Modernizing NASA Websites and Digital Services

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

December 2023

Report on Modernization of Agency Websites and Digital Services

Contents

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 final report as a follow-up to our yearly reports since 2019. Each of the Agency's yearly reports, including years 2019, 2020, 2021, and 2022, are available at this public website: www.nasa.gov/general/nasa-reports-and-transcripts as required by IDEA, P.L. 115-336, Section 3(d)(2).

NASA's 2023 IDEA report details the Agency's performance related to website modernization, efforts to maintain a list of websites and digital services utilized by the public, and the Agency's priorities for modernization and consolidation to meet IDEA, Office of Management and Budget (OMB) M-22-23, OMB M-23-10, and other requirements.

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;
- Creating an Agency archiving program; and
- Creating an Agency web governance structure.

The Agency's progress has increased exponentially with the re-launch of the newly modernized websites at www.nasa.gov and science.nasa.gov along with establishing an Agency working group to oversee and collaborate on updated web governance, policies, and initiatives. NASA also continues to progress consolidation efforts and reduction of public-facing websites and web applications.

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 publicly available 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
NASA has made major strides in creating a more secure, less duplicative, and more accessible experience for the public. NASA web modernization teams are continuing their efforts to further reduce the web footprint by assessing and migrating additional websites into the new flagship web experience.

The NASA web modernization teams continue to review and track the Agency's digital footprint while aligning with new guidance and clarification from OMB on modernizing government websites and web infrastructure. NASA is proceeding with the activities needed to respond to OMB M-23-22, including providing additional data from the analysis of NASA's web footprint, appointing a Digital Experience Delivery Lead (the current Agency Web Modernization Lead), and establishing policy and governance for websites and web applications maintained by the Agency.

Agency Efforts
NASA's web modernization priorities have included the redesign and launch of the Agency's flagship 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.

In 2023, the Agency's first release of the Horizon Design System for all NASA websites was completed on www.nasa.gov and science.nasa.gov. With the launch of the flagship websites complete, work is well underway to establish governance and oversight of websites and web applications in order to institutionalize NASA's implementation of IDEA, including new and updated requirements issued in 2023 (OMB M-23-10 and M-23-22). The Agency is preparing to submit required reporting for Actions 2 through 6 in response to OMB M-23-10 in early 2024.

Following the launch of the flagship web experiences for the public, the second major phase of web modernization is now underway, starting with the list of sites that comprise 90 percent of NASA top trafficked websites. Several sites have been consolidated and decommissioned, and the Agency is currently working to migrate blogs.nasa.gov into the modernized www.nasa.gov site. Outside those top 90 percent sites, NASA is working through a number of migration strategies to consolidate additional public-facing websites throughout 2024 and beyond.

NASA continues its efforts to deploy an Agency-wide web archiving program out of the History and Information Services Division (HISD), allowing the Agency to archive older websites that

have low usability but unique and quality content (e.g., past missions). The HISD team has established 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 support the Agency's overall approach to website consolidation. In 2023, HISD successfully created two working prototypes built from scans of existing websites and successfully embedded emulations of those sites, with full functionality and searchability, on a larger internal website. In 2024, HISD will continue to build on this progress by scanning www.nasa.gov to create an archived emulation of the old version of the site, and eventually share that historical content with the public. Technical complexity and cost remain the primary hurdles.

Right-Sizing NASA's Digital Footprint
This year, NASA updated the tracking data for the Agency's public web footprint by adopting data sources and scanning tools provided by OMB and the General Services Administration, including Site Scanner and ITDashboard.gov. As NASA continues to implement strategies and governance in relation to its digital footprint, the Agency is tracking 1,777 total live external NASA web domains as of December 2023. (Note that small fluctuations of the Agency's live external websites is to be expected as the number of live domains does change periodically.)
Per OMB M-23-22's definition of "public-facing," after removing redirecting domains, development and testing environments, non-website Application Programming Interface endpoints and web services, and employee-only websites that require Personal Identity Verification Credential (PIV) authentication, NASA is tracking 810 public-facing websites out of 1,775 total live external domains. As the Agency continues to consolidate public-facing websites, domains are temporarily redirected to point visitors to its new home, and this external domain metric will be affected by that approach in the short term.
To provide a better user experience and reduce cybersecurity risks, NASA is are making every effort to continue decreasing the number of publicly accessible domains by assessing which websites to consolidate and decommission.

Modernization Priorities
In 2023, the NASA web modernization teams began working on Agency-wide policies and directives to address outstanding web governance concerns by establishing an appropriate governance structure, including a Web Working Group (W-WG) comprised of stakeholders, subject-matter experts, and content managers from across the Agency to further modernization efforts. The W-WG is currently drafting several NASA Interim Directives (NIDs) covering public-facing websites, web applications and domain names, which will go through the Agency review process in 2024. As each NID is approved, they will be shared with the public on nodis3.gsfc.nasa.gov.

Following the launch of www.nasa.gov, and science.nasa.gov in September 2023, NASA is in the process of utilizing these Agency wide platforms to assist with consolidating hundreds of websites to reduce its web footprint.

In order to inform this work, NASA continuously monitors key digital assets and has developed new internal domain tracking tools to better understand the wealth of content and web applications the Agency produces to share information with the public. These tools are vital to

the next phases of modernization as NASA begins to consolidate a portion of its publicly accessible and popular websites.

The following list includes the top percent of trafficked websites that are priorities for consolidation into the new Agency-wide platforms, such as the current main website, 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. This list is updated with sites which have been decommissioned after their content was consolidated into www.nasa.gov or science.nasa.gov.

Website/Digital Service	Content
nasa.gov – *Modernized*	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 – *Consolidation in progress*	Public-friendly, data-driven information about Earth's changing climate.
solarsystem.nasa.gov – *Consolidated into science.nasa.gov and redirected*	A real-time encyclopedia of our solar system's planets, moons, asteroids, and comets and NASA's robotic exploration of them.
earthobservatory.nasa.gov – *Consolidation in progress*	Images, stories, and discoveries from NASA's Earth science research.
jpl.nasa.gov	Information about Jet Propulsion Laboratory nd its role in space exploration.
spaceplace.nasa.gov – *Consolidation in progress*	Science content developed specifically for elementary school children.
science.nasa.gov – *Modernized*	Homepage of NASA's Science Mission and Directorate with details on the Agency's astrophysics, heliophysics, planetary, and Earth science programs.
blogs.nasa.gov – *Modernization in progress*	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 – *Consolidation in progress*	Information, images, and documents related to NASA and previous space exploration efforts.
exoplanets.nasa.gov – *Consolidation in progress*	A complete catalog and public-friendly explanations of the 4,000+ planets discovered beyond our solar system.

svs.gsfc.nasa.gov – *Consolidation in progress*	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 – *Consolidation in progress*	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 – *Consolidation in progress*	Catalog of NASA images and animations of Earth.
nasapeople.nasa.gov – *Consolidated into www.nasa.gov and decommissioned*	Public interface for NASA Careers information.
ciencia.nasa.gov – *Modernized*	NASA science information for Spanish speakers.
jwst.nasa.gov – *Consolidation in progress*	Mission homepage for the James Webb Space Telescope.

In 2024, NASA continues work toward the following milestones:

- Continue to modernize and improve the American public's user experience by adding enhancements to flagship websites;
- Accelerate the consolidation and decommissioning of NASA's public-facing websites and migration of content into 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;
- Share an open-source code repository to collaborate with developers across the Agency; and
- Adopt and begin operating under a new web governance structure, with updated Agency-wide web policies to be published on the agency's policy repository, nodis3.gsfc.nasa.gov.

Conclusion
Every day, NASA communicates groundbreaking and life-changing accomplishments in science, exploration, and discovery. NASA's content is compelling, visually appealing, and reaches millions of Americans and people around the world. 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. Therefore, NASA will continue working to improve our presence on the web, including examining website usability and eliminating redundancy, consolidating as necessary, and maximizing the effectiveness of public communication efforts. NASA's web modernization efforts will remain focused on 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 Agency's missions and the public.