U.S. Department of Health & Human Services

INFORMATION TECHNOLOGY STRATEGIC PLAN

FY 2017 - 2020

Contents

CIO Cover Letter

It is my pleasure to share with you the *Department of Health and Human Services (HHS) Information Technology (IT) Strategic Plan, 2017-2020*. This replaces the *HHS IRM Plan, 2014-2018* and is the first IT plan since the enactment of the Federal Information Technology Acquisition Reform Act (FITARA).

The HHS IT Strategic Plan represents a collaborative effort across the Department to ensure that we realize the full benefits of IT. The plan articulates the primary role of the Operating Divisions (OpDivs) investing and managing IT and recognizes the important coordinating and oversight roles required of the Department Office of the Chief Information Officer (OCIO). This plan was developed through powerful collaboration between all levels of OCIO and the CIO Council, whose members represent the IT communities of every HHS Division. As a result of that collaboration, the HHS IT Strategic Plan serves as the enterprise roadmap for the HHS IT community.

As new technologies continue to emerge at a rapid pace, opportunities to improve mission-focused activities will emerge. New capabilities, including Application Programming Interfaces (APIs) and open source frameworks to support data exchange and business intelligence, "big data," and the "Internet of Things," manifest themselves in cloud-based Electronic Health Records, Telemedicine, Remote Patient Monitoring, and Wearable Technology. Modernizing core systems at HHS increasingly relies on these new digital technologies, fundamentally changing the way that information is created, preserved, and shared in more user-friendly and accessible ways.

Therefore, this plan includes an assessment of where the Department stands with its use and management of IT and outlines a vision for how IT will improve the Department at the end of the four-year planning period. It identifies five strategic goals and related initiatives that will help move the Department forward in its stewardship of IT for:

1. **IT Workforce**
2. **Cybersecurity and Privacy**
3. **Shared Services**
4. **Interoperability and Usability**
5. **IT Management**

Information technology is a catalyst for successful delivery of HHS' missions throughout our Department. With over $11 billion in IT spending annually, a strategic vision of how HHS will deliver IT to enable mission programs, grants, and other goods and services is crucial. This IT Strategic Plan serves as a roadmap, outlining several steps we are taking to improve performance and ensure effective implementation of HHS IT.

/Beth Anne Killoran/

Beth Anne Killoran
Department of Health and Human Services (HHS)
Chief Information Officer
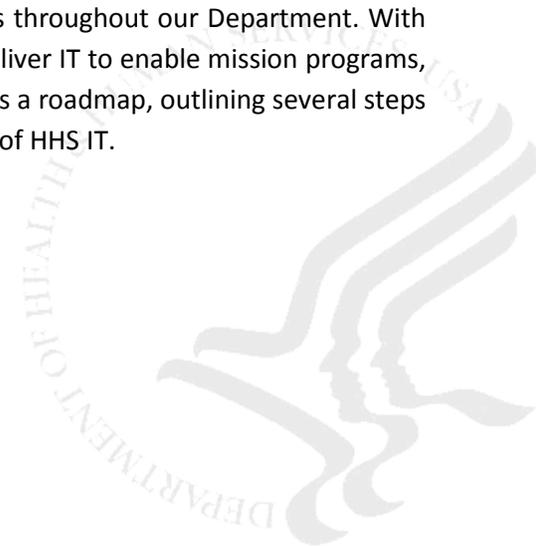
CIO Council Endorsement

This plan has been developed with input and endorsement from across the Department of Health and Human Services (HHS) and its Operating Divisions (OpDivs). The following Chief Information Officers (CIOs) have endorsed this plan and have committed to operationalizing the plan within their OpDivs.

/Nancy Eickelmann/

Nancy Eickelmann
Administration for Children and Families
(ACF)
Chief Information Officer (Acting)

/Todd Simpson/

Todd Simpson
Food and Drug Administration
(FDA)
Chief Information Officer

/J. Scott Cory/

Scott Cory
Administration for Community Living
(ACL)
Chief Information Officer

/Adriane Burton/

Adriane Burton
Health Resources and Services Administration
(HRSA)
Chief Information Officer

/Jay Toven/

Jay Toven
Agency for Healthcare Research and Quality
(AHRQ)
Chief Information Officer (Acting)

/Mark Rives/

Mark Rives
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(IHS)
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(CMS)
Chief Information Officer (Acting)

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James Blagaich
Substance Abuse and Mental Health Services
Administration (SAMHSA)
Chief Information Officer
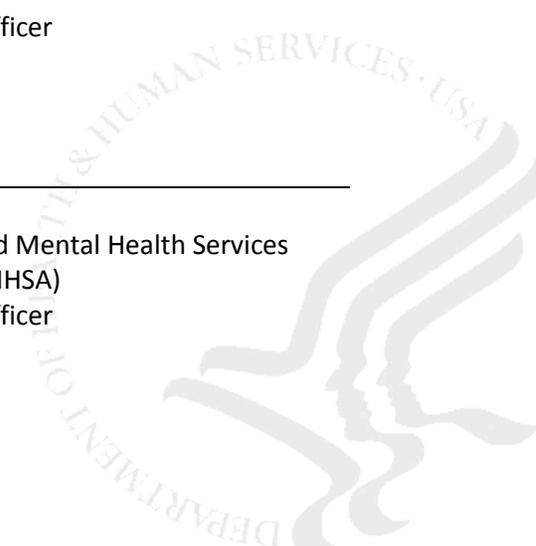
Introduction

The Department of Health and Human Services (HHS) Strategic Plan outlines the mission of the Department to "…enhance the health and well-being of Americans by providing for effective health and human services and by fostering sound, sustained advances in the sciences underlying medicine, public health, and social services." Cascading from relevant HHS Strategic Plan objectives, this *HHS IT Strategic Plan, 2017-2020*, outlines the Department's efforts to improve information technology (IT) in support of this mission. This document highlights the linkage between HHS IT strategy and its organizational strategy, outlines some of the drivers and factors shaping IT strategy for HHS, and provides an overview of five IT strategic goals and related objectives. Each one of the goal descriptions includes a table that maps how the strategies support the objectives under each goal. The strategy concludes with a high-level overview of how the Department will bring this plan to fruition through tactical planning, implementation and performance measurement.

HHS Strategic Goals

The *HHS Strategic Plan FY, 2014-2018* articulates the overarching mission goals for the Department. Within the broader Department strategic plan, the role of IT is clearly identified as a critical element to enhance and support the mission of HHS. The *HHS Strategic Plan, FY 2014-2018* goals are as follows:

STRATEGIC GOAL 1: STRENGTHEN HEALTH CARE. HHS is responsible to ensure improved access, affordability, and quality in health care.

IT Implications of Strategic Goal 1 – HHS utilizes technology that supports a wide range of mission activities either directly or through its partners such as states and grantees in order to:

- Ensure affordable health coverage of all Americans;
- Promote food and drug quality and safety;
- Support research; and
- Provide and coordinate healthcare and human services—prevention, primary care, and social services, both ancillary and critical.

Implementation of critical HHS programs requires extensive coordination of information sharing across the Department, with other Federal agencies and State governments, and the utilization of innovative health IT.

STRATEGIC GOAL 2: ADVANCE SCIENTIFIC KNOWLEDGE AND INNOVATION. HHS is developing innovative, knowledge-based approaches to address a variety of health and human services challenges. Objective 2 under this goal reads, "Improve laboratory, surveillance, and epidemiology capacity." HHS focuses on promising strategies with the potential to yield positive results from public investments, including using technology to improve collaboration, modernizing the regulatory approval process, and expanding behavioral research.
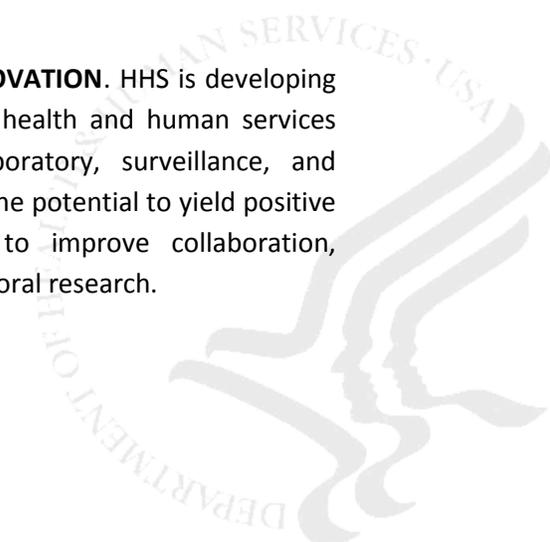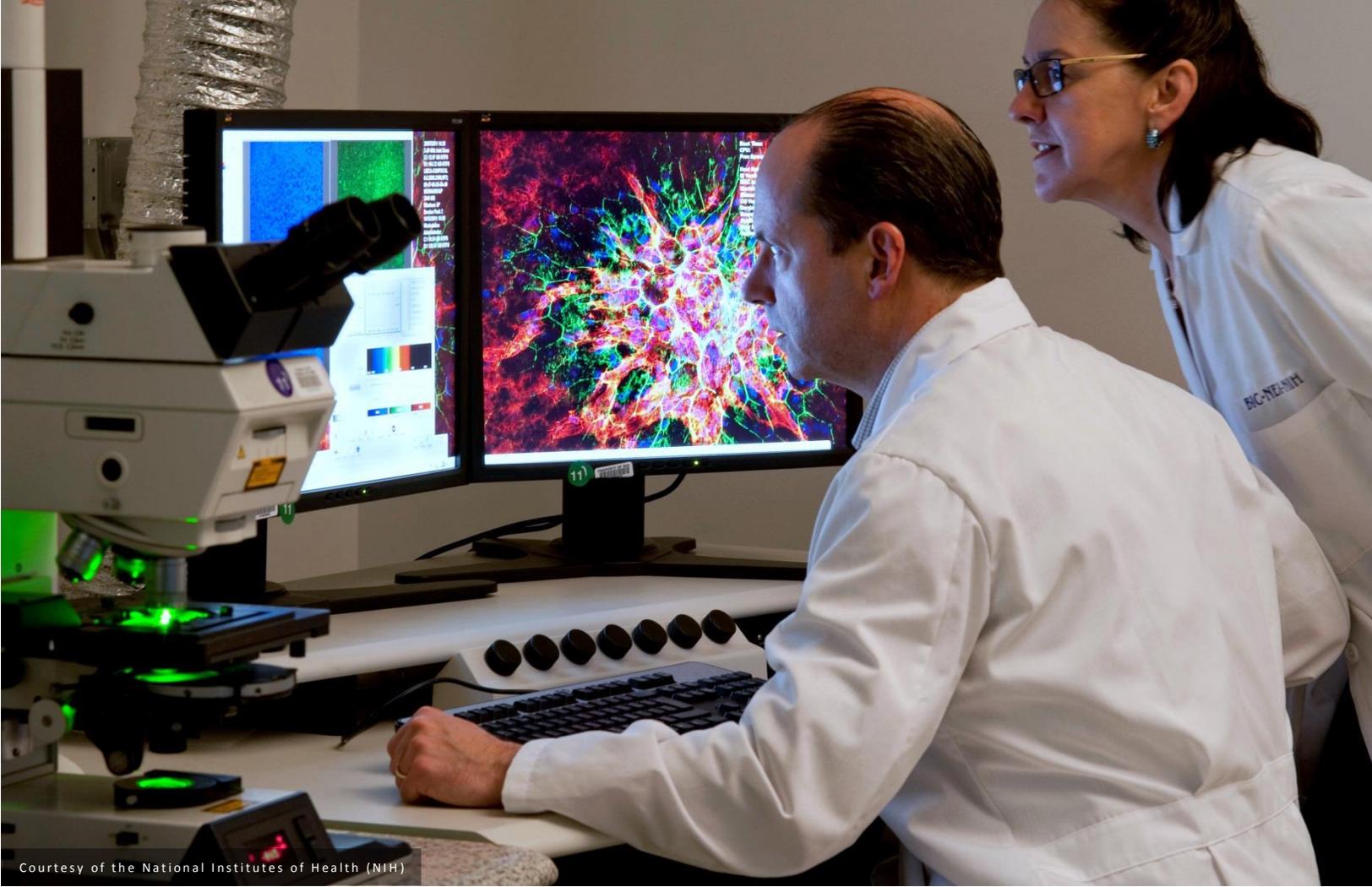
IT Implications of Strategic Goal 2 – The advancement of scientific knowledge, at its core, is an information-driven endeavor, which uses the building blocks of data from basic research, puts those data in the larger context of existing research and public health challenges, and transforms that information into knowledge to serve the varied customers and stakeholders for the Department's programs.

STRATEGIC GOAL 3: ADVANCE THE HEALTH, SAFETY, AND WELL-BEING OF THE AMERICAN PEOPLE. HHS programs are addressing the unique needs of vulnerable populations through improved program coordination within HHS and across government agencies through policy development, evidence-based practice, and research. HHS also is working to expand the evidence based on national health security and is setting priorities for research, evaluation, and quality improvement to improve public health and medical emergency preparedness, response, and recovery efforts.

IT Implications of Strategic Goal 3 – This focus on evidence-based policy analysis and program delivery relies on the analysis of high-quality, reliable data with appropriate security and privacy provisions, using up to date analytical and visualization tools.
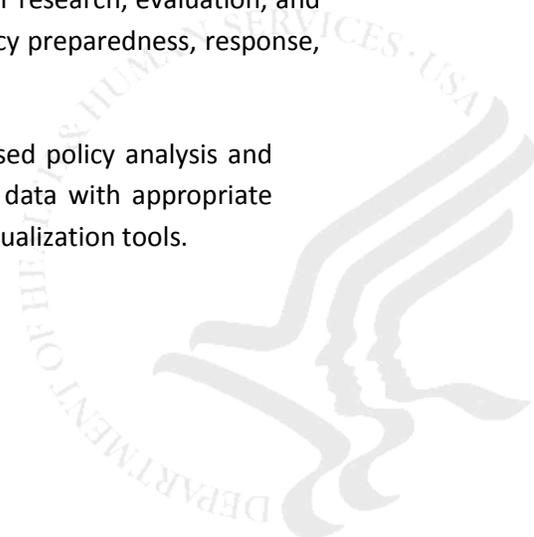
STRATEGIC GOAL 4: ENSURE EFFICIENCY, TRANSPARENCY, ACCOUNTABILITY, AND EFFECTIVENESS OF HHS PROGRAMS. Objective 2 under this goal reads, "Enhance access to and use of data to improve HHS programs and to support improvements in the health and well-being of the American people."

IT Implications of Strategic Goal 4 – This goal area is where the importance of information and IT is most clear in the HHS Strategic Plan. This objective explicitly discusses the role of IT in addressing the effectiveness of HHS programs. Similarly, the efficiency, transparency, and accountability of HHS program operations rely on up-to-date systems to support the internal operations of the Department.

IT Mission Statement

Deliver HHS IT resources and services, leverage common solutions, and provide a secure infrastructure throughout the Department that enables Division-level IT organizations to focus on the unique mission requirements of the programs they support.

IT Vision Statement

Cost-effective, secure, innovative, and timely IT solutions and services address the breadth of pressing human services and health care challenges across HHS program users and stakeholders.

IT Principles

- **Innovation**—Foster innovation and adoption of new technologies
- **Customer/User Experience Focus**—Design and deliver IT solutions that put the needs of customers and users first
- **Quality and Availability of Information**—Enhance the quality, availability, and delivery of information
- **Efficiency**—Increase efficiency, transparency and accountability of IT
- **Value**—Provide business value to all users and stakeholders

HHS Mission Needs for IT

HHS mission and functions require use of interconnected systems to provide real-time data to support everything from identifying public health threats to resource allocation and operational decisions on health and social service delivery. In 2014, The Office of the National Coordinators for Health IT published *A Shared Nationwide Interoperability Roadmap* (www.HealthIT.gov) that underscores the vital importance of IT to the nation's health and care. In particular, the roadmap provides a near-term target
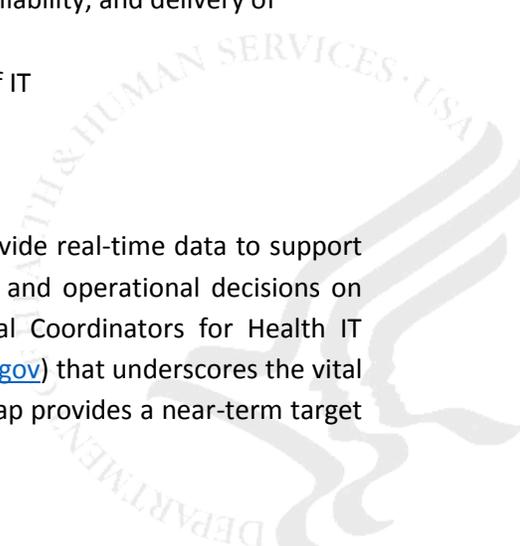
focus on the interoperability of a core set of electronic health information for individuals and care providers, which will be useful to community-based services, social services, public health, and research communities. The Roadmap is complemented by the *Federal Health IT Strategic Plan, 2015-2020*, which aims to improve the health IT infrastructure, help transform health care delivery, and improve individual and community health in the expanding digital health environment.

Figure 1: HHS IT Strategy Overview

HHS STRATEGIC GOALS
Strengthen Health Care − Advance Scientific Knowledge and Innovation − Advance the Health, Safety, and Well-Being of the American People − Ensure Efficiency, Transparency, Accountability, and Effectiveness of HHS Programs

HHS IT MISSION
Deliver HHS IT resources and services, leverage common solutions, and provide a secure infrastructure throughout the Department that enables Division-level IT organizations to focus on the unique mission requirements of the programs they support.

HHS IT VISION
Cost-effective, secure, innovative, and timely IT solutions and services address the breadth of pressing human services and health care challenges across HHS program users and stakeholders.

HHS IT PRINCIPLES

Innovation	Customer/User Experience Focus	Quality and Availability of Information	Efficiency	Value

Goal 1	**Goal 2**	**Goal 3**	**Goal 4**	**Goal 5**
IT WORKFORCE Acquire, deploy, and sustain a technology-enabled workforce	**CYBERSECURITY & PRIVACY** Protect critical systems and data	**SHARED SERVICES** Optimize the ability to accomplish the mission by sharing business systems and services	**INTEROPERABILITY & USABILITY** Promote usability, interoperability, data sharing, and integration	**IT MANAGEMENT** Mature IT management and governance to improve stewardship of IT investments and acquisitions
Objective 1.1: Identify and define capability and capacity needs to forecast staffing and effectively plan for IT hiring	**Objective 2.1**: Improve the security and privacy posture of data and information systems	**Objective 3.1**: Ensure common understanding of shared services through the development and deployment of an enterprise framework	**Objective 4.1**: Improve the management and governance of data across HHS	**Objective 5.1**: Update IT management and governance processes for guiding IT investments and acquisitions to reflect new legal and government wide policy requirements
Objective 1.2: Streamline employee recruitment, hiring, and onboarding processes for IT Professionals				
Objective 1.3: Brand HHS as an IT Employer of Choice	**Objective 2.2**: Effectively prevent, monitor and rapidly respond to emerging threats and vulnerabilities	**Objective 3.2**: Maximize value by balancing service cost and quality through the enterprise framework	**Objective 4.2**: Promote interoperable exchange of data across HHS	**Objective 5.2**: Mature IT service delivery through effective program and project management
Objective 1.4: Develop and retain our technology workforce				
Objective 1.5: Expand IT education and outreach programs for non-IT personnel	**Objective 2.3**: Prioritize Cybersecurity investments through a risk-based approach	**Objective 3.3**: Promote strategic sourcing or other procurement vehicles for more efficient and cost-effective provisioning IT goods and services	**Objective 4.3**: Expand user engagement through improved usability and accessibility of systems and data	**Objective 5.3**: Streamline reporting processes to allow for increased focus on mission delivery

IT Strategic Goals and Objectives

The Department's IT strategies for the next four years are grounded in legislative and regulatory drivers that inform the requirements of HHS programs in public health, social services, medical care, health insurance, research, prevention and response, and IT management (see Appendix B: Environmental Drivers). The HHS IT Strategic Plan also acknowledges the external factors shaping the IT goals and objectives for HHS (see Appendix C: Technology Trends and Enablers). The Department, like many health care, financial, and service organizations, is undergoing a digital transformation that highlights fundamental shifts in how it interacts with its myriad public and private sector customers and partners. These changes include a focus on shared services, customer-centric operations, and mobile services. This shift means users and partners will have confidence in the timeliness, integrity, and security of the data they receive and its availability on a variety of platforms and devices.

Goal 1: IT Workforce

Aim—Acquire, deploy, and sustain a technology-enabled workforce

The most important aspect of any IT organization is its people. For most Federal agencies, with the reliance on IT to deliver services, a competent and effective IT cadre across the organization is vital to mission accomplishment. Building and maintaining a community of diverse IT professionals is essential to the successful execution of organizational objectives. HHS must effectively:

- Plan for, acquire, develop, and sustain a strong and diverse IT workforce with expanded learning and training programs across HHS,
- Further the overall IT knowledge, expertise and opportunities across competencies of the department, and
- Improve targeted recruitment, professional development, and talent/performance management.

Improved staff planning, recruitment, hiring, development, succession, and retention strategies enable HHS to build a diverse pipeline of top IT professionals and leaders. Further, through expanded learning and training programs across HHS, the overall IT competency of the Department improves.

Objective 1.1: Identify and define capability and capacity needs to forecast staffing and effectively plan for IT hiring

HHS identifies and improves the processes, standards, people, and technology needed to support consistent ongoing workforce analysis. Through identification and definition of critical IT and cybersecurity role categories and competency requirements to support workforce analysis and planning, HHS actively monitors the coverage of current and future IT competency needs. HHS maintains and grows the capability for mature workforce analytics and planning on a consistent and ongoing, enterprise-wide basis. The HHS workforce plan optimizes the HHS and OpDiv workforce through a variety of human capital tools.
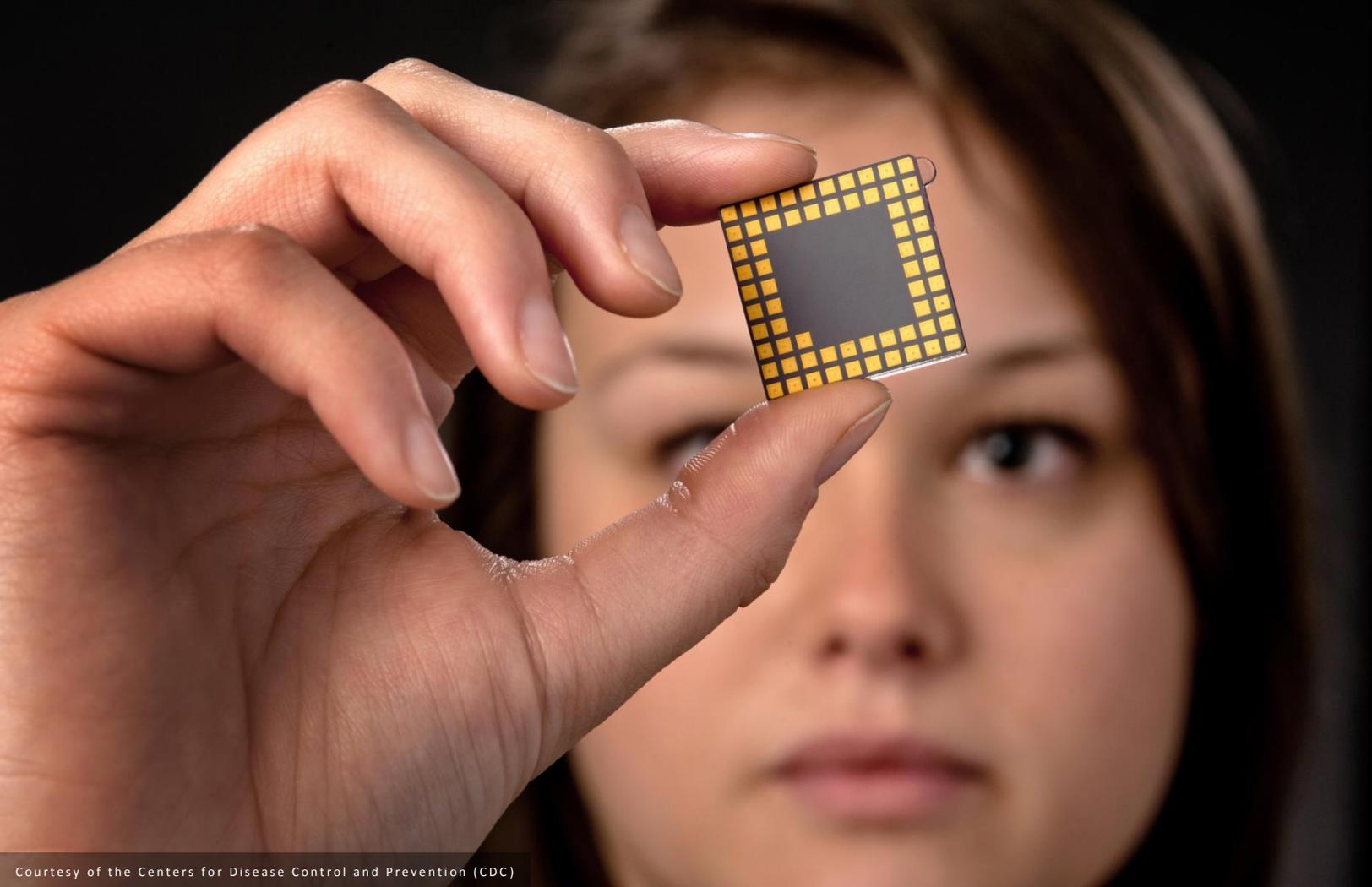
Objective 1.2: Streamline employee recruitment, hiring, and onboarding processes for IT Professionals

Streamlined and effective recruiting processes enable HHS to identify and hire top technology talent. Efficient recruiting and hiring processes provide candidates with a positive impression of the Department, and the entire agency to recruit successfully for top talent. Through improved communication, facilitated by HHS, OpDiv IT organizations are able to share best practices and potential candidates. This includes both the creation of a larger, more robust library of approved position descriptions and sharing certificates of approved candidates for IT openings across HHS. By improving the consistency and accuracy of data collected through the recruiting process, HHS can evaluate and improve the efficiency and effectiveness of recruiting strategies and processes for IT professionals, focusing on reducing the length of time to fill IT positions.

Objective 1.3: Brand HHS as an IT Employer of Choice

HHS strives to be an attractive work environment to top technology talent. The Department benefits from a diverse workforce that can infuse the workplace with enthusiasm, talent, and unique perspectives. HHS requires a multidisciplinary, multicultural mix of senior, mid-level, and junior staff for cross-training, succession planning, and coverage. HHS strives to create a welcoming and appealing work environment to meet the expectations of top IT talent and remain competitive with other Government agencies and private sector IT firms. HHS recruiters are provided with additional tools and strategies to
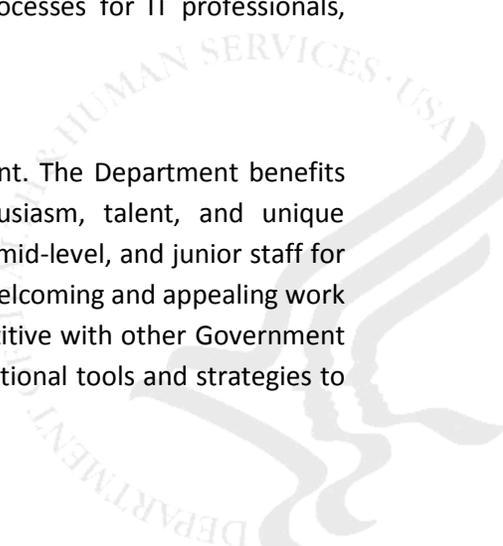
entice prospective employees with interesting and flexible career growth opportunities. HHS also expands the talent pool by leveraging our geographic dispersion and expanding capabilities and tools required to support workplace flexibility. Through surveys and analytics, HHS continues to evaluate the effectiveness of employee attraction programs to adapt and improve. The focus of this objective is on increasing the number of candidates, and improving the offer acceptance rate for IT professionals through being an employer of choice in the Government IT community.

Objective 1.4: Develop and retain our technology workforce

Creating a work environment that continues to foster the professional growth of IT professionals enables HHS to improve retention of IT talent. Multi-track, technology, and/or leadership focused-career paths, mentorship, and professional development programs for IT professionals and leaders improve HHS' ability to develop and retain IT professionals by providing the tools and opportunities needed for professional growth. HHS utilizes details, rotations, and mentoring to provide IT professionals with opportunities to grow skillsets and broaden experiences. The Office of the Chief Information Officers (OCIO) collaborates with Office of Human Resources (OHR) to: (1) enhance the current IT performance management appraisal program (PMAP) and related processes to define standardized IT employee role-based performance requirements, and (2) define and develop strategic programs that reward high performance, retain top talent, rectify performance gaps, and align to mission requirements.

Objective 1.5: Expand IT education and outreach programs for non-IT personnel

Technology has expanded into almost every aspect of the HHS mission. Improved understanding of technology enables non-IT personnel to be more effective in using the productivity tools provided. It also improves the ability of policy decision makers to factor technology enablers and impacts into key decisions. Through increased internal IT education and outreach programs, OCIO will promote IT skills development to raise IT competence across HHS.

Strategies	Objective 1.1 Workforce Planning	Objective 1.2 Recruiting Processes	Objective 1.3 Attraction Strategies	Objective 1.4 Retention	Objective 1.5 IT Education
Proactively monitor future IT staffing needs	X	-	-	-	-
Use available analytics to target and recruit IT professionals that advance HHS IT Workforce Competencies	X	X	X	-	-
Build a pipeline of future technical talent and leadership candidates	-	X	X	-	-
Develop innovative programs for information sharing between OpDivs for recruiting (Position Descriptions, certificates, candidate pipeline)	-	X	-	-	-
Expand the use of detail opportunities and Direct Hire programs, beyond Security hires, as recruitment tools	-	-	X	-	-
Create technology and leadership focused career paths for IT professionals	-	-	X	X	-

Strategies	Objective 1.1 Workforce Planning	Objective 1.2 Recruiting Processes	Objective 1.3 Attraction Strategies	Objective 1.4 Retention	Objective 1.5 IT Education
Use detail, rotational, and mentorship opportunities as a retention tool	-	-	-	X	-
Provide relevant tools and process training for IT and non-IT staff	-	-	-	-	X
Update training for IT program and project managers to improve knowledge of innovative, incremental processes and practices	-	-	-	-	X

IT Workforce in Action

Workforce Development Pilot for Cybersecurity

HHS has been using the National Institute of Standards and Technology (NIST) National Initiative for Cybersecurity Education (NICE) Framework Specialty Areas to identify IT and Cybersecurity competencies for IT and cybersecurity workforce development efforts. The Department is currently assessing cybersecurity knowledge and skill requirements through a comprehensive IT Cybersecurity Workforce Development Program Pilot. This pilot is focused on developing training and workforce development tools and materials for each cybersecurity competency requirement for use by the broader IT workforce.

HHS is expanding on the approach from the pilot to identify and define workforce requirements for the broader IT workforce. IT and cybersecurity career paths are being created for each IT and cybersecurity role category. These career paths will enable HHS to establish a manageable set of role definitions, competency models, and competency profiles that accurately reflect the requisite knowledge, skills, abilities and behaviors for successful job performance and mission achievement. Once complete, these will drive better-informed and competency-based: workforce analyses; targeted recruitment efforts, staffing plans, skills assessments, professional development efforts, and performance and talent management plans.

Goal 2: Cybersecurity and Privacy

Aim—Protect critical systems and data

Protection of IT assets is critical to the reliability of HHS information systems and the fidelity of the data within them. HHS employs a robust risk management approach through improved asset management, robust threat and vulnerability analysis, and established response and recovery plans and procedures. This allows HHS to maintain its security posture, considering the integrated operations of HHS, consistent with its mission and business needs. This holistic risk management approach enables prioritization to ensure that critical data and information, such as personally identifiable information, personal health information and public health data, are protected according to the appropriate level of

risk throughout the system or asset's lifecycle. Through implementation of Department-level programs to support ongoing identification, validation, and prioritization of cybersecurity risks, HHS enables cybersecurity personnel to mitigate the most significant problems first while limiting unnecessary costs. Furthermore, information sharing, including cyber threat information, across the OpDivs and Staff Divisions (StaffDivs) enables improved situational awareness across the Department, its Federal partners, and private sector stakeholders (see Cybersecurity Information Sharing Act (CISA)).

Objective 2.1: Improve the security and privacy posture of data and information systems

HHS improves the security posture of data and information systems through improved management, training, and hiring. Improved accuracy and coverage of IT assets provides visibility to the potential cybersecurity targets and allows IT leadership to evaluate the potential impact associated with vulnerabilities to the IT asset inventory. Maintaining a consistent and current security and privacy impact assessment program, constantly evaluating compliance of critical data and information, ensures feedback and assurance systems and data are continually evaluated for vulnerabilities, and appropriate mitigations are employed to protect system and data vulnerabilities. Improved training programs and compliance rates for existing security training programs provide system owners and users with the knowledge to employ the techniques needed to maintain security posture of systems and data earlier so that security can be built into systems.

Objective 2.2: Effectively prevent, monitor and rapidly respond to emerging threats and vulnerabilities

Threat prevention, monitoring, and rapid response enable HHS to maintain its security posture while facing dynamic and emerging cyber threats. Improved governance and integrated technical capabilities empower HHS leadership to make risk-based decisions. By partnering with the private sector and other Federal agencies, HHS further expands its access to lessons learned and best practices, and creates two-way communication of emerging threats and vulnerabilities. Through these enhanced communications and capabilities, information is made rapidly available across the enterprise and enables timely detection, mitigation, and responses.

Objective 2.3: Prioritize Cybersecurity investments through a risk-based approach

By employing a risk-based cybersecurity and privacy protection approach, HHS continuously evaluates priorities of threat response and mitigation strategies. By focusing on the risk associated with each threat and vulnerability, HHS focuses investments where they are most effective and reduces time and money spent on less credible threats and low impact vulnerabilities. Maintaining a register of prioritized threats, vulnerabilities, and risks that are regularly communicated to the OpDivs enables cybersecurity and privacy protection investments to be focused across the OpDivs on the most important risks to the HHS enterprise.

Strategies	Objective 2.1 Data Protection	Objective 2.2 Threat and Vulnerability Management	Objective 2.3 Risk Based Approach
Enforce accountability for ongoing reviews of HHS privileged and unprivileged users	X	-	-
Enforce accountability for ongoing reviews of systems to validate appropriate implementation of credential management	X	-	-
Continuously improve and enforce accountability for completion of security training for all HHS employees who access HHS systems	X	-	-
Evaluate the cybersecurity posture of High Value Assets (HVAs) and legacy systems, and execute necessary remediation activities to ensure their protection on an ongoing basis	X	-	X
Advocate for a secure, cloud environment, consistent with existing regulatory requirements	X	X	-
Define and maintain a comprehensive inventory of all IT systems and assets (i.e., systems, HVAs and legacy systems)	X	X	X
Define and manage an inventory of legacy systems to develop modernization, decommissioning, and/or replacement plans in order to reduce the risk associated with unsupported and end-of-life systems	-	X	X
Establish governance mechanisms to detect, manage, and communicate emerging threats and vulnerabilities enterprise-wide	-	X	X
Deploy and leverage cybersecurity tools to proactively identify threats and vulnerabilities to enable more effective, efficient risk mitigation	-	X	X
Evolve risk management techniques (including incident and breach response "resiliency" capabilities) to focus on highest areas of system inventory and risk (i.e., HVAs, legacy systems)	-	-	X
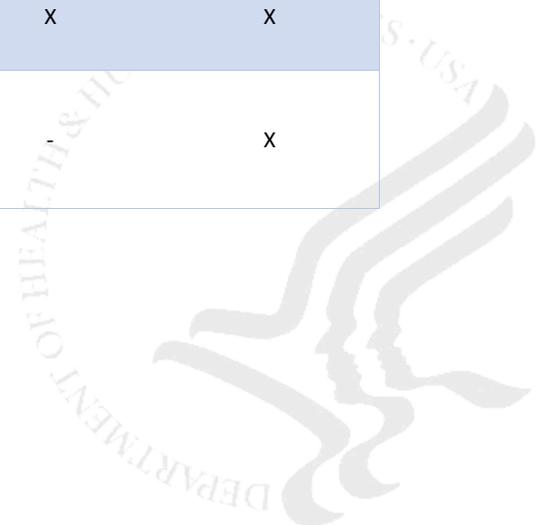
Einstein Intrusion Protection and Prevention

On November 16, 2015, the HHS Office of Information Security (OIS) entered into an agreement to implement Einstein 3 Accelerated (E3A) capabilities at the Washington DC and Atlanta Trusted Internet Connection locations. Einstein is a managed security service provided through the Department of Homeland Security (DHS) offering intrusion protection and prevention for all executive branch civilian agencies. The E3A service is the latest iteration that adds automated blocking of malicious Domain Name Service (DNS) and email traffic to its capabilities. E3A improves existing DNS blocking and email scanning services through the implementation of classified indicators unavailable to commercial providers. OCIO is bringing Domain Name Service components of this service online and is working to bring email protection online. This capability ensures 100 percent of outbound DNS requests are routed through the E3A servers while still maintaining the required level of responsiveness and availability given current and future traffic volumes.

Goal 3: Shared Services

Aim—Optimize ability to accomplish mission by sharing business systems and services

HHS and the OpDivs develop and maintain a strategic, business-facing IT service portfolio to enable the efficient fulfillment of business capabilities to accomplish the mission, achieve the Department's vision, and meet stakeholders' technological needs. HHS is improving the efficiency, reliability, and security of IT systems and infrastructure by expanding use of shared services across the Department. By establishing an enterprise framework for shared services, HHS facilitates implementation of shared services through a clear definition of policies, communication of available services, and benefits of using those shared services. Additionally, through strategic sourcing, HHS reduces acquisition costs by consolidating large commodity IT acquisitions and streamlined procurements. Implementation of shared services improves standardization, interoperability, data sharing, and reduces costs. Education and outreach programs inform the larger workforce about the availability and value of shared services.

Objective 3.1: Ensure common understanding of shared services through the development and deployment of an enterprise framework

HHS uses a robust shared services framework for building and maintaining shared services to produce the supporting policies and processes needed to ensure an effective shared services program across the Department. Improved clarity and communication, with built-in feedback loops, continually improve access to and quality of shared services. Communication and outreach programs allow HHS to both communicate shared service offerings across HHS, and to collect input on their quality and applicability. Through a common understanding and continuous improvement, HHS increases the scope and adoption of shared services.
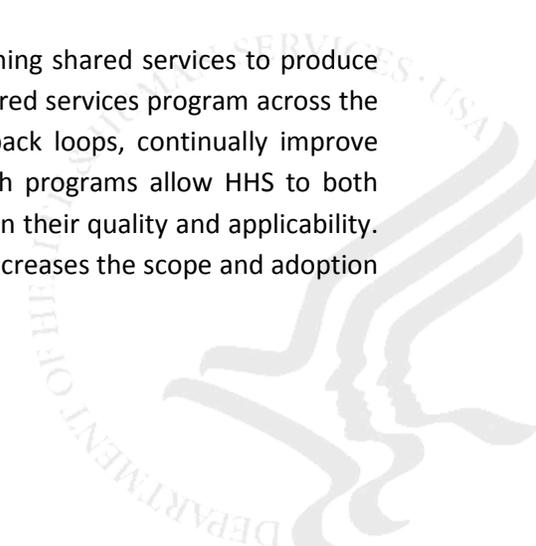
Objective 3.2: Maximize value by balancing service cost and quality through the enterprise framework

Through the HHS enterprise shared services framework and common service catalog for commodity IT services, HHS supports a marketplace that enables services to be both shared and brokered from internal and external providers based on cost and quality of service requirements and internal capacity to deliver the service. The establishment of shared services enables HHS to focus less on commodity IT, which releases resources, and focus more on mission delivery. Shared services enable HHS to leverage common business functions across the Department at the strategic, operational, and tactical-level in support of one or more service catalog offerings. In establishing an enterprise framework for shared services, the Department enables sharing strategies, methods, and tools used to capture, manage, preserve, and deliver organizational processes and capabilities.

Objective 3.3: Promote strategic sourcing or other procurement vehicles for more efficient and cost-effective provisioning IT goods and services

An important shared service is the use of strategic sourcing and department-wide procurement vehicles. Increasingly, organizations are realizing that decentralized IT acquisition decision making leads to sub-optimal buying decisions for IT hardware and software services. For a Department the size and breadth of HHS, this is especially true even given the variety of products and services that are quite fundamental and common to running programs across the Department. Experience across the public and private sectors have proven there are financial and "time-to-solution" benefits from pooling acquisitions for commodity IT products and services. HHS brings these benefits to the broadest array of users across the Department as a means to reduce costs of operations and free up resources for more transformative technology projects.
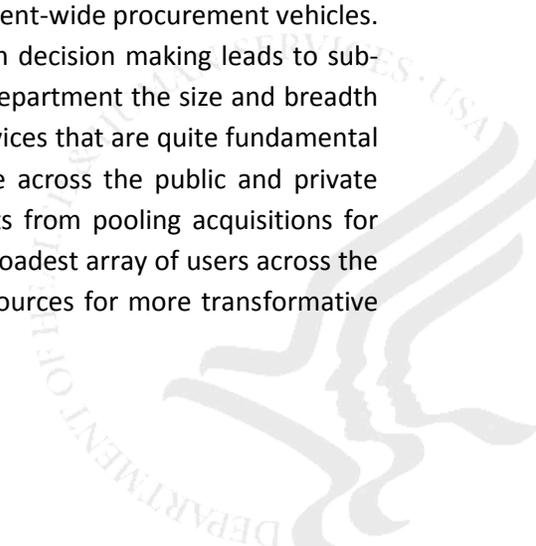
Strategies	Objective 3.1 Common Understanding	Objective 3.2 Maximize Value	Objective 3.3 Strategic Sourcing
Establish a policy to operationalize the enterprise shared services framework across the Department	X	X	-
Update, maintain, and communicate available services to include emerging business capabilities delivered by shared services	X	-	-
Introduce shared services workshops that effectively communicate the financial and operational rewards of using the shared services	X	-	-
Expand department-level IT Asset / Software License Management	X	-	-
Identify and use OpDiv best practices to consolidate and standardize Departmental data center and cloud service requirements	X	X	-
Update investment and acquisition governance processes to apply best practices of shared services throughout	X	X	-
Annually identify, assess, and select candidates for shared services, and divesting / decommissioning legacy services	-	X	-
Maximize the use of strategic sourcing contract vehicles and enterprise license agreements for the provisioning of IT	-	-	X
Collaborate across the Department to develop new strategic sourcing vehicles	-	-	X
Promote the availability of government-wide and department-wide IT acquisition vehicles through an IT contracts catalog	-	-	X

Shared Services in Action

NIH Information Technology Acquisition & Assessment Center

With an executive designation provided to the National Institutes of Health (NIH) from the Office of Management and Budget, the NIH Information Technology Acquisition & Assessment Center (NITAAC) awards and administers three Government-Wide Acquisitions Contracts (GWACs) for Information Technology (IT) products, services and solutions for the benefit of the entire HHS community, namely:

- Chief Information Officer—Commodities/Solutions (CIO-CS);
- Chief Information Officer—Solution Partners (CIO-SP3) for IT services/solutions; and
- CIO-SP3 Small Business for IT services/solutions with socioeconomic set-asides.

These GWACs offer many advantages over other types of contracting vehicles by giving HHS customers the ability to quickly fulfill their IT requirements from highly qualified contractors at reasonable prices. All contract holders have gone through a comprehensive review process prior to award, which includes dimensions such as technical capabilities, past performance, price, and cost. This enables Contracting
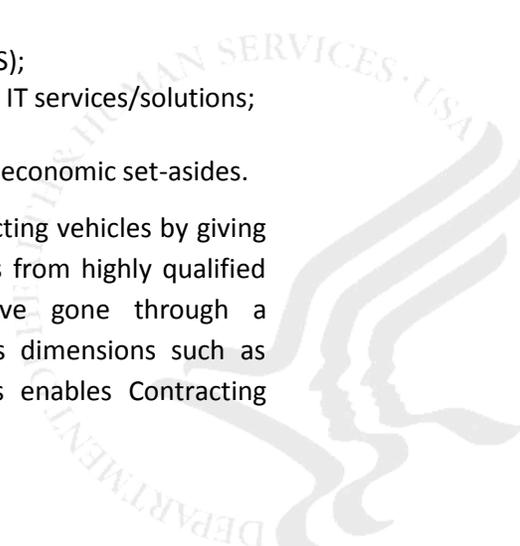
Officers to use simplified evaluations at the task order level, resulting in significant savings in time, money, and resources. As an example, the pre-negotiated rates under CIO-SP3 and CIO-SP3 Small Business average 10-15 percent less than comparable contracting vehicles. Additionally, CIO-CS prices are less than or equal to prices available under Federal Supply Schedules.

Goal 4: Interoperability and Usability

Aim—Promote usability, interoperability, data sharing, and integration

Interoperability and usability improve the ability of HHS to share resources and connect with users and stakeholders, while still protecting the privacy and security of data. Communication and transparency across the Department are enabled through robust data sharing and interoperability, and improve HHS' ability to use advanced data analytics to inform mission and administrative decision making. By establishing open frameworks and standards for data, Application Program Interfaces (API), and user experience design, HHS improves the efficiencies of all system interactions (i.e., system to system, human to system). Improved usability and accessibility allow HHS to efficiently connect with stakeholders to provide them access to the data and functions that support the HHS mission.

Objective 4.1: Improve the management and governance of data across HHS

HHS will maintain policies to enable and promote a "share-first" culture and governance processes to support data sharing and interoperability practices consistent with appropriate privacy protections. HHS will establish a department-level dashboard that provides an inventory of data sets to promote data sharing across HHS. Through outreach to the OpDivs to collect best practices, HHS will develop policies and processes that scale out those practices currently in the OpDivs. By applying these best practices, HHS will expand the availability and consistency of shared data across the HHS entities.

Objective 4.2: Promote interoperable exchange of data across HHS

HHS adopts enterprise interoperability policies in IT decision-making to promote improved interoperability across HHS. HHS improves its ability for systems to cost-effectively exchange data through increased compliance with standards and best practices. In accordance with the Shared Nationwide Interoperability Roadmap (www.HealthIT.gov), HHS adopts common standards, protocols, architectures, and vocabularies to promote the interoperable sharing of information and services. Through these practices, HHS improves the accessibility and interoperability of data to all stakeholders—from administrative processes to direct care and emergency response situations.

Objective 4.3: Expand user engagement through improved usability and accessibility of systems and data

As technology continues to rapidly evolve, so do the ways in which users choose to engage with electronic resources. To meet these ever-changing needs, and to ensure that all users have direct and timely access to critical health information and services, HHS is committed to implementing technology that is user-friendly, accessible, adaptive, and, wherever possible, incorporates device and system-agnostic tools and approaches. Such flexibilities are integral to allowing all stakeholders to access information in a manner of their choosing, thus creating the best user experience possible.

Strategies	Objective 4.1 Data Management and Governance	Objective 4.2 Data Interoperability	Objective 4.3 Usability and Accessibility
Develop HHS Policy for IT services and data that promotes a culture and practices of open data sharing	X	-	-
Develop and maintain a common HHS data model and segment architecture	X	-	-
Deploy an HHS Business Intelligence Strategy that promotes data and information exchange standards	X	X	-
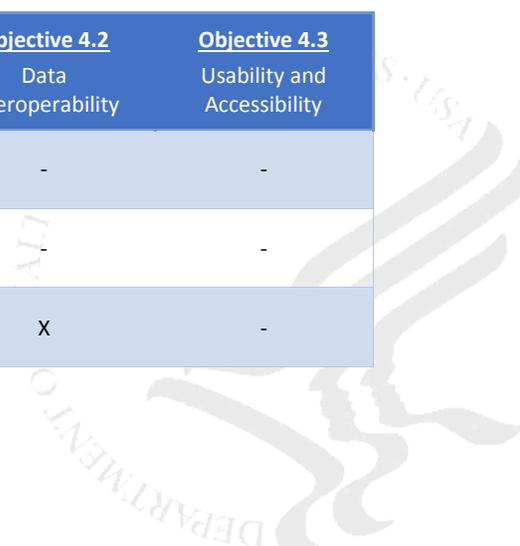
Strategies	Objective 4.1 Data Management and Governance	Objective 4.2 Data Interoperability	Objective 4.3 Usability and Accessibility
Capture data sharing best practices from HHS internal and external partners	X	X	-
Establish formal processes, rules, templates, etc. for controlled sharing of data to support open data sharing while protecting sensitive information	X	X	-
Publish approved list of mechanisms for sharing HHS data	X	X	-
Expand usage of open APIs for data, functions, security, identity management, and access management	X	X	-
Define HHS data domain and data exchange framework	-	X	-
Identify and deploy information exchange protocols that facilitate information exchange from existing systems	-	X	-
Ensure attention to usability and accessibility of all systems and data access throughout the IT project life cycle through user and critical partner input and involvement	-	-	X

Interoperability and Usability in Action

Data Sharing Between TANF and Child Welfare Agencies

Since 2006, both the Children's Bureau and the Office of Family Assistance have promoted various initiatives to improve coordination and collaboration between child welfare and Temporary Assistance for Needy Families (TANF) agencies. The Children's Bureau funded five grant opportunities to demonstrate models of effective collaboration between child welfare and TANF agencies to improve outcomes for children and youth who are in, or are at risk of entering, the child welfare system. For example, TANF workers may have access to different family contact information than a child welfare agency has, which can help a child welfare worker locate relatives who may be able to provide a temporary or permanent home for a child at risk of being removed from his or her home or who is placed in foster care. Data sharing will also allow TANF workers to identify if a family is being served by the child welfare agency and therefore prevent duplicative services. Through improved data sharing and

collaboration, TANF and child welfare agencies improve their effectiveness in meeting their respective missions and, more importantly, the needs of the children and families that they serve.

Goal 5: IT Management

Aim—Mature IT management and governance to improve stewardship of IT investments and acquisitions

With the passage of the Federal Information Technology Acquisition Reform Act (FITARA), Federal agencies face increased scrutiny for how they are maximizing the value from IT investments and acquisitions. In particular, the HHS CIO must demonstrate the rigor and effectiveness of its IT management and governance processes that address acquisition, investment and life cycle management. Much of this goal is covered by HHS' published reports to the Office of Management and Budget (OMB) on FITARA implementation.

Objective 5.1: Update IT management and governance processes for guiding IT investments and acquisitions to reflect new legal and government wide policy requirements

The enactment of FITARA and the resulting OMB implementation guidance provides additional focus and direction on HHS' ongoing efforts to improve IT management. HHS improves visibility and understanding of IT-related resources and investments to strengthen the linkage to mission priorities and integrate IT governance with enterprise risk management and budget processes. The improved governance processes result in clarity on IT decision-making authority. Additionally, program leadership is better informed on how to navigate the decision-making process for how to bring good IT projects to fruition both to extend existing capabilities, and to modernize legacy systems to reduce operational spending.

Objective 5.2: Mature IT service delivery through effective program and project management

Effective program and project management is the mechanism by which IT organizations move from concept to reality as efficiently and effectively as possible. By bridging the gap between mission delivery, administrative functions, and IT capabilities, HHS can reduce the overhead associated with turning innovative mission ideas into innovative mission solutions. These improvements in IT service delivery improve the Department's ability to plan, manage, and deliver IT projects that meet mission needs on time and within budget.

Objective 5.3: Streamline reporting processes to allow for increased focus on mission delivery

Effective IT program and project reporting promote transparency and accountability. This is especially true in IT organizations within HHS when hundreds of millions of dollars are being spent on technology each year. The challenge is that the required reporting often has to span multiple functions across the organization and through multiple layers that start at the Department-level, and requires a response

down at the laboratory or institute -level. Streamlined processes and enabling technologies allows for appropriate reporting, which minimizes the burden on mission delivery while maintaining appropriate program and project accountability. Through increased availability of data, and implementation of improved data analytics capabilities, HHS improves the ability to use predictive analysis to inform key IT decision making.

Strategies	Objective 5.1 Management and Governance Processes	Objective 5.2 Service Delivery Maturity	Objective 5.3 Streamlined Reporting
Update policies and governance mechanisms for IT investment, budget and acquisition review and approvals to be consistent with new / updated policies	X	-	-
To implement FITARA, clarify roles and responsibilities at the Headquarters, Operating Division and Staff Division-levels for IT investment, budget and acquisition decision making	X	-	X
Update the integrated governance framework for managing IT investments, budgets and acquisitions to be consistent with new / updated policies	X	-	X
Update Enterprise Performance Life Cycle (EPLC) tools, templates, and training to incorporate innovative, incremental techniques	-	X	X
Update training for IT program and project managers to improve knowledge of innovative, incremental processes and practices	-	X	-
Utilize project costs and schedule dashboards based on bottoms-up data feeds to help communicate IT project health transparently both internally and externally to HHS	-	X	X
Improve coordination of project reporting across HHS administration and management functions and lines of business	-	-	X

IT Management in Action

Strengthening IT Governance

With the enactment of FITARA, HHS is reinforcing CIO authorities at the Department and OpDiv levels. The Department's IT management framework recognizes that IT investment and acquisition decisions happen at several different levels in the organization. Accordingly, OCIO strengthened this federated IT decision making process by formally documenting delegations of CIO decision authority to selected OpDiv CIOs. This formal process for delegating CIO decision authority provides several benefits. It establishes the principle that the delegation of CIO decision authority to an OpDiv is based on the strength of OpDiv IT governance processes. It also formalizes a long-held practice of federated IT decision making that drives IT investment and acquisition decision making closer to the program offices that benefit most from the IT investments and recognizes the significant IT management capabilities of the OpDivs. The delegation
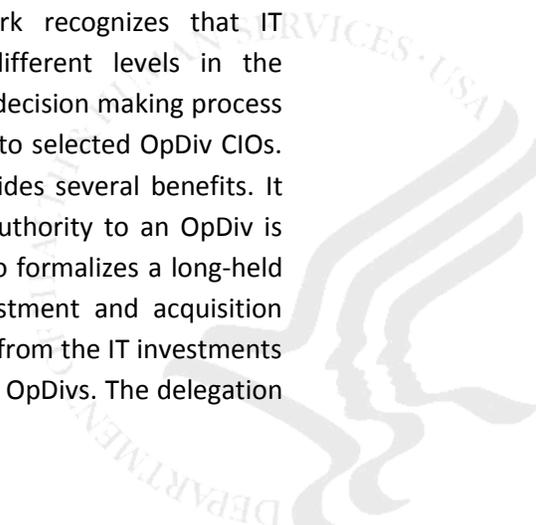
process also places conditions on the delegations so that the Department can continue to be involved, when needed, in overseeing IT decision making across the whole organization. OCIO is using the FITARA integrated project team (IPT) to further strengthen IT management across the Department.

Implementing the HHS IT Strategic Plan

With the publication of this IT Strategic Plan, the Department starts the process of implementing strategies identified for each of the five goals. As depicted in Figure 2, the IT Strategic Plan is the output of the "strategize" phase. The next phase, "formulate," advances the strategy through tactical planning that includes organizing groups to carry out the strategies outlined for each of the five goals. The tactical plan will reflect the level of investment for each goal and to the extent needed, and will include a sequencing of the strategies over time under each goal. The completion of the tactical planning will include a refined definition of success for the strategies and include related key performance indicators (KPIs). The definition of success and KPIs during the formulate phase underpins the performance measurement mechanisms for the plan. Finally, the "execute" phase encompasses the execution of the tactical plan and provides the outputs and outcomes outlined in each the goals articulated above. As noted in the figure, policy and security considerations drive IT strategy and the IT Steering Committees continue to provide governance and oversight of strategy implementation.

Figure 2: HHS IT Strategic Planning Process

At HHS, our foremost priority remains the enhancement and protection of the health and well-being for all Americans. This strategy ensures that Department's information technology enables the successful undertaking of that task for years to come.

Appendices

Appendix A: IPT Membership

| Operating Division	Representative(s)
Administration for Children and Families (ACF)	Nancy Eickelmann
Administration for Community Living (ACL)	Scott Cory
Agency for Healthcare Quality and Research (AHRQ)	Tim Erny, Pat Bosco
Centers for Disease Control and Prevention (CDC)	Sandra McGill, Richard Rosemeier
Centers for Medicare & Medicaid Services (CMS)	Janet Vogel, Fatima Millar, Walter Mitton
Food and Drug Administration (FDA)	Brad Wintermute, Todd Simpson
Health Resources and Services Administration (HRSA)	Valerie Wampler
Indian Health Service (IHS)	Steve Thornton, CDR Glenn Janzen, Mark Rives, Philip Wise
National Institutes of Health (NIH)	Teresa Booher
Substance Abuse and Mental Health Administration (SAMHSA)	Jim Blagaich, Kathryn Wetherby

Staff Division	Representative(s)
Assistant Secretary for Public Affairs (ASPA)	Kim Hutchinson, Phyllis Noble, Eric Sun, Leopoldo Gomez, Tracy Hall
Assistant Secretary for Preparedness and Response (ASPR)	Robert Bastani, Steve Saletta
Assistant Secretary for Administration (ASA), Office of the Chief Information Officer (OCIO), Office of Information Security (OIS)	Chris Bollerer, Lisa Dorr, Julie Chua
Assistant Secretary for Administration (ASA), Office of the Chief Information Officer (OCIO), Office of Strategy, Policy and Governance (OSPG)	Dennis Papula, Robert Tagalicod, Freda Bredy
Assistant Secretary for Administration (ASA), Office of Security and Strategic Information (OSSI)	Carla MacGregor
Assistant Secretary for Planning and Evaluation (ASPE)	Michelle (Missy) Leban, Margo Bailey, Sarah Potter
Office of the Assistant Secretary of Health (OASH), Office of the Surgeon General (OSG)	CAPT Eric Shih, Lawrence Furman, Saranya Rao
Office of Global Affairs (OGA)	Heber Willis
Office of Medicare Hearings and Appeals (OMHA)	Bruce Goldin
Office of the National Coordinator for Health IT (ONC)	Kevin Acotto, John Shimabukuro, Jiuyi Hua

Appendix B: IT Strategic Plan Development Process

Given the increasing interconnectedness of the Department of Health and Human Service (HHS)'s missions and programs with information technology (IT), the Department undertook a collaborative and consensus-driven process to develop an IT Strategic Plan to cover Fiscal Years 2017-2020. There were a number of drivers and factors leading to the development of a new IT Strategic Plan, but the most critical was having a broad strategy to link IT across the Department. The HHS Chief Information Officer (CIO) community came together in late 2015 to lay out priorities for IT, which initiated the development of this Plan.

The Office of the CIO (OCIO) facilitated an integrated project team (IPT) (See Appendix A: IPT Membership) to conduct an analysis and synthesis of drivers for the Department's IT strategy. The IPT included representatives from IT organizations across the Department, including OCIO, Operating Divisions (OpDivs), and Staff Divisions (StaffDivs). Together, this team met throughout the winter and spring of 2016 to recommend the set of goals and objectives identified in the body of this IT strategic plan. The review and approval process culminated with a CIO Council meeting in the summer of 2016 where the members approved the publication of this document.

Figure 3: HHS IT Strategic Plan Development Process
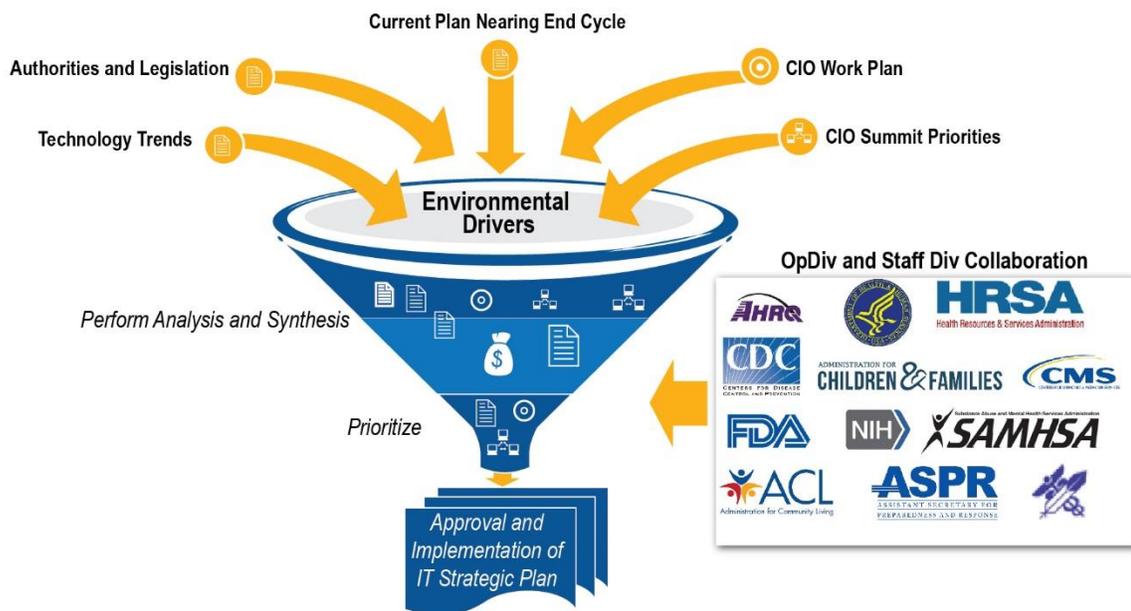
Appendix C: Environmental Drivers

Existing IT Environment

Like other Federal agencies, HHS spends significantly more on operations and maintenance than on new investments. HHS recognizes the need for greater development spending, and modernizing or replacing unsupported technology. These are the types of projects that can drive transformational change and improve mission delivery, effectiveness, and efficiency. More importantly, these are the types of projects that address the risks associated with operating on outdated and unsupported platforms.

New Policy Drivers

Recent legislation, including the Digital Accountability and Transparency Act (DATA) of 2014 and FITARA (2015), requires Government agencies to enhance oversight and tracking for new technology purchases and maintenance. These new policies and related Government-wide policies place a renewed emphasis on improving HHS' IT management, including IT acquisition, budgeting, management, and governance processes. For HHS, this means ensuring horizontal integration across the functional areas participating in IT decision making and governance and vertical integration from the top to the bottom of what is a very distributed organization. It also requires the continued development and maturation of the Department's IT workforce to make these changes a reality.

Ongoing Government-Wide Initiatives

NIST's Framework for Improving Critical Infrastructure Cybersecurity similarly provides guidance for Federal agency cybersecurity activities. Government-wide efforts to consolidate data centers, improve cybersecurity, promote shared services, and modernize legacy systems continues to consume IT resources, limiting the ability to respond to new or changing strategic drivers. Government-wide guidance continues to push agencies to transform digital services to have user experiences for the public consistent with the commercial environment (financial institutions, health providers, social media, etc.). This shift means users and partners will have confidence in the timeliness, integrity, and security of the data they receive and its availability on a variety of platforms and devices.

Appendix D: Technology Trends and Enablers

Electronic Health Records, Telemedicine, Remote Patient Monitoring, and Wearable Technology are among the technologies that are now available to the Department to respond to the drivers outlined above. The following technology trends and enablers are not specific to HHS, but represent capabilities the Department hopes to take advantage of in the coming years to meet the IT needs of the Department, its customers, and stakeholders.

Data Analytics

The amount of data available to inform decision making is growing exponentially. Managing Federal programs and delivering medical care and human services are data-rich endeavors. What once was done largely on paper is more frequently done electronically, resulting in massive data stores maintained by both the Department and its state, local, and tribal government and private sector partners in service delivery. CIOs and Chief Medical Informatics Officers (CMIOs) will continue to evaluate systems to harvest data from various sources—fiscal, clinical, academic, for example—to perform predictive analytics to determine the most effective ways to reduce costs and improve quality of service delivery and patient care. For users, technologies such as APIs and open source frameworks will make it easier for Federal agencies and health providers to share information appropriately.

Modernizing Core Systems

Like most Federal agencies, HHS allocates significant portions of its total IT spending to legacy systems. These core systems often date back years, if not decades, and are difficult and expensive to maintain. Additionally, these systems struggle to meet customer and stakeholder needs. IT organizations are increasingly looking for ways to re-platform, decommission, or replace out-of-date core systems as a way to be more responsive to end user needs and free up organizational resources.

User Interface/User Experience (UI/UX)

For many years, clinicians on the frontlines of service and care delivery have struggled with software that is hard to use. Across the spectrum of public, private and not-for-profit sectors, there is a growing recognition that adoption of electronic solutions for any sector requires a design perspective that puts the users' needs first and not those of the developers. Many organizations are implementing this through agile development frameworks that include smaller development increments, frequent touch points for users and stakeholders, and quicker delivery of value to users.

Mobile/Internet of Things

Increasingly, mobile and embedded technologies are enabling new capabilities across the breadth of HHS OpDivs. Everything from health care delivery, food and drug monitoring, and disease event monitoring within and outside of the United States is subject to the transformative effect of liberating HHS employees from their desks to do their work. One example is "Telehealth," which is the use of technology to deliver care through techniques like videoconferencing, allowing hospitals without specialists on staff to call on experts to effectively treat stroke, heart attacks, and complicated pregnancies. Other Telehealth efforts employ home monitoring through remote sensing for patients with pulmonary disease, heart failure, and diabetes in an effort to intervene before an expensive crisis occurs. Wearable technology, another form of mobile technology, is enabling projects to collect and store patient data such as blood pressure, weight, or heart rate.

Precision Medicine Initiative

The goal of the Precision Medicine Initiative (PMI) is to enable a new era of medicine through research, technology and policies that empower patients, researchers and providers to work together toward development of individualized care. NIH is building a national, large-scale research participant group, called a cohort, to lead efforts in cancer genomics as part of PMI for Oncology. The PMI Cohort Program will seek to extend precision medicine to all diseases by building a national research cohort of one million or more U.S. participants. The goal of the PMI Cohort Program is to set the foundation for a new way of doing research that fosters open, responsible data sharing with the highest regard to participant privacy, and that puts engaged participants at the center of research efforts.

Enterprise Security/Privacy

All of the environmental factors listed above present security and privacy risks. Whether protecting our HHS enterprise or fulfilling our responsibilities for the Healthcare and Public Health Sector, HHS must address the complex set of governance, people, process, and technology issues to take advantage of these advances/innovations. Aligned with the Federal Government's focus on Cybersecurity, HHS continues to lead and actively participate in fulfilling requirements for initiatives and new legislation such as the Cybersecurity National Action Plan (CNAP), Cybersecurity Strategy and Implementation Plan (CSIP), and CISA.

Courtesy of the National Institutes of Health (NIH)

Appendix E: HHS IT Strategy Overview

HHS STRATEGIC GOALS

Strengthen Health Care – Advance Scientific Knowledge and Innovation – Advance the Health, Safety, and Well-Being of the American People – Ensure Efficiency, Transparency, Accountability, and Effectiveness of HHS Programs

HHS IT MISSION

Deliver HHS IT resources and services, leverage common solutions, and provide a secure infrastructure throughout the Department that enables Division-level IT organizations to focus on the unique mission requirements of the programs they support.

HHS IT VISION

Cost-effective, secure, innovative, and timely IT solutions and services address the breadth of pressing human services and health care challenges across HHS program users and stakeholders.

HHS IT PRINCIPLES
- Innovation
- Customer/User Experience Focus
- Quality and Availability of Information
- Efficiency
- Value

HHS IT STRATEGIC GOALS

GOAL 1: IT WORKFORCE
Acquire, deploy, and sustain a technology-enabled workforce
Objective 1.1: Identify and define capability and capacity needs to forecast staffing and effectively plan for IT hiring
Objective 1.2: Streamline employee recruitment, hiring, and onboarding processes for IT Professionals
Objective 1.3: Brand HHS as an IT Employer of Choice
Objective 1.4: Develop and retain our technology workforce
Objective 1.5: Expand IT education and outreach programs for non-IT personnel

GOAL 2: CYBERSECURITY & PRIVACY
**Protect critical systems and data**
Objective 2.1: Improve the security and privacy posture of data and information systems
Objective 2.2: Effectively prevent, monitor and rapidly respond to emerging threats and vulnerabilities
Objective 2.3: Prioritize Cybersecurity investments through a risk-based approach

GOAL 3: SHARED SERVICES
Optimize the ability to accomplish the mission by sharing business systems and services
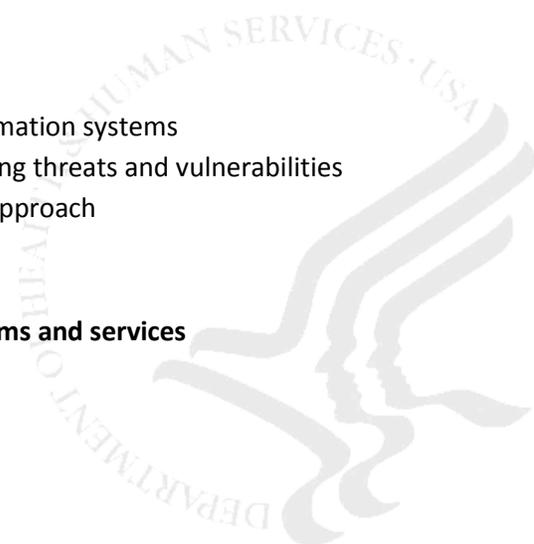
Objective 3.1: Ensure common understanding of shared services through the development and deployment of an enterprise framework

Objective 3.2: Maximize value by balancing service cost and quality through the enterprise framework

Objective 3.3: Promote strategic sourcing or other procurement vehicles for more efficient and cost-effective provisioning IT goods and services

GOAL 4: INTEROPERABILITY & USABILITY

Promote usability, interoperability, data sharing, and integration

Objective 4.1: Improve the management and governance of data across HHS

Objective 4.2: Promote interoperable exchange of data across HHS

Objective 4.3: Expand user engagement through improved usability and accessibility of systems and data

GOAL 5: IT MANAGEMENT

Mature IT management and governance to improve stewardship of IT investments and acquisitions

Objective 5.1: Update IT management and governance processes for guiding IT investments and acquisitions to reflect new legal and government wide policy requirements

Objective 5.2: Mature IT service delivery through effective program and project management

Objective 5.3: Streamline reporting processes to allow for increased focus on mission delivery

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