Modernizing NASA Websites and Digital Services

A report required by the 21st Century Integrated Digital Experience Act (IDEA), P.L. 115-336

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Report to Congress on Modernization of Agency Websites and Digital Services

Executive Summary

As required by the 21st Century Integrated Digital Experience Act (IDEA), also known as Public Law 115-336, NASA is submitting this interim report to the appropriate Committees of Congress in response to Section 3 (b)(2) of that law. This report also serves as NASA's first annual response to Section 3(d)(2) of that law. As such, this report will be posted publicly on NASA's website: https://www.nasa.gov/reports.

Background

NASA's mission is unique among Federal agencies. A key requirement of our core mission is to inspire Americans and to share the excitement and scientific knowledge of space exploration – from the depths of Earth's oceans to the farthest reaches of our universe. NASA's use of websites to engage and inform the public is a critical part of the mandate set forth in U.S. statute 51 U.S.C. § 20112, Sec. 203.(a)(3). This requirement in the National Aeronautics and Space Act of 1958, as amended, states that NASA must "provide for the widest practicable and appropriate dissemination of information concerning its activities and the results thereof."

NASA's digital portfolio spans a wealth of public information that encompasses the real-time excitement of events ranging from spacewalks on the International Space Station to Mars landings. NASA's explanatory content puts complex science into plain language and captures the Agency's rich and storied history. NASA servers also host massive archives of scientific data that represent a multi-billion-dollar investment in science and exploration for the benefit of all humankind.

NASA was an early adopter in the use of the Internet to communicate with the public and share science data, beginning in 1993. This has resulted in the development of a large number of websites over the last 26 years. NASA's current digital portfolio is as complex and broad as the Agency's missions. NASA has been participating in the Department of Homeland Security's Cyber Hygiene program starting in 2014. This service has helped NASA gain insights to the publicly exposed information technology (IT) footprint for the Agency and vulnerability identification on those assets as new patches and configuration errors are identified. NASA peaked at 7,989 Internet accessible-devices early on, and 77,166 service ports available to the Internet, with over 6,000 of those being public web domains. In order to reduce risk and better manage costs of maintaining the devices and services with high risk exposure, NASA reduced the number of Internet-exposed devices to 1,651 and 3,355 service ports, with about 2800 being web domains. This was done through consolidation and improved managed service delivery.

Overall, NASA's web modernization efforts are focused on preserving critical information and maintaining our charter of inspiration while creating a streamlined, 21st century digital portfolio worthy of the world's greatest space Agency while protecting data with the evolving cyber security threat landscape.

Agency Efforts

NASA's extensive digital portfolio was developed and is administered across our nine Centers and one Federally Funded Research and Development Center. The Agency currently has more than 2,800 web domains even though over 90 percent of the online traffic is geared towards our

top 40 sites. Over the last year, the Agency re-examined its digital footprint, online user experience, and the critical role of cybersecurity NASA implemented an Agency-wide mandate to convert all sites to Hypertext Transfer Protocol Secure, a best practice to protect information shared between servers and end users. Over the last five years, many key sites received design overhauls and optimization. By early 2018, web teams began exploring the use of Accelerated Mobile Pages that deliver streamlined information to mobile users faster as well as developing better writing and structure for Search Engine Optimization and ensuring optimal search results. Currently, the Agency is conducting a consolidation of social media accounts in an effort to streamline the distribution and quality of information. NASA began its digital modernization efforts years ago and will continue to work at improving its public content and user experience.

NASA and IDEA

On May 15, 2019, NASA Administrator James Bridenstine issued an Agency-wide memo requesting "a full review of NASA's Web footprint and digital presence . . . to result in an enhanced cyber-posture and an improved focus for communicating our messages." The NASA Website Modernization Team (NWMT) was convened to conduct a review of the Agency's digital footprint, provide recommendations to the Administrator and Agency senior leaders, as well as respond to the requirements of the IDEA Act. The team, led by the NASA Office of the Chief Scientist, is charged with recommending ways to reduce cyber vulnerabilities by strengthening digital security, analyzing website usability and user experience, eliminating redundancy, and finding ways to maximize the effectiveness of online communication. The NWMT is composed of 16 team members from NASA Headquarters, Goddard Space Flight Center, Marshall Space Flight Center, Kennedy Space Center, Johnson Space Center, Ames Research Center and the Jet Propulsion Laboratory.

Key Websites and Digital Services

The NWMT has begun comprehensive analyses to recommend sites to be consolidated into modern platforms, eliminated, or archived. This digital consolidation will be accomplished through data-driven audits that will find synergies among the top websites and establish an archiving process and system for older websites with low usability but quality content (e.g., past missions).

The NWMT will recommend a new modern NASA web structure and updated Agency governance policies that will maintain an active inventory of all websites, implement a repeatable process to approve new domains, ensure that site developers comply with applicable policies and security protocols, and archive websites at the appropriate time.

NASA strongly believes in a digital-first approach to providing quality services and engagement with the public. An example of this is our one-stop-shop website where citizens will find opportunities to participate in challenges, prize competitions, and citizen science activities that develop solutions for problems related to NASA's missions. This is available online at www.nasa.gov/solve. The NWMT surveyed other forms that NASA uses when conducting Agency business, such as contractor reporting, safety reporting, grant monitoring, medical reporting, and qualitative feedback for Agency service delivery. Many forms have already been digitized and can be signed electronically if a signature is required. The NWMT plans to

identify the existence of other possible non-digitized forms and ensure those forms are digitized and posted on the NASA public website for consumers, as appropriate.

Modernization Priorities

NASA is in the process of a comprehensive review of key digital assets that effectively represent more than 93 percent of the Agency traffic. The extensive analysis will result in recommendations for a streamlined, optimal digital presence that leverages the best of NASA's websites. A concurrent review will map a process for preserving valuable historical data in a secure archive. This list includes websites that are more popular with our online audiences such as our main website, NASA.gov; websites about our recent missions and discoveries; climate change; images of our planet and solar system; and some of our websites for children and young audiences.

Website/Digital Service	Content
nasa.gov	NASA's primary web portal to share information and inspiration with the public
mars.nasa.gov	Information and images about NASA's Mars Exploration Program
apod.nasa.gov	Curated space images with public-friendly scientific captions
spotthestation.nasa.gov	Enables the public to find out when the International Space Station will pass over their city
climate.nasa.gov	Public-friendly, data-driven information about Earth's changing climate
solarsystem.nasa.gov	A real-time encyclopedia of our solar system's planets, moons, asteroids and comets, and NASA's robotic exploration of them
earthobservatory.nasa.gov	Images, stories and discoveries from NASA's Earth science research
jpl.nasa.gov	Information about NASA's Jet Propulsion Laboratory and its role in space exploration
spaceplace.nasa.gov	Science content developed specifically for elementary school children
science.nasa.gov	Homepage of NASA's Science Mission Directorate with details on the agency's astrophysics, heliophysics, planetary and Earth science programs

blogs.nasa.gov	A public blogging platform that allows the sharing of agency expertise and knowledge
voyager.jpl.nasa.gov	Mission homepage for NASA's Voyager 1 and Voyager 2 missions, currently in interstellar space
history.nasa.gov	Information, images and documents related to NASA and previous space exploration efforts
exoplanets.nasa.gov	A complete catalog and public-friendly explanations of the 4,000+ planets discovered beyond our solar system
images.nasa.gov	Public repository of NASA images and videos
svs.gsfc.nasa.gov	Public repository of NASA scientific visualizations, images and videos
eol.jsc.nasa.gov	Public repository of NASA astronaut photography from the International Space Station
moon.nasa.gov	Information, history and images of NASA's exploration of Earth's Moon
photojournal.jpl.nasa.gov	Repository of NASA images and videos for the public and science community
visibleearth.nasa.gov	Catalog of NASA images and animations of Earth
intern.nasa.gov	Details on how to apply for NASA internships
ciencia.nasa.gov	NASA Science information for Spanish speakers
jwst.nasa.gov	Mission homepage for the James Webb Space Telescope

Once the NWMT has completed its analysis, NASA will provide additional information to Congress along with an estimation of cost and completion date of the modernization efforts. Additionally, NASA will continue to meet the requirements of Section 3, subsection (d) in submitting follow-on reports to the Director of the Office of Management and Budget annually for an additional four years. These reports will then be posted publicly on NASA's website at https://www.nasa.gov/reports.

Future Design and Standardization
The current audit that the NWMT is conducting and the new archiving process will lead to a

more streamlined NASA digital presence through the development of enterprise-wide principals, standards, and guidance.

Conclusion

Every day, NASA communicates groundbreaking and life-changing accomplishments in science, exploration, and discovery. As an Agency, our content is compelling, visually appealing, and reaches millions of Americans and people around the world, making NASA one of the best-known and most popular organizations on the planet. As an international leader on digital content and a strong online presence, we must continually self-evaluate and ensure that we reflect NASA's priorities and activities. We continue working to improve our presence on the web by minimizing cyber vulnerabilities through strengthened security, continually examining website usability and eliminating redundancy, consolidating as necessary, and maximizing the effectiveness of communication efforts. NASA's newly established NWMT will make sweeping recommendations to ultimately redefine and enhance the Agency's digital presence.