



# IT Talk

Jan - Mar 2022

Volume 12 • Issue 1

## Digital Transformation at NASA



DT will transform  
the WAY we

**WORK**



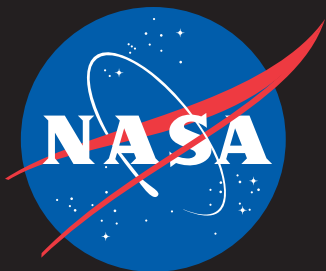
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EXPERIENCE of our

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# IT Talk

Jan - Mar 2022 Volume 12 • Issue 1

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# Message from the NASA CIO

The past year and nine months have certainly been challenging on many fronts, especially with the COVID-19 pandemic. But I've been impressed with how the NASA Office of the Chief Information Officer (OCIO) team has adjusted and is thriving at working together remotely and onsite in new and collaborative ways.

I'm proud of the productive and supportive IT environment we are creating to help the broader NASA family do difficult things to keep the agency's mission moving forward. Our OCIO Transformation efforts are helping with this. Last year, we officially kicked off the pilot for our new operating model with Workplace and Collaboration Services and our Agency Level Offices. As we continue to move through this new year, we will set a high standard for providing NASA with secure, modern, and reliable IT services. Three efforts you will see a lot of in 2022 include our organizational changes and improvements, IT Systems Transformation, and Digital Transformation.

In this issue, we'll explore how Digital Transformation will increasingly change the way NASA operates and will enable the agency's missions to be completed more efficiently and effectively.

We will also look at how the new cybersecurity Executive Order is helping NASA enhance existing tools and processes and implement new capabilities.

And finally, we'll provide a glimpse into the OCIO and its NASA Enterprise Automation Service (NEAS) team's agencywide robotic process automation (RPA) competition. The five-week Bot-A-Thon introduced employees to RPA and automation technology and gave them hands-on experience in automating some of their own repetitive tasks.

This issue is filled with many terrific stories that I hope you'll enjoy. Happy reading and happy new year!

*Jeff Seaton*

NASA Chief Information Officer



## Workplace and Collaboration Services (WCS) News and Updates

Check out the latest news from WCS (all links are internal to NASA):

- [Get to Know Workplace and Collaboration Services \(WCS\) and the Products and Services it Provides](#)
- [Windows 10 Version 20H2 Availability](#)
- [Do Not Use Public Software to Self-Upgrade Your Computer](#)
- [Guidance for Connecting Your Computer to Public Wi-Fi](#)
- [Connecting Mobile Devices to the NASA Wireless Network](#)
- [Internet Explorer \(IE\) 11 Timeline for Retirement](#)
- [How to Avoid Missed Emails When Using Focused Inbox](#)
- [New Features in Firefox Now Available](#)
- [Teams Feature Updates](#)
- [Enterprise-Managed Product Updates](#)
- [See What's New with ICAM](#)



# NASA'S INAUGURAL BOT-A-THON

*By Dylan Monroe, Office of the Chief Information Officer, Marshall Space Flight Center; Lilyan Parker, Office of the Chief Human Capital Officer, Headquarters; and Chris Blakeley, Program Manager, NASA Enterprise Automation Service Office, Kennedy Space Center*

The OCIO and its NASA Enterprise Automation Service (NEAS) team sponsored an agencywide robotic process automation (RPA) competition that recently concluded in early December. The idea behind the five-week “Bot-A-Thon” was to introduce employees to RPA and automation technology and to give them hands-on experience in automating some of their own mundane, rule-based, repetitive tasks. Benefits of incorporating RPA include time savings, improved accuracy, increased productivity, and, ultimately, reduced costs.

In addition to upskilling NASA employees and realizing the long-term benefits of RPA, the inaugural Bot-A-Thon objectives included complementing the agency's digital transformation effort and working with developing RPA citizen developers to further the adoption and implementation of RPA in everyday work settings.

There was a high level of enthusiasm among the 110 participants to learn how to use UiPath's low-code software to offload their tedious and monotonous tasks. Each week, participants could opt to attend training. A UiPath trainer would walk through examples of using different features of the RPA software. Additionally, participants could attend vendor office hours where they could receive one-on-one help to troubleshoot their automation projects.

Six winning Bot-A-Thon automations were selected from entries submitted by the 42 individual participants and 18 teams (68 team members). Awardees showcased their automations during a recognition ceremony

hosted by members of NASA's innovation leadership. Those honored were as follows:

- **Best Business Impact** (automation that demonstrates the most hours saved): The Red Team, composed of Sarah Tylka, Abiola Akanni, and Ali Nawab. Their automation pulled Jira tickets, exported the completed tasks, and e-mailed the individual team members a list of their completed tickets as part of a status reporting requirement. Cumulatively, the automation saves team members over 1,200 hours annually.
- **Best Workforce Impact** (most engaged employees as a result of the automation being implemented): David Long. David created his automation to reduce the number of manually performed funds transfer transactions within SAP software and subsequent processing time of the transactions.
- **Best Reusability** (automation can be replicated in other Centers and offices across the agency): Preston Lamb, from the Plum Team. Preston automated an e-mail to remind team members to input tasks and hours worked into a SharePoint list for resource-loading purposes.
- **Best Automation Design** (best code, strategy, and layout): Ember Krienke, from Team NERDS. Ember's automation focused on ensuring consistent and accurate reporting across the agency for Continuous Monitoring Program (CMP) 9a.7a, which monitors available budget on reimbursable agreements that are expiring.

- **Most Exciting Automation** (automation with the greatest “wow” factor): Stephanie Stout, from the Plum Team. Stephanie's automation creates sub-sites within SharePoint On-Premise by extracting an assessment number from e-mail, modifying and adding App Parts, editing the Wiki page, and updating a master assessment list.
- **Most Advanced Automation** (automation that touches the most systems and/or incorporates intelligent automation components): Devon Webb, from Team NERDS. Devon automated the daily download of six reports and daily refresh of a Power BI dashboard.

In light of the Bot-A-Thon's success and given the growing interest in automation, the OCIO and NEAS team will be hosting a second Bot-A-Thon in early 2022. The second Bot-A-Thon is set to use Microsoft's Power Automate software. Showcasing various RPA tools will give employees a sense of the pros and cons of each software option, which will help them assess which tool to use for their automation projects. More information on the second Bot-A-Thon will be forthcoming.

If you or your team have repetitive tasks that you would like to automate, or if you would like to learn more about automation options, please contact NEAS team members [Dylan Monroe](#) and [Lilyan Parker](#). You can also visit the [NEAS website](#) for more information (internal to NASA).

# COVID-19 Supply Chain Shortages Create Challenges for NASA's Mission

By Cynthia Zhang, Enterprise Information Communications Technology Supply Chain Risk Management (ICT SCRM) Analyst, Goddard Space Flight Center

Supply chains are inherently fragile and theoretically can be disrupted at any stage. Unfortunately, in September 2021, this theory became a reality for NASA when we experienced a shortage of liquid oxygen due to labor shortages during the COVID-19 pandemic.

Liquid oxygen is a key ingredient in liquid rocket propellant, and the shortage delayed the launch of our Landsat 9 mission. According to [an article by Space Daily](#), this shortage was not due to a lack of available liquid oxygen, but rather an increased demand for medical liquid oxygen for COVID-19 patients. During transportation, medical liquid oxygen is stored at -300 degrees Fahrenheit and NASA recommends that it be stored around -297 degrees Fahrenheit for its missions. Only specially designed trucks and trained drivers with the appropriate certifications are permitted to transport liquid oxygen at these temperatures.

However, a lack of certified truck drivers caused a strain in the liquid oxygen supply chain. The shortage of qualified truck drivers can be attributed to issues with the trucking industry.

According to [a Guardian article](#), truck drivers are leaving their jobs due to poor working conditions and low pay rates, causing some trucking companies to have turnover rates as high as 100%. Unpaid work is an additional factor as most trucking companies pay drivers by mileage driven. Drivers are not compensated for loading their truck, waiting in traffic jams, or taking their mandatory rest breaks. [Smart-Trucking.com](#) points out that paying drivers per mile could cause safety concerns as drivers attempt to log more miles to avoid low pay. Truck drivers with a Duty Status Record are required to use an electronic logging device (ELD) to determine their driving and off-duty hours. While an ELD could

prevent truck drivers from overexerting themselves, truck drivers who experience delays during their allotted driving time are not compensated.

A supply chain is not just about materials; it is also about the people involved. When NASA experienced a shortage of liquid oxygen this past September, the importance of supply chains became critical because it affected current missions. September 2021's events show the importance of truck drivers in NASA's supply chain. Although vital products and services are needed to fuel NASA's missions, it is important to remember that without people and resources, none of what we do is possible.

ICT SCRM is a service provider of the Office of CyberSecurity Services (OCSS), supporting the Cybersecurity and Privacy Program (CSPP).

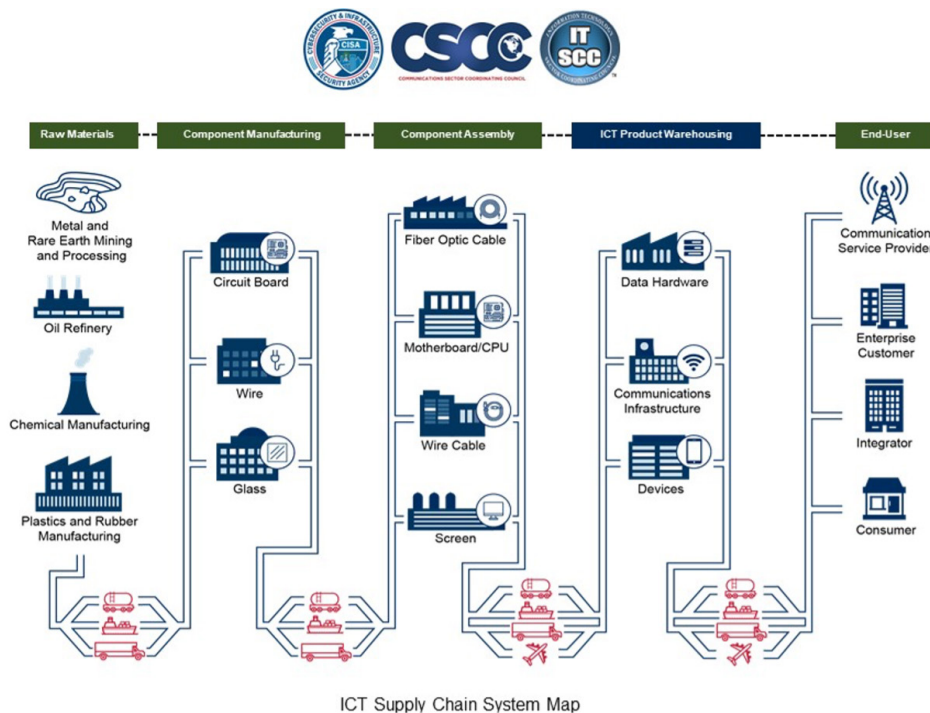


Image from the Cybersecurity and Infrastructure Security Agency



# Digital Transformation at NASA and Why It Matters!

By Jill Marlowe, NASA Digital Transformation Officer, NASA Headquarters



## DT will transform the WAY we WORK

Sondra's digital assistant alerts her to a newly published partner data set related to her science research. She kicks off a bot to transfer & clean the data and integrate it into her model. Using analytics to rapidly cross-check the results, she discovers a potential breakthrough.

For decades, NASA has been at the forefront of discovery, exploration, and inspiration, extending the frontiers of human achievement in air and space. Now the Nation aspires to even bolder missions, but in an increasingly hyper-connected, technology-enabled, fast-paced, and competitive world.

In FY21, the agency launched the Enterprise Digital Transformation (DT) strategic initiative as a transformation catalyst by harnessing digital solutions across NASA to accelerate the modernization and transformation of our work, workforce, and workplace. In FY22, Enterprise DT leaders Jill Marlowe, Digital Transformation Officer, and Ron Thompson, Chief Data Officer, became part of the Office of the Chief Information Officer (OCIO)

senior leadership team, creating new opportunities to synchronize DT with our IT strategy and services to provide a digital foundation for NASA's transformation efforts. The timing for exploring transformation opportunities is ideal, as the OCIO Transformation is actively revising and optimizing the organization and IT operating model.

So, what is digital transformation and why does it matter? Digital transformation is leveraging new digital technologies to change processes, products, or capabilities so dramatically that they are unrecognizable compared to their previous form. In our personal lives, an example of DT is our modern dependency on smartphones (the integration of many digital technologies), which have transformed the way we bank, shop, travel, play, dine, learn, work, manage our homes, and connect and record/share memories with friends and family; we did all these same functions 20 years ago, but in radically different ways. Similarly, in the business realm, a prime DT example is Uber, which essentially used digital technology to reinvent the traditional taxi service, all without owning a single vehicle.

What DT is not is just using digital technology to merely digitize or automate existing processes and products. Done right, DT calls companies to focus on the value and products that will be needed/possible in the future as the world changes and then reinvent their business processes, culture, and customer experiences to meet those changing business and marketplace requirements. Across the world, DT is transforming the way people live and businesses work, and it is only accelerating as the pace of digital discovery is increasing more and more every day.

DT is poised to enable this same kind of exciting transformation at NASA—it can and will change the way NASA op-

erates and accelerate our stepping into new roles as we team with a growing suite of partners (many of whom were born digital) to deliver increasingly bold and complex missions faster and more affordably than ever before. For our organizations, DT is a critical lever that can accelerate the implementation of their transformation and modernization strategies as they critically examine their work and processes, each doing their part to transform NASA.



Caryn is excited to have joined a 1-day collaboration jam session with new teammates from across NASA to quickly learn and apply AI/ML tools on an elusive space suit challenge. She loved helping the mission and can't wait to share her new skills and ideas with her financial peers.

## DT will transform the EXPERIENCE of our WORKFORCE

For our employees, DT will ultimately enable:

- A workplace with more efficient, effective, digitally optimized, and integrated processes using digital workflows with integrated data and models;

- More time and talent to be spent on research, analysis, and discovery instead of repetitive tasks;
- A more connected, diverse, and digitally savvy workforce who work in hybrid on-/offsite teams, geographically distributed across the Nation (or even the world!); and
- The potential to take on exciting new kinds of work opportunities as roles emerge, with NASA transforming to catalyze a new era of aerospace.

To accelerate NASA's digital transformation journey, Enterprise DT, as an agency strategic initiative, is focused on igniting DT efforts aligned with agency transformation goals and priorities, connecting organizations with similar DT interests and needs, integrating DT solutions through an architecture to create our connected future enterprise, and facilitating DT adoption through the promotion of and access to key digital enablers. As digital technologies evolve, new crosscutting digital enablers will emerge; however, our initial focus includes Data, Collaboration, Model-Based Anything (radical use of modeling across any/all functions), Artificial Intelligence and Machine Learning, Process Transformation, and Culture and Workforce.

After completing formulation in FY21, Enterprise DT launched five major pilot activities in FY22, each one being executed by multi-organizational teams with experts from across NASA, including the OCIO.

- **Enterprise Data Platform (EDP) Intelligent Search** will revolutionize how NASA will find, integrate, and analyze data to speed up and improve decision making for our missions.
- **Modern and Inclusive Collaboration Spaces (MICS)** will accelerate testing of on-/offsite hybrid team collaboration tools, new space

utilization options, and teaming norms and behaviors to inform agency Future of Work plans.

- **Smart Reviews** will automate, streamline, and improve real-time, data-driven discussions for program/project reviews.
- **NASA Digital Engineering Environment** will create an initial interoperable framework to allow internal/external engineers to seamlessly team up on complex engineering design, analysis, and test workflows.
- **Smart Centers** will explore the integration of technologies like internet of things (IoT) sensors, autonomous surveillance, data platforms, and digital twins on our physical infrastructure to improve our facility sustainability and planning.



## DT will transform the AGILITY of our **WORKPLACE**

George pauses digital manufacturing of an urgent job after a critical IoT sensor alert. He imports the data history into the lab digital twin model and forecasts the job can safely continue, avoiding delays.

Looking to FY23 and beyond, Enterprise DT is working with senior leadership to establish focused priorities for additional organizational and enterprise DT efforts, based on their potential for immediate benefits, as well as strategic importance. Return on DT investments will be measured (and forecasted) looking not only at the potential for efficiencies (real-dollar savings by eliminating process steps, redundant systems, etc.) and effectiveness (achieving more results for the same investment, including cost avoidance), but also on their ability to accelerate new products/services aligned with NASA's larger transformation goals (for example, open science data to enable interdisciplinary discovery).

As our DT journey progresses, Enterprise DT will measure both our transformation progress to ensure that our cross-agency efforts are focused on the right high-payoff outcomes, and also our collective digital maturity to assess our ability to do those things digitally "right" in a modern age. The OCIO team will play a key role in enabling NASA's progress in this second dimension especially, and is already providing critical agency DT leadership to establish foundational enterprise capabilities in data/data science, collaboration, and artificial intelligence/machine learning.

Digital transformation is a massive undertaking. When done right, it will produce an agency that is more aligned with public demands and resilient in the fast-moving digital future.

Organizations and employees interested in learning more about DT solutions to transform NASA are invited to engage in our DT journey on the [DT Nexus community site](#); participate in our weekly Transformation Tuesdays seminar series (these resources are internal to NASA); and/or contact [Jill Marlowe](#), NASA Digital Transformation Officer.



# NASA's Communications Program Enables 1.4 Million Views of Rare Total Solar Eclipse from Antarctica

By Sylvester Placid, Communications Strategist, Communications Program, Marshall Space Flight Center

A total solar eclipse darkened the summer skies over Antarctica on December 4, 2021, a rare event for the continent during a season when the Sun remains above the horizon for several months. The Moon cast a shadow over Antarctica, as seen in this NASA image from the Earth Polychromatic Imaging Camera (EPIC) aboard the Deep Space Climate Observatory (DSCOVR) space weather station. Total solar eclipses in the polar regions are exceedingly rare, as they constitute only a small part of Earth's land area—the last total solar eclipse in Antarctica was in November 2003, and the next will not occur until December 2039.

Since so few can observe this event from Antarctica, the Communications Program's (CP's) Enterprise Video Content Delivery Network (EVCDN) solution enabled a live, two-hour video feed of the Antarctic eclipse on NASA's YouTube channel. More than 1.4 million viewers watched the eclipse as it happened from the southern pole.

The video was delivered to viewers completely over the internet, without the use of a satellite feed. It was streamed from Union Glacier, Antarctica, by members of the JM Pasachoff Antarctic Expedition, who used the video as part of their data collection on electrical activity in the ionosphere during the eclipse.



Image courtesy of the NASA DSCOVR EPIC team



## Live Feed of the Dec. 4, 2021 Total Solar Eclipse

1,120,015 views • Streamed live on Dec 3, 2021

36K DISLIKE SHARE SAVE ...



# A National Transformation of Cybersecurity

By Cody Scott, Chief Cyber Risk Officer, NASA Headquarters

If you work with any of the agency's IT staff, chances are you have heard the buzz phrase "cyber executive order" mentioned over the last seven months. But what is it? And what changes are happening as a result?

In response to mounting cyber-attack campaigns against the public sector, the private sector, and the American people's security and privacy, the Biden administration issued Executive Order 14028, "[Improving the Nation's Cybersecurity](#)," on May 12, 2021, stating that the prevention, detection, assessment, and remediation of cyber incidents is a top priority and essential to national and economic security.

The order's message is clear: the Federal Government must make bold changes and significant investments to defend itself; incremental improvements (as advocated in the past) will no longer suffice:

*The Federal Government must bring to bear the full scope of its authorities and resources to*

*protect and secure its computer systems, whether they are cloud-based, on-premises, or hybrid. The scope of protection and security must include systems that process data (information technology) and those that run the vital machinery that ensures our safety (operational technology).*

The order outlines several cybersecurity measures and requirements intended to harden all Federal information systems, including protecting critical software and supply chains, implementing strong authentication and data encryption, maturing incident detection and response capabilities, and adopting a zero-trust access model to agency data. And these are only the first steps.

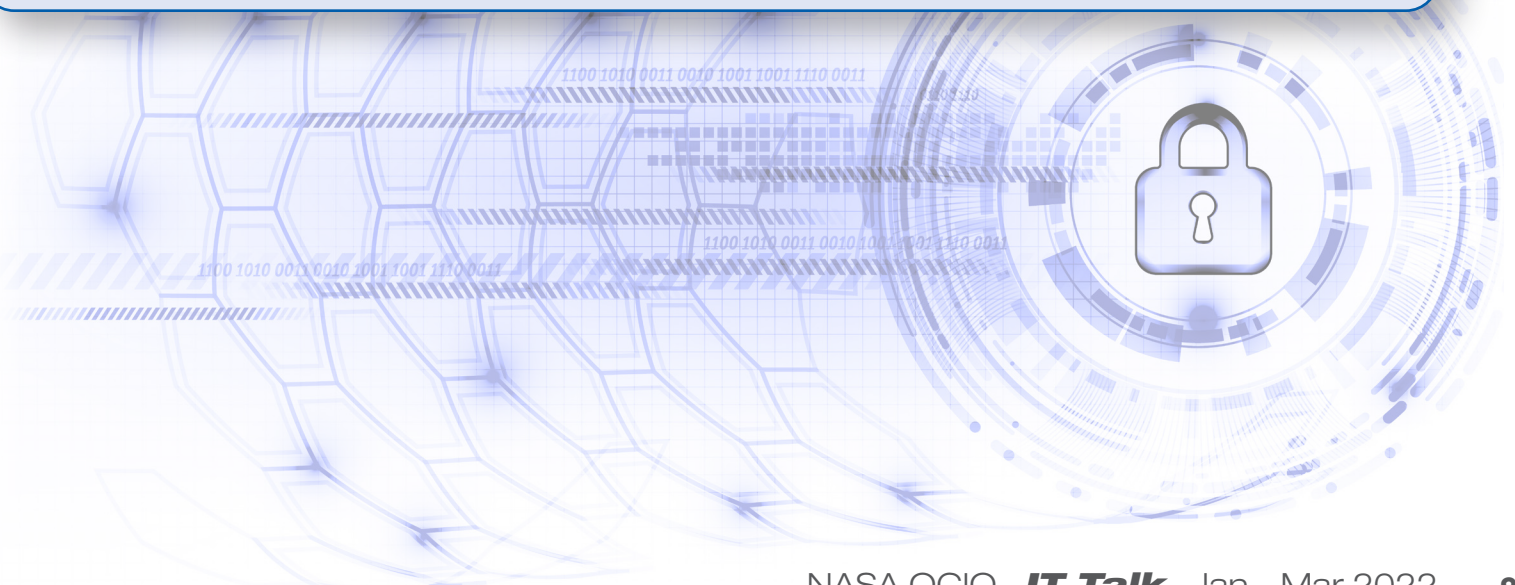
What does this mean for NASA? All systems owned, used, or operated by or on NASA's behalf are in the order's scope. Therefore, all systems—including those in development as well as in operation—must adopt

these protections to reduce operational risk to NASA, the Federal Government, and our private-sector partners.

The Office of the Chief Information Officer established an Executive Order Working Group (EOWG) composed of representatives across key agency organizations. The EOWG coordinates all necessary actions and shares information. Through the Center Chief Information Officers and Center Chief Information Security Officers, the order's requirements are coordinated with each Information System Owner (ISO) at each NASA facility. The ISO and the system's Authorizing Officials are the primary responsible and accountable parties for ensuring that their systems conform to agency and Federal requirements.

For more information or questions about the order, please contact the EOWG Lead, [Cody Scott](#).

The full text of the order is available [here](#).



# OCIO Stands By to Support Artemis I

By Daniel Horton, Workplace & Collaboration Services Communications, Marshall Space Flight Center

It has been nearly 50 years since a human last walked on the Moon. Technology has progressed tremendously in this time—it is now commonplace to carry 100 times the computing power of an Apollo capsule in our pockets today.

After a decade of development on the new Space Launch System (SLS), the successor to Apollo is ready to launch in early 2022. Years of technical advances have contributed to the build-out of the new vehicle, equipping it to send more than 27 metric tons to the Moon and beyond.

In October 2021, the spacecraft for the first Artemis mission was fully stacked inside the Vehicle Assembly Building (VAB) at Kennedy Space Center (KSC). Artemis I will send an uncrewed Orion capsule into a six-day retrograde orbit around the Moon. This mission, currently slated for February 2022, will certify Orion and the SLS for the next flight (Artemis II), which will take a crew of humans on the same ride. After that, American boots will return to the Moon with Artemis III.

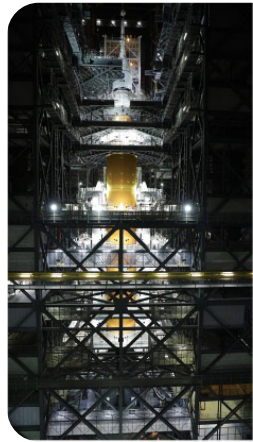
The OCIO community is proud to stand by in support of the history-making Artemis mission. Preparations are also underway to ensure stability and continuity of operations for the launch of Artemis I, in addition to supplying many of the tools needed to return astronauts outside of low-Earth orbit.

One of the main ways to ensure stability is through a flight freeze. These freezes are a restriction of updates or changes in the production environment during launch activities. Postponing software updates during a launch window minimizes risk to computers that may be directly or indirectly involved in mission activities.

Lists of computers required to be frozen are collected and validated ahead of a launch, and a meeting is held with key personnel ahead of time to ensure that requirements are correct and in place. When it is time for a launch, the listed computers are frozen at T-48 hours prior to a flight and can remain in place up to T+48 hours after launch.

In previous years, these freezes had a tendency to affect full Centers and, at times, the entire agency. To mitigate end-user impact, the shift to freezing targeted systems ensures that only those computers associated with the launch are frozen. Thanks to these targeted freezes, OCIO will help support both a continuity of operations for the mission window and a seamless experience for non-mission-essential customers.

As Artemis prepares for its first mission early in the new year, OCIO is proud to play a part in integrating with the rest of the agency to ensure a successful flight. As the road is paved to return astronauts to the Moon in coming years, we are thrilled to share this excitement with the rest of NASA.



## Teammate Information Transfer

By Jaumarro A. Cuffee, COMIT Communications Strategist, Information Resources Directorate, Johnson Space Center

In our individual roles that support NASA missions, we use a variety of software applications to draft and edit documents, collect and analyze data, telework, learn new skills, communicate, and collaborate. As new features are added and existing features change, it is difficult to keep up with the application features that accommodate our needs. To help bridge knowledge gaps, Johnson Space Center's Information Resources Directorate (IRD) invited the center community to share their favorite application features, tips, and tricks.

Six hundred people joined a [Microsoft Teams meeting](#) to educate and learn from each other. Attendees entered the meeting with microphones muted and cameras disabled, and the organizer orchestrated unmuting microphones and promoting individuals to the presenter

role so they could share their screens to quickly demonstrate less obvious, timesaving features of desktop applications. Providing this visual fostered better understanding and prompted questions for variations and alternatives to the demonstrated feature. In the chat, attendees exchanged additional tips and shared links to internal NASA resources and vendor help sites. One person demonstrated the accessibility of desktop applications using shortcut keys and hot keys for mouse-free navigation, actions, and formatting. A form to register their tips before the meeting was provided to participants and received less than five responses, but more than 25 people chimed in by speaking up, demonstrating, or typing messages during the hosted event. Everyone who participated had a firsthand view of some challenges encountered when hosting a large meeting, but they

all contributed to keeping the activity lively, orderly, and productive.

In addition to being edifying, the tech tip exchange allowed people to engage in a social manner while working remotely. Working from home has reduced the casual queries between officemates that can foster a similar exchange of information.

Based on feedback, people would like to see more of this type of engagement to enable them to interact with each other and broaden their knowledge. IRD plans to adopt the tech tip exchange as a regularly scheduled activity.

- [More information about Teams and other helpful resources](#) (internal to NASA).
- [Upcoming Microsoft enhancements to Teams](#) (internal to NASA).



# CIO Randi Levin wins a 2021 ORBIE Award

By Whitney Haggins, IT Communication Strategist, Jet Propulsion Laboratory, California Institute of Technology



JPL CIO and Director for Information and Technology Solutions Randi Levin has been selected as a 2021 SoCalCIO of the Year ORBIE winner in the Large Corporate category. The announcement was made at a virtual award ceremony held November 12.

For more than 20 years, the ORBIE Awards have been given to CIOs around the country who are transforming their organizations through

exceptional technical leadership. Since their inception in 1998, the ORBIE Awards have honored over 1,800 CIOs as finalists and over 400 CIO of the Year winners.

Leza Dabit, Executive Director of SoCalCIO, had this to say about the 2021 winners: "The SoCalCIO ORBIE winners demonstrate the significance of strong technology leadership in these uncertain times. Over the past year, CIOs are leading in unprecedented ways and enabling the largest work-from-home experiment in history." Many CIOs hold the ORBIEs in such high regard largely because the judging process is handled by previous ORBIE recipients, who have an intimate understanding of what it means to be a CIO and the importance of great leadership.

The rigorous judging and selection process, which lasted several rounds and featured an independent peer review led by prior ORBIE recipients, was based upon

- Leadership and management effectiveness,
- Business value created by technology innovation, and
- Engagement in industry and community endeavors.

The 2021 SoCalCIO ORBIE program competition included nominations from 236 CIOs from industries across Southern California, including private and public businesses; nonprofits; and finance, government, healthcare, education, technology, entertainment, and professional sports entities. The complete list of winners is available [here](#).

IT Talk

National Aeronautics and Space Administration

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