



Modernizing NASA Websites and Digital Services

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

December 2022

Report 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, the National Aeronautics and Space Administration (NASA) is providing this report as a follow-up to our yearly reports since 2019. Each of the Agency's yearly reports, including those from 2019, 2020, and 2021, are available at this public website: www.nasa.gov/news/reports as required by the IDEA, or P.L. 115-336, Section 3(d)(2).

NASA's 2022 IDEA report details the Agency's performance related to website modernization, maintaining a list of websites and digital services utilized by the public, the Agency's priorities for modernization and consolidation to meet the IDEA requirements, and a summary of the cost and schedule for these activities.

NASA continues to work diligently to assess, consolidate, streamline, and modernize NASA's digital portfolio. The NASA web modernization teams continue making progress in the following areas:

- Assessing and consolidating websites.
- Redesigning the Agency's main websites (www.nasa.gov and science.nasa.gov).
- Creating an Agency archiving program.
- Creating an Agency web governance structure.
- The teams for www.nasa.gov and science.nasa.gov are working hand in hand together to launch an integrated web experience for our website visitors.

The Agency's progress has increased exponentially this year after selecting WordPress in late 2021 as the content management system (CMS) and with the new Horizon Design System (HDS) moving into development. Additionally, the teams made strides with web content migration into the CMS, establishing groups across the Agency to deliver content for modernized websites at www.nasa.gov and science.nasa.gov, and working with these groups to continue decreasing the footprint of NASA's public-facing websites.

Statutory Citation

SEC. 3. WEBSITE MODERNIZATION.

(a) REQUIREMENTS FOR NEW WEBSITES AND DIGITAL SERVICES.—

Not later than 180 days after the date of enactment of this Act, an executive agency that creates a website or digital service that is intended for use by the public, or conducts a redesign of an existing legacy website or digital service that is intended for use by the public, shall ensure to the greatest extent practicable that any new or redesigned website, web-based form, web-based application, or digital service—

- (1) is accessible to individuals with disabilities in accordance with section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d);*
- (2) has a consistent appearance;*
- (3) does not overlap with or duplicate any legacy websites and, if applicable, ensure that legacy websites are regularly reviewed, eliminated, and consolidated;*

- (4) contains a search function that allows users to easily search content intended for public use;*
- (5) is provided through an industry standard secure connection;*
- (6) is designed around user needs with data-driven analysis influencing management and development decisions, using qualitative and quantitative data to determine user goals, needs, and behaviors, and continually test the website, web-based form, web-based application, or digital service to ensure that user needs are addressed;*
- (7) provides users of the new or redesigned website, web-based form, web-based application, or digital service with the option for a more customized digital experience that allows users to complete digital transactions in an efficient and accurate manner; and*
- (8) is fully functional and usable on common mobile devices.*

(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

A key requirement of NASA's 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 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 real-time 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 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 many websites over the last 27 years, making NASA’s current digital portfolio as complex and broad as the Agency’s missions. Today, NASA’s web modernization efforts are not only focused on modernizing and consolidating, but also 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.

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 NASA web modernization teams have conducted a review of the Agency’s digital footprint, adopted recommendations to modernize NASA’s websites and web infrastructure, and are proceeding with the activities needed to respond to the IDEA. The teams have developed and are now implementing plans that strengthen digital security, analyze website usability and user experience, eliminate website redundancy, and are finding ways to maximize the effectiveness of online communication. With the support of the current NASA Administrator, Bill Nelson, the teams have previously conducted an audit of all NASA websites to assess visitor traffic and preferences as well as identify and eliminate duplication of content. Steps are under way now to properly consolidate websites, replatform and redesign the main NASA website (www.nasa.gov) and Science website (science.nasa.gov), create an Agency web-archiving program, and implement a new Agency web governance structure.

Originally, the team 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 the Jet Propulsion Laboratory (JPL), including representatives from the Office of the Chief Information Officer, the Office of Communications, the Mission Directorates, and other programmatic offices. Today, the Agency team is comprised of approximately 60 active members with representation from all NASA Centers, Headquarters, and the JPL. Additionally, a science-specific team is comprised of 64 active members representing all science disciplines and activities across the Agency.

Agency Efforts

NASA’s web modernization priorities include the redesign of the main NASA websites (www.nasa.gov and science.nasa.gov); improved search engine optimization, assessment, and consolidation of Agency websites; streamlined content management; and establishing an Agency web governance structure.

Throughout 2022, parallel platform development teams have been integrating HDS into NASA's new CMS. The teams working on design and content have been meeting with stakeholders across the Agency to share the new design and new CMS and to drive efforts to create refreshed content for the future www.nasa.gov and science.nasa.gov websites to be launched in April 2023.

NASA continues to explore the opportunities and effective methods of creating and establishing an Agency-wide archiving program out of the History and Information Services Division, allowing the Agency to archive older websites that have low usability but rich, unique quality content (e.g., past missions). The team's work continues to deploy a standards-based archival system that will enable preservation of and access to archived websites while assessing alternatives for website crawling and emulation—capabilities that will support our overall approach to website consolidation. Currently, technical complexity and expected costs are the primary hurdles.

Right-Sizing NASA's Digital Footprint

As NASA continues to re-examine its digital footprint and online user experience, the Agency is tracking, as of November 2022, 2,793 live, public NASA domains. Of those, 1,812 host live, public NASA websites. The difference of 901 is primarily due to NASA hosting external applications (including login screens, etc.). Note that small fluctuations of the Agency's live, public-facing websites are to be expected as the number of live domains changes periodically. In 2022, NASA decreased the number of these publicly available domains by 473 and is continuing its work across NASA Centers to further assess which websites to consolidate, decommission, or archive. To provide a better user experience and reduce cyber security risks, the teams are collaborating with all NASA Centers to decrease the number of publicly accessible domains.

Modernization Priorities

In 2022, NASA senior leadership hired and placed the Web Modernization Lead responsible for Agency web governance with a focus on establishing an appropriate governance structure, including ongoing, sustainable working leadership boards comprised of stakeholders, subject-matter experts, and content managers from across the Agency to further modernization efforts.

NASA has prioritized www.nasa.gov and science.nasa.gov as websites and digital services in need of modernization to comply with the requirements in section 3(a) of the 21st Century IDEA. Both sites are estimated to launch in April 2023.

Following the launch of www.nasa.gov and science.nasa.gov, NASA will utilize these Agency-wide platforms to assist with consolidating hundreds of websites while defraying year-over-year operational costs as the Agency continues to reduce its web footprint into a single platform. Our initial focus remains on prioritizing consolidating websites that account for the top 90 percent of NASA's traffic.

In order to inform this work, NASA completed a comprehensive review of key digital assets that effectively represent more than 90 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 developing the platform to host the main NASA websites 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 priorities for consolidation into the new Agency-wide platforms, such as the current main websites, www.nasa.gov and science.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.

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 ISS.
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.
nasapeople.nasa.gov	Public interface for NASA Careers information.
ciencia.nasa.gov	NASA science information for Spanish speakers.
jwst.nasa.gov	Mission homepage for the James Webb Space Telescope.

In 2023, NASA expects to achieve the following milestones:

- Debut and launch the new www.nasa.gov, science.nasa.gov, and main science websites, within the new CMS and using the HDS.
- Continue to modernize and improve the American public’s user experience by adding enhancements to each website.
- Continue the consolidation and decommissioning of NASA’s vast web footprint of websites and migration of content to www.nasa.gov and science.nasa.gov.
- Provide training and support as well as an improved service delivery for the new platforms to internal communities.
- Adopt and begin operating under a new web governance structure.
- Define new NASA web policies to sustain modernization progress.

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.

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 web modernization 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. The new NASA websites for the Agency and Science will launch in April 2023 and be a major public step toward this vision. NASA remains committed to complying in full with P.L. 115-336, and as appropriated funds are made available, complete the legislative requirements of the law.