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

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Executive Summary

As required by the 21st Century Integrated Digital Experience Act (IDEA), or Public Law (P.L.) 115-336, NASA is submitting this report to the appropriate Committees of Congress as required by Section 3 (b)(2) of that law. This report is being submitted as a follow-up to our December 2019 interim report to Congress, and thus completes the Congressional reporting requirement specified in Section 3 (b)(2) of that law. In parallel, NASA is also submitting this report to the Office of Management and Budget as required by Section 3(d)(1), and we will subsequently post a copy to the Agency's website as required by Section 3(d)(2). This report, along with the 2019 report, will be available on this public website: https://www.nasa.gov/reports.

Since last year, NASA has worked diligently to assess, consolidate, streamline, and modernize NASA's digital portfolio. The NASA Web Modernization Team (NWMT), which convened in August 2019, has focused on the following areas:

- Assessing and consolidating websites;
- Redesign of the Agency's main website (www.nasa.gov);
- Creation of an Agency archiving program; and
- Creation of an Agency web governance structure.

This 2020 report details progress made in these areas and how the Agency is performing when it comes to website modernization. Future budgetary requirements needed for completion of this work will be incorporated into NASA's annual budget submissions to Congress, as needed. NASA remains committed to complying in full with P.L. 115-336 in a timely manner, and as appropriated funds are made available to complete the legislative requirements of the law.

Statutory Citation

SEC. 3. WEBSITE MODERNIZATION.

(b) REQUIREMENTS FOR EXISTING EXECUTIVE AGENCY WEBSITES AND DIGITAL SERVICES.—Not later than 1 year after the date of enactment of this Act, the head of each executive agency that maintains a website or digital service that is made available to the public shall—
> *(1) review each website or digital service; and*
> *(2) submit to Congress a report that includes—*
>> *(A) a list of the websites and digital services maintained by the executive agency that are most viewed or utilized by the public or are otherwise important for public engagement;*
>> *(B) from among the websites and digital services listed under subparagraph (A), a prioritization of websites and digital services that require modernization to meet the requirements under subsection (a); and*
>> *(C) an estimation of the cost and schedule of modernizing the websites and digital services prioritized under subparagraph (B).*
(c) INTERNAL DIGITAL SERVICES.—The head of each executive agency shall ensure, to the greatest extent practicable, that any Intranet established after the date of enactment of this Act conforms to the requirements described in subsection (a).
(d) PUBLIC REPORTING.—Not later than 1 year after the date of enactment of this Act and every year thereafter for 4 years, the head of each executive agency shall— (1) report annually to the Director on the progress of the executive agency in implementing the requirements described

in this section for the previous year; and (2) include the information described in paragraph (1) in a publicly available report that is required under another provision of law.

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 in the National Aeronautics and Space Act of 1958 as recodified and amended at 51 U.S.C. § 20112(a)(3) that NASA "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 (ISS) 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 in the 1980s to communicate with the public and share science data, and beginning in 1993, via the World Wide Web. This has resulted in the development of a large number of websites over the last 27 years, making NASA's current digital portfolio as complex and broad as the Agency's missions. NASA peaked at 7,989 Internet-accessible devices early on, with more than 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 then reduced the number of Internet-exposed devices to 1,651, with about 2,800 being web domains. Within the last year, that number has decreased again to about 2,500 web domains. This was done through consolidation and improved managed service delivery. Today, 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.

Agency Efforts

NASA's extensive digital portfolio was developed and is administered across all NASA Centers and the Jet Propulsion Laboratory (JPL), our Federally Funded Research and Development Center. At the start of the NWMT review, NASA had more than 2,800 web domains, with 90 percent of the online traffic hosted by the Agency's top 40 sites. Over the last couple of years, NASA has been re-examining its digital footprint and online user experience. By early 2018, NASA had begun 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. NASA is continuing to consolidate social media accounts in order to streamline the distribution and ensure quality of information. In the first phase of this effort, the Agency's Science Mission Directorate decreased the number of social media accounts from more than 300 accounts to less than 200. This streamlining allows the Agency to better connect with citizens and provide better and more relevant information to interested audiences. NASA is committed to continued improvement of its public content and user experience.

NASA and the 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 NWMT, led by the NASA Office of the Chief Scientist, was asked 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. The team was charged with recommending ways to strengthen digital security; analyze website usability and user experience; eliminate website redundancy; and find ways to maximize the effectiveness of online communication. Over the last year, the NWMT conducted an audit of all NASA websites in order to assess visitor traffic and preferences and identify and eliminate duplication of content. Steps are being taken to properly consolidate websites; revamp/redesign the main NASA website (www.nasa.gov); create an Agency web-archiving program; and finalize and implement a new Agency web governance structure.

Originally, the NWMT was comprised 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 JPL, including representatives from the Office of the Chief Information Officer, the Office of Communications, the Mission Directorates, and other programmatic offices. With the creation of seven new sub-teams, the NWMT has grown to 50 active members with representation from all NASA Centers, Headquarters, and JPL. The following is a list of the sub-teams and their areas of responsibility:

- **Design:** Develop a new, modern and more engaging main website;

- **Platform:** Evaluate and select new content management system and establish new/best processes and procedures for the new consolidated systems;

- **Governance:** Review or create web policies and processes and establish leadership boards and new organizational structures;

- **Archiving:** Identify outdated websites and content eligible to be archived, identify necessary tools to establish Agency-wide archiving program and processes;

- **URL Redirects:** Determine which URL's need to be merged, decommissioned, or left untouched;

- **Content:** Audit content across NASA websites and develop processes for content consolidation, generate best practices to ensure search engine optimization, and establish future process for management of NASA-wide content;

- **Web Consolidation:** Review websites and identify which need to be consolidated or decommissioned, and identify future web compliance requirements; and

- **Implementation:** Implement NWMT and sub-team recommendations, requirements, and processes.

Key Websites and Digital Services

The NWMT conducted comprehensive analyses to identify websites eligible for consolidation into modern platforms or eligible for decommission. As of early November 2020, NASA had reduced the number of domains to about 2,500. The NWMT is now evaluating the feasibility of establishing an Agency-wide archiving program to archive older websites that have low usability but rich, unique quality content (e.g., past missions). The anticipated NASA governance structure for this activity will include a new Agency policy for creating and maintaining websites, and the streamlining and consolidation of content management across all NASA websites.

NASA strongly believes in a digital-first approach to providing quality services and engagement with the public via social media platforms most used by the public. This approach has been validated by the

Agency's 42 million followers on Twitter and 61 million followers on Instagram. For NASA's SpaceX Demo-2 launch, more than 10 million people tuned in online to see the launch, and more than 50 million watched some portion of NASA Television's broadcast of the 2017 solar eclipse. Additionally, NASA's Citizen Science program as well as Prizes, Challenges, and Crowdsourcing activities also are popular digital activities for the public.

The NWMT also surveyed public-facing forms that NASA uses when engaging with the public and conducting Agency business, such as those used for contractor reporting, safety reporting, grant monitoring, medical reporting, and qualitative feedback for Agency service delivery. It was determined that all public-facing forms are already available in a digitized format and many can be signed electronically, if a signature is required.

Modernization Priorities

NASA's web modernization priorities include: assessment and consolidation of Agency websites; redesign of the main NASA website (www.nasa.gov) and improved search engine optimization; streamlined content management; and the creation and implementation of a web governance structure and archiving program.

NASA completed a comprehensive review of key digital assets that effectively represent more than 93 percent of Agency traffic. The extensive analysis resulted in recommendations for a streamlined, optimal digital presence that leverages the best of NASA's websites.

The Agency is currently in the first phase of redesign of the main NASA website and the consolidation and integration of our public websites and public content. This will allow for more compelling content, better design, and additional innovative opportunities across the Agency.

The following list includes websites that are the most 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 ISS 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 JPL 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

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 with a strong online presence, NASA must continually self-evaluate and ensure that we reflect the Agency's priorities and activities. NASA continues working to improve our presence on the web, which includes examining website usability and eliminating redundancy, consolidating as necessary, and maximizing the effectiveness of public communication efforts. NASA's NWMT and its sub-teams have been conducting analyses and making data-driven recommendations and decisions to ultimately redefine and enhance the Agency's digital presence with the goal of providing the best service to the public. NASA remains committed to complying in full with P.L. 115-336 in a timely manner, and as appropriated funds are made available to complete the legislative requirements of the law.