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VIA EMAIL

October 9, 2020

Control No.: 21-0001-FOIA

This letter is in response to your October 4, 2020 request under the Freedom of Information Act (FOIA), 5 U.S.C. § 552. You requested the following information:

> I am requesting a copy of the most recent Five Year Information Technology (IT) Plan at the Maritime Administration (MARAD).

After a careful search of our files 48 of responsive pages were found. This release of records represents the agency's final response to include all records located and determined to be responsive to your request. Please find enclosed the responsive document(s) released in its entirety.

The attached record is provided to you free of charge.

You have a right to appeal. Should you wish to do so, you must send your appeal and a copy of this letter, within 90 days of the date of this letter. The appeal should be sent to foia.marad@dot.gov or mailed to the following address:

Maritime Administration
Freedom of Information Act Appeal
1200 New Jersey Avenue, SE
Second Floor, West Building

Room W24-220, Mailstop #4
Washington, DC 20590

Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows: Office of Government Information Services, National Archives and Records Administration, 8601 Adelphi Road-OGIS, College Park, Maryland 20740-6001, e-mail at ogis@nara.gov; telephone at 202-741-5770; toll free at 1-877-684-6448; or facsimile at 202-741-5769.

Sincerely,

T. Mitchell Hudson, Jr.
Freedom of Information Act Officer

Enclosure

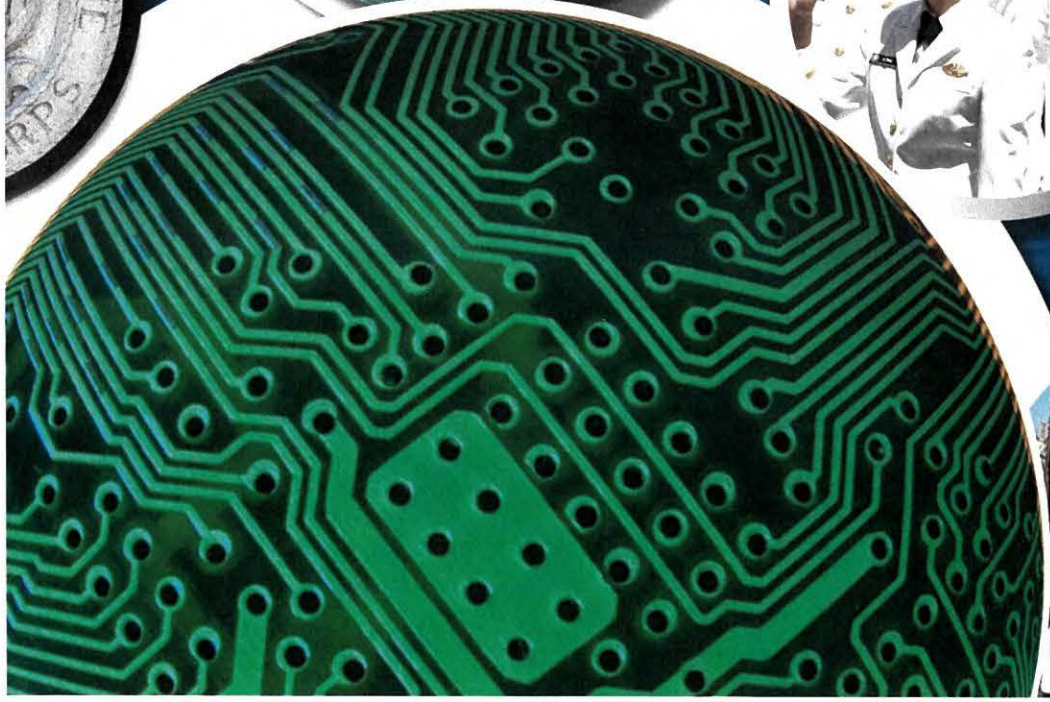
U.S. Department of Transportation
Maritime Administration

MARAD

IT STRATEGY

FY2014 – 2018

August 23, 2013



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This MARAD IT Strategic Plan was developed to support the MARAD mission for the next five years. This Plan provides a roadmap to focus the Office of the Chief Information Officer (OCIO) within MARAD on the highest priority business needs as defined by the MARAD Program Offices, in the delivery of effective and efficient IT solutions.

This Plan is organized around the following six strategic goal areas, including:

- Agile Technology
- Information Sharing
- Communication and Collaboration
- Academic Technology
- Security and Managed Risk
- Operational Excellence

This IT Strategic Plan is consistent with a best practice approach across Government and industry. In addition to supporting MARAD's highest priority business needs, this Plan provides a path for MARAD to comply with guidance and mandates from the Federal IT oversight organizations as well as the requirements established by the Department. This Plan also outlines steps to enhance governance and management oversight of MARAD's IT investment portfolio.

The elements of this Plan were developed to support and align with the DOT and MARAD strategic priorities. The MARAD OCIO will follow through on the execution of this Plan by developing the tactical plans necessary to support the implementation of each of the strategic initiatives defined in this Plan. We expect to make these strategic and tactical planning activities a regular part of the planning process within MARAD in the future. We very much appreciate the input and validation of the Plan based on significant collaboration with the MARAD Associate Administrators and their teams.

Jack Schreibman
Deputy Associate Administrator for Administration

Robert Ellington
Chief Information Officer

1. Executive Summary

The Maritime Administration (MARAD) provides a broad range of services in support of the maritime transportation industry. These services include advocating for the expansion of U.S.-flagged maritime freight movement, ensuring readiness of the Ready Reserve Force, supporting the modernization and expansion of maritime infrastructure, and operating the U.S. Merchant Marine Academy (USMMA). To deliver these services, MARAD relies on timely access to information to plan and execute operations and support decision making. As the provider of information technology (IT) services to MARAD, the MARAD Office of the Chief Information Officer's (OCIO) ability to deliver the required IT capabilities is key to MARAD's future success. To demonstrate its commitment to supporting MARAD's technology needs, the MARAD OCIO has defined the following Mission Statement and Vision:

IT Mission Statement: *To provide timely and cost-effective Information Technology solutions and tools to best meet MARAD's business needs.*

IT Vision: *MARAD Information Technology precisely and consistently meets or exceeds business and system owners' expectations in order for MARAD to effectively and efficiently deliver all required business services.*

In delivering the IT Mission, the MARAD OCIO established six organizational goals, defining long term results toward which the OCIO can focus its efforts over the next five years. These goals were defined to ensure alignment of the OCIO with MARAD's strategic direction and long-term needs.

In order to assist in operationalizing this Plan, measurable Objectives and Strategies were defined for each Goal. This Plan provides guidance to support annual planning and serves as a tool to analyze the strategic alignment of proposed investments as part of the IT governance processes.

AGILE TECHNOLOGY - Provide a flexible, functionally rich technology environment that meets the evolving needs of the Programs and their stakeholders.

INFORMATION SHARING - Improve MARAD's ability to leverage information assets to facilitate cargo, infrastructure, and advocacy and enhance the resiliency and security of the maritime transportation network.

COMMUNICATION AND COLLABORATION - Improve MARAD's ability to communicate and collaborate with stakeholders and a geographically dispersed and mobile workforce.

ACADEMIC TECHNOLOGY - Support the needs of the U.S. Merchant Marine Academy by operating a robust, secure, and current technology environment in conformance with DOT technology standards.

SECURITY AND MANAGED RISK - Operate proactively to identify and manage cyber security and business continuity risks.

OPERATIONAL EXCELLENCE – Improve MARAD mission support through efficient delivery of IT services, effective oversight, and enhanced customer engagement.

Current economic conditions and trends in federal government spending indicate funding levels for IT-related spending will remain flat or decline over the next five years. Given the anticipated funding environment, the OCIO will collaborate with MARAD program offices to prioritize IT investments and balance spending between ongoing operations, compliance, systems maintenance, and strategic investments for the future.

2. Introduction

This IT Strategic Plan outlines a strategic path for the MARAD OCIO for the period of FY2014–2018, and was developed with both MARAD's and USMMA's missions and strategic priorities in mind. The DOT OCIO's technology goals and priorities over the next five years were also referenced. This Plan was also developed using input and validation from the MARAD OCIO and program office leadership, with a focus on how to best support MARAD's mission and business priorities. It is important to note that implementation of this IT Strategic Plan is subject to funding and resource availability.

Purpose

The purpose of this document is to define the IT Strategic Plan for the period of FY2014-2018 on behalf of MARAD, which serves to:

- Establish MARAD IT priorities linked to MARAD program goals, objectives, and operational priorities,
- Provide long-term direction for IT investment planning and resource allocation,
- Respond to legislative mandates and regulations specific to IT,
- Comply with federal guidance as provided by Office of Management and Budget (OMB) and the Office of the Secretary of Transportation (OST).

Scope

The MARAD IT Strategic Plan encompasses MARAD's IT-related services, as well as its IT investments and activities, including those associated with headquarters, the USMMA, gateway offices, and fleet sites.

3. MARAD Mission and Strategy

MARAD Current Environment

The world's marine transportation industry is an ever-evolving, highly sophisticated, and internationally-integrated intermodal transportation network that plays a major role in advancing the global economy. Always critical to the nation's well-being and security, international maritime transport has become even more vital to America's economy and continued prosperity as world markets operate in ever-closer synchronization.

The U. S. national transportation system, including the Great Lakes, coastal, and inland waterways, is a complex system of intermodal linkages requiring a high level of integration in operations and planning. To operate effectively, the Marine Transportation System (MTS)

requires coordination of a diverse mix of components including vessels, support services, a network of ports and terminals, and highly trained personnel working both afloat and ashore.

MARAD Mission

MARAD was established to promote and strengthen the U.S. MTS and establish seamless integration with other major transportation modes. Through its programs, MARAD supports and monitors waterborne transportation to enhance national security and the economic and environmental health of the nation. MARAD is also charged with ensuring a present and future sealift capability for our nation's economic growth. To ensure sufficient sealift capability is available when needed, MARAD maintains a fleet of reserve ships prepared to meet surge capacity needs.

MARAD monitors the U.S. maritime industry for potential impacts to the availability and security of sealift capabilities, while its maritime advisories keep the U.S. Flag Fleet informed of critical information related to maritime operations. MARAD also provides support for current mariners, development of future mariners, and education programs for youth interested in mariner operations. The USMMA plays a key role in educating new generations of mariners through innovative, state-of-the-art programs in advanced navigation and engineering. USMMA programs develop highly trained, licensed Merchant Marine officers ready to meet the present day needs of the maritime industry. The USMMA works in conjunction with other academic institutions and maritime academies to continuously improve maritime training and education.

MARAD works with government agencies, port authorities, and state, local, and regional transportation planning organizations to develop, operate, and maintain the security, environmental safety, and viability of maritime transportation infrastructure. These efforts include project collaboration, funding support, and addressing environmental and community concerns related to infrastructure challenges. MARAD also works with other entities that own and operate key transportation infrastructure or provide transportation services to address transportation networks with high levels of congestion.

MARAD provides investment support to the maritime industry through grant and loan programs that support a myriad of programs, including educational services at the USMMA, U.S.-flag commercial vessel operations under the Maritime Security Program, U.S.-flag carriage of government-impelled preference cargoes, small shipyard grants, loan guarantees for ship construction at U.S. shipyards, and a range of other expenditures.

MARAD Strategy

In order to support MARAD program needs and deliver its mission successfully, MARAD has defined a strategic direction, represented and driven by five primary goals:

1. **CARGO:** Identify and develop new freight movement opportunities for the U.S.-flag fleet
2. **READINESS:** Ensure a U.S.-flag fleet with trained crews sufficient to provide sealift resources during peacetime, contingencies/emergencies, and war
3. **INFRASTRUCTURE:** Modernize and expand maritime infrastructure. Develop integrated intermodal ports, and expand maritime industrial capacity
4. **ADVOCACY:** Continued improvement of agency capabilities for stewardship/operation of federal (USMMA) and state maritime academies, general maritime advocacy, and administration of credit programs
5. **ORGANIZATIONAL EXCELLENCE:** Implement best practices in effectiveness and efficiency within a framework of accountability, sustainability and stewardship

These strategic goals were used as guidance in developing this IT Strategic Plan to support the needs of the MARAD programs. Please note the alignment within Section 7 (MARAD Strategy Alignment) of this Plan.

4. MARAD IT Environment

As one of twelve Operating Administrations (OAs) of the DOT, MARAD operates within a federated organizational structure, wherein each of the OAs pursues different mission priorities. Each OA owns and operates its own systems while leveraging DOT shared services for common business support solutions and infrastructure. Business support solutions provided by DOT include back office services such as human resource management, acquisition management, financial management, and communications, as well as IT infrastructure services such as LAN/WAN network connectivity, desktops, and related security. The current MARAD IT portfolio consists of a diverse set of applications supporting a broad range of MARAD mission delivery and support functions. Over the last few years, the MARAD applications portfolio has been significantly streamlined through the retirement of obsolete systems and migration to DOT-provided common services. System maintenance and enhancements are managed by the MARAD OCIO and delivered by outside contractors.

To address growing business needs during a time of significant budgetary constraint, MARAD has defined an IT Modernization Program to redesign its business processes and modernize its

systems, subject to funding and resource availability. Through this program, MARAD hopes to achieve the following objectives:

- Enhance application portfolio functionality to address stakeholder needs,
- Increase overall operational efficiency by reducing the dependency on costly legacy systems,
- Upgrade the systems environment to employ more current technologies,
- Improve data quality across the application portfolio, and
- Improve security.

As part of this IT Modernization Program, MARAD has defined a roadmap to improve the MARAD application portfolio, to include the following key elements:

- Migration to a Service-Oriented Architecture to provide a platform able to deliver improved system integration,
- Leveraging cloud computing platforms to reduce cost of operations through the sharing of IT resources with other federal government entities, and
- Improving data management across applications to reduce data duplication across systems and improve overall data quality.

MARAD's ability to execute the elements of this IT Strategic Plan is dependent to a large extent on available funding. Like most federal agencies, MARAD is expecting to experience flat or declining budgets over the near term, so utilizing resources in a manner that delivers the most value is critical.

To ensure alignment of IT priorities with MARAD's strategic direction and priorities, MARAD's OCIO has undertaken the creation of this IT Strategic Plan and a program to enhance the IT governance structure and processes. The MARAD IT governance model will integrate with the Capital Planning and Investment Control (CPIC) and Change Management processes, and align with the DOT governance model. When the strategic planning and IT governance processes are fully matured, the Strategic Plan and enterprise architecture (EA) will be used to guide operational planning, budgeting, and performance management processes.

5. IT Strategic Planning Influences

The elements of this IT Strategic Plan were influenced by a number of internal and external factors, illustrated in Figure 1. These factors include MARAD mission requirements, MARAD and USMMA Strategic Plans, federal laws and regulations, OMB mandates and directives, DOT plans and policies, and other internal and external influences.

Figure 1: IT Strategic Planning Influences

DOT Strategic Plans and Policies

As an Operating Administration of the DOT, MARAD is obligated to operate in compliance and alignment with policies and plans defined by the DOT. Guided by Department and OMB priorities, the DOT OCIO has developed a draft Integrated Resource Management (IRM) Strategic Plan that defines a set of strategic technology goals for the Department over the next five years. These goals set a path for DOT to improve the accessibility and utility of information. The MARAD OCIO will also pursue opportunities to enhance intermodal and cross-agency collaboration through enhanced communications, standardized tools, and improved workforce competencies. This plan also maintains strengthened cybersecurity through improved situational awareness and effective risk management as a high priority. Another DOT OCIO priority is the implementation of enhanced governance structures and processes aligned with the PortfolioStat and TechStat reporting processes to improve investment decision making and ensure investments meet their performance goals.

DOT has also made the dissemination of data a priority initiative with the creation of the DOT Open Government Plan, v2.0. That Plan demonstrates a strong commitment on the part of the Department to foster openness with DOT employees, stakeholders, and the general public in accordance with the Open Government Initiative. The DOT vision for an open culture is:

"To support our strategic goals, DOT will pursue organizational excellence through greater transparency, increased citizen and employee collaboration, and more effective public participation while managing the risks associated with openness."

In an effort to improve mission performance and the utilization of DOT IT assets, the DOT Chief Enterprise Architect within the DOT OCIO has defined a roadmap for migrating the Department's IT environment to its target architecture, which dictates that DOT:

- Develop a service-oriented architecture that enables shared components,
- Create systems that are interoperable and ready to share data,
- Leverage innovative Web technologies to enable access from anywhere,
- Deliver technology and energy efficiencies, and
- Assure that solutions are secure and information is protected.

In response to federal legislation and policy, OMB guidance and mandates, and National Institute of Standards and Technology (NIST) standards on information security, DOT has established a cybersecurity policy for the management of risks associated with information systems. Under this new policy, DOT senior leaders must establish risk management as a fundamental mission requirement and commit sufficient resources to implementing effective risk management programs. This policy also requires MARAD to develop and implement a strategy for continuous monitoring of information system security controls and evaluating the effectiveness of these controls, as well as potential impacts to these controls from proposed changes.

Using the DOT OCIO plans and policies as guidance, MARAD has incorporated elements from these strategies and priorities into this Plan.

Internal Forces

Within MARAD, an environment exists in which the OCIO is being asked to deliver expanded services with flat or reduced resources due to ongoing budget constraints. As a result of expected reductions in overall federal spending, this environment can be expected to continue for the foreseeable future. Operating under this assumption, MARAD's IT plan takes a conservative approach when defining strategies to enhance systems and expand capabilities.

MARAD is in the process of defining an enterprise architecture model for the OA that articulates the target architecture toward which MARAD will migrate over time. Key elements of the target architecture have been defined, including implementation of a service oriented architecture (SOA), utilization of a shared cloud computing infrastructure, and implementation of data management policies and procedures to improve the accessibility and life cycle management of information. A MARAD Business Case has been developed in advance of the creation of an OMB Exhibit 300 for the proposed IT modernization effort.

External Forces

Numerous federal laws and regulations prescribe, influence, and guide the development of DOT and MARAD IT policy and strategies. Key among these are the Clinger Cohen Act, the E-Government Act, the Federal Information Security Management Act of 2002 (FISMA), The 25 Point Implementation Plan To Reform Federal IT Management, Open Government (Open Gov) Directive, and the Digital Government Strategy. Compliance with these laws and directives requires a commitment to enhanced security and privacy protection while operating in an open and collaborative manner. It also requires an ongoing dedication to driving performance improvement and efficiency in the delivery of IT services. Details of these laws and regulations can be found in Appendix C of this document.

Additionally, oversight entities such as the General Accountability Office and the DOT Office of Inspector General investigate and advise on opportunities to improve performance and ensure integrity and compliance with government regulations. Output from audits and investigations provide guidance for priorities and initiatives that DOT and its OAs must pursue.

Key IT Trends

Information technology continues to advance at a rapid rate, and while it's difficult to project with certainty which of today's emergent technologies will be mainstream five years into the future, there are new and innovative technologies that are rapidly gaining traction and offer great promise for transforming how federal agencies execute their mission. One technology already delivering great value to government agencies and which has strong backing from OMB and the federal CIO is cloud computing. Cloud computing allows agencies to leverage shared resources and thus reduce costs while increasing flexibility (e.g., quickly modify service levels based on changes in capacity without locking into a large investment up front). It is anticipated that cloud computing will continue to expand across the Federal Government as cloud providers enhance and expand their service offerings.

A key technology which has enabled the growth of cloud computing is server virtualization. Virtualization uses software to divide a physical server into multiple virtual server environments. This technology allows organizations to consolidate server hardware and more easily move applications between server environments. While most agencies employ server virtualization to some degree today, the technology is far from fully deployed. Virtualization technology can also be employed on the desktop where it can separate a computer desktop environment from the physical computer. The "virtualized" desktop can then be stored on a centralized server, thereby requiring less computing resources at the workstation level. Desktop virtualization adoption has progressed at a slower rate due to a longer technology

maturation rate. Through virtualization, agencies can realize more scalability, cost saving, and improved services without increasing resources.

Analysts project that in 2013, mobile devices will surpass personal computers to become the most common Web access tool. Mobile devices are enabling organizations to eliminate system access limitations based on physical location and deliver a truly untethered enterprise application environment. Providing access to applications and information at the location where decisions are made can improve decision-making and responsiveness.

Two more technologies driving improved decision-making are data analytics and visualization. Through the use of advanced analytical tools, non-technical users can unlock insights from big data stores or model business scenarios to allow better planning and preparation for potential crisis or disaster situations. With data visualization tools, users can see patterns in data that aren't readily apparent in data tables or charts. The combination of improved tools on the front-end with data warehouse technology offers great potential for reporting, analysis, simulation, and forecasting applications. When applied in a manner to deliver management dashboards, this technology can also help to drive more timely and effective management decision-making.

The use of social media in the federal government continues to expand, spearheaded by Facebook, Twitter, YouTube, Flickr and others. Through the use of these tools, federal agencies are able to increase engagement, remove boundaries, and enhance collaboration with employees, citizens, and stakeholders. Government agencies are also using social media to improve the provisioning of services, distribute event notifications, and allow the public to weigh in on policy decisions. For government organizations, these technologies offer great promise for delivering on the commitments of openness, transparency, and a participatory government.

6. MARAD IT Strategy

MARAD's ability to deliver on its mission and goals depends heavily on its ability to efficiently assimilate, analyze, and distribute information within the organization and externally with stakeholders. MARAD depends on its information systems to monitor, analyze, and react to situations occurring in the marine transportation system and improve maritime domain awareness. MARAD programs also rely on IT platforms to inform and collaborate with MTS stakeholders to expand maritime freight movement and ensure compliance with U.S. laws and environmental regulations. In addition, MARAD utilizes IT systems to manage and maintain a responsive reserve fleet with up-to-date crew availability information. Lastly, the USMMA

relies on information technology to support academic endeavors at the USMMA and deliver a world-class educational environment.

IT Mission and Vision

The following Mission and Vision statements were defined by the MARAD OCIO:

IT Mission Statement: ***To provide timely and cost-effective Information Technology solutions and tools to best meet MARAD's business needs.***

IT Vision: ***MARAD Information Technology precisely and consistently meets or exceeds business and system owners' expectations in order for MARAD to effectively and efficiently deliver all required business services.***

Guiding Principles

The following principles were defined to guide the MARAD OCIO's current and future decision-making; they represent the common values to be embraced and demonstrated by MARAD's OCIO and provide direction for the development of this IT Strategic Plan.

- MARAD's mission drives all IT investment.
- Collaboration with business partners and stakeholders is essential.
- Information resources and investments should be continually optimized.
- Future IT solutions and systems should be aligned with changing business needs.
- Information will be treated as a strategic asset.
- Attracting and retaining a high performance IT workforce is key to MARAD's success.
- MARAD will adopt IT management best practices across all disciplines.

IT Goals, Objectives and Strategies

To support the MARAD mission from FY2014 through 2018, MARAD's OCIO defined the following goals, objectives and strategies:

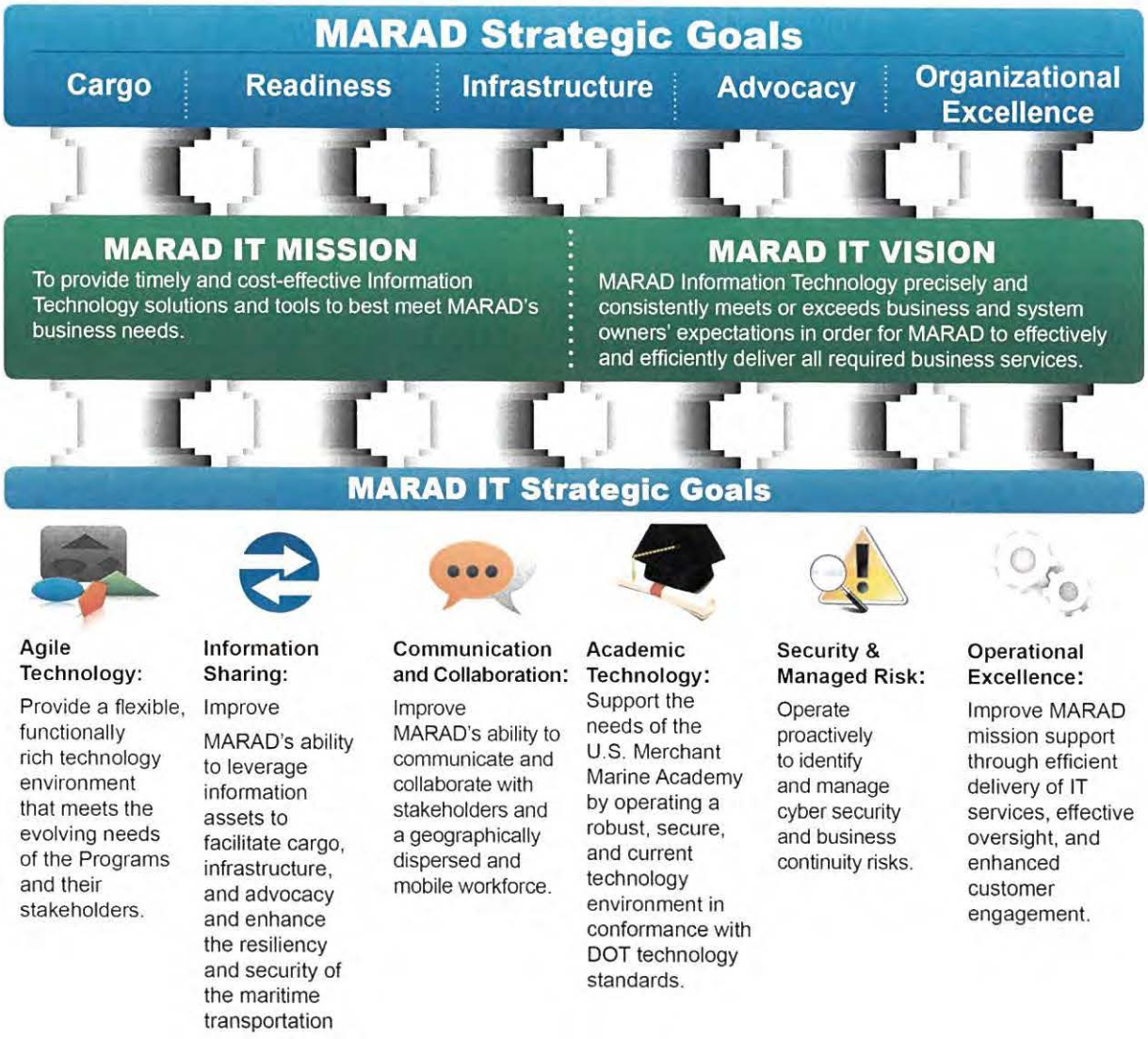

Figure 2: MARAD IT Mission, Vision, and Strategic Goals

Goal 1 - AGILE TECHNOLOGY - Provide a flexible, functionally rich technology environment that meets the evolving needs of the Programs and their stakeholders.

MARAD's OCIO will deliver a portfolio of IT services and solutions that enable and enhance the OA's broad range of activities. This service portfolio will provide the capabilities allowing MARAD to plan, communicate and collaborate effectively, automate processes, and make informed decisions throughout the OA. MARAD's OCIO will deliver these capabilities via a flexible technology environment utilizing industry standard, enterprise-class technology platforms.

Objective 1.1 - Enhance IT capabilities through strategic investments focused on MARAD's highest priority business needs to improve decision-making and increase efficiency and effectiveness.

MARAD program stakeholders and leadership rely upon MARAD's application portfolio to perform key activities, such as provide maritime domain awareness, manage the Ready Reserve Force, monitor and engage with the maritime workforce, monitor regulatory compliance, and collaborate with maritime stakeholders. MARAD's OCIO will make strategic investments that address functionality gaps in existing applications and improve information accessibility. This will enable MARAD to improve the efficiency and effectiveness of business processes, reduce burdens on MARAD staff and improve service to external stakeholders.

Strategy 1.1.1 - Introduce new technology solutions to automate manual business processes and help drive operational efficiency at all levels within the organization.

By migrating MARAD to the DOT-standard online collaboration platform, MARAD's OCIO will provide MARAD the ability to utilize workflow automation, collaborative document creation, and online peer-review capabilities. These capabilities will enable MARAD to automate processes such as environmental permitting and Title XI applications, and improve efficiency and effectiveness of regulation and compliance monitoring. These capabilities also enable remote collaboration across distributed workgroups, reducing the need for travel. Additionally, MARAD's OCIO will evaluate and implement project management tools to improve MARAD's ability to manage large projects, such as those funded by TIGER grants.

Strategy 1.1.2 - Include business process re-design as a necessary component of all major Information Technology investments.

Redesigning business processes associated and impacted by technology change enables MARAD to realize the maximum benefits from its investments. Without this effort, the intended performance improvements associated with system enhancements such as eliminating manual activities and bottlenecks, reducing cycle times, facilitating collaboration, or sharing information may not be realized. To improve the impact of future IT investments, MARAD's OCIO will work with program stakeholders to tailor business processes to current and future application requirements.

Strategy 1.1.3 - Expand the deployment of operational and performance management dashboards to improve decision-making.

Program offices currently rely on spreadsheets and other desktop tools for reporting and analysis. MARAD's OCIO will improve MARAD's ability to access performance information for executive, management, and operational reporting and analysis by expanding the deployment of data visualization technology across the OA.

Strategy 1.1.4 - Enhance the ability to directly receive information from external information systems in order to reduce manual data entry.

Many MARAD business activities, including maritime workforce monitoring and port capacity reporting, currently rely upon manual-intensive processes to collect information and update MARAD systems. Elimination of indirect data ingest processes such as transcription or scanning of paper forms, and manual upload of spreadsheets, emails, and other data files offer opportunities to improve efficiency. MARAD's OCIO will undertake the development of data portals for electronic data submission, and implement system-to-system interfaces for data transmission to improve data integrity and eliminate manual intervention. Additionally, MARAD's OCIO will partner with mission stakeholders to apply IT capabilities such as barcode scanners and mobile data collection applications to internal data collection activities such as inventory management and environmental compliance audits.

Strategy 1.1.5 - Enhance scenario analysis capability across applications to improve planning capabilities.

The state of the nation's maritime network is constantly changing due to events related to ports, shippers, costs, regulations, natural disasters, workforce, and other transportation elements. Maritime stakeholders rely on MARAD information systems to provide situational awareness and assist with the analysis of potential responses to maritime environmental scenarios in near real-time. MARAD's OCIO will enable improved mission planning and

response capabilities by enhancing the scenario analysis and planning capabilities that currently exist in the MARAD IT application portfolio.

Performance Measures for Objective 1.1

- *Number of critical operational dashboards deployed*
- *Percentage of manual system data entry points eliminated through enhanced system interfaces*

Objective 1.2 - Improve application agility, flexibility and reliability across the MARAD IT portfolio.

Increasing transaction volumes, scope expansion, and the need for application enhancements has challenged the limits of many existing applications and their underlying technology platforms. In order to improve reliability and scalability, MARAD's OCIO will systematically migrate MARAD applications to enterprise-scale technology platforms. MARAD's OCIO will also implement a more flexible technology architecture to improve MARAD's ability to adapt, extend, and integrate IT applications. MARAD's OCIO is developing a target enterprise architecture in support of the IT modernization roadmap. During the time span covered by this IT Strategic Plan MARAD's OCIO will deploy key elements of the target architecture to enhance the foundation on which MARAD's IT applications are developed and operated. A more flexible infrastructure will allow MARAD's OCIO to shorten the delivery time for system changes and enhancements and enable MARAD to respond and adapt more rapidly to mission challenges.

Strategy 1.2.1 - Implement a SOA framework to provide a platform for service-based applications.

Applications within the current MARAD IT application portfolio were developed and implemented over time as standalone applications, each with a specific purpose. This approach has resulted in an environment of siloed applications with limited integration across applications. As a result, users must access multiple systems in order to access information that exists within those systems. This also creates an environment in which applications may store redundant information. This presents a problem whereby different results may come about from a similar inquiry made in separate systems. When implemented effectively, Service Oriented Architecture (SOA) frameworks can break down the barriers between functions and data that may exist in separate applications. By implementing a SOA framework, MARAD's OCIO will provide a foundation for application modernization to address these challenges. This will require re-architecting existing applications into componentized applications with data and services that can be shared and reused across applications. MARAD IT applications will be

migrated to this environment at appropriate times in their life cycle to improve the integration and flexibility of the MARAD IT portfolio.

Strategy 1.2.2 - Migrate key mission applications to enterprise-class platforms.

Several MARAD IT applications currently operate on software platforms that were not intended to be used for large multi-user enterprise applications. While these applications provide important functionality to mission programs, their underlying software platforms are ineffective as enterprise application platforms due to their limited security, reliability, scalability, and multi-user access capabilities. For this reason, they may present business continuity and security risks. MARAD's OCIO will migrate those applications not operating on enterprise-level software platforms to enterprise-class databases and software platforms to improve their security, scalability, and reliability.

Performance Measures for Objective 1.2

- *Percentage of mission applications on enterprise-class platforms*
- *Average cycle time for new application enhancements*
- *Systems availability percentage of MARAD mission systems over a given period*

Goal 2 - INFORMATION SHARING - Improve MARAD's ability to leverage information assets to facilitate cargo, infrastructure, and advocacy and enhance the resiliency and security of the maritime transportation network.

MARAD mission effectiveness will be enhanced through an improved ability to leverage the wealth of maritime transportation and operational information within its existing systems portfolio. To support the mission, MARAD's OCIO will provide enhanced reporting and analytical capabilities, reduce data silos, and improve accessibility of relevant external information resources. MARAD will also be a more active participant in federal information-sharing initiatives in order to share information with, and gain access to external government data sources to improve maritime situational awareness and support counterterrorism. Efficiencies within the human resource management, financial management, legal counsel, facilities management, and internal control functions will also be enhanced through improved information accessibility.

Objective 2.1 - Enhance the quality, accessibility, and usefulness of MARAD information assets.

MARAD's OCIO will employ strategies to improve the quality, accessibility, and usability of existing information resources so that the full value of those information assets can be realized. MARAD will reduce redundancy and improve data integration by making improvements to data architecture and instituting information governance processes. MARAD's OCIO will also enhance and integrate the reporting, analytics, and electronic discovery capabilities of the existing applications to enable system users to turn raw data into valuable insight and support decision-making.

Strategy 2.1.1 - Expand reporting, analytics, and search capabilities across the MARAD application portfolio.

In order to enhance the reporting, analytics and search capabilities across the MARAD application portfolio, MARAD's OCIO will identify and implement an enterprise-wide reporting, analytics, and search platform that meets MARAD mission and organizational needs. A high priority will be placed on identifying a single reporting and analytics platform that can operate across the diverse MARAD IT portfolio. Combined with the data management strategies defined elsewhere in this Plan, MARAD's OCIO plans to provide users the ability to leverage data across applications to enhance reporting and analytics.

Strategy 2.1.2 - Form an Information Management Authority to address information management governance.

In order to improve information asset management, MARAD will establish an Information Management Authority (IMA) working group to focus on data management and data quality issues. The IMA will review all system change requests for potential impact on data management and quality, and subsequently report assessments to the appropriate IT governance board. This working group will also ensure that all new IT systems follow the open data, content, and Web API policy as required under the federal Digital Government strategy.

Strategy 2.1.3 - Develop and implement a data management strategy and solution for improved data quality and to ensure use of authoritative data.

Applications within the MARAD portfolio exhibit data gaps and redundancies, allowing inconsistencies and inaccuracies when similar data is sourced from different applications. To eliminate this, MARAD's OCIO will undertake a strategic initiative to define a data management strategy and implement a solution to manage the availability, usability, integrity, and security of the data stored in MARAD applications. MARAD's OCIO will identify the information policies, data rules, and guidelines for managing key data elements and assigning roles and responsibilities for ongoing data management.

Strategy 2.1.4 - Expand the integration of multimodal transportation information into MARAD applications to improve maritime and overall transportation domain awareness.

MARAD will expand the transportation domain awareness provided by the application portfolio to include brown water and intermodal transportation elements by integrating additional multimodal transportation data sources.

Strategy 2.1.5 - Maximize the dissemination and utility of public data sets in accordance with the Open Government and Digital Government Initiatives.

Currently, MARAD publishes industry data via its publicly-accessible website using a variety of formats, including spreadsheets and various on-line publications. However, accessing these datasets can require significant manual effort to access and reformat for use. In order to make this data more accessible and user-friendly, MARAD's OCIO will work with DOT to implement a data management platform that enables and promotes the publishing of open-format online data, which can be downloaded, indexed, searched, and accessed more easily.

Performance Measures for Objective 2.1

- *Percentage of transportation data solutions converted to cross-platform solutions*
- *Number of duplicate data elements existing across applications*
- *Percentage of data assets governed by a data management lifecycle*
- *Percentage of data assets accessible via API*

Objective 2.2 - Increase MARAD participation in federal initiatives to enhance information exchanges with other government entities and industry.

MARAD will be an active participant in the Information Systems Environment, which provides analysts and investigators with information related to homeland security in order to help enhance national security. MARAD will perform required reporting to support analytical and coordination functions with the Intelligence and law enforcement communities as appropriate.

Strategy 2.2.1 - Participate in the Information Systems Environment initiative to enable information sharing to support counterterrorism efforts and improve decision making.

MARAD will leverage existing data sharing standards and techniques for sharing information with other government agencies. MARAD will work closely with DOT to implement Information Sharing Architecture standards and collaborate with the U.S. Intelligence Community (IC). MARAD will evaluate the adoption of the National Information Exchange Model as the basis for developing reference information exchanges to support homeland security and intelligence efforts. MARAD's OCIO will work closely with DOT's OCIO to take a more proactive approach to coordinating DOT information standards and practices. Lastly, MARAD will coordinate data sharing efforts with the DOT's OCIO activities for establishing Department-wide information standards and exchanges.

Performance Measures for Objective 2.2

- *Number of automated system interfaces to government and industry sources established for information sharing*

Goal 3 - COMMUNICATION AND COLLABORATION - Improve MARAD's ability to communicate and collaborate with stakeholders and a geographically dispersed and mobile workforce.

MARAD's OCIO will deliver IT services enabling connectivity for MARAD's mobile and distributed workforce, and provide true location-independence and improved productivity for staff located outside headquarters. Enhanced mobile device support will allow mobile workers to bring MARAD information assets to bear for decision-making, and enable tasks such as data collection in the field. Additionally, with partner organizations and stakeholders distributed across the globe, enhanced virtual collaboration capabilities will improve the effectiveness of working groups and advocacy efforts for MARAD programs. Using enhanced Web and social media communication platforms, MARAD will realize an improved ability to reach and engage external stakeholders in a two-way dialog. Improved online multimedia capabilities will also improve the ability and reach of programs for publishing information, notices, and announcements.

Objective 3.1 - Enhance the quality of IT services for a growing mobile work force.

Proliferation of highly-functional mobile devices, ubiquitous high-speed broadband, and cellular data coverage have raised IT user expectations for fully-functional, location-independent access to IT systems and services. While mobile access capabilities have the potential to deliver significant value to users, they bring security, reliability, and scalability challenges. Enhanced connectivity for remote MARAD users will bring headquarters-equivalent application and information access to MARAD's gateway and satellite offices, as well as shipboard and other remote workers. Improved mobile device and security management capabilities will minimize the risk of data loss and unauthorized access to systems and sensitive information.

Strategy 3.1.1 - Participate in the DOT Mobilize initiative to expand safe and secure end-user access points to DOT systems and services.

The DOT Mobilize initiative is a DOT OCIO program designed to identify and implement next generation IT mobility solutions in support of a widely-distributed and mobile workforce. As part of this initiative, MARAD's OCIO will work with DOT's OCIO to pilot and implement solutions, such as mobile device management and virtual desktop connectivity to improve connectivity for remote and mobile workers. This "bring-your-own device" approach (BYOD) presents a potential for significant cost savings, improved user flexibility, and convenience for

all staff. MARAD's OCIO will work with DOT's OCIO to evaluate and deploy BYOD solutions once they are proven suitable for use in the DOT environment.

Strategy 3.1.2 - Establish a remote access technology refresh lifecycle to ensure timely adoption of technologies for enhanced system access, collaboration, and communication.

With continued evolution in remote access technologies, security threats and user needs, MARAD's OCIO recognizes that MARAD remote access solutions must be maintained through an ongoing technology refresh program. MARAD's OCIO will work with DOT's OCIO to define a suitable remote access technology lifecycle to ensure that remote access solutions are maintained and enhanced to meet evolving needs.

Performance Measures for Objective 3.1

- *Percentage of MARAD IT assets accessible from remote offices and locations*
- *Number of remote MARAD sites lacking full accessibility to internal MARAD system resources*

Objective 3.2 - Enhance MARAD's ability to demonstrate the value of MARAD and maritime transportation and engage stakeholders.

Through the utilization of next-generation social media and Web content management solutions, MARAD will realize substantial improvements in the ability to tailor online messaging and digital content to specific audiences while increasing engagement with those audiences. Utilizing interactive Web and social media tools offers MARAD programs the ability to directly interact with stakeholder groups in a two-way dialog, as well as collect usage and response data for measuring the impact of those interactions. By enhancing the ability to conduct a higher level of interaction through Web portals, MARAD can improve the effectiveness of its advocacy activities within the maritime transportation industry.

Strategy 3.2.1 - Enhance the MARAD Web platform to improve MARAD's ability to publish valued content to the maritime industry.

The DOT OCIO recently implemented a Web content management system as a shared service accessible to all DOT OAs. This shared platform offers a functionally-rich Web environment with a potential for significant operational cost savings. The content management system provides the ability to publish media-rich Web content tailored to specific target audiences using content publishing features that reduce the level of effort required for content authorship, publishing, and management. MARAD's OCIO will work with Public Affairs and program office leadership to redesign the MARAD website, improve the MARAD Web presence

and better convey MARAD and maritime industry value to the global economy. If found to be cost effective, MARAD's OCIO will work with DOT to implement the content management system.

Strategy 3.2.2 - Expand the use of social media tools to increase engagement of MARAD customers and stakeholders.

Linking the vast, international population of maritime industry partners/stakeholders in an effort to increase engagement and facilitate a dialog on critical industry issues presents a challenge. Social media tools offer an exciting and efficient solution. To facilitate new types of engagement, MARAD's OCIO will expand the ability for MARAD staff, partners, and stakeholders to utilize social media tools in a safe and secure manner.

Performance Measures for Objective 3.2

- *Annual customer satisfaction survey scores for content, speed, reliability, convenience, and usefulness of the website*

Objective 3.3 - Improve ability of MARAD personnel to collaborate with internal and external stakeholders.

In an effort to share commodity IT services and realize economies of scale, DOT's OCIO has established a DOT-wide SharePoint collaboration platform to improve knowledge management and collaboration capabilities. This DOT OCIO enterprise-wide collaboration platform offers the potential benefits of close integration with the DOT Enterprise Messaging platform and other cloud-based office productivity tools. Over time, MARAD's OCIO will migrate MARAD collaboration sites to the DOT OCIO shared collaboration platform, enhancing collaboration capabilities within MARAD and potentially lowering costs.

Strategy 3.3.1 - Expand the capabilities and adoption rate of the DOT collaboration platform for internal MARAD collaboration sites.

With the migration from the legacy eRoom-based collaboration platform to the common DOT collaboration platform underway, MARAD's OCIO recognizes that users will need to be trained how to use and maximize the new platform's capabilities. MARAD's OCIO will work to raise stakeholder understanding of its basic features and functions, identify opportunities to apply collaboration and workflow automation, and help spread awareness and adoption of collaboration tools.

Strategy 3.3.2 - Identify and deploy an enhanced external collaboration platform.

With industry advocacy as a primary MARAD mission objective, external collaboration is an important and frequent activity performed by MARAD personnel. The DOT enterprise collaboration environment does not currently support access by external entities. However, online collaboration with external stakeholders is an important capability for MARAD and other Department OAs. In order to continue delivering external-facing collaboration capabilities to MARAD stakeholders, MARAD's OCIO will work with the DOT OCIO to identify and migrate to a suitable enterprise collaboration platform that enables access by external entities.

Performance Measures for Objective 3.3

- *Number of internal/external collaboration activities migrated to an enterprise collaboration platform*

Goal 4 - ACADEMIC TECHNOLOGY - Support the needs of the U.S. Merchant Marine Academy by operating a robust, secure, and current technology environment in conformance with DOT technology standards.

MARAD will deliver a complete portfolio of IT services tailored to the unique needs of educators, administrators, and midshipmen at the USMMA. The USMMA IT infrastructure will enable safe and secure delivery of world class academic programs to midshipmen whether they are physically on-campus, aboard training ships, or at remote locations. Compliance with DOT technology standards will ensure a secure and reliable IT network environment and application portfolio at the USMMA.

Objective 4.1 - Leverage technology to improve the delivery of education to on- and off-campus students and support a dynamic campus culture.

As advancements in technology continue to enhance aspects of communication, collaboration, and learning, opportunities exist to fundamentally change the manner in which education is delivered at the USMMA. Through the enhancement of technology deployed to support the USMMA's academic endeavors, MARAD's OCIO and the USMMA will create a world-class learning environment ensuring that midshipmen are well prepared for challenges they will face in their post-graduation careers.

Strategy 4.1.1 - Standardize applications and tools used in the delivery of education across the campus.

The current USMMA IT application portfolio is undergoing change as the legacy administrative system is being phased out and replaced with an end-to-end academic management system, CAMS®, designed to manage the full student life cycle, from prospective student contact through graduation. MARAD's OCIO will work with the USMMA IT to standardize additional applications and technologies in and out of the classroom, improving the USMMA's overall academic quality, communication, and outreach capabilities.

Strategy 4.1.2 - Provide differentiated network services to support the needs of the USMMA academic community.

Computing needs for an academic environment differ from that of a typical MARAD office environment. At the USMMA, IT must support midshipmen and academic community needs while providing accessibility for visiting faculty and industry partners. To support the unique needs on the USMMA campus, MARAD's OCIO will work with the USMMA to design and

implement a network environment that provides the necessary segmentation to support differentiated services, as well as provide network connectivity and security appropriate for each user population.

Strategy 4.1.3 - Expand the Maritime Simulation Program

The Maritime Simulation Program is a group of innovative programs based at the USMMA that prepare Midshipmen for leadership and service in the maritime industry. To maximize the program's overall benefits, the USMMA will expand it to include the latest technologies for Bridge, Engine room, Towing, and Dynamic Positioning simulation, thus expanding the USMMA's already world-class operational training and certification curricula.

Performance Measures for Objective 4.1

- *User satisfaction level for IT capabilities that support on-campus and off-campus students*

Objective 4.2 - Improve external linkages to promote ongoing collaboration, communication, and problem-solving across federal, industry, alumni, and academic partners.

Information technology offers great potential for breaking down knowledge barriers, enhancing collaboration, and expanding learning opportunities beyond the walls of an academic institution. Through virtual learning, classroom and social media technologies, the USMMA will enhance the integration of its academic environment and enable industry and academic partners to bring real life experiences and industry expertise into the classroom environment.

Strategy 4.2.1 - Mature website design and content management capabilities and processes to enable website content to be easily maintained and adapted to each audience.

The recent redesign and migration of the USMMA website to the DOT shared Web content management system provides the USMMA with a full-featured Web platform for Web-based communications. The USMMA's ability to deliver relevant content, and enhance its ability to convey its academic value to the outside world, is dependent on the establishment of effective Web governance, content publication, and approval processes. MARAD's OCIO will work with the USMMA to define and implement these processes and realize the Web content management platform's full value.

Strategy 4.2.2 - Expand usage of social media and virtual learning tools to increase engagement with partners and stakeholders.

Colleges and universities are utilizing social media and virtual learning technologies to enhance academic communication channels and improve the overall learning environment. To enhance the educational experience, the USMMA will mature the virtual learning capabilities available to faculty and students. To improve communication and engagement within the USMMA campus environment, MARAD's OCIO will work with the USMMA to make social media tools available for midshipmen, alumni, professors, and administrators while maintaining a secure computing environment for the USMMA.

Performance Measures for Objective 4.2

- *Percentage of MARAD public-facing content that is reviewed and updated no less frequently than an annual basis*

Objective 4.3 - Reduce the cost to operate and maintain the USMMA infrastructure.

As the negative effects of the current economic climate are felt on federal budgets, efficient management of IT resources will be critical to maintaining or expanding IT service levels. To accomplish this, the USMMA will consolidate and share infrastructure through server virtualization and cloud computing. When practical, the USMMA will leverage the shared services delivered by the DOT OCIO.

Strategy 4.3.1 - Consolidate resources to reduce the USMMA technology footprint.

Currently, the USMMA IT portfolio utilizes dedicated servers for each application. Virtualization technologies provide a reliable and secure solution for reducing the hardware footprint. Consolidation of server hardware through server virtualization will be performed across the USMMA portfolio to reduce the hardware, software, operations, and maintenance costs for the USMMA.

Strategy 4.3.2 - Leverage shared services and cloud services to improve service and reduce costs.

The USMMA can take advantage of shared services and cloud technologies to reduce operations cost and improve service quality. For instance, the USMMA will leverage shared service offerings from DOT OCIO to deliver services such as the Web content management platform on which the USMMA external website operates, and email and collaboration platforms. The USMMA will also use external cloud computing solutions to reduce the level of internal resources required to deliver elements of its application portfolio, such as library management.

Performance Measures for Objective 4.3

- *Percentage year over year operational cost savings*

Objective 4.4 - Provide a Federal Government-compliant IT environment to all MARAD employees at the USMMA.

The USMMA faces a unique challenge in providing an IT environment to meet the diverse needs of academic and administrative staff and students while maintaining compliance with federal and DOT regulations. While the USMMA staff are classified as MARAD employees, requiring all of the same security safeguards as any other federal employee, midshipmen are not. The USMMA must balance the needs and interests of the diverse user group while delivering a safe and secure computing environment for all users. To meet this challenge, MARAD's OCIO will continue collaborating with DOT's OCIO on security-related initiatives and deliver a secure computing environment that is fully compliant with all federal and DOT cybersecurity standards. For the USMMA, MARAD's OCIO will implement an architecture that provides the necessary network security controls to maintain a secure and Federal Government-compliant network environment for MARAD employees while delivering a secure environment suitable for an academic environment.

Strategy 4.4.1 - Re-architect the USMMA network to improve service and bring into alignment and compliance with DOT network standards.

Departmental initiatives, as well as several government-wide mandates such as IPV6 and Trusted Internet Connection, dictate the need for a redesign and reconfiguration of the USMMA network to achieve compliance with the DOT network standards. MARAD's OCIO will work with the USMMA and the DOT OCIO to comply with these mandates and establish appropriate network segmentation to eliminate network addressing conflicts within the DOT network.

Performance Measures for Objective 4.4

- *Number of compliance-related IT and security audit findings/POAM action items*

Goal 5 - SECURITY AND MANAGED RISK - Operate proactively to identify and manage cyber security and business continuity risks.

MARAD will include risk management as a fundamental mission requirement and ensure sufficient resources are committed to operate an effective organization-wide risk management program. MARAD's OCIO will effectively manage cybersecurity and business continuity risks to provide protections commensurate with the magnitude of harm that could arise from each risk, continuously monitor the effectiveness of information system security controls and adapt those controls as risks change.

Objective 5.1 - Provide MARAD with a safe, secure, and highly available operating environment fully compliant with federal cybersecurity requirements and best practices.

MARAD will collaborate with DOT's OCIO to deploy DOT-standard solutions to automate, scale and continuously monitor information security controls in the face of evolving security threats. MARAD will work with DOT's OCIO to implement information security protections appropriate for risk levels associated with unauthorized access, use, disclosure, disruption, modification, or destruction of information maintained by or on behalf of MARAD. Sensitive data will be protected in accordance with appropriate security and privacy policies. MARAD OCIO will also deliver business continuity and disaster recovery capabilities for timely and effective return of MARAD systems to an operational state within a timeframe acceptable to the mission.

Strategy 5.1.1 - Define and operate a security risk management framework to manage information security risks.

FISMA, the Paperwork Reduction Act of 1995, and the Clinger-Cohen Act emphasize the need for a risk-based approach to achieve cost-effective IT security. The NIST has defined an integrated Risk Management Framework which effectively brings together all FISMA-related security standards and guidance to promote the development of comprehensive and balanced information security programs by agencies. MARAD will utilize the NIST Risk Management Framework and DOT Cybersecurity Policy to select and implement appropriate security controls, policies, and procedures to provide an organization-wide information security program that manages organizational risk associated with the operation of MARAD IT systems.

Strategy 5.1.2 - Implement standard DOT cybersecurity solutions across the MARAD network environment according to a prioritized funding plan.

MARAD will leverage Department-specified security policy, procedures, and solutions where appropriate and cost effective to fulfill requirements and gain efficiencies in implementing its information security program.

Strategy 5.1.3 - Implement appropriate business continuity plans to ensure sufficient availability of information or information systems at all times.

MARAD's OCIO will partner with mission stakeholders to develop and implement a business continuity plan that addresses the needs of the OA's missions and functions. Implementation of the plan will include training affected personnel in their contingency-related duties and periodic testing of the plan execution.

Strategy 5.1.4 - Ensure that all personally identifiable information and/or other DOT sensitive information are appropriately protected.

In delivering its mission, MARAD maintains limited personally identifiable information (PII) on mariners and the USMMA midshipmen in its information systems, and will continue to minimize the amount of PII collected and retained. For those applications requiring PII retention, MARAD's OCIO will ensure that appropriate technology solutions are utilized to store and protect this type of sensitive information in accordance with FISMA and the Privacy Act of 1974.

Performance Measures for Objective 5.1

- *Number of incidents involving unauthorized use or misuse of an IT asset or information during the period*
- *Percentage of critical IT resources with backup components and contingency plans*
- *Percentage uptime of critical IT resources for the past period*
- *Percentage of critical IT resources that comply with federal/departmental IT security standards and policies*

Objective 5.2 - Increase security awareness of MARAD personnel.

MARAD will raise the level of security awareness throughout the organization by offering relevant training and education to all employees and contractors. Where appropriate, MARAD will ensure that specialized cybersecurity training is provided annually to individuals with significant information system security or cybersecurity program responsibilities.

Strategy 5.2.1 - Increase security awareness by ensuring availability of innovative and relevant training/education offerings.

DOT currently provides basic security awareness training to all information system users as part of initial training for new users and when required by system changes. MARAD will enhance the security awareness of MARAD personnel by offering additional training and education opportunities beyond basic security awareness. MARAD's OCIO will work with DOT's OCIO to develop innovative training modules that can be delivered via online or classroom based means.

Performance Measures for Objective 5.2

- *Compliance with FISMA requirement for 100% of MARAD employees to have received IT security awareness training during the last fiscal year*
- *Percentage of MARAD employees demonstrating a "high level" of awareness for IT security issues as reported by an annual employee survey*

Goal 6 - OPERATIONAL EXCELLENCE – Improve MARAD mission support through efficient delivery of IT services, effective oversight, and enhanced customer engagement.

MARAD's OCIO will improve MARAD mission support through the pursuit of operational excellence. To improve operating efficiencies, MARAD will maximize the use of shared computing resources, including virtualized servers and desktops, common utility computing solutions delivered by DOT's OCIO, and where appropriate, cloud computing platforms.

To ensure alignment and quality in its IT service delivery, MARAD's OCIO will employ best practices for IT planning, governance, operations, and customer service. MARAD's OCIO will support the initiative to increase telework opportunities.

Enhanced workforce skills and capabilities will allow MARAD's OCIO to increase engagement with the MARAD program offices to better understand their technology needs and work collaboratively on identifying solutions to maximize business value.

Objective 6.1 - Improve the MARAD IT management processes designed to align investments with priorities and maximize mission value.

MARAD will mature its IT management and governance processes in alignment with OMB/DOT governance guidance. IT Governance will provide a standardized approach to assessing investments for return on investment, strategic fit, and life cycle costs before investment decisions are made.

MARAD's OCIO will manage IT investments using a portfolio approach, allocating portions of the IT budget for maintenance versus strategic investments. Adoption of a portfolio approach to managing IT investments will provide a more structured, analytical approach to decision-making and improve dialog with the business.

Strategy 6.1.1 - Adopt comprehensive IT governance to prioritize IT investments and provide for program oversight and efficient spending.

MARAD's OCIO has instituted an Investment Review Board (IRB) and MARAD Modernization Board (MMB). MARAD will improve the effectiveness of these governance boards through the utilization of working groups focusing on Enterprise Architecture, Data Management, and Change Management to advise on and implement the various management board decisions. MARAD will also continue to define standardized tools and processes used to provide

consistency and alignment with DOT's OCIO governance processes. Additional tools and techniques will be implemented to improve project performance management and support a portfolio management approach across the IT portfolio.

Strategy 6.1.2 - Define and implement a performance management system to ensure greater visibility and accountability.

MARAD will develop a performance management system to manage, measure, and account for program performance. The performance management system will enhance program performance visibility, enable MARAD leadership to identify shortfalls, and allow for more rapid adjustments. Additionally, MARAD's OCIO will employ data visualization technology to automate the monitoring and reporting process and reduce manual report generation.

Performance Measures for Objective 6.1

- *Percentage of IT investments managed through the MARAD IT governance process*
- *Percentage of critical IT projects that track and report performance measurement data*

Objective 6.2 - Improve operational efficiency in the delivery of the MARAD IT services portfolio.

OMB is driving agencies to share common services and utilize cloud computing solutions to improve the efficiency of IT operations. There may be opportunities to reduce MARAD IT resource requirements by utilizing cloud computing services to leverage shared operations staffs, data center assets, and other underlying technology infrastructure. With this in mind, MARAD's OCIO will reduce redundancy with DOT by sharing services such as email, messaging, directory services, collaboration services, mobile support, and other common services across DOT OAs.

Strategy 6.2.1 - Migrate business support applications toward DOT shared platforms.

MARAD's OCIO will continue to leverage opportunities to utilize shared solutions and platforms for common services operated by other federal agencies or DOT OAs. Opportunities include migrating to a common DOT-wide messaging platform and a shared content management platform for external Web hosting.

Strategy 6.2.2 - Expand use of shared infrastructure platforms to reduce resource requirements.

MARAD will expand the use of shared infrastructure platforms on which to operate its technology environment. This strategy includes utilizing shared data centers, cloud computing environments, server virtualization, and SAN storage for the delivery of IT resources.

Performance Measures for Objective 6.2

- *Number of systems that duplicate functionality delivered by DOT shared systems*
- *Percentage of systems on approved shared infrastructure platforms*

Objective 6.3 - Provide greater service to MARAD Program Offices by increasing engagement and focusing resources on timely and innovative solutions to address growing business needs.

MARAD's OCIO will increase collaboration and establish partnerships with the program offices to better anticipate mission needs and align resources to deliver the technological capabilities and services bringing the greatest benefit. MARAD's OCIO will also enhance its project management and training capabilities in order to improve project delivery.

Strategy 6.3.1 - Implement more effective collaboration processes to improve MARAD OCIO's ability to identify opportunities to leverage technology to support the Program needs.

In order to improve quality of service and enhance collaboration with the program offices, MARAD's OCIO will implement organization and process changes allowing MARAD's OCIO to engage more effectively with the program office personnel. This approach may include appointing an IT contact for each program office with responsibility for maintaining a recurring dialog with the program office leadership to keep abreast of current and future business needs. The IT governance processes will also be used as a mechanism to involve the program office personnel in IT decisions on priorities and resource allocation.

Strategy 6.3.2 - Enhance planning, design, and project management capabilities to support mission needs and lead a technology portfolio evolution.

Successfully delivering the strategies and initiatives outlined in this Plan will require effective program and project management skills, as well as technology leadership. Further, successfully migrating MARAD's applications to a more flexible technology architecture, while maintaining a high level of IT service, will require an equally high level of technology management and project leadership. MARAD will enhance the technical and project management skills of its workforce, and the tools available to enable successful project execution.

Strategy 6.3.3 - Establish a robust system training capability to improve system adoption.

In order to maximize benefits from existing systems, as well as new system implementations and enhancements, users must be fully trained on the new technology. MARAD will establish a robust system training capability allowing MARAD system users to fully understand new capabilities and adopt process changes associated with the deployment of new technology solutions.

Performance Measures for Objective 6.3

- *Percentage of projects for which regular needs assessment reviews are scheduled*
- *Percentage of projects on-time & on-budget*

7. MARAD Strategy Alignment

Figure 3 and Figure 4 below illustrate how MARAD IT Strategic Goals align with MARAD and USMMA Strategic Goals.

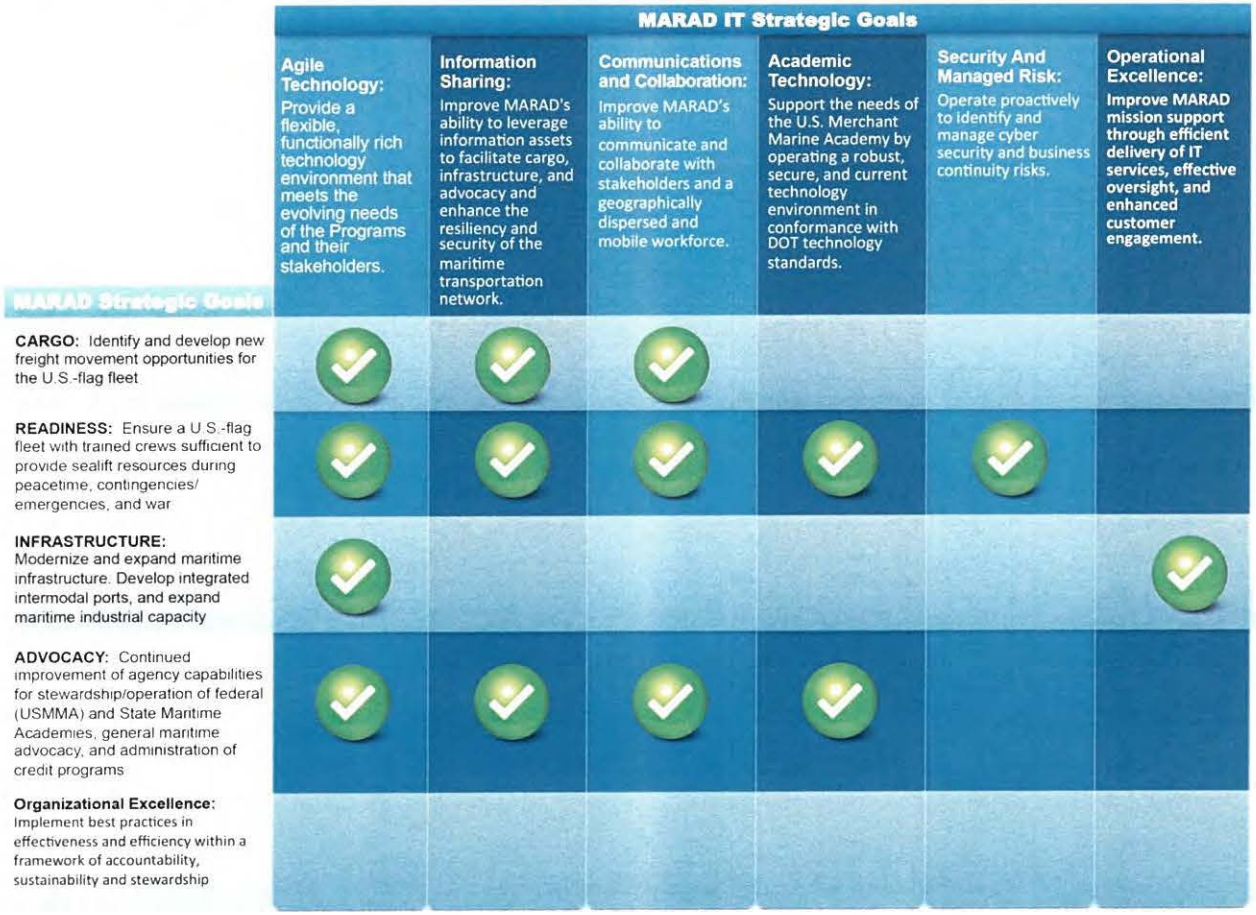

Figure 3: Alignment of IT Strategic Goals to MARAD Strategic Goals

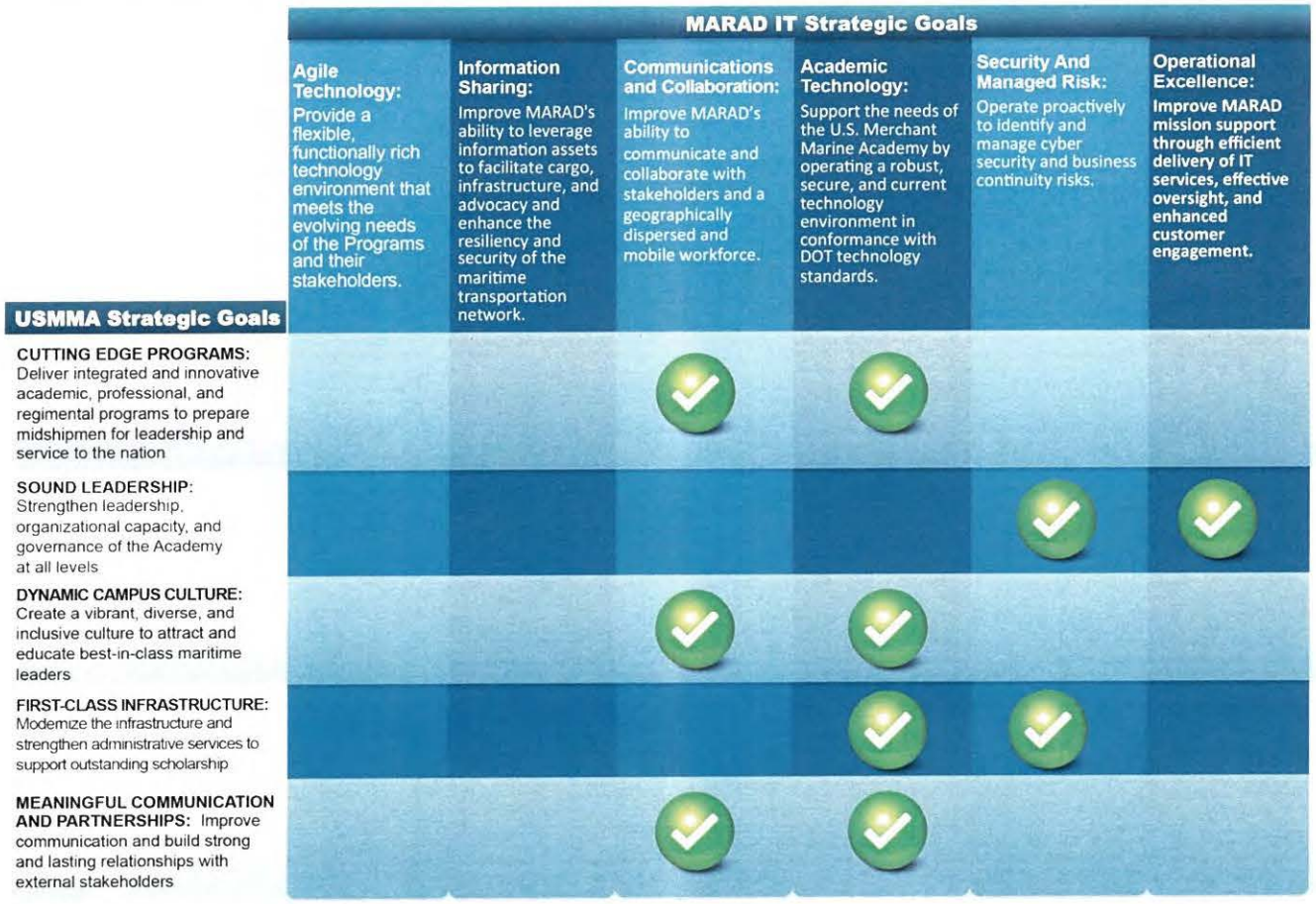

Figure 4: Alignment of IT Strategic Goals to USMMA Strategic Goals

Appendix A

Acronyms

API	Application Programming Interface
BYOD	Bring Your Own Device
CAPOS	Cargo Preference System
CCA	Clinger-Cohen Act of 1996
CIO	Chief Information Officer
CMS	Content Management System
CPIC	Capital Planning and Investment Control
DOT	Department of Transportation
EA	Enterprise Architecture
FISMA	Federal Information Security Management Act
GAO	Government Accountability Office
IC	Intelligence Community
IMA	Information Management Authority
IT	Information Technology
IRB	Investment Review Board
LAN	Local Area Network
MARAD	Maritime Administration
MMB	MARAD Modernization Board
MTS	Marine Transportation System
NIST	National Institute of Standards and Technology

OA	Operating Administration
OCIO	Office of the Chief Information Officer (as specified, either DOT or MARAD)
OIG	Office of the Inspector General
OMB	Office of Management and Budget
Open Gov	Open Government
PII	Personally Identifiable Information
SOA	Service Oriented Architecture
WAN	Wide Area Network

Appendix B

Definitions

Agile Technology	Technologies that foster the ability to both create and respond to change in order to operate in a turbulent mission or business environment.
Cloud Computing	A general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). A cloud service has three distinct characteristics that differentiate it from traditional hosting. It is sold on demand, typically by the minute or the hour; it is elastic -- a user can have as much or as little of a service as they want at any given time; and the service is fully managed by the provider.
Data Analytics	Data analytics is the science of examining raw data with the purpose of drawing conclusions about that information. Data analytics is used in many industries to allow companies and organization to make better business decisions and in the sciences to verify or disprove existing models or theories.
Data Visualization	The graphical presentation of information, with the goal of providing the viewer with a qualitative understanding of the information contents.
Infrastructure-as-a-Service (IaaS)	The capability provided to the consumer is to provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications.
Platform-as-a-Service	The capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired

(PaaS)	applications created using programming languages, libraries, services, and tools supported by the provider.
Software-as-a-Service (SaaS)	The capability provided to the consumer is to use the provider's applications running on a cloud infrastructure.
Service-Oriented Architecture	An architectural style promoting the concept of business-aligned enterprise service as the fundamental unit of designing, building, and composing enterprise business solutions.
Virtualization	To create a virtual version of a device or resource, such as a server, storage device, network or even an operating system where the framework divides the resource into one or more execution environments. The term virtualization is now associated with a number of computing technologies including the following: • Storage virtualization: the amalgamation of multiple network storage devices into what appears to be a single storage unit, • Server virtualization: the partitioning a physical server into smaller virtual servers, • Operating system-level virtualization: a type of server virtualization technology which works at the operating system (kernel) layer, • Network virtualization: using network resources through a logical segmentation of a single physical network, • Desktop virtualization: the partitioning a physical personal computer into smaller virtual personal computers.

Appendix C

Federal Laws and OMB Mandates

Clinger-Cohen Act - Since the implementation of the Clinger-Cohen Act (1996), the CIO in federal organizations has been assigned primary responsibility for managing federal IT investments, including the security and privacy of the information associated with these investments. CIO responsibilities include very specific procedural and policy responsibilities related to capital planning, security, and enterprise architecture, as well activities for shaping the agency's information culture.

E-Government Act - The E-Government Act of 2002 directs agencies to conduct reviews of how personally identifiable information about individuals is collected and handled within their respective agency. Agencies are required to conduct privacy impact assessments for electronic information systems and collections, making the privacy impact assessment publicly available through the agency website, the Federal Register, or other means.

FISMA - The Federal Information Security Management Act provides the framework for securing the federal government's IT. All agencies must comply with the FISMA requirements and report annually to OMB on the effectiveness of their security programs.

25 Point Implementation Plan to Reform Federal IT Management - The 25 Point Plan for IT Reform attempts to clear acquisition obstacles and allow agencies to leverage commercial best practices to create a more efficient and effective government. Highlights of the Plan include shifting to a "Cloud First" policy, consolidating commodity IT funding, and consolidating federal data centers.

Open Government Directive - OMB directs departments and agencies to take specific actions to implement the principles of transparency, participation, and collaboration. Under the Open Gov Directive, agencies are required to develop and maintain an Open Government Plan that defines steps to publish information online in an open format that can be retrieved, downloaded, indexed, and searched by commonly-used Web search applications.

Digital Government Strategy - Issued by the federal CIO in May 2012, the Digital Government Strategy requires agencies to take a number of actions, including ensuring that all new IT systems follow the open data, content, and Web Application Programming Interface (API) policy, establishing an agency-wide governance structure for developing and delivering digital services, and ensuring all new digital services follow digital service and customer experience improvement guidelines.

PortfolioStat - In March 2012, OMB established PortfolioStat as a new tool for agencies to use to assess the maturity of their IT portfolio management process, make decisions on eliminating duplication, augment current CIO-led capital planning and investment control processes, and move to shared solutions in order to maximize the return on IT investments across the portfolio. PortfolioStat requires Agency Chief Operating Officers (COO) to lead an annual agency-wide IT portfolio review within their respective organization. Under PortfolioStat, OMB engages directly with agency leadership in a face-to-face, evidence-based review of the IT portfolio to identify potential redundancies or investments that are not aligned to agency missions or business functions.

CIO Authorities - On August 8, 2011, OMB issued a memorandum (M-11-29) to agency heads which clarified the role of the Chief Information Officer (CIO) giving him the lead role in governance, commodity IT, program management, and information security. The CIO Authorities required that agencies, "pool their purchasing power across their entire organization to drive down costs and improve service for commodity IT. ... CIOs must show a preference for using shared services as a provider or consumer instead of standing up separate independent services." Agency CIOs will also be held accountable for terminating and turning around troubled projects, and delivering meaningful functionality at a faster rate while enhancing the security of information systems.