential, and Access Management (ICAM) modernization effort. The new NAMS will be available to users on November 12, 2014. In order to ensure that everyone is ready to use the new system, Center communication leads and ICAM subject matter experts will be working together to conduct Town Hall meetings in mid to late October. Be sure to watch your Center communications for more details. The NEACC will also conduct virtual Town Halls for those unable to make it to their Center-specific Town Hall.

Visit the ICAM portal (*https://icam.nasa.gov*) for a sneak peek at what the new NAMS will look like. In addition to the sneak peek, we've also listed some important factors to be aware of when NAMS 7.0 is released.

- New URL: Users submitting requests for access to logical and/or physical assets will use the URL, *https://nams.nasa.gov*, rather than the current URL, *https://idmax.nasa.gov*. Don't forget to update those bookmarks!
- Enhanced user interface with new look and feel, including navigation and alerts, for all users:
- New user-based landing page provides user with an overview of provisioned and in-process requests, as well as a starting point for new requests.
- The new interface offers the ability to track the status of user requests and recommend system/application access to other users. Recommended access appears in the users' "save for later" list within NAMS.

So what's next for ICAM after the NAMS 7.0 launch? The ICAM team will be working to meet its goal of providing users access to systems and buildings on Day 1 of deployment. Since ICAM took on this charge, statistics show that onboarding time has significantly decreased from 3 months to 2 weeks. You may also find that other Federal Agencies are looking to NASA when it comes to central authentication and the use of derived credentials. In addition to working toward this goal, the ICAM team will continue its modernization effort and release a new version of IdMAX in the summer of 2016.



ServiceNow Migration and the NSSC

The NASA Shared Services Center (NSSC) is presently in the discovery phase of the ServiceNow Migration project and is collaborating with functional subject matter experts (SMEs) to develop requirements for the migration from the BMC Remedy 7.5 platform to ServiceNow. The purpose of this project is to migrate all NSSC workflow and applications currently residing on the Remedy platform to a ServiceNow, cloud-hosted environment.

The decision to upgrade the NSSC's work management system to the cloud environment is in keeping with NASA's Office of the Chief Information Officer (OCIO) Cloud Policy: "Cloud computing offers NASA new opportunities in computing scalability, improved availability of NASA's public data, faster project start-up times and the ability to pay only for the computing that you need and use. Shifting away from hardware and facility ownership has significant cost savings potential for the Agency" (OCIO Cloud Policy, 2013).

The goals are to harness this platform for the NSSC's use in a way that best enables functional area teams to move beyond the limits of existing capabilities. Full communication and transition plans are forthcoming, and the NSSC is certain to utilize what is needed in ServiceNow to benefit the NSSC, our stakeholders, and our end-users. This includes but is not limited to the following:

- Maximizing Return on Investment (ROI) on cloud services: This migration to a secure, cloud-based service will eliminate 40 on-premise servers. This reduction will ensure savings in Operating and Maintenance (O&M), electrical, and floor space costs, while decreasing the time to market for the new and enhanced services the NSSC can provide to the Information Technology (IT) Infrastructure Integration Program (I3P), human resources, financial management, and procurement customers.

- Refining Services: With direct support from ServiceNow's development team to migrate a significant amount of NSSC's and I3P workflows and applications, this transition from BMC Remedy 7.5 platform to a ServiceNow cloud-based environment will markedly improve the NSSC's capabilities.

Cloud computing has the potential to play a major part in addressing inefficiencies and improving government service delivery. The cloud computing model can help agencies grappling with the need to provide highly reliable, innovative services quickly despite resource constraints (OMB, 2011). See First Cloud Policy.

The NSSC successfully started its migration to the ServiceNow work-management system in early 2014. When completed, this 12- to 16-month project will greatly enhance the NASA user experience, make ordering goods and services from the NSSC easier, and integrate metric collection and analysis into NSSC process workflows.

Order-to-Pay (OtP) Project

The NSSC is also managing the Order-to-Pay (OtP) project utilizing ServiceNow. OtP consists of new requirements to improve the Center validation process with a Center Validation Tool (CVT) for reconciling Agency Consolidated End-User Services (ACES) invoices and for creating new services in the Enterprise Service Request System (ESRS) for tech refresh (early tech refresh) and like-to-unlike refreshes. The ESRS will migrate from Remedy to ServiceNow as a part of this project. Look for deployment of the CVT in October 2014 and the ESRS in January 2015.

IT Infrastructure Integration Program (I3P) Update

Communications Services Office (CSO)/NASA Integrated Communication Services NICS)

In response to new and emerging flight project requirements, a challenging budget environment, and an increasing threat environment, the Communications Service Office (CSO) has developed an integrated and comprehensive communications backbone strategy that will attempt to address the full range of identified requirements.
The cornerstone of this strategy is the implementation of the Mission Next Generation Architecture (MNGA), which will provide a secure and flexible infrastructure to support all current and future flight project requirements. The approach utilized will optimize the CSO Communications Backbone through focused tech refresh activities and use of latent bandwidth within the existing CSO Corporate Communications Backbone to provision circuits for the MNGA, where appropriate.

The three key projects that make up the CSO Backbone Strategy include the Backbone Equipment Refresh (BBER) Project, the MNGA Project, and the Mission Backbone Transition (MBT) Project. Once the strategy was developed and approved, the CSO funded the initial work in these areas starting in fiscal year (FY) 2013. The CSO prepared and submitted a Mission Support Council (MSC) Issue Paper, which requested funding for the various projects beginning in FY15 that makes up the CSO Backbone Strategy. When the MBT Project completes the transition of current Agency mission-routed data customers to the new mission network, it is anticipated that significant cost savings will be realized as legacy mission data circuits are downsized or decommissioned.

End-User Services (ACES)

Office 2013 Upgrade for Windows: ACES Windows computer users are currently receiving upgrades from Office 2010 to Office 2013. Upgrades are happening on a rolling weekly deployment schedule. Users scheduled for an upgrade receive an e-mail message one week prior to deployment of the new software. The message describes what to expect during the installation. A reminder e-mail is sent to the user one day before the installation. The software is deployed during the standard Tuesday night patching window (8 p.m.–2 a.m. local time). In order to receive the upgrade during this timeframe, users are instructed to leave their computers powered on, logged off (at the Windows login prompt), and connected to the NASA network. Computers left in this state will be automatically updated and rebooted with no user interaction required. Users are encouraged to review the Office 2013 training documents and videos, available at ACES > Services > Software > Microsoft Office, to become familiar with the new features of Office 2013. New, reimaged, and refreshed ACES Windows computers are being delivered with Office 2013 already installed.

Like-for-Like Mobile Refreshes: Like-for-like mobile refreshes are occurring on a rolling deployment schedule across NASA Centers. A like-for-like mobile refresh is for end users who will be replacing their cell phone with the same phone type they currently have (e.g., iPhone to iPhone), the same carrier, the same services, and the same phone number. Device refreshes are included as part of the monthly service fee for ACES seats and are not an additional cost to NASA. Users scheduled to receive the refresh will get e-mail notifications prior to deployment with details on schedule and actions required for the refresh, including instructions for backing up data from their original device. Additional information on like-for-like refreshes, including a high-level overview of the process and FAQs, is available at ACES > Deployment > Mobile Deployment.

BlackBerry Mobile Refreshes: Current ACES BlackBerry users will be given the option to refresh to another device because BlackBerry 9900 and 9930 smartphones will soon go “end of life” and will no longer receive technical support from the vendor. End users who require Public Key Infrastructure (PKI) should defer their refresh until devices are offered that provide this capability. BlackBerry users will be included in the upcoming refresh cycle and will be contacted through the refresh notification e-mails used in the like-for-like refresh process with instructions to place the order for a new device with the Enterprise Service Desk (ESD).

Java 8 Deployment: The Agency plans to move to Java 8 in March 2015. Java is used for interactive graphics on Web sites. Application owners are encouraged to test against current applications to ensure compatibility and provide feedback on any issue encountered. Java 8 is available on select computers in local ACES Development Test Labs (DTLs). NASA developers and system/application owners can also request that Java 8 be installed on their computer via Client Automation Enterprise (CAE) by registering at ACES Application Testing. The deadline to complete testing is October 31.

Enterprise Applications Service Office/NASA Enterprise Applications Competency Center (EASO/NEACC)

The NASA Electronic Forms (NEF) site has been migrated to a new platform. The new NEF portal will provide users with an enhanced look and feel, a centralized repository for all NASA and Center forms, and enhanced site security measures via Launchpad authentication for all internal NASA forms. Many of the forms available in the new NEF portal have been converted to Adobe LiveCycle Enterprise Suite 4 (ES4), the new Agency forms solution replacing FileNet. These form conversions provide the ability to open and use the eForms functionality within supported browsers on both ACES and non-ACES Windows and Mac platforms with Adobe Reader installed. Forms not yet converted to Adobe LiveCycle will be accessible from the new NEF portal. Users are required to authenticate into the NEF portal *https://nef.nasa.gov* to access NASA and Center forms.

The NASA Conference Tracking System (NCTS) transitioned from the NASA Shared Services Center (NSSC) to the NASA Enterprise Applications Competency Center (NEACC) September 26, 2014. The NEACC is hosting the application and provides ongoing operational and sustaining support. The NSSC will retain transactional responsibility for updating the NCTS with conference information as requested by the centers.

The Human Capital and Workforce (HCW) Line of Business (LOB) continues to monitor the remarks in WebTADS to ensure employees are no longer using it to indicate telework hours. The center payroll offices are regularly notified during the WebTADS super user calls of employees who are incorrectly recording telework in this manner. The numbers have significantly decreased since the Office of

Human Capital Management (OHCM) sent a notice to all employees via the NASA Human Resources Messaging System (HRMES).

The finalized changes to the Voluntary Leave Bank Program functionality with OHCM were approved. Resumix needs to be transitioned to Red Hat Linux (RHEL); the infrastructure will be assessing whether or not Resumix will function on RHEL in late October or early November.

A technical integration design face-to-face workshop for Identity, Credential and Access Management (ICAM), CIMA, and MaaS360 was held September 3–4, 2014 at Marshall Space Flight Center. The workshop helped attendees gain a better understanding of what the various integration touch points are and how the integrations would be implemented. Additionally, more insight into the MaaS360 roadmap was provided. Integration design architecture drawings as well as actions were documented.

Enterprise Service Desk (ESD)

The ESD continues to operate in a steady state, providing periodic releases and updates while also providing future updates to stakeholders throughout the Agency. Some recent ESD activities and events included:

- Release of an enhancement to display the ACES Product Catalog (APC) shipping costs to end users and approvers;
- Release of the cancel/reject capability for ACES to allow proper handling of a service request that cannot be processed as submitted or was requested for cancellation by the end user;
- A ServiceNow Migration presentation and update for the End User Service Board (EUSB), ESD Service Board, and the general ESD stakeholder community.

The ESD will continue to keep the IT community and stakeholders informed of any releases as they arise.

Customer Service Week at the NSSC

The ESD and Customer Contact Center will celebrate Customer Service Week (CSW) October 6–10, 2014, at the NSSC and at NASA's Marshall Space Flight Center. CSW is an international event celebrated annually during the first week of October. CSW is dedicated to recognizing the importance of customer service and honoring the people who serve and support customers every day.

During the appreciation week, call agents will:

- Boost morale, as well as motivate and promote teamwork;
- Raise Agency-wide awareness of the importance of customer service;
- Thank other departments for their support;
- Let customers know about the NSSC's commitment to customer satisfaction; and
- Host senior managers from the NSSC as they spend an hour or more in the contact centers taking calls from NASA customers.

Web Services and WESTPrime

Heartbleed Virus: WESTPrime users benefitted from a swift and multi-layered response to Heartbleed. Within just hours, all of the components of the AWS infrastructure that use OpenSSL, including Elastic Load Balancers, were patched without intervention from users providing a basic protection for most WESTPrime applications less than a day after the public announcement of the vulnerability. Within just a couple of weeks, all of the components of the entire WESTPrime infrastructure had been patched, and replacement of keys and certificates was underway as WESTPrime coordinated with application owners. WESTPrime handled reporting of remediation status to the NASA SOC, and was able to perform complete remediation and certificate replacement across the entire infrastructure in record time, and with minimal impact to customers using WESTPrime.

Web Services launches Piwik: Looking for a web analytics software platform? Piwik is your free open source solution for web analytics for NASA internal-only websites. It provides detailed reports on your website and its visitors, including the search engines and keywords they used, the language they speak, which pages they like, the files they download and so much more. For information on how to implement Piwik for your site, visit the Web Services website at *http://inside.nasa.gov/webservices/content/web-analytics-services*.

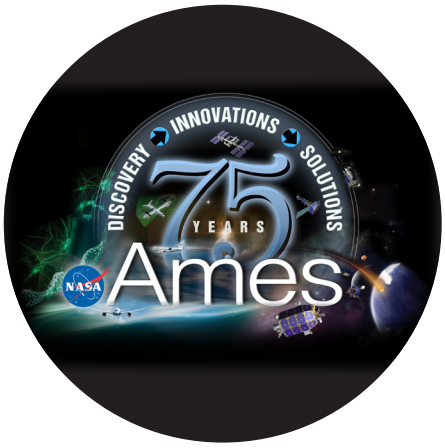
EVA Drawing Repository Dashboard (EDRD) Demo: WESTPrime embarked on a new and exciting project with the NASA Engineers of Extravehicular Activity (EVA) in response to an action from a NASA mishap investigation board. The purpose of the demo was to provide a search interface for EVA drawings and models creating a repository/index accessible via an Internet browser. The EDRD Demo was used as a proof of concept by NASA to show the capabilities of the EVA Data Consolidation project. The demo used a small sample of localized information (canned content), to show how a user can make search requests or use a 3D image of a space suit to quickly drill down to relevant information during real-time mission support, anomaly resolution, hazard/risk assessments, and future hardware upgrades. The EDRD Demo was completed on September 30, 2014.

DevOps: WESTPrime is working to adopt a (Development and Operations) DevOps framework across web sites and web applications. DevOps is a newer approach to software development that encourages better communication, collaboration, and integration between development and operations functions. By improving the communication and collaboration between developers and operations personnel, WESTPrime will become more efficient while also helping NASA rapidly produce quality software products. Mid-September marked the debut of the first phase of the WESTPrime DevOps Software as a Service (SaaS) offering. The first phase of the SaaS offering includes the implementation of a Git-based shared code repository that is available to all existing WESTPrime customers; this code repository service is powered by Atlassian Stash. The remaining phases of the WESTPrime DevOps SaaS implementation will be completed by the end of 2014 and will also include implementations of Jira Agile, Confluence and Bamboo. The environment has been setup in such a way that users will be able to navigate between the services seamlessly and will be integrated with NASA ICAM. This offering allows teams to centralize their development processes and helps to set the stage for future enhancements such as continuous integration and continuous delivery.

NASA Ames—Celebrating 75 Years of Discovery, Innovation, and Solutions

By: Penny Hubbard, CIO Communications, Ames Research Center

Information Technology has come a long way in the past 75 years. NASA's Ames Research Center is celebrating this progress on its 75th Anniversary by showcasing its past, current, and future technological and scientific innovations. It has been over a decade since AMES invited the public behind the scenes at its facility. On October 18, 2014 AMES will hold a 75th Anniversary Open House event. For this momentous occasion, each organization is developing intriguing, informative, and interactive activities and exhibits to highlight its unique contributions to space exploration. As guests arrive, they will receive an Event Passport—their guide during the event and a wonderful memento to take home. The day's events are focused on the following key areas: Earth Right Now; the International Space Station; Technology; Mars; Aeronautics; and the Solar System and Beyond. Through behind-the-scenes walking tours, informative guest-speaker panels, and an array



of inspirational exhibits, guests will be informed, inspired, and involved in all things NASA Ames.

As you can imagine, there are myriad logistical factors to consider—safety, security, and the environment. Attendees are urged to walk, ride bikes, or take public transportation and event shuttles. In keeping with environmental considerations, there will be few handouts beyond the Event Passport. Instead, guests will be able to scan QR codes at booths or visit informative Web sites (listed in the passport) to view more program details. Health and safety are paramount at an event of this size. Big or small, those details are being addressed as only an Agency responsible for space flight can. Even feeding a crowd of this size is a significant undertaking, but Ames has it covered with a fleet of over 140 local food trucks scheduled to serve up tasty and diverse treats.

The Center was hopeful that local reaction to the Ames 75th Anniversary Open House would be positive. Planning and decision making began earlier in the year, but one question remained: Would the public want to come and visit? Within days of the free-event tickets being made available online, the event was completely "sold out" to 120,000 enthusiastic NASA fans. The Ames team had its answer, and it was a resounding "We will be there!"

International Space Apps Challenge wins Open Government Award!

A panel of international judges has selected the International Space Apps Challenge to receive an award. The Space Apps Challenge was one of 10 initiatives recognized for its international mass collaboration to generate more than 2,000 crowd-sourced solutions in the last three years. This year's Space Apps Challenge, held the weekend of 12-13 April 2014 around the globe, was part of the winning team of entries to help the United States win in the category of Citizen Engagement from the Open Government Partnership (OGP).

The panel of judges were made up of distinguished open government advocates from around the globe. The Open Government Partnership (OGP), which has civic participation, launched this prize to recognize innovation in citizen engagement from 63 participating countries. The Open Government Awards is an annual event, and this year's winners were announced recently at the United Nations General Assembly.

The NASA Office of the Chief Information, Technology & Innovation Division, led by Deborah Diaz, brought together a team of experts to run the 2014 Space Apps Challenge event. There were 8,196 participants from 95 cities and 46 countries that submitted 671 projects. It had such a high interest around the world that there were over 29 Million tweets during the weekend event. For more information about the 2014 Space Apps Challenge and the winners for the Earth Watch, Robotics, Asteroids, Technology in Space and Human Space Flight categories visit: *https://2014.spaceappschallenge.org*. The next Space Apps Challenge is scheduled for April 11-12, 2015.

To read more about the 2014 Open Government Awards visit: *https://www.opengovawards.org/Awards_Booklet_Final.pdf*.