



Information Resources Management Strategic Plan 2023



December 2023

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM



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Introduction

The *IRM Strategic Plan* describes how the Board develops long-term investment strategies and how it ties those strategies to annual operations planning, budgeting, and reporting activities. The Board recognizes the key roles that its information technology resources—and its data—play in meeting its responsibilities. This *IRM Strategic Plan* defines the Board's approach for identifying IRM activities that align with its strategic goals and annual plans, including how it

- conducts strategy development efforts that incorporate Boardwide input;
- uses those strategies to drive annual planning and budgeting;
- enforces high standards in enterprise architecture, privacy, information security, and other areas related to information resources management;
- governs and manages Board data in a manner that makes it easily available and fit for use by the Board and the public;
- develops the workforce needed to stay on the leading edge of information technology and data management trends; and
- reports publicly on the results of the Board's work.

These processes ensure that the Board's chief information officer (CIO) works in partnership with business stakeholders from across the Board to identify, prioritize, and fund technology and information management investments that align with the strategic direction of the Board.

For this plan period, the *IRM Strategic Plan* sets forth four IRM goals:

- Goal 1: Provide an Adaptive Computing Environment
- Goal 2: Enhance Cybersecurity and Risk-Management Practices
- Goal 3: Provide an Engaging and Intuitive Work Environment
- Goal 4: Invest in a Diverse IT Workforce

In pursuit of these goals, the Board is continuously evaluating new technologies and enhancing its processes. This Plan provides examples of how emerging trends and tools are identified and assessed, which allows new technologies to be integrated into future iterations of strategy development and operational planning.

The *IRM Strategic Plan* will be updated annually to reflect progress toward meeting the goals and objectives of the plan, including changes in the Board's strategic priorities and new compliance or regulatory requirements. When a new Board *Strategic Plan* is published every four years, this *IRM Strategic Plan* will be updated to align with the organization's new goals and objectives.

Finally, the *IRM Strategic Plan* also incorporates the Board's *Open Data Plan* as required under Open, Public, Electronic, and Necessary (OPEN) Government Data Act (OGDA).¹ The *Open Data Plan* lists the Board's planned actions in creating a publicly available data inventory, making data assets available in open format, leveraging technology, training, and setting procurement standards that will enable open data collection, management, and usage as well as collaboration with the public.

¹ Title II of the Foundations for Evidence-Based Policymaking Act of 2018.

Board Strategy and Information Sharing

The Government Performance and Results Act of 1993 (GPRA), as amended by the GPRA Modernization Act of 2010, requires federal agencies to prepare a strategic plan covering a multiyear period.² Although the Board is not covered by GPRA, the Board follows the spirit of the act and, every four years, following a collaborative strategic planning process that includes senior leaders and key stakeholders, publishes a plan that identifies the Board's strategic goals and supporting objectives for the next four-year period.

The Board's current strategic plan covers the years 2020-23 and outlines the Board's priorities within five functional areas.³ Relevant to the *IRM Strategic Plan*, Goal 5 of the Board's *Strategic Plan* states that the Board will seek to "Optimize operations and capabilities through efficient, effective, and sustainable stewardship and governance of resources." Under Goal 5, the Board's *Strategic Plan* identifies several objectives related to technology and information resources management. They include the following:

- ensure that the current and future workforce has the abilities, knowledge, and skills necessary to carry out the Board's mission
- design and implement a modern, safe, sustainable, and efficient workplace equipped with new tools and technology to better use resources
- optimize technologies to support effective and efficient operations within the Board and across the Federal Reserve System
- explore new technologies and delivery mechanisms to expand capabilities and promote efficiencies and productivity improvements
- enhance cybersecurity and data privacy programs and maintain a secure technology environment that fosters collaboration, continuous improvement, and innovation
- improve data management and analytics capabilities to promote greater agility and efficiency in identifying and responding to business needs and in meeting federal requirements
- enhance capacity to leverage innovative data and technology approaches and trends, including big data, machine learning, and artificial intelligence to pilot new efforts and prepare for the future

The Board has developed this *IRM Strategic Plan* to align with Goal 5 of the Board's *Strategic Plan* and its associated objectives.

² GPRA Modernization Act of 2010, Pub. L. No. 111-352 (2011), <https://www.congress.gov/111/plaws/publ352/PLAW-111publ352.pdf>.

³ *Strategic Plan 2020-23*.

Annual Planning and Reporting

Each year, the Board publishes an *Annual Performance Plan*, which provides greater detail regarding the specific initiatives the organization will undertake and allocate resources to, in order to accomplish the objectives in the Board *Strategic Plan*. The Board also publishes an *Annual Performance Report*, which summarizes the Board's progress toward achieving the objectives identified in the Board *Strategic Plan*. Both the *Annual Performance Plan* and the report are available on the Board's website.⁴

Freedom of Information Act

The Freedom of Information Act (FOIA), 5 U.S.C. § 552,⁵ generally provides that any person has a right of access to federal agency records, unless the records (or any portion of the records) are protected from disclosure by one of FOIA's nine exemptions or by one of three special law enforcement record exclusions.

The Board maintains public and nonpublic records:

- **Public** records are available at the Board's conventional reading room and electronic reading room.⁶ A FOIA request is not required to obtain these materials.
- A FOIA request must be submitted to obtain **nonpublic** records, according to the processes described on the Board's website.⁷ Requests may be submitted in writing, via the electronic request form, or via <https://www.foia.gov/> (the government's central website for FOIA request submissions).⁸ Internally, the Board uses a cloud-based solution to track and manage both written and electronic requests.

To continue providing high-quality, timely, and efficient FOIA services, the Board is making investments in versatile and adaptable technology solutions that ensure compliance with relevant regulatory and statutory requirements. A multiyear effort is focused on modernizing the portfolio of systems used to respond to requests from external stakeholders, other federal agencies, Congress, and the public.

⁴ See <https://www.federalreserve.gov/publications/gpra.htm>.

⁵ See <https://www.justice.gov/oip/freedom-information-act-5-usc-552>.

⁶ See <https://www.federalreserve.gov/foia/readingrooms.htm>.

⁷ See <https://www.federalreserve.gov/foia/request.htm>.

⁸ See <https://foia.federalreserve.gov/app/Home.aspx>.

Public Feedback

The Board complies with the Information Quality Act and related OMB guidance. Accordingly, the Board's website describes how the organization reviews and substantiates the quality of its information before it is disseminated to the public.⁹ It also outlines how affected persons may seek, and when appropriate, obtain correction of information that the Board disseminates.¹⁰

The public may submit comments on the Board's proposed regulations either through the website, by email, or in writing, as explained on the Board's website.¹¹ This process covers comments on rulemaking proposals such as those under the Dodd-Frank Wall Street Reform and Consumer Protection Act and the Economic Growth Regulatory Paperwork Reduction Act (EGRPRA) and, information collection proposals.

⁹ See https://www.federalreserve.gov/iq_guidelines.htm.

¹⁰ See https://www.federalreserve.gov/iq_correction.htm.

¹¹ See <https://www.federalreserve.gov/apps/foia/proposedregs.aspx>.

IRM Governance: Technology Oversight Committee

In late 2022, the Board established a Technology Oversight Committee (TOC) to support the Board chief operating officer's (COO) delegated responsibility and authority for administrative oversight of the Board's operations and resources, and the Board's CIO delegated responsibility and authority for information technology and information security. The TOC is co-chaired by the COO with standing members, including the CIO, chief financial officer (CFO), and chief data officer (CDO).

The TOC is responsible for

- shaping the vision and approving the enterprise strategy for technology at the Board;
- identifying the technology capabilities that best support our shared mission and business goals;
- identifying the gaps between current and desired technology capabilities;
- identifying and prioritizing investments intended to achieve desired capabilities;
- accepting and managing the risks of its prioritization and decisions;
- evaluating the effectiveness of investments and decisions, and adjusting as necessary; and
- holding technology providers across the Board accountable for executing the technology strategy and vision.

The TOC charters six working committees to govern key components of technology operation management:

- Enterprise Architecture
- End-User Experience
- Information Security and Privacy
- Technology Financial Management
- Technology Portfolio Management
- Technology Talent

Plan Goals and Objectives

Working with the CIO, TOC, and senior leadership from across the Board, and utilizing Goal 5's objectives as guideposts, Board staff developed this *IRM Strategic Plan* to identify the Board's top technology and data management priorities.

The development process was informed by the Board's research and innovation activities, which are designed to encourage creative thinking across the organization. Fostering a culture of innovation has always been instrumental to the Board's success in identifying, evaluating, and implementing solutions that address some of its largest challenges. That same innovative mindset has also proven to be valuable in developing the technology and data management goals and objectives outlined in this *IRM Strategic Plan*.

The development process was also guided by many of the same principles being applied to the Board's enterprise architecture efforts. These efforts focus on defining future target state architectures, creating governance around enterprise-level tools, and ensuring consistency of use across the organization. Key to achieving success in those areas—as well as in meeting information resources management goals—are principles such as

- **Enterprise Alignment:** Consider broader enterprise needs when making technology decisions supporting a specific business line.
- **Cloud:** Embrace the purposeful utilization of cloud services, technology, and processes to improve productivity and flexibility.
- **Data Lifecycle Management:** Consider a broad strategic and enterprise view of data and information to allow for sharing, easy access, integration, and analysis.
- **Stakeholder Partnership:** Collaborate with business partners to balance the desire for specific features and functions provided through custom development versus an off-the-shelf purchase, with cost, complexity, and support considerations.

The goals and objectives that follow in this *IRM Strategic Plan* are the outcome of this development process. Each broad goal includes more specific objectives that describe how the Board is providing an adaptive computing environment for its workforce; fostering an engaging and intuitive work environment; developing a diverse workforce by augmenting skills, building capacity, and advancing inclusive behaviors; and placing a strategic focus on security, risk management, and continuous monitoring.

Goal 1: Provide an Adaptive Computing Environment

To expand the analytical and computational solutions available to staff and increase capacity for processing and storing data and other information, the Board is prioritizing a number of initiatives. This includes continuing to adopt cloud services that support business and operational capabilities in a secure and cost-effective manner. Investments are also being made to increase capacity for integrated access to diverse data sources, to provide for the secure sharing of data and computing resources with business partners, and to advance data capabilities and operational productivity through the practical application of artificial intelligence and other technologies.

Objective 1.1: Cloud Computing

Continue strategic adoption of cloud services and define a pathway for Board divisions to utilize cloud offerings in a secure, timely, and flexible manner

The Board's technology strategy requires integrating cloud computing into the technology environment to take advantage of the advanced data integration, analytics, and external collaboration capabilities the cloud provides, and to be able to adopt new technology faster. The Board is accelerating its move to the cloud, increasing the pace at which we implement solutions to enhance business processes, foster innovation, better manage risk, and give Board employees access to more modern and agile systems.

- **Establish cloud governance, develop centralized resources, and educate staff:** The Board has established a cross-divisional team of cloud subject matter experts who are tasked with developing cloud policies, procedures, and best practices. The team ensures that cloud resources are shared with all relevant stakeholder groups and collaborates with technical training staff to identify and facilitate educational opportunities for Board employees.

In-progress activities:

- Continue to resource the Cloud Center of Excellence to coordinate cloud efforts and manage the Board's cloud adoption roadmap.
- Enhance existing cloud governance by developing and updating key policies, decision rights, and architectural guidelines.
- Facilitate trainings, workshops, and other educational activities to further develop employees' expertise in cloud technologies.
- Expand service and data catalogs that inventory all Board resources currently hosted in the cloud.
- Enhance dashboards that track and report usage, costs, and service level agreements.

Longer-term activities:

- Streamline existing procedures for evaluating, selecting, implementing, and managing the use of cloud technologies in ways that minimize overhead.

- Explore and implement policy automation and policy-as-code capability to reduce compliance burden and improve time to market.
- Develop additional venues through which employees can grow their cloud skills, network with others who have similar objectives, and share information about using cloud technologies at the Board.
- **Increase the Board's capacity to leverage cloud services:** The Board has established teams responsible for architecture, engineering, and maintenance activities needed to support the Board's cloud infrastructure, services, and security. It has also created project workstreams to research and evaluate cloud tools and deployment methodologies in cloud vendor environments. As part of this research, the group has identified and prioritized several goals for the upcoming years.

In-progress activities:

- A Cloud Taskforce, which was established this year, is developing an implementation roadmap to migrate the Board's data, applications, and infrastructure to the cloud, significantly reducing usage of the on-premises data center.
- Establish multi-cloud infrastructure that incorporate best-in-class service offerings of infrastructure as a service, platform as a service, and software as a service from multiple cloud providers.
- Mature cloud automation through application deployment pipelines, containerized workloads, infrastructure as code, and policy as code; deployed new applications and migrated existing applications to validate and enhance these capabilities.
- Develop reference architectures, configuration baselines, procedures, patterns, blueprints, and best practices for leveraging cloud services.
- Provide cloud-native analytics tools to conduct economic and policy analysis research.
- Explore and implement cloud solutions to provide data management solutions for enterprise data lifecycle management.
- Research cloud-based data integration, processing, and analytics tools to manage and perform data analytics.
- Mature cloud cost management through establishing FinOps framework.

Longer-term activities:

- Develop and maintain cloud migration strategies and roadmaps.
- Identify additional, more complex use cases (e.g., web services, data management platforms, and data ingestion/processing workflows); and continue to enable cloud services that facilitates these use cases.
- Explore cloud-native analytics solutions to enable researchers to conduct modern research with emerging data patterns on complex problems.

Objective 1.2: Data and Analytics

Support the Board's data lifecycle and data management needs by increasing capacity for and integrating access to diverse data sources

As the group responsible for setting the Board's data strategy and policy, the Office of the Chief Data Officer (OCDO) has identified several goals around the collection, management, and analysis of data. To achieve these goals, OCDO has partnered with the Division of IT to identify and implement technologies that will improve data quality, increase access to data, and streamline the onboarding of new data.

- **Explore opportunities for using open-source tools to manage big data:** The Board has recognized the performance and cost-saving benefits of using open-source frameworks to manage large data assets. An IT team manages the growth of the Board's on-premises architecture and provides advisory services to teams considering the use of the platform, including teams considering it for big data business cases.

In-progress activities:

- Expand the technology capabilities to enable the Board business functions to use big data more effectively.
- Enable the availability of big data for emerging business needs.
- Explore open source and vendor products in data storage and processing, including conducting proof of concepts to evaluate capabilities.

Longer-term activities:

- Modernize the architecture and infrastructure of existing data processing and analytics platforms to increase data automation and orchestration and enable future cloud integration.
 - Determine whether to leverage open-source capabilities in the cloud; if so, develop governance around their expanded use.
- **Grow the capabilities of the Board's Data Platform (BDP):** The Division of IT and OCDO partnered to build the BDP, which provides staff with a platform-agnostic interface for accessing a vast array of the Board's managed data assets (including those purchased from external vendors). Leveraging common data platform capabilities, the BDP is enhancing data access and usage.

In-progress activities:

- Use of the latest platform features to improve system performance, security, and operational efficiency.
- Onboard additional acquired data assets used for economic research.
- Introduce the next generation data catalog to facilitate data discovery and understanding, and the management of metadata.

Longer-term activities:

- Explore the migration of BDP hosted data assets to the cloud to improve the platform’s data science capabilities.
- Enable orchestration and automation capabilities within the BDP to enhance data management processes.
- Build and deploy a cloud-based prototype of the next generation data and analytics platform to support big data management and data sciences.

Objective 1.3: Artificial Intelligence and Machine Learning

Advance data capabilities through the practical application of artificial intelligence and other enabling technologies and methodologies

In support of the Board's goals to accelerate the collection, analysis, and sharing of information, staff are assessing the search, mathematical optimization, and statistics and probability methods associated with artificial intelligence/machine learning (AI/ML). Work in this area is also focused on developing staff so that they have the skills needed to enable adoption of these new technologies, which aligns closely with the Board’s long-term focus on meeting workforce needs in a rapidly changing environment.

- **Investigate the costs and benefits of AI/ML:** Because AI/ML differs from traditional application development, the Board is working to build expertise in programming languages, techniques, methods, software frameworks, and libraries specific to AI/ML. The Board has established several workgroups that have already conducted proofs of concept, developed prototypes, and identified AI/ML capabilities that produce tangible benefits in the areas of code generation, natural language processing, and automated response. The workgroups have also begun to develop the staff skills and infrastructure needed to enable adoption of these new technologies.

In-progress activities:

- Continue to facilitate discussions through the AI workgroup to develop recommendations around maturing AI/ML use cases for the Board.
- Investigate generative AI/large language models use cases to understand the benefits of generative AI to increase productivity and innovation while mitigating known risks to the extent possible.
- Develop policies and procedures around generative AI and its use cases to safeguard Federal Reserve data and mitigate cybersecurity and privacy risks.
- Identify training courses and other resources that developers, analysts, and managers can use to build skills in AI/ML programming languages, search and mathematical optimization techniques, statistics and probability methods, software frameworks, and libraries.

- Investigate opportunities for robotic process automation; develop software robotic prototypes and evaluate their ability to emulate repetitive and routine human interactions with digital systems and software.

Longer-term activities:

- Establish an AI/ML service framework; package functions and methodologies into an easy-to-use model that all teams can leverage.
- Develop legal and governance framework for using various AI/ML models, including the most advanced generative AI models.
- Set best practices for the adoption and use of AI/ML models.
- Create an AI/ML resource center that organizes software, algorithmic inventories, processes, governance, and best practices in a way that facilitates adoption of AI/ML technologies.
- Continue to work with Board business lines to identify scenarios where AI/ML analysis and functionality could be applied.

Goal 2: Enhance Cybersecurity and Risk-Management Practices

The Board views cybersecurity as a high priority for itself and Board-supervised institutions. The Board and the Reserve Banks, who carry out supervision activities under authority delegated by the Board, maintain robust information security programs and engage and coordinate on cybersecurity issues with numerous critical stakeholders including the financial regulatory agencies and industry. These efforts include actively monitoring cybersecurity threats and responding, as appropriate, to incidents that could affect the operations of the Board, the Reserve Banks, or supervised institutions.

The Board has taken a proactive approach to safeguarding its operations and assets by developing, documenting, and implementing a comprehensive security program. Overseen by the Board's information security officer, the Board's program complies with federal information security requirements as established by the Federal Information Security Modernization Act (FISMA) as well as with National Institute of Standards and Technology (NIST) standards and guidance issued in accordance with FISMA. More information is available in the Board's Cybersecurity and Financial System Resilience Report.¹²

The Board's privacy program is overseen by the Senior Agency Official for Privacy (SAOP), who, among other activities, monitors federal laws, regulations, and policies for changes that impact the Board's privacy program. As needed, the SAOP ensures that the Board's practices are adjusted to reflect new laws and regulations as well as emerging business needs.

¹² Board of Governors of the Federal Reserve System, *Cybersecurity and Financial System Resilience Report* (Washington: Board of Governors, August 2023), <https://www.federalreserve.gov/publications/files/cybersecurity-report-202308.pdf>.

As the Board continually enhances both programs, changes to its information security tools and controls (Cybersecurity Architecture) as well as its governance, processes, and training (Cyber, Risk, and Privacy Programs) are aimed at reducing the overall risk of cybersecurity incidents, mitigating the impact of incidents, and improving the Board's ability to respond to incidents when they do occur.

Objective 2.1: Cybersecurity Architecture

Re-engineer the Board's cybersecurity tools and controls to establish a zero-trust architecture (ZTA) as well as to strengthen enterprise identity and access management capabilities

The Board's approach to cybersecurity focuses on remaining vigilant about its cybersecurity posture, investing in risk mitigation initiatives and programs, protecting systems and data, and continuously monitoring and assessing cybersecurity risks to its operations. The Board uses a comprehensive "defense in depth" approach, whereby multiple layers of security controls are implemented across the enterprise to protect nonpublic information against advanced persistent threats, malware, insider risks, distributed denial of services attacks, and other risks. The Board continues to plan cybersecurity initiatives that will enhance the Board's identity and access management capabilities, improve its ability to respond to evolving cybersecurity threats with agility, decisiveness, and speed, and enable the continuous monitoring of critical assets.

- **Implement a ZTA and supporting controls:** Executive Order 14028¹³ outlined a new vision for agency information security models, a vision that was further defined in M-22-09.¹⁴ That memo defined a ZTA paradigm shift for agencies, one that will require the Board to move away from a traditional focus on the network perimeter and instead toward users, assets, and data. The Board views ZTA as an opportunity to transform not only the information security program but also the Board's approaches to infrastructure management, application development, and data management.

In line with this emerging guidance, the Board has conducted a ZTA maturity assessment, developed a high-level ZTA implementation plan, and begun to develop a target-state ZTA design. The Board is reviewing M-22-09 and related guidance as the Board plans a ZTA pilot, discusses how to enhance its monitoring and incident response capabilities, and looks at strengthening continuous diagnostics and mitigation (CDM) practices.

¹³ "Improving the Nation's Cybersecurity," 86 Fed. Reg. 26,633 (May 12, 2021), <https://www.govinfo.gov/content/pkg/FR-2021-05-17/pdf/2021-10460.pdf>.

¹⁴ See M-22-09, "Moving the U.S. Government Toward Zero Trust Cybersecurity Principles," <https://www.whitehouse.gov/wp-content/uploads/2022/01/M-22-09.pdf>.

In-progress activities:

- Develop a target-state ZTA design and pilot it with at least one Board application.
- Ensure that the Board's logging, log retention, and log management capabilities meet EL1 requirements defined in M-21-31.¹⁵
- Establish standards for encrypting Board data stored in the commercial cloud and monitoring access to that data.
- Partner with the Department of Homeland Security (DHS) to implement DHS existing CDM tools and capabilities at the Board.

Longer-term activities:

- Refine the ZTA approach based on the pilot's outcome; plan a broader rollout of the new model.
 - Enhance the Board's logging capabilities to support information sharing with the DHS Cybersecurity Infrastructure Security Agency; meet M-21-31 EL2 and EL3 requirements per time-lines in that memo.
 - Evaluate cloud encryption and access standards versus the capabilities of new vendors; refine approach as more Board data moves to the cloud.
 - Work with DHS to implement DHS emerging CDM tools and capabilities at the Board.
- **Strengthen identity, credential, and access management (ICAM) capabilities:** The Board has established an ICAM program, with oversight for the policies and technologies that ensure that Board information and resources are only accessed by the appropriate individuals for the purpose of conducting Board business. A framework of ICAM policies built into the Board's technology infrastructure enables staff to securely share information across the organization as well as with external partners. Current areas of focus include strengthening access control via a centralized permissions management application, modernizing the Board's multifactor authentication (MFA) model, and investigating longer-term enhancements to the privileged access management (PAM) solution.

In-progress activities:

- Implement a centralized permissions management solution.
- Identifying and codifying ICAM core principles.
- Design and pilot the Board's long-term MFA approach.
- Conduct research for—and plan the modernization of—the Board's PAM solution.

¹⁵ See M-21-31, "Improving the Federal Government's Investigative and Remediation Capabilities Related to Cybersecurity Incidents," <https://www.whitehouse.gov/wp-content/uploads/2021/08/M-21-31-Improving-the-Federal-Governments-Investigative-and-Remediation-Capabilities-Related-to-Cybersecurity-Incidents.pdf>.

Longer-term activities:

- Enhance the centralized permissions management solution to support additional types of access requests; expand its scope to support revalidating existing permissions.
- Refine the MFA approach based on the pilot’s outcome; plan a broader rollout of the new model.
- Modernize the Board’s PAM solution to support a hybrid on-premises/cloud computing environment.

Objective 2.2: Cyber, Risk, and Privacy Programs

Re-engineer the Board’s cyber, risk, and privacy programs to incorporate new standards, processes, and tools that enable the agility the business requires, while protecting Board information and assets based on risk

The Board’s cyber, risk, and privacy program leadership continually evaluates the Board’s programs in light of any new federal guidance or requirements as well as emerging cybersecurity threats. Program enhancements are identified, piloted, and implemented on a rolling basis. In recent years, greater attention has been placed on how the Board can more closely align its security and privacy controls with various business areas’ risk tolerances.

- **Evolve the cyber risk governance program to better align business risk tolerance with program activities:** The Board promotes effective cybersecurity risk management through active oversight, collaboration, and coordination across Board functions and Board stakeholders. Within the IT Division, the CISO/SAOP has oversight for identifying emerging cyber and privacy threats and coordinating the Board’s responses to any incidents. At a Boardwide level, the Office of the COO helps coordinate information flow and provides mechanisms for the efficient and timely exchange of critical risk information across business, IT, and information security functions.

Executive Order 14028¹⁶ put a spotlight on the cybersecurity risks posed by the software supply chain, and the Board has taken steps toward identifying and assessing the security posture of “critical software,” as defined by NIST.¹⁷ Understanding and managing the risks associated with critical software will continue to remain an important focus.

In-progress activities:

- Refocus the cyber risk governance program so that it incorporates input from business units, on the areas in which they perceive their highest areas of risk to be.
- Evaluate whether all “critical software” identified meets applicable security measures.

¹⁶ 86 Fed. Reg. 26,633 (May 12, 2021).

¹⁷ “Critical Software – Definition & Explanatory Material,” National Institute of Standards and Technology, last modified July 9, 2021, <https://www.nist.gov/itl/executive-order-improving-nations-cybersecurity/critical-software-definition-explanatory>.

Longer-term activities:

- Continue to evolve the cyber risk governance program to support business needs and address emerging cybersecurity risks.
 - Monitor guidance on critical software and expand Board activities to cover additional categories as those are added by NIST.
 - Make changes as appropriate into the Board’s contract language.
 - Move toward DevSecOps and a continuous compliance model to improve speed to market while increasing compliance coverage.
- **Implement new tools and training in support of the information security and privacy assurance programs:** The Board administers mature information security and privacy training programs. The Board evaluates and enhances the training programs annually to incorporate the latest information about policies, procedures, and risk-management practices.

The Board compiles and displays training program metrics—as well as metrics on risk management, inventory management, and privacy program activities—on a dashboard which provides Board leadership with insight into key information security and privacy program activities.

In-progress activities:

- Continue to implement enhanced information security and risk-management training programs.
- Transition to a continuous authorization program, which will allow business owners and security personnel to have an automated, ongoing method to monitor system security.
- Enhance the information security and privacy dashboard to include additional metrics that support the annual FISMA review process and other internal processes.

Longer-term activities:

- Develop a Security & Privacy Champions initiative, which will educate product owners and developers and enable them to incorporate security and privacy standards into requirements for new efforts.
- **Continually enhance the privacy program to ensure the integrity and security of the personally identifiable information collected by or on behalf of the Board:** The Board’s SAOP has responsibility for developing, implementing, and maintaining an agencywide privacy program that ensures compliance with applicable privacy requirements. Program staff collaborate with Board’s Legal Division staff to ensure that Privacy Impact Assessments and System of Records Notices are created and published on the Board’s website, in accordance with the Privacy Act¹⁸ and section 208 of the E-Government Act of 2002.

¹⁸ Privacy Act of 1974, 5 U.S.C. § 552a.

In-progress activities:

- Ensure policies, standards, and processes are adaptive to changing laws, guidance, and best practices (e.g., NIST SP 800-53 Rev. 5).
- Evaluate privacy standards and processes to identify opportunities for improvement.
- Evaluate the staffing structure of the privacy program to identify opportunities for improvement.
- Provide guidance and counsel to stakeholders in connection with the Board's multiple IT modernization projects.

Longer-term activities:

- Update privacy program standards and processes to make the program more efficient and effective.
- Restructure the privacy program staffing to better support the Board's privacy requirements.

Goal 3: Provide an Engaging and Intuitive Work Environment

The Board has embarked on a multiyear effort to evaluate all facets of its physical and digital work environment, including but not limited to improving governance and coordination as well as deploying enhanced hybrid tools, conference room technologies, and mobile computing and communication platforms. The overall goal is to create a smart, intuitive work environment where Board staff can collaborate with anyone at any time, in any place.

Objective 3.1: Digital Transformation***Accelerate the pace of enterprise technology transformation at the Board to enable business outcomes***

The TOC is established to accelerate the pace of digital transformation at the Board. The TOC governs Boardwide technology operations holistically under a federated structure to enable business outcomes for the Board.

- **Establish new approach to organize and manage work:** TOC established six working committees to govern key components of technology operation management: Enterprise Architecture, End-User Experience, Information Security and Privacy, Technology Financial Management, Technology Portfolio Management, and Technology Talent.

In-progress activities:

- Establish reference architecture and reference patterns for common technology solutions.
- Establish a portfolio management framework to align technology investments with the Board's strategic objectives and high-priority business needs to deliver expected business value and mitigate risk.

- Mature funding request evaluation process and identify new and existing financial data elements that will assist with the decisionmaking process for reviewing technology investments.
- Establish a Zero-Trust Workgroup to provide enterprisewide input into the development of the Board's ZTA.
- Develop enterprise user experience (UX) strategy to improve accessibility, IT communications, and establish a framework for gathering enterprise user and business needs.
- Establish Agile and lean processes and grow product management practices to improve product quality and time to market.

Longer-term activities:

- Put into practice Portfolio Management and Product Management practices.
- Expand Agile practices and operating models throughout the organization.
- Continue to mature enterprise architecture that drive alignment of strategy, technology, and operations.
- Implement an investment decisionmaking process to support the Board's run, grow, transform, divest framework.
- Establish and coordinate effort to build out ZTA.
- Establish strategies to upskill and align Board staff to digital transformation efforts.

Objective 3.2: Digital Workspace

Create a modern digital workspace that enhances mobile, collaboration, and audio/visual capabilities to allow employees to effectively and consistently work from any location or Board devices

The Board's hybrid work environment requires always connected, near instant access to the information that staff require to perform their work. The Board continues to deploy technology that enables staff to collaborate more effectively whether they are working in the physical office or remotely while providing a seamless UX. Additionally, as the Board modernizes its buildings, it will continue to implement integrated electronic tools to increase conferencing capabilities, enhance conference room and collaborative space scheduling.

- **Implement digital workspace enhancements:** The Board continues to collect feedback from staff and implement ongoing enhancements to technology to improve the digital workspace.

In-progress activities:

- Continue to develop training resources and implement new technologies that address the immediate communication and information sharing needs of staff, such as continuing to simplify the process for connecting to audio/video meetings from Board conference rooms.
- Engage with staff across the organization to identify pain points and improvement opportunities for using technology, both when working in the office or remotely.

- Stand up a design-thinking center of excellence that conducts workshops and research on optimizing the user experiences when using Board systems and applications.

Longer-term activities:

- Evaluate new conference room features and telepresence technologies, such as wayfinding that would broaden the range of communication tools available to staff.

Objective 3.3: Collaboration Tools

Implement integrated electronic collaboration tools to increase conferencing capabilities and enhance conference room and collaborative spaces

The Board has widely deployed cloud-based platforms that support collaboration among staff. These tools have been highly effective in facilitating meetings and other communications as the prevalence of hybrid meetings continues. The Board will continue to research audio-visual hardware and conferencing platforms that support seamless meeting connections from any location.

- **Expand use of cloud-based collaboration platforms:** The Board has already adopted industry-leading cloud tools that support information sharing and collaboration among Board staff as well as with Reserve Bank staff and select federal agencies. Staff can access these tools on their Board-issued phones and laptops, which is enabling them to work across devices from any location.

In-progress activities:

- Add functionality and products to the existing suite of cloud technologies to further enhance and support a modern workspace.
- Continue to expand the Board’s capabilities to support external collaboration with other federal financial regulatory agencies.
- Encourage teams to continue moving their collaboration and communication activities from on-premises to cloud-based platforms.

Longer-term activities:

- Investigate extending the Board’s capabilities to include collaboration with research partners at academic institutions and other external organizations.

Goal 4: Invest in a Diverse IT Workforce

The Board is committed to maintaining a highly skilled workforce that enables the Board to meet its missions. Staff within Board divisions responsible for workforce development, personnel management, and diversity, equity, and inclusion activities have formed an informal community of practice that promotes information sharing regarding such practices across the organization. Those division representatives work closely with the People, Strategy & Operations team and the Office

of Diversity, Equity, and Inclusion to recruit, train, and support the overall professional development of Board staff.

Objective 4.1: IT Workforce Development

Provide opportunities for the IT workforce to develop the technical and business process skills necessary to thrive in an evolving computing environment

The 2020-23 Board *Strategic Plan* contains an objective focused on attracting, developing, and retaining “diverse talent with varied experience and perspectives to ensure the Board is able to meet workforce needs in a rapidly changing environment.”¹⁹ In alignment with that plan, the Division of IT is working to develop an IT workforce that can meet the evolving automation demands of Board business areas.

- **Ensure that the IT workforce has the abilities, knowledge, and skills necessary to carry out the Board’s mission:** The Board is dedicated to developing both the business acumen and technical skills of its IT staff, so that the IT community remains at the forefront of technological change. To that end, the Board’s Office of Development and Learning partners with employee development and personnel management specialists embedded in each division to provide the Board’s IT workforce with a broad range of both internally developed and publicly available professional development resources. The Board offers rotational opportunities that enable staff to experience other IT roles and encourages its IT professionals to attend conferences and pursue professional certifications that support their professional growth.

The Board is undertaking an “Enterprise IT Workforce Modernization” effort, which will update IT position descriptions to tie them more closely to the Board’s evolving technology needs. It will also more closely align Board position descriptions with industry trends and better equip the organization to attract and retain staff in a competitive job market.

Within the Division of IT, the Board has created a work unit dedicated to leading the division’s transition to using Agile development methodologies. These iterative application development practices will enable the Board to deliver technology solutions in a faster, more responsive manner. The team is working with technology professionals in other divisions to identify training resources that can be used across the organization.

In-progress activities:

- Revise the job position descriptions that were prioritized as part of the Enterprise IT Workforce Modernization effort.
- Require training sessions that upskill the IT workforce in support of the Agile transformation.
- Establish a series of cloud technology trainings to prepare the workforce for cloud migration.

¹⁹ *Strategic Plan 2020-23.*

Longer-term activities:

- Complete the modernization of all remaining IT job families and identify capability gaps as part of the Enterprise IT Workforce Modernization effort.
- Facilitate focused coaching engagements that develop the Agile skills of service delivery and leadership teams.
- Study the impact of artificial intelligence and its applications and risks on the Board's workforce.

Objective 4.2: Diversity, Equity, and Inclusion

Collaborate with functions across the Board to explore the factors that influence diversity, equity, and inclusion (DEI), and evaluate external outreach opportunities to promote increased participation in STEM-related disciplines

The Board published a 2022-25 *Diversity and Inclusion Strategic Plan* that frames its DEI strategies, objectives, and actions as responsibilities shared by all Board employees.²⁰ It describes how the Board develops and implements activities and training for staff to encourage growth and better understanding of DEI issues. It also describes outreach and recruitment programs aimed at drawing a diverse range of technology and STEM professionals to the Board.

Across the organization, the Board actively seeks and deploys technology solutions that provide virtual learning opportunities. Other technology solutions focus on ensuring all Board staff have the ability to readily access and utilize the Board's information resources.

- **Enhance the Board's recruiting program to draw applicants from diverse professional backgrounds:** Recruiting and retaining a highly motivated, well-trained workforce with diverse professional backgrounds is necessary to achieve the Board's missions and goals. The Board's recruiting efforts are sustained by strong professional relationships with an array of colleges and universities, professional organizations, and associations.

The Board has broadened its IT professional candidate pools by improving engagement with Historically Black Colleges and Universities (HBCUs), the Hispanic Association of Colleges and Universities (HACU), the INROAD program (which creates pathways to careers for ethnically diverse high school and college students), and a number of STEM-focused organizations. Recent activities have included HBCU outreach events that aimed to raise awareness of IT professional opportunities at the Board. The Board has seven employee resource groups (ERGs) that continually identify and recommend programs and opportunities that improve the Board's recruitment and development of its workforce including technology professions.

²⁰ Board of Governors of the Federal Reserve System, *Diversity, Equity, and Inclusion Strategic Plan 2022-25* (Washington: Board of Governors, December 2022), https://www.federalreserve.gov/publications/files/distrategicplan_202211.pdf.

In-progress activities:

- Broaden the Board’s recruitment approach to bring a more diverse range of perspectives and expertise into the IT workforce.
- Identify and develop strategies to partner with external groups that advocate for STEM disciplines (e.g., professional organizations and organizations representing high school-aged children).

Longer-term activities:

- Develop additional programs that engage prospective students and aim to increase the future IT and STEM professional candidate pools.
- **Foster DEI initiatives:** The Board publishes resources, plans events, and supports ERGs aimed at fostering DEI in the workplace. It also reinforces its commitment to DEI through a variety of communication channels and educational outreach efforts aimed at both internal and external audiences.

In-progress activities:

- Annual scheduling of DEI-focused events, programs, and workshops.
- Continually identify and offer annual DEI training to Board management staff, in the areas of unconscious bias, leading with conscious inclusion, and allyship.
- Increase workforce participation in ERGs.

Longer-term activities:

- Identify initiatives that will focus on equity, inclusion, and employee engagement.

Open Data Plan

The Board believes that adopting robust open data standards and practices as well as collaborating with the public on the use of the agency's data will promote transparency and understanding of the Board's mission and activities.²¹ Accordingly, the Board is working proactively and collaboratively to advance open data objectives, including those codified in Title II of OGDAs.²² The Board's CDO is formally charged with implementing OGDAs' requirements and provides an annual report to Congress on the compliance of the Board. The CDO works with the Board Data Council (BDC), which consists of senior leaders across the Board who are responsible for data, to facilitate continuous improvement and innovation in the Board's data-related capabilities and the achievement of the data-related goals.

The Board's *Open Data Plan* (included as part of the Board's *IRM Strategic Plan*) addresses the Board's efforts in the following areas:

- Data Collection Mechanisms
- Collaboration with the Public
- Data Asset Usage Evaluation
- Open Government Data Asset Quality Evaluation and Improvement
- Open Data Enablers: Technology, Training, and Procurement Standards
- Priority Data Assets, Comprehensive Data Inventory, and Federal Data Catalogue

The *Open Data Plan* also describes the Board's annual accomplishments with regards to data and detailed plans and activities directed toward future data activities.

Data Collection Mechanisms

In accordance with OGDAs, the Board's data collection mechanisms generally are available in an open format.²³ In particular, the Board collects data from supervised financial institutions in an open format as set forth in the Board's reporting instructions.

²¹ As set forth in the Office of Management and Budget Circular No. 130, *Managing Information as a Strategic Resource*, "'Open data' means publicly available data that are made available consistent with relevant privacy, confidentiality, security, and other valid access, use, and dissemination restrictions, and are structured in a way that enables the data to be fully discoverable and usable by end users. Generally, open data are consistent with principles, explained in OMB guidance, of such data being public, accessible, machine-readable, described, reusable, complete, timely, and managed post-release."

²² Pub. L. No. 115-435 (2019).

²³ OMB defines "an open format" as "one that is platform independent, machine readable, and made available to the public without restrictions that would impede the re-use of that information." See "Open Government Directive," Memorandum for the Heads of Executive Departments and Agencies, https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/memoranda_2010/m10-06.pdf.

Completed activities:

- The Board established and adopted data guidelines that will support an open format as the default format for data collections submitted through Reporting Central.²⁴

In-progress activities:

- The Statistics function is streamlining its business processes and replacing its legacy automation systems with cloud-ready technology.²⁵ The new technology will continue to support data collection in open data formats that will allow the supervised financial institutions to submit data to the Federal Reserve without undue burden.

Collaboration with the Public

The Board conducts outreach and engagement activities to the public and industry in connection with its publicly available data publications. Industry outreach initiatives include communications with trade groups, financial institutions, and third-party consultants and vendors. The public is also invited to submit questions and comments concerning data on the Board's website.²⁶

Completed activities:

- The Board's New Data Download Program (NDDP) project team engaged with the public through online surveys, in-depth interviews, and focus group sessions to gather the public's assessment of the Board's current Data Download Program (DDP) website functionalities and to understand the end-user preferences. Over 400 users participated and provided feedback on existing features and potential modifications that would increase user satisfaction. The results also provided the Board with a better understanding of DDP users, such as their professional role or the industry in which they are employed. In addition, information was gathered on users' familiarity with the Federal Reserve Bank of St. Louis' Federal Reserve Economic Data (FRED) online database and what features of FRED were deemed useful by the users. The findings informed the Board's plans to enhance DDP capabilities and future collaboration with the FRED team.

In-progress activities:

- The Board is developing a plan to solicit feedback from the public as to how the Large Commercial Banks statistical release is currently used and what enhancements would increase user satisfaction.²⁷

²⁴ Reporting Central provides financial institutions with information about the Board's electronic reporting application, report forms, instructions, and relevant documents needed for preparing and filing regulatory and financial reports.

²⁵ The Statistics Function serves as data stewards responsible for data management activities.

²⁶ See the Board's feedback web page at <https://www.federalreserve.gov/apps/ContactUs/feedback.aspx>.

²⁷ "Large Commercial Banks," Board of Governors of the Federal Reserve System, last modified August 18, 2023, <https://www.federalreserve.gov/releases/lbr/>.

Data Asset Usage Evaluation

Currently, the Board's evaluation of public data asset usage is based on monitoring and tracking activities on the Board's website, including page views, unique page views, and downloads.

Completed activities:

- Based on the analysis of the Board's website traffic coupled with the DDP user feedback survey results, the Board gained better insight into the aspects of the DDP that are most important to the public users. In particular, understanding the frequency of data access by the public indicated that the Board should focus on sustaining the reliability of the data publication schedule and improving the ease of downloading the data. In conjunction with evaluating potential modifications to the DDP, the Board made technical improvements over the past year to its internal data publication processes to enhance the efficiency and reliability of data delivery to the public. The Board also updated the XML file format to allow longer descriptions and improved the readability of the data files. These enhancements will augment the data usability for the public.

In-progress activities:

- As part of the Board's Data Strategy (2022-25) action plan, the NDDP project team will review and update the project roadmap with annual goals and key milestones through 2025 to enhance DDP.
- The Board is developing a plan to publish non-government user data asset statistics.

Open Government Data Asset Evaluation and Improvement

The Board ensures the timeliness, completeness, consistency, accuracy, usefulness, and availability of open Government Data Assets principally through the Statistics Data Quality Program (DQP).²⁸ Under the DQP, data quality controls are implemented at the pre-submission, submission, and post-submission phases of the Board's data collections.

The Board also focuses on managing and using data more efficiently and effectively. As part of the Board's Data Strategy to support timely decisionmaking and the availability of robust data, the Board developed the *Metadata Management Action Plan* to improve the discovery, access, and use of data.

²⁸ OGDAs defines an "open government data asset" as "a public data asset that is (A) machine-readable; (B) available (or could be made available) in an open format; (C) not encumbered by restrictions, other than intellectual property rights, including under titles 17 and 35, that would impede the use or reuse of such asset; and (D) based on an underlying open standard that is maintained by a standards organization." See 44 U.S.C. § 3502(20).

Completed activities:

- The Statistics DQP developed a formal review process to ensure that the existing data quality processes are meeting the Board's objectives. The results will be examined and evaluated to identify gaps or potential improvements that can increase the robustness of the DQP
- The Board established an internal *Metadata Management Action Plan* that was approved by the BDC to strengthen the discoverability, usability, trust, and collective understanding of the Board's data assets. To implement this action plan, the Board developed metadata standards, defined implementation team roles and responsibilities, and made investments in technology to support its metadata environment. A cornerstone of the Board metadata program is a new technology platform which will enable efficient governance processes and host the Board's comprehensive data inventory.
- The unstructured data workgroup explored the challenges users face when using and managing unstructured data, such as the intensive processing that is necessary to make unstructured data useful. The workgroup provided recommendations to the BDC that would reduce duplication of effort and improve the accessibility of processed datasets across different divisions of the Board. The BDC evaluated the recommendations and incorporated them into the Board's Data Strategy action plans.

In-progress activities:

- The inaugural formal review on the DQP will be performed in the next 12 months.
- As part of the Board's continued investment in cloud capabilities, the Integrated Research and Analytics Platform (IRAP) program is working to develop a cloud-based data and analytics hub. IRAP will provide data users a seamless experience in accessing quality data located in multiple platforms, analyzing data with state-of-the-art research and analytical tools, and collaborating across the Board and the Federal Reserve Banks. In addition, the IRAP program will enable data management capabilities to accelerate cloud data migration and the adoption of consistent data management practices.

Open Data Enablers: Technology, Training, and Procurement Standards

The Board recognizes that the acquisition of technology, provision of training for employees, and implementation of procurement standards will help the Board meet its data goals, including timely decisionmaking and the availability of robust data.

The Board's Procurement Office is instrumental in sourcing both professional services talent and information technology products in support of open data objectives. A basic ordering agreement (BOA) is used to efficiently procure consulting services. The Board's procurement processes include objectives designed to increase supplier diversity, and the Board is committed to ensuring fair inclusion and utilization of minority-owned and women-owned vendors in all Board contracts.²⁹

The Board also offers various relevant training opportunities for staff on topics, such as data science, data management, and data analytics.

Completed activities:

- The Board recruited and hired two new staff to assist with OGDA implementation. The new staff will focus on advancing open data objectives and meeting OGDA requirements.
- The Board established a new Information Management BOA to procure consulting services to support the development of the Board's open data plan implementation, which included consulting firms and vendors with specific expertise in OGDA. The majority of the Information Management BOA awards were made to companies that were designated as small, disadvantaged businesses; women-owned small businesses; and veteran-owned, small businesses.
- To support staff learning and development, a collaborative Board and Federal Reserve Bank (System) training platform was launched to provide training on emerging technologies (e.g., cloud-based capabilities, Robotic Process Automation, artificial intelligence). This platform empowers innovation communities in fostering research, sharing of best practices, and the adoption of emerging technologies. It positions the Board to adapt quickly to industry changes and support staff development.

In-progress activities:

- The Board is seeking and recruiting new staff with advanced skills to support the Board's metadata management.³⁰
- As part of the Board's talent management efforts, the Board is modernizing and standardizing job descriptions associated with data management professionals. The Board is also developing tools to support data professionals in career planning and professional development.

²⁹ See the Board's supplier diversity web page at <https://www.federalreserve.gov/aboutthefed/procurement/supplier-diversity.htm>.

³⁰ Examples of such skills relevant to open data include metadata management, enterprise information architecture, data modeling, data governance, data management, records management, descriptive data analytics, machine learning, and other data science skills.

Priority Data Assets, Comprehensive Data Inventory, and Federal Data Catalogue

The goal of the Comprehensive Data Inventory (CDI) is to create an inventory of Board data assets as required by OGDA. The new technology platform investment that supports the metadata program will provide data users a single portal for search and discovery of the Board's data assets and serve as the Board's CDI.

Completed activities:

- The Board has adopted the metadata schema required by the Federal Data Catalogue to facilitate the publication of the Board's data catalogue. The Board incorporated this schema as part of its metadata standards.
- The Board has made the inaugural publication of the Board's Federal Data Catalogue available on <https://data.gov/>. The catalog includes information of data assets that are currently available to the public on the Board's website and the Board's information collections.

In-progress activities:

- As the Board plans for enhancements to the Federal Data Catalogue, identifying the criteria that prioritizes the release of the data assets to the public is an important consideration. A cross-divisional workgroup will help the OGDA implementation team prioritize future releases to ensure that the Board is providing the most value to the public.
- To ensure that regular updates are made to the Federal Data Catalogue, the Board is developing processes for compiling and maintaining the catalogue.

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