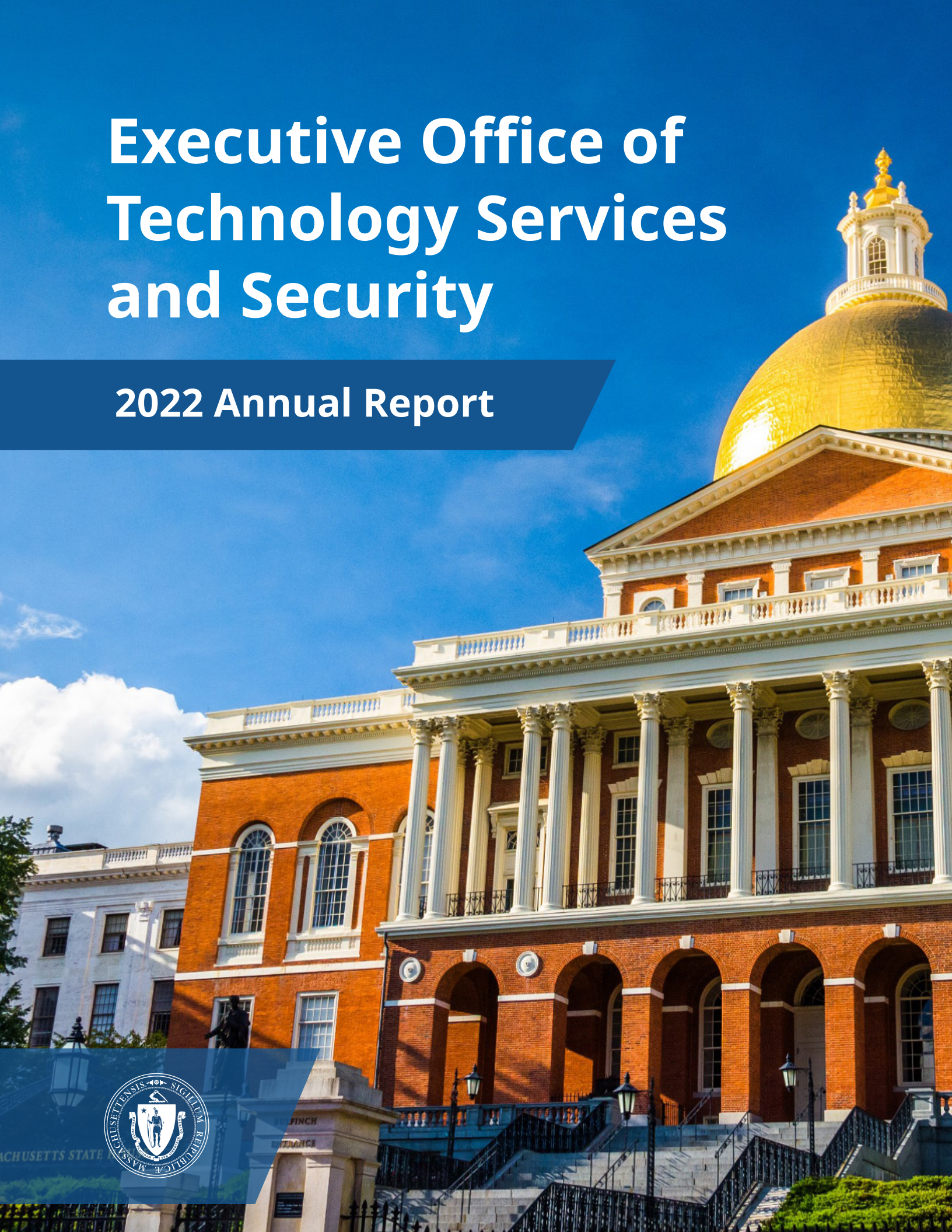
Executive Office of Technology Services and Security

2022 Annual Report



Introduction

The Commonwealth finds itself at a transformational moment as technology becomes ever-more integrated into the way government conducts business. This annual report serves as an informative resource for our state leaders, public agency partners, and constituents to learn more about EOTSS' role as the lead enterprise information technology (IT) and cybersecurity organization for the Executive Branch.

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A message from the CIO of the Commonwealth

From the CIO

The Baker-Polito Administration made the important decision five years ago to modernize our state-owned information technology (IT) systems and services, strengthen the Commonwealth's cybersecurity posture, and improve the constituent digital-government experience through the creation of a new cabinet-level lead IT organization for the Executive Branch – the Executive Office of Technology Services and Security (EOTSS).

Since then, EOTSS has undergone transformational change by means of critical investments in our core personnel, processes, and technologies to:

- Drive a new enterprise approach to IT infrastructure and services
- Unify security operations, risk management, and data privacy frameworks
- Ensure the continuity of government operations through a more resilient Commonwealth
- Foster innovative technology solutions to enhance citizen-centric digital services
- Deploy a Standard Operating Environment (SOE) across all Executive Branch agencies

These significant investments coupled with our innovative spirit earned Massachusetts an improved grade of B+ and an award for Data Governance/Transparency by the prestigious Center for Digital Government in its 2020 Digital States Survey. The Commonwealth was one of the ten most-improved states among its peers and one of four states recognized for ensuring data quality and privacy protections.

Significant investments coupled with our innovative spirit earned Massachusetts an improved grade of B+ and an award for Data Governance and Transparency by the prestigious Center for Digital Government in its 2020 Digital States Survey.

More importantly, our previous investments and groundwork laid the foundation for a successful technology response to the most significant global public health crisis in generations. COVID-19 highlighted above all the critical need for secure, available, reliable, and resilient technology systems and services to maintain the continuity of government operations and constituent services under the most difficult circumstances. The Commonwealth's increased focus in recent years on prioritizing resiliency by adopting cloud-based solutions, enabling a more flexible and mobile workforce, and expanding our digital services footprint enabled a strong and timely response to many of the unique challenges imposed by the pandemic.

We could not have found success or overcome these recent challenges on our own. It takes a collaborative effort and strong working relationships with our colleagues in the Administration as well as our partners in the Legislature and private industry. Recently, this collaboration has taken on many forms – such as the passage of legislation authorizing $660 Million in spending on new IT and cybersecurity capital investments, the development and rollout of the Commonwealth's new Paid Family and Medical Leave (PFML) system, and the enterprise deployment of standardized hardware, software, and tools in support of a new hybrid workforce model. EOTSS looks forward to continued partnership with key stakeholders across state government and the private sector to ensure future success in the years to come.

As we close out FY2022 and build an IT roadmap for FY2023 and beyond, cybersecurity, resiliency, mobility, and accessibility remain the four cornerstones of our efforts to modernize and secure the enterprise. Unified security operations, vulnerability management, and incident response protocols will bolster the state's security posture in today's heightened threat environment. The continued migration of legacy systems and business applications from out of state data centers to contemporary hybrid-cloud and 3rd-party hosting solutions will provide more resilient and accessible options for the agencies, residents, and businesses in the Commonwealth that depend on them. Deploying a standard operating environment, with a consistent technology stack across all agencies, will promote agility and efficiency across the entire Executive Branch. And, core network and IT infrastructure upgrades will lead to uniform, scalable, and secure connectivity across the enterprise for all agencies.

As we close out FY2022 and build an IT roadmap for FY2023 and beyond, cybersecurity, resiliency, mobility, and accessibility remain the four cornerstones of our efforts to modernize and secure the enterprise.

Working towards completion of priority enterprise programs and initiatives over the next 12 months, EOTSS anticipates resistance from three significant headwinds.

Increased cybersecurity threats to government entities and vendor partners may present new security challenges and potential disruptions across all levels of government and major industry sectors. A strong labor market (particularly in technology), spurred by the ongoing economic recovery, may make it increasingly difficult for the Commonwealth to recruit and retain top talent in cybersecurity, IT, and digital services. Lastly, lingering global supply chain issues may continue to negatively impact IT equipment and service delivery.

Of course, new challenges also present new opportunities. We find ourselves at a transformational moment as technology becomes ever-more integrated into the way agencies conduct business. Now is the time to leverage the acceleration towards digital-centric services and a more resilient state government that was set in motion by the COVID-19 response.

EOTSS looks forward to once again partnering with the Administration, Legislature, and private industry on innovative business and technology solutions to overcome tomorrow's challenges and keep moving Massachusetts forward. I know we are all equal to the task.

I encourage you to take some time to review this report and spend a few minutes learning more about EOTSS' lead role for enterprise IT and cybersecurity, our successful collaborations with agency, state, and vendor partners, and our plans for the road ahead.

Thank you.

Curtis M. Wood

Secretary/Commonwealth CIO

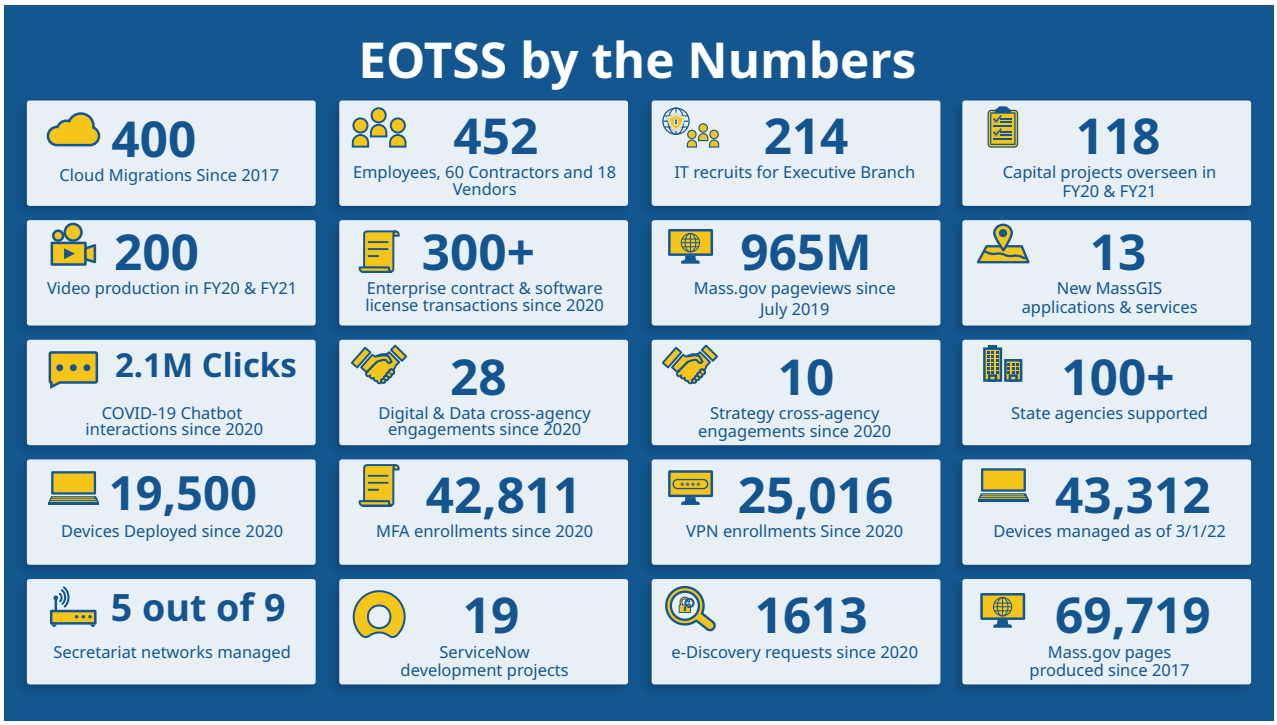
About Us

Our Mission

The **Executive Office of Technology Services and Security (EOTSS)** seeks to provide secure and quality digital information, services, and tools to customers and constituents when and where they need them.

As the lead enterprise information technology (IT) and cybersecurity organization for the Executive Branch, EOTSS offers responsive digital services and productivity tools to more than 40,000 state employees. It also provides digital services and tools that enable taxpayers, motorists, businesses, visitors, families, and other citizens to do business with the Commonwealth in a way that makes every interaction with government easier, faster, and more secure.

EOTSS by the Numbers



The Newest Member of the Cabinet

The Baker-Polito Administration created EOTSS in 2017 in partnership with the Legislature "to improve data security, safeguard privacy, and promote better service delivery" across the Commonwealth. These goals would be achieved through the modernization of the state's aging IT and security infrastructure, the development of true enterprise strategies and organization structure, and investments in best-in-class technologies and first-class talent.

EOTSS has broad statutory authority to effectuate the goals prompting IT consolidation in **Chapter 64 of the Acts of 2017**, as memorialized and articulated in **M.G.L. c. 6A, s. 7A** and **M.G.L. c. 7D**.

Since its creation, EOTSS has made critical investments in infrastructure resiliency, unifying cybersecurity operations, and deploying a Standard Operating Environment (SOE) and technology architecture across all agencies. The organization has also collaborated with agencies to improve the centralized delivery of digital services for constituents, schools, businesses, government agencies, and municipalities.

Enterprise Leadership, Expertise, and Economies of Scale

The centralization of IT and cybersecurity under EOTSS enabled the state to manage infrastructure and service delivery more efficiently through enterprise leadership, expertise, and economies of scale.

Additionally, EOTSS delivers value in the following enterprise program areas (among others):

- IT Capital Investment & Related Program Management
- Centralized Contract Management and Enterprise Software License Acquisition Management
- Targeted IT Recruiting
- Asset Management
- Privacy & Risk management

Agency Business Applications

While EOTSS assumed oversight of core IT and cybersecurity infrastructure and services, management of the business application layer was preserved at the agency and secretariat level – where there resides deep subject matter expertise and

knowledge of the business and the application layers, and impact with respect to daily operations and respective constituency

However, agencies continue to work with EOTSS to strategical identify which of their legacy business applications should be kept, replaced, retired, or consolidated. They then collaborate on migration to approved hosting solutions within the EOTSS SOE for those applications that will remain in service.

The Road Ahead

EOTSS continues to lead the charge in transforming the Commonwealth's decentralized approach to IT infrastructure and service delivery into a centralized technology organization laser focused on securing digital assets and providing world-class service to customers and constituents.

Modernizing the Commonwealth's IT landscape remains a top priority on the EOTSS strategic roadmap, as does strengthening the state's cybersecurity posture to meet today's emerging threats. The organization will also continue to collaborate across multiple agencies and secretariats to invest in high-impact IT projects that can be efficiently supported over their useful lives.

Modernizing the Commonwealth's IT landscape remains a top priority on the EOTSS strategic roadmap, as does strengthening the state's cybersecurity posture to meet today's emerging threats.

All efforts will work towards ensuring a more resilient Commonwealth and the continuity of government operations under any circumstance, as well as improving the constituent digital experience when accessing essential government services.

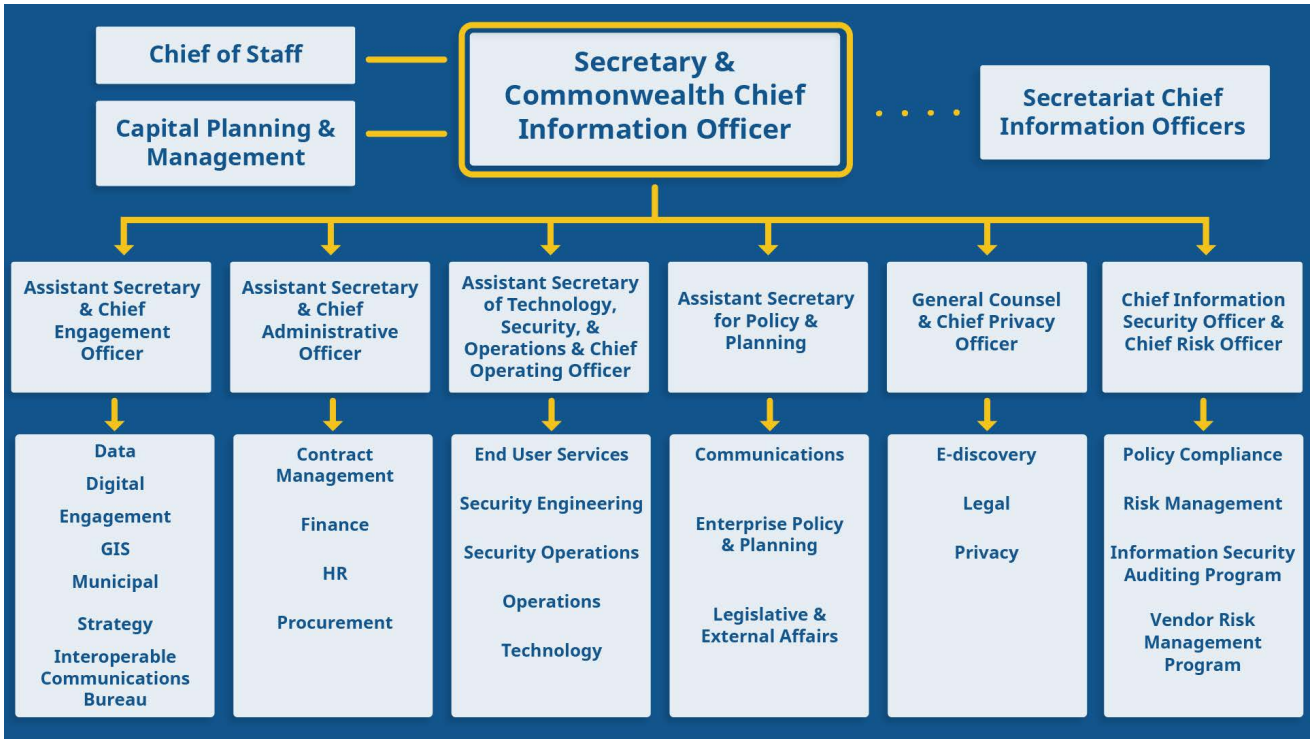
EOTSS Organizational Structure

The EOTSS organizational structure has evolved since 2017 to better reflect the management, operational, and staffing needs of a modern enterprise IT and cybersecurity agency.

At a high level, 22 EOTSS Departments report up to the Secretary and Commonwealth CIO through four Assistant Secretaries and the General Counsel.

Secretariat Chief Information Officers (SCIOs) and their respective technology organizations also have a "dotted-line" reporting responsibility to the EOTSS

Secretary and Commonwealth CIO.



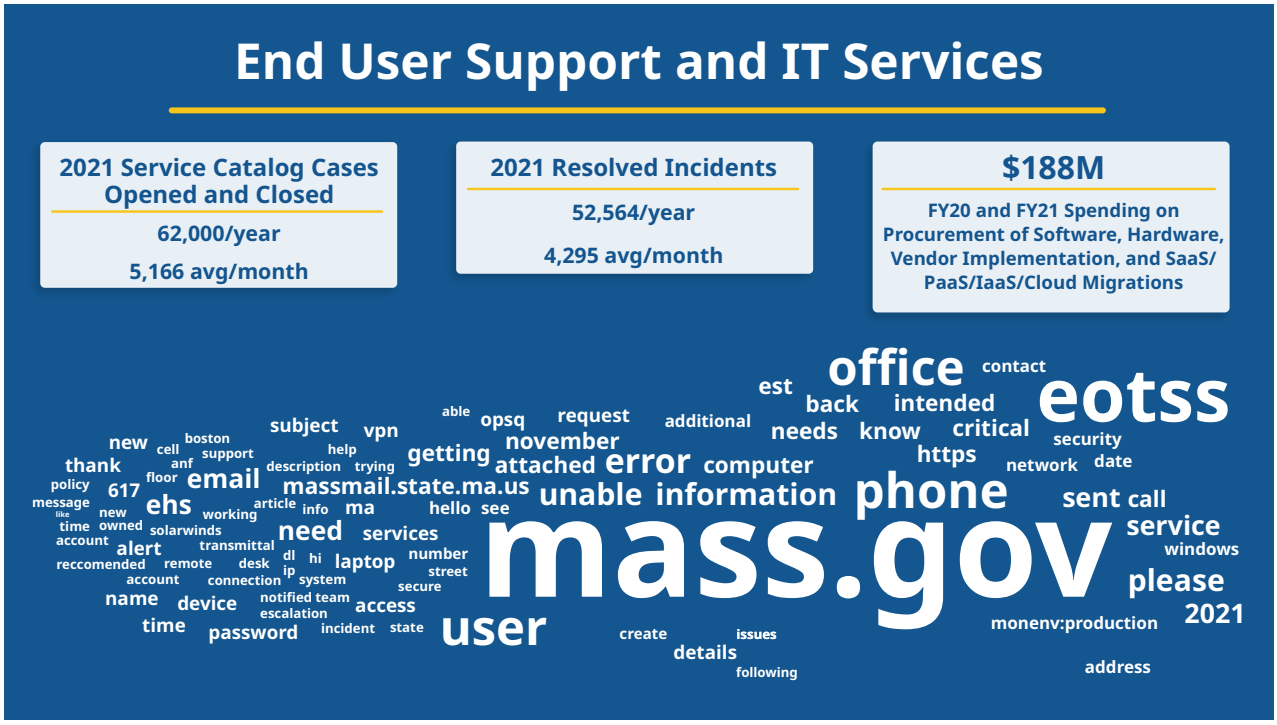
These 22 departments are staffed by 452 full-time employees and 60 staff augmentation contractors working through 18 vendors (via **ITS77**).

EOTSS full-time employees, contractors, and vendors primarily support the enterprise in the following areas:

- **Enterprise Cybersecurity & Risk Management –** EOTSS maintains operational responsibility for securing the Commonwealth's infrastructure, networks, data, and systems through the development and maintenance of enterprise security policies and strategies; security operations; incident reporting and response; risk management; and information governance.
- **Infrastructure & Network Services –** These services include voice and data networks; enterprise systems and services; mainframe and various hardware environments; architectural and infrastructure hosting services for cloud and other environments, as well as enterprise application maintenance and business support.
- **End-User Support & IT Services –** These teams oversee end user software, hardware, voice, and connectivity support for Commonwealth employees, agencies, and IT organizations; they manage the **Service Desk**, **CommonHelp Desk**, and Desk Side Services.
- **Digital & Data Services –** These teams have responsibility for overall strategy and management of the Mass.gov environment, while also providing leadership and direction to agencies in the delivery of digital services to our residents,

visitors, and businesses. The Data Office more specifically establishes data standards and assists with data analysis, visualization, and business intelligence efforts.

- **Strategy Management & Consulting Services –** The **Office of Strategy Management (OSM)** is a business engagement team offering agencies expertise in planning and performance management, project management, business strategy, and research and analysis. They seek to increase the efficiency and responsiveness of state agencies by improving service delivery and adopting new technology-enabled business solutions.



Additionally, the following EOTSS Departments perform niche functions within the organization and for our partners in state and local government:

- **Office Of Municipal and School Technology (OMST) –** This Office supports local government efforts to effectively serve their residents, students, and employees through the use of technology. It serves cities, towns, and school districts across the Commonwealth by providing technical assistance to position communities for successful technology initiatives, promoting state resources that can improve local government operations, and administering and providing information about available IT and security grant opportunities.
- **Bureau of Geographic Information Services (MassGIS) –** MassGIS is the state's one-stop-shop for interactive maps and associated descriptive information. The team coordinates GIS activities in state and local government and sets GIS data standards. MassGIS supports emergency response, real-estate research, environmental planning and management, transportation planning, economic

development, and engineering services.

- **Interoperable Communications Bureau –** This Division provides infrastructure planning project management, grant administration and support to promote interoperable communications amongst first responders, public safety, public health, and other government services across a growing spectrum of communications platforms to include the statewide public safety radio network and public safety wireless broadband network(s).
- **IT Capital Investment Management –** The Secretary and **EOTSS Office of Capital Planning** oversee the IT capital investment portfolio and related program management. This team works in partnership with the **Executive Office for Administration and Finance (A&F)** and the **IT Investment Advisory Board** to develop and administer the **annual Capital Investment Plan (CIP)** with the Governor's Office.
- **Office of the General Counsel & Legal Services –** This Office, along with the Commonwealth's first Chief Privacy Officer (CPO), oversees the development of policies regarding the appropriate sharing of sensitive data and ensures compliance with federal and state laws concerning the collection, retention, sharing, and disposal of data. It also manages the enterprise e-Discovery team that provides executive branch agencies with technical services for record preservation and e-mail and file extractions.
- **Administration & Finance –** Divisions reporting to the Chief Administrative Officer include Human Resources, IT Recruiting, the Fiscal Office, the Procurement team, Contract Management & Software Licensing; and IT Accessibility.
- **Policy & Planning –** This Division is responsible for establishing an enterprise IT strategic planning framework; development of a statewide IT roadmap; maintaining enterprise policies, standards, and guidance; and overseeing Executive Office communications, legislative and external affairs.

Collaboration with Secretariat Chief Information Officers

In addition to reporting up to their respective cabinet secretaries, Chief Information Officers and their IT and security organizations at the other secretariats also have a "dotted-line" reporting responsibility to the EOTSS Secretary and Commonwealth CIO:

Administration & Finance

Health & Human Services

Transportation

Labor & Workforce Development

Public Safety & Security

Education

Energy & Environmental Affairs **Housing & Economic Development**

EOTSS promotes a collaborative relationship with the SCIOs through monthly SCIO Cabinet Meetings, **annual strategic planning exercises**, and project implementation support and monitoring.

EOTSS Board and Commission Involvement

Body Cam Task Force

Established by the **2020 Police Reform Bill**, "An Act relative to justice, equity, and accountability in law enforcement in the Commonwealth." The Board, chaired by the Secretary of the Executive Office of Public Safety and Security (EOPSS) or designee and is comprised of various law enforcement, civil liberties, and technology stakeholders, is charged with proposing regulations to establish a uniform code for the procurement and use of body-worn cameras by law enforcement officers throughout the Commonwealth. The Secretary of the Executive Office of Technology Services and Security (EOTSS) or designee serves as a member of the Task Force, offering technology procurement and implementation expertise.

State 911 Commission

Established by the 2008 State 911 Bill, "An Act establishing a state 911 department, single 911 surcharge and an enhanced 911 fund." The Commission, chaired by the Secretary of the Executive Office of Public Safety and Security (EOPSS) and is comprised of public safety and other interested government entities throughout the Commonwealth. The Commission is charged with providing strategic oversight and guidance to the State 911 Department on enhancing 911 service in the Commonwealth. The Commonwealth's Chief Information Officer (CIO) serves as a member of the Commission, offering public safety radio technology guidance on behalf of the Executive Office of Technology Services and Security's (EOTSS) Interoperable Communications Bureau (ICB).

Justice Reinvestment Policy Oversight Board (JRPOB)

Established by the **2018 Criminal Justice Reform Bill**, "An Act Relative to Criminal Justice Reform." The Board, chaired by the Secretary of the Executive Office of Technology Services and Security (EOTSS) and comprised of a broad spectrum of criminal justice agency leaders and stakeholders inside and outside of state government, is charged with monitoring the development and implementation of justice reinvestment policies relative to the collection, standardization, and public availability of data.

Community Compact Cabinet (CCC)

The **Community Compact Cabinet (CCC)** champions municipal interests across all executive secretariats and agencies, and develops, in consultation with cities and towns, mutual standards and best practices for both the state and municipalities.

While the CCC offers partnerships with municipalities in a number of **best practice** areas, EOTSS and its Office of Municipal and School Technology (OMST) collaborated with the CCC to head up the **IT Best Practices Program**. This program includes assistance in areas ranging from IT Health Checks to Cybersecurity and Strategic Planning. A **rundown of completed IT Best Practice engagements** can be found here.

Through the CCC and the EOTSS-designed **CCC Connector Portal**, the Baker-Polito Administration has centralized links to the municipal grant finder, application submission calendar, and other resources that municipalities need to interact more easily with state government so that they can better serve residents, businesses and visitors.

The MassGIS team also worked with the Lt. Governor's Office to create an **interactive map** that visually demonstrates how communities have engaged with the Administration through the CCC.

CCC IT Grant Program

The **CCC IT Grant Program** is a competitive grant program focused on driving innovation and transformation at the local level via investments in technology. The funding is designed to drive innovation, make government more efficient, save taxpayer money, and make it easier for residents to interact and transact with their local government.

Grants of up to $200,000 support the implementation of innovative IT projects by funding related one-time capital needs such as technology infrastructure or software. Incidental or one-time costs related to the capital purchase such as planning, design, installation, implementation and initial training are eligible. EOTSS and its OMST partner with the CCC and municipalities on program development and implementation.

Most recently in December 2021, Lt. Governor Polito **announced $3.5 million in IT grants to 70 municipalities** through this program. The Baker-Polito Administration has now issued 749 grants through this program worth $19.2 million to help Massachusetts communities become more efficient and innovative while improving their technology infrastructure.

Here is a list of past **recipients and projects of Community Compact IT grants**.

Municipal Fiber Grant Program
This fiscal year, the Baker-Polito Administration announced the rollout of a new **Municipal Fiber Grant program** aimed at closing critical gaps that exist in municipal networks. The provision of fiber in communities allows for centralized management of IT infrastructure, including an enterprise approach to network monitoring, cybersecurity, records management, and backup and recovery. A cohesive municipal network also creates opportunities to gain economies of scale by aggregating internet bandwidth purchases and the associated security infrastructure.

EOTSS and its OMST again partnered with the CCC and municipalities on program development and implementation.

Strategic Partnerships

The EOTSS senior leadership team and staff regularly engage with strategic partners in federal, state, and local government – as well as industry partners and non-profit organizations who are well positioned to offer strategic guidance and best practices on cybersecurity, IT product and service delivery, and the digital government experience.

Some examples of these strategic partnerships are noted below.

Mass Cyber Center
The **Mass Cyber Center** was launched in September 2017 by the Baker-Polito Administration with a vision to enhance opportunities for the Massachusetts cybersecurity ecosystem to compete as a national cybersecurity leader and to strengthen the resiliency of the Commonwealth's communities, including public and private organizations and businesses.

The Mass Cyber Center's mission is to enhance conditions for economic growth through outreach to the cybersecurity ecosystem of Massachusetts, while fostering cybersecurity awareness and resiliency within the Commonwealth.

As outlined later in the Enterprise Security & Risk Management section of this report, EOTSS works with several other federal, state, and industry partners in carrying out its security and risk mission.

NASCIO
As a 501c (3) (h) nonprofit association, the primary objective of **the National Association of State CIOs (NASCIO)** is to provide policymakers with insight and recommendations regarding the implications of technology-related legislation, regulations, policies and proposals.

- NASCIO's primary advocacy efforts focus on:

- building awareness of state IT policy issues
- advancing the role of the state CIO
- expanding the association's visibility on Capitol Hill and with federal agencies

Additionally, biannual NASCIO conferences allow for the greater exchange of IT policies, procedures and ideas that are implemented on the state level to address common problems facing all state-level enterprise organizations. NASCIO conferences are based on these guiding principles:

- be non-partisan
- be ethical in our actions and relationships
- foster policies that support the public trust
- focus on multi-jurisdictional issues
- promote open standards and best practices
- promote strategic alignment of government technology investments and state business agendas
- promote the CIO as the technology leader who drives business innovation and transformation

SAFECOM

As outlined on the Cybersecurity and Infrastructure Security Agency (CISA) website, **SAFECOM** collaborates with emergency responders and elected officials across all levels of government to improve emergency response providers' inter-jurisdictional and interdisciplinary emergency communications interoperability across local, regional, tribal, state, territorial, international borders, and with federal government entities. "SAFECOM works with existing federal communications programs and key emergency response stakeholders to address the need to develop better technologies and processes for the coordination of existing communications systems and future networks."

The EOTSS Secretary currently serves as the NASCIO designee to SAFECOM. Other **SAFECOM members** include representatives from a wide array of public safety associations and organizations.

National Association of State Technology Directors (NASTD)

Founded in 1978, the **National Association of State Technology Directors (NASTD)** is a member-driven organization that seeks "to advance and promote the effective use of information technology and services to improve the operation of state government." NASTD represents IT professionals from all 50 states and the private sector. Members provide and manage state government IT services and facilities for state agencies and other public entities. They play a strategic role in planning and shaping state government technology infrastructures and policies.

GOV Tech & Massachusetts Virtual Digital Government Summit

In November 2021, the Baker-Polito Administration, in partnership with Government Technology, hosted the **2021 Massachusetts Virtual Digital Government Summit**, an annual conference geared toward networking opportunities and the sharing of best practices to enhance technology and cybersecurity services across the public sector. With a focus on the 'future of work' in adapting how the business of government is executed, the Summit offered attendees from state and municipal government with a valuable opportunity to build vital relationships with industry leaders and learn about innovative solutions for the challenges governments face in an increasingly digital world.

Guiding Principles

Overview

These Guiding Principles reflect the Administration's priorities of ensuring the continuity of government services, improving the citizen-centric digital experience, strengthening our cybersecurity posture, and modernizing our legacy technology infrastructure.

Together, they help move the Commonwealth toward the following strategic goals (among others):

- Deploying a common enterprise architecture and Standard Operating Environment (SOE)
- Reimagining customer engagement, success, and fulfillment
- Enabling a modern workplace in support of a hybrid workforce
- Modernizing legacy IT infrastructure, core networks, and hosting solutions
- Unifying enterprise security operations, vulnerability management, and incident response

Holistic Strategic Planning

EOTSS has organized a holistic, enterprise approach to **IT strategic planning** for all secretariats. It evolves from an organization's mission and vision to the specific goals they hope to achieve over a 24-month time horizon. Secretariats then identify the strategies and initiatives they will deploy to reach their specified goals.

This approach synchronizes secretariat IT strategic planning with the annual **IT Capital Planning** process as well as the EOTSS statewide IT planning process.

The EOTSS "Top 10"

All secretariat and agency strategic plans, programs, projects, and initiatives must take into consideration the following "Top 10" priorities from the EOTSS statewide IT strategy.

EOTSS Top Ten Priorities

1. **Continuity of Government Services:** Ensure that solutions fit within the Modern Workplace framework and consider disaster recovery and the continuity of operations.
2. **Business Resiliency:** Applications and systems should move to approved cloud and modern third-party hosting solutions equipped to handle unexpected events and still perform at scale.
3. **Scalability:** Applications and systems should move to approved cloud and modern third-party hosting solutions that can scale up capacity to meet processing demands.
4. **Security:** All solutions and infrastructure should provide for end-to-end security with priority focus on cybersecurity and risk management.
5. **Mobility:** Ensuring workforce mobility through the Modern Workplace Program, associated collaborative toolsets, mobile device management solutions, and mobile application management solutions.
6. **Accessibility:** The ability to make information available to all authorized systems and users at any time and in any place in a secure, timely, and efficient manner.
7. **Availability:** All infrastructure should be fault tolerant, with the ability to switch over to alternate systems as needed.
8. **Flexibility:** Agencies should maintain the ability to add new services and/or functionality to a system without requiring a significant effort.
9. **Transparency:** Agencies should maintain the ability to add new services and/or functionality to a system without Provide clear, simple, and well-defined interfaces, APIs and/or services to enable system and user interactions.
10. **Citizen-Centric Government:** Agencies should maintain the ability to add new services and/or functionality to a system without Citizen-centric government is focused on user-centric design. Agencies must consider the full citizen user experience and tailor solutions to how real users interact with government services.

Enterprise Objectives & SOE Architecture

All secretariats and agencies must alsov account for the following EOTSS enterprise programs, projects, and initiatives as part of their strategic planning:

- The Modern Workplace Program (MWP) Standard End User Set up – A laptop (equipped with Windows 10 and Office Pro Plus with OneDrive, SharePoint, and Teams), monitor, docking station, keyboard, and mouse.
- Other MWP projects and workstreams (e.g. personal and group file Migrations to SharePoint and OneDrive, email migrations).
- Consolidation of the Active Directory into Azure AD.
- One Network Consolidation – Redesign and build of CORE Network and WAN Optimization.
- MassVoice Enterprise Solutions – Migration to the secure, private-cloud Unified Communications service tailored exclusively to MA state and local government clients.
- Enterprise Cybersecurity Framework, Operations, and Incident Response and Reporting.
- One Service Desk – Moving toward One End-User Organization.
- Infrastructure Hosting – Strategies for moving out of state-run data centers and modernizing legacy IT infrastructure (Hybrid Cloud, On-premises -3rd-Party Hosting, IaaS, PaaS, and SaaS).
- Application Rationalization – Prioritization for modernizing, replacing, or upgrading key business applications and readying for migration to approved hosting solutions.
- Enterprise Print Services – Moving to a vendor-agnostic enterprise managed-print solution for multi-function devices located in agency offices and facilities.

The Road Ahead

Along with the IT Capital Investment Principles, the EOTSS Top 10 and the enterprise objectives included as part of the SOE rollout provide agencies with a framework to ensure the continued availability of government operations and the efficient delivery of

The goal is to work towards a Commonwealth where all public services are accessible, reliable, and available wherever and whenever needed.

services to the residents, businesses, and visitors of the Commonwealth.

Moreover, the EOTSS Guiding Principles and holistic planning approach will help agencies to promote technology solutions that enable for optimizing business processes, protecting constituent data, and improving the overall digital government experience.

COVID-19 Response & Recovery

Pre-Pandemic

Prior to the March 2020 COVID-19 outbreak, the Baker-Polito Administration's earlier investments in IT and cybersecurity modernization, and its renewed focus on improving the citizen digital experience, laid the foundation for a successful technology response to the public health emergency.

IT capital projects had prioritized migrations to cloud-based solutions ensuring more reliable and available systems. The **Modern Workplace Program (MWP)** enabled a more flexible and mobile workforce through the deployment of updated hardware, software, and applications. And, agencies were also increasingly investing in digital solutions over the traditional "paper" and "in-person" processes of the past.

These prior investments all helped the Commonwealth overcome many of the pandemic's unique challenges by offering access to more secure, available, reliable, and resilient technology systems and services as part of our response.

The Pandemic Emergency Response

When 20,000 employees, representing almost half the Executive Branch workforce, transitioned to remote work in mid-March 2020 under the Governor's state of emergency declaration, EOTSS led a successful technology response in coordination with the Governor's Office and leadership from the other secretariats and their respective secretariat chief information officers (SCIOs).

The collective response ensured a rapid and smooth transition to telework to help agencies maintain critical constituent services and support their workforce with the necessary hardware, software, and collaborative tools to get the job done remotely.

EOTSS also implemented an incident command structure that provided critical situational awareness on the status of IT initiatives and important cybersecurity information as the pandemic response evolved.

To support these efforts and the state's significant shift to telework, EOTSS and our

secretariat partners:

- **Stood up a new VPN system** to accommodate 20,000 new concurrent users and upgraded critical data communications infrastructure to improve performance under heavy demand.
- Expedited the enablement of **Microsoft Office 365 G3 licenses** for end users to allow for immediate access to **remote collaboration tools** like Teams, OneDrive, and SharePoint.
- Enrolled 42,000+ employees in **multi-factor authentication/identity access management services** to enhance the Commonwealth's cyber security framework in a remote environment.
- Established the **Telework PMO to source, procure, and deploy over 7,200 new laptops** and other equipment to remote workers and in support of agency operations.
- **Deployed a System Center Configuration Manager (SCCM) environment** to remotely push software updates and security patches to end users.
- **Implemented an Auto-Pilot program for "light-touch" device deployments** to end users working from home and other remote locations.
- **Developed the Mass Telework Knowledge Base** to provide digital instructions, responses to frequently asked questions (FAQs), and tip sheets to help teleworkers get set up.

In addition to supporting the Commonwealth's remote workforce, EOTSS also deployed a number of technologies to support the Commonwealth's COVID-19 initiatives to deliver government services to the constituents we serve, especially our most vulnerable populations. These initiatives included:

- **Assisting the Department of Unemployment Assistance (DUA) in monitoring and supporting the Amazon Web Service (AWS) cloud environment** to ensure scalability, performance, and the security of the Commonwealth's Unemployment Insurance (UI) application to meet a massive claimant demand.
- **Working with DUA and AWS to stand up remote UI call centers** in three days; to support 1,500+ remote staff in handing an unprecedented volume of UI claims; to implement automated forms processing; to help prioritize and clear a backlog of hundreds of thousands ofclaimant callbacks; and to assist in developing and deploying enhanced fraud protection services.
- **Establishing additional remote call center capabilities beyond DUA** that allowed agencies to provide critical constituent and employee services for the Governor's Office, Human Resources Division (HRD), the Executive Office of Education (EOE), and EOTSS.

- **Assisted DUA with standing up a new environment for the Pandemic Unemployment Assistance (PUA) program** within 14 days of initial engagement – which included chatbots providing for over 300 frequently asked questions (FAQ's), integration into a 3rd party contact center for claimants, and creation of robust dashboard reporting and analytics visualization for agency staff and management.
- **Partnering with the Executive Office of Public Safety & Security (EOPSS) and the Department of Correction (DOC) to create a videoconference program** that enabled family and attorney visits.
- **Working with EOPSS and the Office of the Chief Medical Examiner (OCME) to ready and stand up a temporary field morgue.**
- **Engaging Massachusetts-based company Everbridge to bolster the Commonwealth's COVID-19 communications strategy with the launch of AlertsMA.** Throughout FY21 and FY22, the AlertsMA platform was used to notify people living in or traveling to Massachusetts about important safety situations. AlertsMA has been a key communication tool in the Commonwealth's response to the COVID-19 pandemic. It has been used in numerous different ways to notify millions of Massachusetts residents in up to 11 different languages. This includes:
  - **Statewide COVID-19 instruction and guidance:** Throughout the pandemic, the COVID-19 Response Command Center sent 50+ million calls, text, and emails to residents and businesses throughout Massachusetts with important safety information – such as messages about stay-at-home advisories, mask mandates, business and public gathering capacity limits, vaccines, travel guidance, and more. Messages were issued in different languages including Albanian, Arabic, Chinese Simplified, English, French, Haitian-Creole, Khmer, Spanish, Portuguese, Polish, and Vietnamese.
  - **Community-specific communications:** AlertsMA was also used to send geotargeted messages to certain cities and towns about community spread, vaccine locations, and more. These messages included alerts to communities identified as being in the "red zone" based on their risk of COVID-19 transition. It also included targeted messages to vaccine equity communities which include 20 communities hardest hit by COVID-19.
  - **Eviction Support:** AlertsMA was used by the Department of Housing and Community Development to send ~40K individual text messages and phone calls to tenants and landlords of tenants having trouble paying rent and other housing costs during the pandemic.
  - **Vaccine waitlist:** Through February and March of 2021, AlertsMA was used to communicate with people waiting to receive a COVID vaccine who requested

assistance scheduling an appointment. ~30K people on the vaccine call back list were called and/or texted using AlertsMA to inform them about the next steps in scheduling a vaccine at one of the Mass Vaccination sites.

- **COVID-19 interest keywords:** ~275K people throughout Massachusetts texted a keyword to anonymously opt-in to receive a wide variety of COVID-19 related information in either English and/or Spanish. Starting in April 2020 and continuing into 2021, this included frequent updates about key topics such as Governor's press conferences, small business loan opportunities, child-care relief, school closures, tax filing extensions, unemployment benefits, health care volunteer opportunities, beach parking, personal protective equipment, drive through testing, job opportunities, and more.
- **MA Traveler communications:** AlertsMA was also used to communicate with thousands of individuals arriving in Massachusetts from other states/countries about inbound travel requirements, including the required Traveler Health Form.

- **Assisting MEMA and the COVID-19 Command Center with mapping support services during the pandemic response** – MassGIS completed statewide mapping of pharmacies, "Grab and Go" meal locations, and food bank locations in central and western MA. Three new map layers were then created and included in the COVID-19 dashboard used in the MEMA bunker and at the COVID-19 Command Center.

In November 2020, the CDC Foundation submitted a request to utilize the Thanksgiving Tips flyer (shown at left) EOTSS created as a resource for other states and cities across the country to rebrand and distribute. EOTSS translated the messaging into 12 different languages.

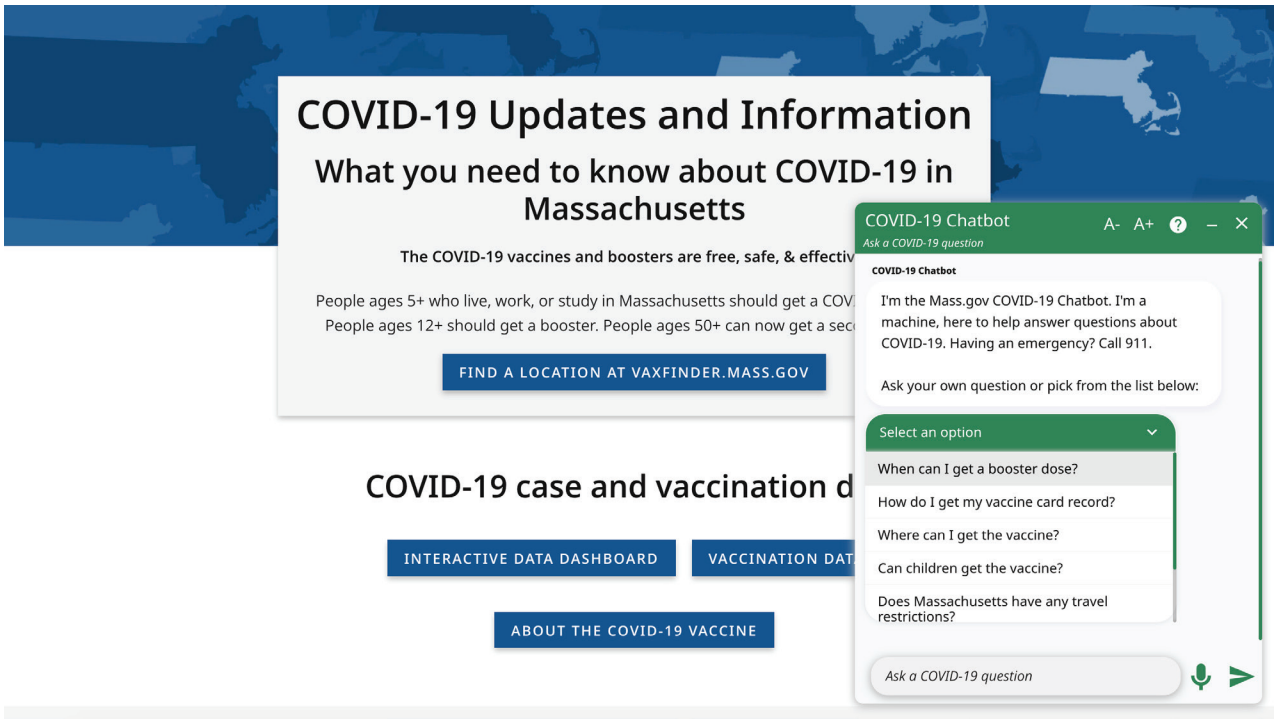
All the while, Digital Services – in coordination with the COVID Command Center, the Executive Office of Health and Human Services (EOHHS), and the Department of Public Health (DPH) – **created extensive digital content** as a part of the Commonwealth's public health communications plan, including public awareness **videos** and graphics for high profile campaigns around COVID awareness and eligibility, **COVID**

Enforcement and Intervention Team (CEIT) work, at-risk community messaging, vaccines, booster shots, and pediatric vaccines.

To date, they have produced over 282 Mass.gov pages containing COVID-19 and related content, along with thousands of graphics in up to 20 languages across 100 different pandemic-related subjects.

Lastly, the Digital Services and Data teams collaborated on statewide efforts to help facilitate COVID-19 testing and the vaccine rollout:

- **Developing and deploying the COVID-19 and Vaccine Chatbots** to assist constituents in navigating the considerable amount of COVID-19, testing, and vaccine-related information on Mass.gov.



The COVID-19 chatbot has been published on 40-50 pages at various times but is currently published on 41 Mass.gov pages. To date, the bot has fielded 300,490 messages and received 2,103,164 total clicks. 23,862 clicks were on pre-populated questions, and a link was clicked in the bot 60,688 total times.

- **Creating the Find a COVID Test website** – aggregating data and maps of locations across the Commonwealth. To provide Commonwealth residents with a way to find available PCR tests or rapid antigen tests, EOTSS developed a searchable tool that allows individuals to input their zip code, or a desired zip code, to surface locations that provide a variety of testing services based on certain categorical needs, such as: testing for children, drive thru appointments, free tests, tests for non-residents or travelers.
- **Improving the usability, availability, and stability of the 3rd party vaccine appointment websites** through the use of virtual waiting rooms and content

delivery networks (CDNs). In the initial stages of the national vaccine rollout, and with limited early supply, the Commonwealth witnessed an incredibly high public demand for appointments. The 3rd party vaccine appointment websites had considerable difficulty withstanding the high traffic events when new appointments were released. Due to intermittent website crashes and a challenging user experience for members of the public who were successful in booking an appointment, EOTSS deployed a team to assist these 3rd party vendors to make necessary improvements to the booking process. These improvements included evaluating the technical stack that supported the backend of the scheduling system and implementing public facing virtual waiting rooms to manage the high volume of traffic to each site and provide an appointment seeker with a transparent view of where they were in line.

- **Deploying the Vaccine Preregistration System** for Mass Vaccination Site appointment seekers. Due to exceptionally high public demand for vaccination appointments, limited supply, and the short-term fixes to the 3rd party appointment scheduling sites highlighted above, a decision was made to implement a Vaccine Preregistration system that would allow residents to sign up for a guaranteed opportunity to schedule a vaccination appointment. To accomplish this goal, EOTSS put together a Preregistration team that consisted of members from their Digital, Data and Technology offices, and partnered with Google Cloud and SpringML to build out the necessary system.
    - Within 24 hours of launch, over 500,000 residents had signed up via the Preregistration system. Registrants were provided confirmation that they had successfully signed up, and upon becoming eligible, whether by CDC or state guidelines, were sent a text or email with a secure booking link, essentially guaranteeing them an appointment from a Mass Vaccination site or Regional Collaborative.
    - Registrants were messaged weekly to reassure them of their spot on the list for an appointment. This orderly, transparent, and communicative process was well received, and proved effective in amplifying the Commonwealth's effort to be a national leader in vaccination rates. Over the course of this initiative, approximately 2,000,000 residents signed up through the system.
- **Partnering with EOHHS, DPH, and the Massachusetts State Lottery to deploy and operate the VaxMillions Giveaway website** (2.5 million registrants). The VaxMillions Giveaway lottery ran from June 15, 2021 to August 26, 2021 to help encourage Massachusetts residents to get a COVID-19 vaccine. Through the duration of the lottery program, the Commonwealth gave away five $1,000,000 prizes to adult residents and five $300,000 scholarship grants to eligible vaccinated participants.

Ongoing Recovery & the Future of Work

EOTSS remains committed to the ongoing COVID-19 recovery and response efforts across the Commonwealth. The secretariat continues to work with agency and vendor partners to support the state's hybrid workforce, seek innovative technology solutions, and ensure the availability of state systems to maintain continuity of government services.

COVID-19 Recovery

MA Digital and Data Services continues to collaborate with the COVID Command Center, EOHHS, and DPH to update **pandemic digital content** and assist with the vaccine and booster rollouts. Most recently, they partnered on creation of the **Massachusetts Digital Vaccine Records** digital content and the deployment of the **My Vax Records** online tool and related chatbot that allows residents who received their vaccination in MA to access their own vaccination history and generate a **COVID-19 digital vaccine SMART Health Card**. The EOTSS team continues to work with other states and interested parties to adopt and implement an interoperable digital framework for vaccine records.

647,965 unique vaccination records have been accessed as of March 7, 2022. There are 1,542,477 total users and 6,942,343 unique pageviews. So far there have been 1,058,063 clicks on "Find my vaccine record" on myvaxrecords.mass.gov.

The Vax Records chatbot has received 37,423 messages and 18,003 clicks on the chatbot icon. There have been 5,445 clicks so far on prepopulated questions.

Future of Work

Like other industries across the private sector and higher education, state government is evaluating its future workplace and workforce models in light of changes accelerated by the pandemic and new opportunities enabled by technology. Ultimately, the public sector has an unprecedented opportunity to nurture a culture of innovation and resiliency through policies, practices, tools, and resources that prioritize flexibility, mobility, and sustainability.

The Administration's **Future of Work (FoW)** initiative is driving this discussion for Executive Branch agencies, and EOTSS has played an integral role as part of the Executive Steering Committee and as the Technology Workstream team lead. The secretariat is helping agencies adopt and support a hybrid workforce, create virtual environments that help reduce their agency footprints and the need for physical office space, and migrate on-premises infrastructure and systems to the cloud and 3rd-party hosting solutions. EOTSS is also active providing guidance and project management support for technology organizations at the secretariat and agency level to facilitate agency moves and office space consolidations.

To help agencies operate with consolidated and shared office space, EOTSS developed and deployed the **Commonwealth Workplace Reservation System**. The system allows for the online reservation of workstation cubicles, offices, and conference rooms within Commonwealth offices and facilities. A parking module is also under development for certain state-owned properties where needed due to agency office lease consolidations. EOTSS is supporting the continued rollout, **end user training**, and future enhancements of these systems.

The ongoing pandemic response and FoW Initiative projects are being completed in coordination with EOTSS priority enterprise programs included in the statewide IT roadmap. Examples of priority programs include the closeout of the Modern Workplace transformation with Microsoft; the continued rationalization and prioritization of business application migrations out of state data centers to hybrid-cloud and 3rd-party hosting solutions; the unification of security operations, incident response, and reporting; and the OneNetwork consolidation effort.

As technology becomes ever-more integrated into the way we conduct business in state government, EOTSS' role in the FoW initiative (and beyond) is expected to increase in leading innovation and influence as it relates to business and technology solutions.

Modern Workplace Program

Overview

In fall of 2019, EOTSS launched the **Modern Workplace Program (MWP)** – a carefully choreographed deployment of hardware, software and tools that promote data security, collaboration, and mobility. This initiative is the cornerstone of the overarching Commonwealth Workforce Mobility Program included in the Administration's FY21-22 Capital Plan to build a sustainable technology foundation ensuring a resilient, accessible, and scalable platform for the continuity of government services.

The MWP is enabling government to operate effectively under any circumstances, and the launch was well timed – as much of the groundwork in that initial fall and winter provided a springboard for the rapid acceleration of telework at the onset of the COVID-19 emergency.

Once fully completed in calendar year 2022, the program will help meet the goals of the Future of Work Initiative by enabling a 21st century state workforce that is more nimble, consumes a smaller office footprint, and has access to updated hardware, software and productivity tools across all agencies.

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Program Baseline and Workstream Goals

Before

Prior to the MWP launch, employees in the Commonwealth's Executive Branch Agencies relied on a varied range of hardware, operating systems, applications, and

collaboration tools to do their jobs. The IT "state of the state" included:

- Use of different end-user hardware setups (desktops, laptops, and tablets) across agencies and secretariats (lack of a standard operating environment)
- A partial migration from Windows 7 operating system and older MS Office application to Windows 10 and Office 365 Pro Plus (3 out of 9 secretariats migrated)
- The deployment of various web-based meeting, videoconferencing, and telephony tools without a true enterprise standard solution
- Collaboration limited to sharing files via email and local personal and group shared drives
- Hardware updates, procurements, and deployments managed by each secretariat and agency on an inconsistent basis
- Software updates and security patches managed through secretariat and agency IT organizations (not centrally managed)

After

In order to address the inconsistency, inequity, and security concerns in end-user hardware, software, and collaboration tools across the enterprise, the MWP workstreams were designed to enable a more modern and resilient workforce by:

- Deploying a **standard end-user hardware and software set up** for all Executive Branch Employees (**Windows 10** with **O365 Pro Plus**)
- Migrating personal employee files to the accessible and secure cloud-based solution **OneDrive for Business** – allowing access from anywhere on any device
- Moving group shared files to accessible and secure cloud-based **SharePoint** solution so that employees can access and collaborate on documents from anywhere on any device
- Migration of email off premise to more secure, resilient, and accessible Office 365 cloud solution
- Standardizing on **Teams** as the enterprise standard for office collaboration and videoconferencing

Current	Future
Office Suite (On Premise) Word Excel PowerPoint Access	Excel: A familiar spreadsheet tool with new ways to view data and share insights Word: Collaborate on documents through state-of-the-art editing and sharing Powerpoint: Create shared presentations with real-time changes OneNote: Organize your notes and share with others Access: A relational database program that helps store information for reference, reporting, and analysis Publisher: A desktop publishing application to create graphic intensive documents
Local Drive	OneDrive for Business: A place to store and share your private documents, easily accessible from any device
Outlook	Everywhere access to email, contacts, and all-in-one calendar management
Skype, Slack, WebEx	Microsoft Teams: Collaborate with instant messaging, video conferencing, and live editing all while within one single application
SharePoint	SharePoint: Browser-based collaboration and document management
Windows 7	Windows 10: Modern operating system meant for an adaptive workspace and collaborative platform

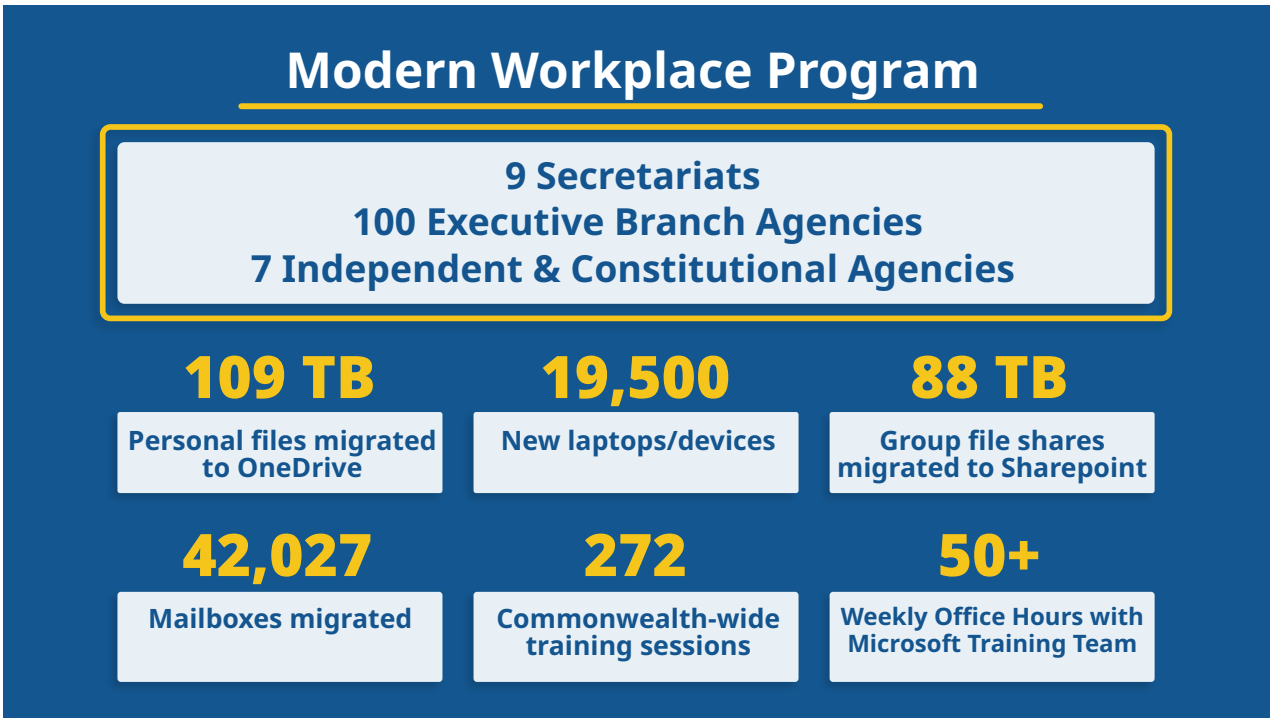
Modern Workplace Program Collaboration Tools across the Enterprise

Additionally, all Centrify/Idaptive applications will be moved to **Microsoft AZURE Active Directory** Identity Services, to provide secure and simplified access to Commonwealth applications and systems through single sign-on and multi-factor authentication for all users. Whether individuals are on-site or remote, they will have seamless access to all their apps so they can stay productive from anywhere.

MWP by the Numbers

When the dust finally settles on the Modern Workplace Program, dedicated staff from EOTSS, its fellow secretariats, and Microsoft Professional Services will have completely transformed the standard end user computing technology stack across the Executive Branch.

To achieve their goals, the team rolled out new hardware and operating system upgrades and leveraged the full cloud-based Microsoft Office 365 suite and the Azure Active Directory (AD) identity access management framework to support the Commonwealth's strategic and tactical goals of promoting government business continuity and technical resiliency, offering enhanced citizen experiences, and enabling our state workforce a modern and mobile technology platform in support of good government.



Additionally, EOTSS migrated an additional 152 business applications to the Azure AD tenant throughout the MWP. Another 30 outdated applications were decommissioned, while there remain several business applications in the queue with EOHHS for migration in 2022 and 2023.

Modern Workplace Program (MWP) Benefits

The Modern Workplace Program is a major step forward for rollout of a Standard Operating Environment (SOE) for all end-user computing in the Executive Branch. It has completely transformed the way the most agencies and their employees do business in the Commonwealth.

Hardware and software procurements, deployments, upgrades, and security patches are now centrally managed through EOTSS and pushed out remotely to the end user in a timelier manner.

Office 365 with the Office Pro Plus suite of productivity and collaboration tools enables the hybrid workforce envisioned by the Future of Work initiative – allowing for seamless remote collaboration among employees.

The migration of personal and group shared files to OneDrive and SharePoint ensure remote access and sharing without the need for a VPN client or remote desktop access that had historically been required to access on-premises files and network drives.

Whether individuals are on-site or remote, moving to Azure AD for identity

management allows employees to have seamless access to all their applications so they can stay productive from anywhere.

A Look Ahead for the Modern Workplace Program

The vast majority of MWP workstreams will be completed by the end of FY22. EOTSS does anticipate a small number of new device deployments to continue into the first half of FY23 due to lingering global supply chain issues for technology equipment.

Additionally, some personal and group shared file migrations for the larger secretariats will also continue into the fall due to the sheer volume of data that remains to be migrated.

Cybersecurity & Enterprise Risk Management

Overview

The Baker-Polito Administration undertook an extensive review of the Commonwealth's technology landscape in 2015 and 2016. Interviews were conducted with key executives and IT personnel across state government. Our existing policies and practices were compared against industry standards. The results of penetration tests of state applications and systems were benchmarked against other states, the federal government, and the private sector.

In its conclusion, the study identified that technology services in the Commonwealth had fallen behind and cybersecurity was not being sufficiently addressed. The roadmap forward recommended establishing an enterprise IT organization, matching policies and standards to new industry standards, modernizing the technology landscape, mitigating major vulnerabilities, and centralizing cybersecurity monitoring, testing, compliance, and training.

Since its creation and elevation to the cabinet level secretariat in 2017, EOTSS has served as the enterprise IT organization and has taken the lead role in cybersecurity policy and strategy for the Executive Branch. Key investments have been made to ensure the confidentiality, integrity, and availability of Commonwealth data, applications, and infrastructure. These investments include the development of an enterprise-wide security and risk management strategy, recruitment and engagement of skilled and experienced talent, procuring best-in-class technologies, and building a modern organizational structure to support operations.

Since its creation and elevation to the cabinet level secretariat in 2017, EOTSS has served as the enterprise IT organization and has taken the lead role in cybersecurity policy and strategy for the Executive Branch.

Thanks to ongoing collaboration with the Administration and the Legislature in 2020, $140 million in new bond authorizations were enabled to further investment in security and risk management. These funds have not only led to the accomplishments listed below but will provide for additional capital investments in FY23 and FY24 as we continue to unify security operations, risk management, and data privacy frameworks across the enterprise.

Investments in People & Training

Cybersecurity and risk management are not solely an "IT" responsibility. Combating today's threats requires the cooperation of all departments and employees within a state agency.

To that end, investment in the hiring, retention, training, and professional development of the people that lead, manage, and run the Commonwealth's day-to-day operations remains the first line of defense against cyber threats.

The Chief Information Security Officer(s)
With the birth of EOTSS in 2017 came the creation of the first enterprise **Chief Information Security Officer (CISO)** position in the state.

The CISO worked immediately with the Commonwealth CIO and EOTSS Secretary to create and maintain new **Enterprise Information Security Policies and Standards** that align with industry best practices and cross-referenced to the National Institute of Standards and Technology (NIST) framework and Center for Internet Security (CIS) controls.

Beyond policies, the CISO and the **Enterprise Security Office** build out key enterprise services and communications to modernize and centralize the Commonwealth's infrastructure and to further improve our overall security posture. Collaboration and improved communication with other secretariats and agencies provided greater visibility and consistency across the enterprise.

On that note, the CISO worked to develop and support CISO positions at each secretariat. Monthly "CISO cabinet" meetings were held to promote coordination and collaboration on issues relative to enterprise security and risk management impacting all agencies.

Privacy, Risk & Information Governance
The Commonwealth's first **Chief Privacy Officer (CPO)** was appointed by the EOTSS Secretary in 2019 and a new **Chief Risk Officer (CRO)** role was added in 2020 to strengthen enterprise leadership around data privacy, information governance, and risk management.

The **CPO** works specifically to establish privacy and security frameworks to protect

the dissemination of sensitive data and to resolve data privacy and security concerns. The position works closely with the **Chief Data Officer**, the EOTSS data team, and the CRO to review and offer feedback on data sharing agreements between state agencies – and supports engagement with the **Data Steward Council that was formed in 2018**, in discussions of data sharing policies and data goals among executive branch agencies. Their combined efforts facilitate the deliberate and thoughtful use of data across agencies to inform policy choices and agency strategy.

The **CRO** supports organizational governance and leadership with strategic and operational risk management and is the executive who facilitates and drives the organization's comprehensive risk management program.

This position also oversaw the development of the first enterprise **Information Governance (IG)** and **Enterprise Risk Management (ERM)** programs.

Establishing a sustainable, scalable IG Program is important when factoring in rapid changes across the information and technology landscape, as exemplified by dramatic increases in data generation and retention, hosting via third-party cloud providers, and evolving cybersecurity threats.

Third-party risk is one of the biggest cybersecurity threats facing governments today. Through a qualitative and quantitative assessment process, the ERM program will (among other priorities) scrutinize the maturity of the security and privacy standards that current third-party vendors and any apparent successful bidders have in place.

Security Awareness Training

Not only has the Administration sought to fill critical roles with top talent throughout Executive-Branch agencies, but it has also invested in new cybersecurity and risk management training frameworks for its workforce.

EOTSS is focused on establishing a culture of cyber awareness throughout state government. Education of the Commonwealth's workforce on best practices for good 'cyber hygiene' through cybersecurity awareness training and the initiation of simulated phishing exercises are two of the best ways for the Commonwealth to grow our cybersecurity team from a couple

As a result, simulated phishing campaigns are planned throughout the year and all Executive Branch employees must now take Annual Cybersecurity Awareness Training and new hires must take an Information Security Awareness Course within their first 45 days as an employee.

dozen to a 40,000+ workforce.

As a result, **simulated phishing campaigns** are planned throughout the year and all Executive Branch employees must now take **Annual Cybersecurity Awareness Training** and new hires must take an **Information Security Awareness Course** within their first 45 days as an employee. This policy also applies to certain non-Executive Branch employees who may have access to Commonwealth systems. EOTSS partners with the state Human Resources Division (HRD) to administer and deliver this training.

Investments in Security Operations

Over the past two years, EOTSS has developed and augmented frameworks and processes to implement unified security operations, incident reporting and response, and vulnerability management across the Executive Branch.

Implementation is managed through **Secretary/CIO administrative directives**, EOTSS **Enterprise Security Polices and Standards**, and collaboration with Secretariat Chief Information Officers (SCIOs) and vendor partners.

Security Operations Center (SOC)
The SOC is a centralized operations center for the Executive Branch that deals with security issues on an organizational and technical level. It is built to **identify, protect, detect, respond to, and recover from cyber incidents** across the Commonwealth.

A unified SOC improves efficiencies and capabilities in functionality, reporting, scanning, vulnerability management, information sharing, and incident response for all agencies and avoids a disparate setup of independent operations across the Executive Branch working at cross purposes and deploying inconsistent technology solutions.

Security Operations Center (SOC)

Three main pillars support all SOC operations.

Incident Response & Reporting Framework (IRR)

- A centralized team coordinates and manages security incident responses
- Redrafted enterprise Incident Response Plan and Reporting Framework that promotes information analysis & sharing across federal, state, and local partners
- Updating the workflow for incident ticketing and tracking to align with plan changes
- EOTSS is developing its own table-top exercises in addition to those planned with external partners
- Provides situational awareness
- Conducts after-action analysis and reporting

Security Information & Event Management (SIEM)

- An enterprise SIEM platform routinely analyzes millions of data points that traverses the Commonwealth's networks each day to detect and alert the SOC to threats and suspicious activity
- Rebuilt SIEM over the past 18 months so it can now incorporate all potential security event data sources, enabling broader analysis and faster, more accurate event correlation
- EOTSS continues to expand capacity by continuing to add data sources (logs, files, network, apps, etc.)

Vulnerability Management Program (VMP)

- EOTSS manages central scanning services for all MA applications and systems (now scanning 20,000 devices per month and growing)
- Centralized and updated patch management and reporting processes across all secretariats
- Implemented weekly, third-party application penetration testing (pen tests), paying particular attention to the state's most critical applications.
- Launched increased cadence of phishing campaigns across all agencies
- US Department of Homeland Security (DHS) also provides monthly vulnerability scanning on MA applications and systems
- The Multi-State Information Sharing & Analysis Center (MS-ISAC) provides real-time alerting for security events

This past year, EOTSS increased SOC capacity and services to implement 24x7x365 operations to support the enterprise and to continue building out monitoring, alerting and mitigation of threats.

Collaboration & Partnerships

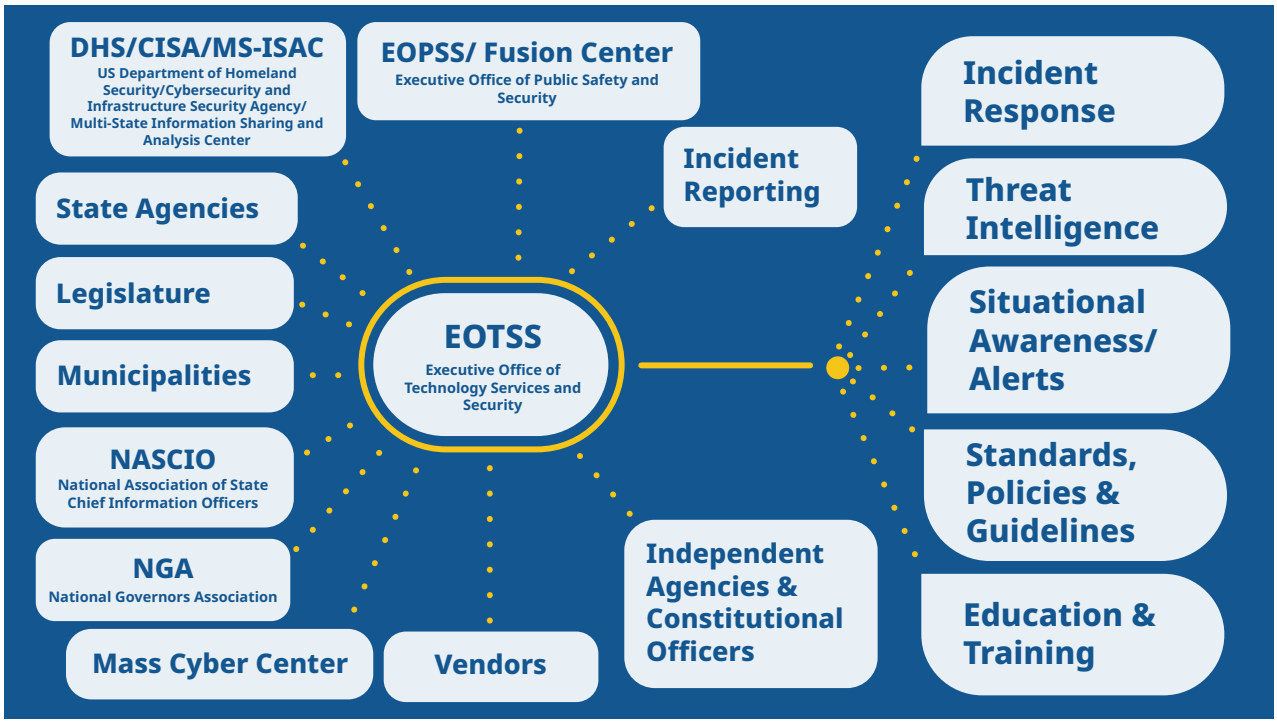
A **2020 NASCIO survey of state CIOs and CISOs** confirmed that the COVID-19 pandemic amplified may of the existing cybersecurity challenges – while also presenting new hazards for all levels of government. There were increases in COVID-related threats to infrastructure tied to the pandemic response as well as frequent scams targeting state employees and constituents alike. For the first time, many CIOs and CISOs were also presented with securing a remote and hybrid workforce at a scale that was never anticipated.

Moreover, the SolarWinds Hack (2020), Colonial Pipeline Ransomware Attack (2021), and multiple attacks against other federal, state, and local government agencies across the country demonstrate that cyberthreats remain very real and present dangers to all levels of government, higher education, and private industry today.

It is now more critical than ever to break down silos and promote the sharing of knowledge and resources to identify, protect against, and mitigate these threats.

It is now more critical than ever to break down silos and promote the sharing of knowledge and resources to identify, protect against, and mitigate these threats. A unified framework for information sharing and incident response also improves communication and facilitates a timelier response.

Accordingly, while EOTSS invested in the right people and positions to lead on enterprise risk and security operations, the Secretary and CISO also sought to improve communication and collaboration among its federal, state, and local partners in government as well as academia and the private sector. The goal is to collaborate on polices and best practices, as well as to share information, monitor for threats, and refer incidents to law enforcement when appropriate.



EOTSS Collaboration & Partnerships Model

Federal & State Partnerships

Building off successful efforts in 2019 – where the CISO formalized EOTSS' relationship with four police, military, emergency management and security organizations to implement information sharing and analysis of cyberthreats, introduce and adopt a cybersecurity incident response framework, and promote security awareness throughout Massachusetts – EOTSS strengthened its partnerships in 2020 and 2021 with the:

- Executive Office of Public Safety and Security (EOPSS)
- Commonwealth Fusion Center (CFC)
- Massachusetts State Police Cyber Crime Unit (CCU)

- **Mass National Guard (MANG)**
- **Massachusetts Emergency Management Agency (MEMA)**
- **Mass Cyber Center (MCC) operated by the Mass Tech Collaborative**
- **MA State Legislature and the new Joint Committee on Advanced Information Technology, the Internet, and Cybersecurity**
- **Multi-State Information Sharing Analysis Center (MS-ISAC)**
- **US Department of Homeland Security (DHS)**
- **Cybersecurity and Infrastructure Security Agency (CISA)**
- **National Cybersecurity and Communications Integration Center (NCCIC)**
- **Advanced Cyber Security Center (ACSC)**
- **StateRAMP**

We have improved information sharing, planning, and outreach with these partners through regular working group sessions and table-top exercises to increase awareness and provide information on securing critical infrastructure across the Commonwealth.

National Grant Opportunities

EOTSS continues to engage in a number of strategic alliances to further enhance the Commonwealth's cybersecurity posture. Massachusetts was one of **seven competitively selected US states and territories partnering with the Homeland Security and Public Safety division of the National Governors Association (NGA)** in 2019 to develop plans to improve interagency coordination and collaboration between state and municipal government around cyber security and awareness.

In 2020, MA was also one of **four states that participated in a successful pilot program with Johns Hopkins University** leveraging a DHS cybersecurity grant to help defend state and local government computer systems from cyberattacks by deploying automation and orchestration tools to identify and mitigate threats to the Commonwealth's systems more quickly.

This past year, EOTSS partnered with the **National Cybersecurity Center (NCC)** and Google to provide high-level cybersecurity training to members and staff of the Massachusetts State Legislature. Over 100 legislators and staff participated in the training program, which was replicated in state houses across the nation.

Municipal Partnerships

The Baker-Polito Administration and EOTSS have maintained strong partnerships with municipal government leaders and their constituents through the **Community Compact Cabinet (CCC)** and Municipal Grant Programs.

Through the CCC, the Administration has awarded **749 grants totaling $19.2** million

to help Massachusetts communities become more efficient and innovative while improving their technology infrastructure. Most recently, **$3.5 million in grants were awarded to 55 municipalities in FY21**, and $3.5 million in grants went to 70 municipalities in FY22. More than 300 municipalities and school districts received IT grant funding over the life of this program.

In 2019, EOTSS announced the first-ever Municipal Cybersecurity Awareness Grants, with over 44,000 municipal and public-school employees in 94 municipalities throughout the Commonwealth accessing training to better detect and avoid cyberthreats. The second round in early 2021 increased to 107 municipalities, and another round is planned for FY22 and FY23.

In 2019, EOTSS announced the first-ever Municipal Cybersecurity Awareness Grants, with over 44,000 municipal and public-school employees in 94 municipalities throughout the Commonwealth accessing training to better detect and avoid cyberthreats.

Employees in communities participating in the program receive interactive online training in topics ranging from email security to USB device safety. Employees also receive simulated phishing emails. Phishing is a growing threat in local government in which an attacker seeks to influence the employee to take an action that may be harmful to the organization, by masquerading as a trusted entity.

Click the following link to view EOTSS Secretary Wood announcing grant winners and the testimonials of the **2021 "Cyber Aware Community" Recognition Program**.

Cyber Month

October is Massachusetts Cybersecurity Month in the Commonwealth, as declared by an official proclamation signed by Governor Charlie Baker and Lt. Governor Karyn Polito. To highlight the importance of the Month, Governor Baker released a video to spotlight the critical importance of cybersecurity in everyday life.

- Watch Governor Baker's **remarks on Cybersecurity Month here**;
- Download the **official proclamation here** (PDF).

National Cybersecurity Month was established to ensure that all Americans are aware of the importance of cybersecurity. This year's theme set by the Cybersecurity & Infrastructure Security Agency (CISA) and the National Cyber Security Alliance (NCSA) is "Do your part. #BeCyberSmart." The emphasis of the campaign is on the

role that we each play in taking proactive steps to protect our online safety.

This evergreen theme encourages individuals and organizations to own their role in protecting their part of cyberspace, stressing personal accountability and the importance of taking proactive steps to enhance cybersecurity.

In 2021, CISA and NCSA focused on the following areas in promotions and outreach:

- October 4 (Week 1): Be Cyber Smart.
- October 11 (Week 2): Phight the Phish!
- October 18 (Week 3): Explore. Experience. Share. – Cybersecurity Career Awareness Week
- October 25 (Week 4): Cybersecurity First

The following link is a **listing of events that took place across the state as part of #MassCyberMonth**.

A Look Ahead for Cybersecurity & Enterprise Risk Management

Preparation for cyber threats is an ongoing and hyper-focused effort. It is critical for the Commonwealth to remain in a state of readiness and preparedness to best position itself to mitigate potential cyber threats and maintain continuity of government services for the customers and constituents we serve.

Throughout the remainder of FY22, FY23, and beyond, EOTSS is firmly committed to partnering with the Administration, the Legislature, and its fellow secretariats to make additional investments in the people, processes, and technologies that drive the state's security operations, risk management, and data privacy efforts.

EOTSS will continue to build out the next generation of the 24x7x365 Unified Security Operations Center (SOC) for the Executive Branch and partners, and improve upon cybersecurity Situational Awareness, Readiness, and Preparedness across the Enterprise. Similarly, the organization will continue to develop the Enterprise Risk Management Program (ERP) led by the Commonwealth's first Chief Risk Officer (CRO) – by establishing a vendor policy and compliance program, as well as a vendor risk portal, to help mitigate third-party vendor risk – one of the biggest cybersecurity threats facing governments today.

Investments in recruiting and training will play an important role in the future of these enterprise programs. EOTSS will explore new partnerships with state, federal, and private sector stakeholders to bolster cybersecurity recruiting efforts, improve the talent pipeline, and open new training opportunities, as well as apprenticeships, internships, and co-op programs.

Government and industry best practices indicate that the EOTSS enterprise

cybersecurity approach improves agility, effectiveness, and efficiencies in state government by promoting collaboration and breaking down silos across enterprise-level and agency-specific programs. Unifying security operations, incident response and reporting, and risk management across all agencies is a huge step towards a more secure Commonwealth. EOTSS will continue to evolve on the cybersecurity front and remain ever vigilant to emerging threats.

Enterprise Network, Core IT Infrastructure & Hosting

Overview

Along with strengthening the Commonwealth's cybersecurity posture, EOTSS' other main priority has been the deployment of a Standard Operating Environment (SOE) with a consistent technology architecture across the Executive Branch.

Historically, IT infrastructure and services have been organized in the Commonwealth at the individual secretariat and agency level. The eight secretariats maintained their own strategic network objectives, deployed a disparate array of technology services and solutions, and hosted most business applications, systems, and infrastructure in aging, on-premises agency data centers or other state-owned facilities.

This decentralized model presented numerous logistical challenges and security concerns for the enterprise – to say the least. Ultimately, these challenges and concerns drove the Baker-Polito Administration and the Legislature to create EOTSS as the ninth cabinet member in 2017.

To achieve its goal of deploying a SOE with a consistent technology architecture, EOTSS made critical investments in the modernization of enterprise network and IT infrastructure and the migration of legacy applications and systems from state-run data centers to contemporary third-party hosting solutions – including cloud services.

These investments set the Commonwealth on the path towards unified networking, infrastructure, and hosting standards that ensure resiliency, redundancy, and business applications availability.

Below, please find highlights of recent network, core infrastructure, and hosting initiatives undertaken by EOTSS in the past two years.

One Network

To address the concerns and challenges of having different secretariat and agency networks scattered across the enterprise, EOTSS launched the One Network initiative in 2019.

One Network is a cross-secretariat program involving all Executive Branch state agencies aimed at folding all secretariats and agencies into a single core network operated by EOTSS. The core network serves as the foundation for all Commonwealth information services including e-mail, data center operations, network communications, business applications, and internet service.

The initial phase of the One Network initiative was completed from 2019-2020 and centered around two main objectives:

One Network is a cross-secretariat program involving all Executive Branch state agencies aimed at folding all secretariats and agencies into a single core network operated by EOTSS.

One Network Phase I Objectives

1 Resolve security concerns by migrating all internet ingress and egress at the secretariat level to the center, so that EOTSS could control and monitor network traffic leveraging enterprise infrastructure and security tools.

2 Inventory the private IP addresses in use, create an enterprise private IP address management strategy, and eliminate any overlap that existed within the Executive Branch amongst the nine secretariats.

These two objectives set the foundation for the recent redesign and build out of the Commonwealth's core network into contemporary, privately-managed data centers over the past 18 months – as well as for wide area network (WAN) optimization efforts and the long-term IP address strategy.

2021 saw EOTSS achieve two additional One Network milestones:

Secured the new primary and secondary network infrastructure locations to support the upcoming transition from state-owned and operated facilities.

One Network 2021 Milestones

- Completed the core network infrastructure and internet service redesign plan that transitions the current service from Chelsea (MITC) and Springfield (SDC) to modern, third-party facilities in Boston and Lowell that will ensure higher network availability, resiliency, and security.
- Inventory the private IP addresses in use, create an enterprise private IP address management strategy, and eliminate any overlap that existed within the Executive Branch amongst the nine secretariats.

With this build-out and operation of the enterprise-wide One Network will lead to uniform, scalable, and secure connectivity across the enterprise for all agencies and customers.

Enterprise Voice Platform

Over the past two years, EOTSS expanded its **Enterprise Voice platform -- MassVoice**, eliminating independently operated voice services, and moving towards cloud managed voice service for Executive Branch agencies. The “MassVoice Enterprise Solutions” are secure private-cloud Unified Communications services tailored exclusively to Massachusetts state and local government clients.

The next generation of MassVoice will allow for a modern, feature-rich, common experience, whether employees are working in an agency location or remote. The connectivity provided will allow for complete business continuity to any location where needed, including seamless inbound and outbound calling, whether in normal operations or if the individual locations become isolated from the core environment.

Infrastructure & Hosting

Since 2018, the EOTSS Office of the Chief Technology Officer (CTO) and Operations and Service Management Division (OSMD) have been working with state agencies to aggressively decommission aging infrastructure and move computing operations to the cloud and EOTSS-approved hosting solutions to ensure resiliency, redundancy and business applications availability.

The "Cloud First" Approach

EOTSS originally set legacy modernization in motion with a "cloud first" position where cloud hosting was to be considered before all other possible solutions. Cloud solutions could offer availability, scalability, and security above and beyond the existing on-premises options.

In this first wave, there was an initial push to migrate older legacy applications and systems in dire need of maintenance and service to the commercial and government cloud. While these initial efforts were successful and services were well received by agencies, EOTSS learned that it needed to mature its internal processes before proceeding with future migrations. The team regrouped and refined the planning process so that EOTSS would gain a better understanding of the agency business needs, priorities, and readiness ahead of migrations – as well as the associated financial impacts.

Cloud Smart: Multi-Cloud/Hybrid-Cloud

In October of 2019, the EOTSS Secretary implemented a significant policy change for infrastructure hosting (Cloud, Services, Migration) and transitioned from "cloud first" with a single provider to a hybrid/multi-cloud hosting model.

Almost 400 applications and services have been migrated since 2017!

This "cloud smart" approach improved the process based on lessons learned from the "cloud first" wave of migrations. EOTSS prioritized up-front planning with the agency businesses and developed a workflow to determine which hosting platform provides the better option based on several considerations: need, priority, readiness, budget, delivery, management, and security.

Today, EOTSS offers multiple cloud offerings and hosting solutions – Hybrid Cloud, On-premises, 3rd-Party Hosting, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-service (SaaS). Agencies are now relying less on state-owned data centers and moving infrastructure to modern hosting environments and state-of-the-art facilities.

Almost 400 applications and services have been migrated since 2017 under the

cloud-first, hybrid cloud, and more-recent approved hosting solutions.

From FY21 to March of 2022, 88 business applications will have been successfully migrated to the cloud, including, but not limited to:

- HR/CMS
- Commonwealth Information Warehouse (CIW)
- DPH Mass Immunization Information System
- DPH Electronic Disease Surveillance System
- EOHHS Health Information Exchange
- DDS Home and Community Services Information System

Third-party Hosting Solutions
For instances in which cloud migrations are unattainable due to policy, financial limitations, or other circumstances, EOTSS works with agencies to secure on-premises hosting within a 3rd party colocation center. This approach provides the Commonwealth more opportunities and options for success in building out and maintaining resilient and available government services.

Colocation delivers significant reductions in upfront capital costs while offering custom solutions, tailored security, uninterruptable power, and backup systems.

Application Rationalization

While EOTSS assumed oversight of core IT and cybersecurity infrastructure and services, the management of the business application layer was preserved at the agency and secretariat level where there resides deep subject matter expertise and knowledge of an application's role and impact with respect to daily operations.

However, agencies are actively working with EOTSS on the enterprise Application Rationalization program – where SCIOs strategically identify their critical legacy application footprint and decide which should be kept, replaced, retired, or consolidated. Action items are prioritized over a three to five-year time horizon as part of the SCIO IT strategic planning process.

Once prioritized, applications remaining in service are migrated to approved hosting options referenced in the above sections.

Retiring Windows 7 & Server OS Modernization

Last year, the EOTSS Secretary and Commonwealth CIO issued an administrative directive on the **Retirement of the Windows 7 Operating System (OS) and Server**

OS Modernization as part of the EOTSS SOE rollout.

Retiring Windows 7

SCIOs have been collaborating with EOTSS to remove all Windows 7 devices from their respective secretariat's fleet of computers and the core network. EOTSS, in partnership with the Executive Office for Administration and Finance (A&F), has provided a funding mechanism under the Modern Workplace Program (MWP) to upgrade existing devices to Windows 10 where possible and replace the remaining fleet with new devices.

19,500 devices have been upgraded to Windows 10.

To date 19,500 devices have been upgraded to Windows 10 through the MWP – with 6,115 Windows 7 devices retired since November 2021 alone.

Server OS Modernization

Similarly, secretariat IT organizations are working to modernize their remaining on-premises server fleet to ensure that they are no longer utilizing unsupported operating systems that no longer receive critical security patches from their manufacturers.

Consolidated Active Directory

EOTSS is committed to implementing an enterprise-wide Azure Active Directory to consolidate numerous on-premises forests/domains into an enterprise forest within Azure – with Multi-Factor Authentication (MFA) enabled.

The Azure Active Directory (AD) Identity Access Management (IAM) framework supports strategic and tactical goals of promoting government business and technical resiliency, offering enhanced citizen experiences, and enabling the state workforce with a modern and mobile technology platform in support of good government.

To date, the efforts have focused on eliminating redundant and often competing technologies, and with the adoption of the Azure AD framework as the enterprise standard, the move to retire previous IAM platforms was prioritized. This program began in 2019 and will be completed with the full migration off the legacy system in 2022. There are four applications left to be migrated to the Azure platform as of the publication of this report. The implementation of the Azure AD framework is the cornerstone of our SOE that provides resiliency and accessibility of and to systems.

Enterprise Architecture, Strategic Oversight & Guidance

The EOTSS Office of the CTO offers strategic guidance, project management, and support for application and system migrations. This organization also develops and maintains the enterprise architecture framework as part of the EOTSS SOE and advises the Contract Management Office on procurements and enterprise software licensing compliance.

Enterprise Architecture Center of Excellence
This group, under the office of the CTO, provides strategic oversite and guidance on enterprise programs and projects being implemented by our partner agencies and secretariats in the Executive Branch. Services include (but are not limited to):

- Provide technical subject matter expert (SME) review of vendor RFR submissions
- Provide technical SME review for EOTSS standards and best practices
- Guidance on migration and modernization of data center workloads to cloud
- Partnership with EOTSS Office of Strategy Management (OSM) to provide technical guidance
- Guidance on application upgrades, stabilization, and strategic direction

Cloud Hosting Platform Architecture Model 2.0
The CTO and team continues to manage and evolve the enterprise standards as well as provide agencies technical consulting in cloud services, as well as ensuring compliance of these standards and technology implementations. In summary, these services include but are not limited to:

- Develop policies and procedures for secure cloud account access
- Create flexible, secure, supportable least privileged permission model for delegated access to cloud accounts
- Direct and manage cloud service engagements with agencies and cloud service providers
- Provide technical expertise and oversight in cloud financial planning and operations

Application Maintenance & Business Support

EOTSS teams work at the direction of the Commonwealth CTO to maintain and support certain business applications across the enterprise. These efforts are spearheaded by the Enterprise Platform, Application Services, and Integration Services teams.

Enterprise Platform Team - Jira, OnBase, Rational & O365
This team assists with project management workflows and setup, user access requests, training, support issues, licensing and contractual obligations, reporting and dashboard creation, and general application support for the Jira, OnBase, Rational, and MS Office 365 enterprise platforms.

Among the Platform Team's accomplishments over the past two years, the Platform Team was integral in the Jira cloud migration and implementation, increasing PowerBI utilization, and creating MS Teams sites and SharePoint communications sites for agency customers.

Enterprise Application Services – HR/CMS & CIW
This EOTSS team maintains and supports the Human Resources Compensation Management System (HR/CMS) and Commonwealth Information Warehouse (CIW) services for the Commonwealth.

Human Resources Compensation Management System (HR/CMS)
HR/CMS is the system that handles HR components such as position data, employee profiles, and evaluations, as well as time & labor functions like payroll, leave balances, timesheets, and tax information. The system is technically supported by EOTSS on behalf of the Comptroller's Office and HRD.

The EOTSS team works regularly on collective bargaining changes, federal/state tax mandates, quarterly critical patches, data maintenance, and environment sizing and cost. It supports over 2,000 Admin users and 90,000+ employees throughout the Commonwealth.

HR/CMS supports over 2,000 Admin users and 90,000+ employees throughout the Commonwealth.

Recent accomplishments include enrolling health and welfare benefits for MBTA retirees, upgrading to a simplified and more intuitive user interface, and implementing Azure AD for the 2,000 core application users. The team also facilitated changes tied to federal and state COVID-19 mandates, vaccination requirements, and new telework agreements. These are in addition to moving the on-premise hosting from our data center at MITC to the AWS Cloud.

The Commonwealth Information Warehouse (CIW)
The CIW consolidates a subset of the financial, budgetary, human resources, payroll, and time reporting data maintained across separate systems by different Commonwealth agencies. The Application Services team ensures access to the integrated, common data in CIW that supports timely, well-informed business decisions to authorized users through a centralized and integrated repository.

Recent accomplishments include the CIW static data migration to AWS Redshift, a new interface with AlertsMA in support of emergency employee notifications, and the deployment of a new CIW SharePoint Site for users.

Integration Services - MOVEit / Interchange, Mobius View & API Services
The EOTSS Integration Services Team powers three valuable enterprise services:

1. MOVEit/Interchange: Managed file transfer service
2. Mobius View: Online report viewing, distribution, and print services
3. API Services: API security and integration service supporting real-time application, mobile, and web access to enterprise services and data managed by Commonwealth agencies

Move IT / Interchange
In June of 2020, EOTSS began the migration from the legacy Interchange file transfer system to MOVEit – a cloud-based, out-of-the-box file transfer technology providing security, efficiency, and usability improvements for agency users.

To date, 90% of the MOVEit Phase 2 Migration has been completed involving 294 interfaces, 23 customers, and 63 business partners. 17TB of data has been transferred through more than 2.2 million file transfers using the new service. Phase 3 began in August 2021 and will be completed in the beginning of FY23 at which point Interchange will be decommissioned.

Mobius View
Over the past year, more than 3,000 Commonwealth users took advantage of the Mobius View for viewing more than 1.2 million online reports. Additionally, over 12.6 million print jobs were processed for various agency customers.

The system was migrated from the mainframe to the cloud in FY22 allowing for the decommissioning of the old legacy platform.

API Services
The Application Programming Interface (API) Team provides security and integration services supporting real-time application, mobile, and web access to enterprise services and data managed by Commonwealth agencies.

They work on interfaces for more than 100 services. Their top three customers (outside of EOTSS managed applications and systems) include EOHHS, the Group Insurance Commission (GIC), and EOPSS.

Legacy Mainframe Reduction

EOTSS is in the process of retiring the on-premise mainframe environment. One of the largest mainframe customer agencies (the RMV) was able to completely move

off the legacy mainframe in 2020-2021, and EOTSS is working on a plan with EOHHS to retire the on-premise mainframe hosting of the MA-21 application next.

A Look Ahead for Network, Infrastructure & Hosting

EOTSS remains committed to its enterprise goals of retiring old infrastructure and mainframes, moving out of state-owned data centers, and migrating applications and systems to approved hosting solutions as part of the Standard Operating Environment (SOE).

Maintaining a SOE with a consistent, well-defined approach to budgeting, spending, technology architecture, service delivery and technical support provides for the greatest opportunity to ensure that Commonwealth systems remain available and secure for our agencies and constituents.

For One Network, EOTSS plans to make further enhancements by building out the wide area network (WAN) and security services to account for and support increased resiliency, mobility, and remote management.

Furthermore, EOTSS will continue to migrate Commonwealth systems from on premise data centers to the cloud and other approved 3rd-party hosting solutions. Especially in today's work environment, cloud services strengthen security services to support remote access to our systems from any location, further enabling the Commonwealth's remote workforce.

Lastly, EOTSS will work to finalize the Cloud Hosting Platform and Infrastructure Architecture Models for publication as part of the EOTSS Standard Operating Environment.

Digital and Data Services

Overview

The **EOTSS Digital and Data Offices** set the enterprise policies, standards, and guidelines for their respective subject matter areas in coordination with the EOTSS Secretary and Commonwealth CIO.

More importantly, they seek to help their partners use the best technology, design, and data to make every interaction with Massachusetts government simpler, faster, and more meaningful. They achieve their missions by collaborating with organizations across state government to improve the constituent digital experience and transform how residents, visitors, businesses, and government agencies interact with the Commonwealth.

Digital Services

With **the establishment of EOTSS** in 2017, the EOTSS Secretary named the Commonwealth's first Chief Digital & Data Officer (CDO), and MA Digital & Data Services was born.

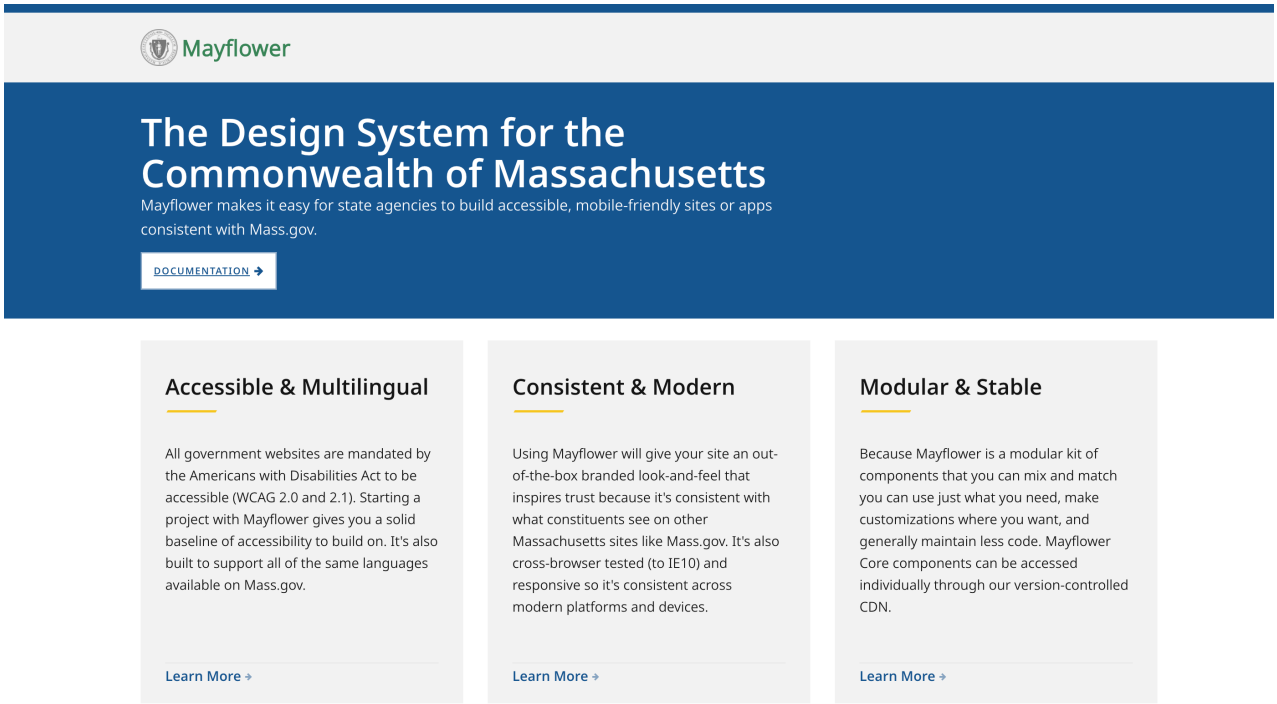
The team then embarked on an enterprise-wide digital transformation aimed at overhauling the legacy Commonwealth internet presence and replacing it with a new **Mass.gov web platform**. They also built out an organization to develop **processes**, **standards**, and solutions that make it easier for agencies to digitally deliver critical government services and information to their constituents.

Mass Digital assists agencies throughout the entire digital project life cycle – from initial whiteboard sessions through to go-live. The team offers (among other services):

- **Content Design & Writing** to help create, edit, and optimize content – as well as to assist with digital marketing campaigns, search engine optimization, information architecture and social media.
- **Video & Multimedia** services such as live action videos, interviews, and motion

graphic explainer videos. They also offer traditional photography and some audio recording services.

- **Web Analytics** services to help agencies gain more insight into how people engage with their content.
- **Web Design** services that help agencies build an easy-to-use, modern, accessible website to deliver their services.



To further assist agencies and content editors across the enterprise with their digital projects, the Digital Team created the **Mayflower** open source design system and the **Mass.gov Knowledge Base**. Together, these tools provide self-service guides, tips, and best practices for authoring and updating content for Mass.gov and state web applications.

Since 2019, they have overseen the creation of nearly 70,000 Mass.gov webpages generating more than 960 million pageviews across the platform!

Digital Engagements

2019 saw an increased demand for core digital and data service offerings, as well as in cross-secretariat and cross-agency engagements. Over the past 2+ years, they have participated in 28 separate engagements with agency partners across the enterprise.

Examples include collaboration with the Executive Office of Labor and Workforce Development (EOLWD) on the creation of digital content and strategies for DFML and the rollout for the **Commonwealth's PFML system** (as highlighted in the Cross-

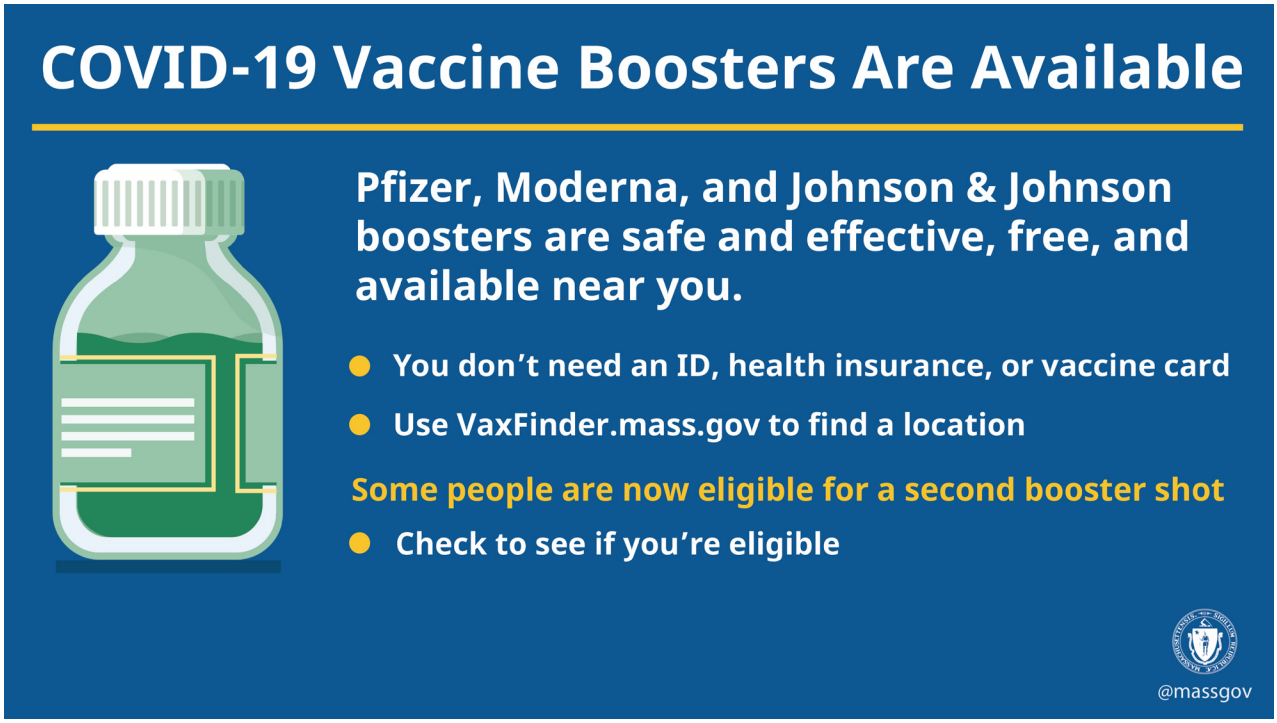
Agency Engagement section of this report), unemployment through re-employment **journey mapping** for the Department of Unemployment Assistance (DUA), and working with the Department of Public Utilities to develop the Ride sharing (TNC) **data visualization site**.

COVID-19 Content

As highlighted in the earlier COVID-19 Response section, the Digital and Data Teams were instrumental in the Commonwealth's 2020-2021 pandemic response. They worked with DUA on **Pandemic Unemployment content** for Mass.gov and the accompanying Return to Work employer content. And, they **created extensive digital and data content** for the COVID Command Center, the Executive Office of Health and Human Services (EOHHS), and the Department of Public Health (DPH) as a part of the Commonwealth's public health communications plan.

Other COVID-19 efforts helped in the development and rollout of critical COVID testing and vaccine websites and supporting systems (such as chatbots). Examples of these websites and systems include:

- **COVID-19 Testing Sites**
- **https://vaxfinder.mass.gov/**
- **Vaccine Pre-Registration & Notification System**
- **Massachusetts Digital Vaccine Card** and **https://myvaxrecords.mass.gov/**



All told, MA Digital produced over 282 Mass.gov pages containing COVID-19 and related content, along with **thousands of graphics** in up to **20 languages** across 100 different pandemic-related subjects. These graphics appeared on Billboards, in store windows, in businesses, in the MBTA bus shelters and train stations, on television, and in countless social media posts. They were also used by street teams and adopted by medical providers. Other States such as Oregon, Rhode Island, and California as well as the CDC Foundation asked to use the MA Digital graphics.

Pandemic Alerting & Notifications

For notifications and alerting, the team leveraged the EOTSS' emergency alerting tool known as AlertsMA, in partnership with Everbridge, to create the **AlertsMA for Residents** notification portal that allows residents to sign-up for COVID-19 alerts by text, email, or phone call in multiple languages.

Other Recent Engagements

Amidst the Team's tireless work on COVID-19 response efforts, they also managed to reach important milestones in their PFML engagement – including "go-live" with PFML in January 2021. EOTSS personnel acted as the Chief Product Officer, Product Managers/Product Owners, Content Strategists, and Data Analysts until the DFML team could hire directly for these roles to become self-sufficient. The Digital team planned, developed, and implemented the online portals for claimants and employers, created content and videos to explain the program to constituents, and built calculators so employees could estimate their benefits and employers their required contributions. By January 2022, the paid leave program distributed $501.3 million in total benefits to more than 75,000 claimants working for more than 19,000 unique employers.

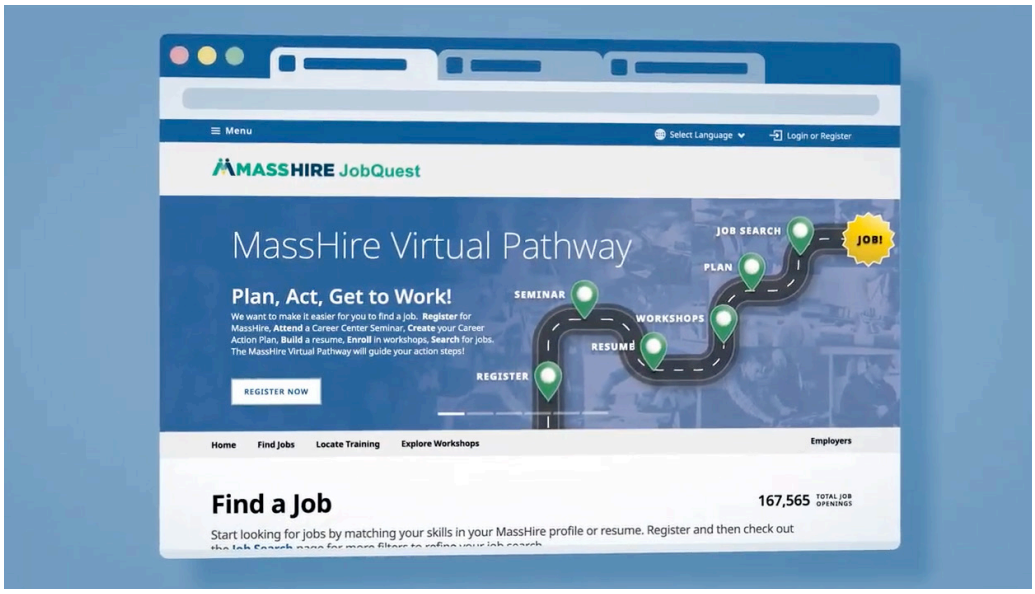
Last, but certainly not least, the Team continued their work in improving the **Mass.gov** platform and supported a content landscape analysis at the **RMV**. Through their "Findability" initiative, Digital improved the overall user experience on Mass.gov, for both desktop and users, through the addition of new topic pages, page headings, breadcrumbs, and alerting features. They also enhanced translation management features to improve multilingual content. For the RMV, the Digital Team conducted rapid discovery work and research culminating in the creation of a draft digital roadmap for RMV and recommendations for content improvements.

Video & Multimedia Highlights

Over the past two years, the Video & Multimedia team produced 200 videos and livestreams for 7 Secretariats, 24 agencies, the Governor's Office, and the Attorney General's Office.

As part of the Governor's re-employment initiative (MassHire), the MassHire Department of Career Services has upgraded **JobQuest** to release a number of new features and upgrades within the application. MHDCS began working with the Mass Digital multimedia staff in FY21 to produce six English motion graphics videos and

six Spanish motion graphics videos to educate current and future users about the new features and upgrades in the application.



Watch video

In addition to videos, the team also produces livestream events for agencies. During the height of the COVID-19 Pandemic, the Governor's Office, the Executive Office of Health and Human Services and the Department of Veterans Services partnered with the Mass Digital multimedia team to produce a **35-minute virtual Veterans' Day Ceremony** that was livestreamed on social media and shared with broadcast television stations. The Mass Digital multimedia team was responsible for filming and editing the entire video.

Other project highlights include Municipal Police Training Committee (MPTC) law enforcement training videos. MPTC worked with the Mass Digital video staff to produce 17 Bridge Academy classroom videos and 11 Bridge Academy practical videos to educate 20,000 police officers throughout the Commonwealth. Topics include Single and Multiple Officer Response to an Active Shooter, Unknown Risk and High-Risk Motor Vehicle Stops, and Lifts and Carries.

Data Office & Data Privacy

Since 2018, the Commonwealth has made great strides in building and improving on the legal and technical infrastructure necessary to facilitate data-driven government.

The **Chief Data Officer (CDO)** for the Commonwealth oversees the EOTSS Data Office and is responsible for developing and governing the enterprise data and information strategy and facilitating data sharing amongst state agencies and the public. The CDO develops and maintains data procedures and policies, seeks to

improve and streamline data systems within the organization, and drives innovation in the area of enterprise-wide data and analytics.

In 2019, the EOTSS Secretary appointed the Commonwealth's first **Chief Privacy Officer (CPO)** to strengthen enterprise leadership around data privacy and **information governance**. The CPO works specifically to establish privacy and security frameworks to protect the dissemination of sensitive data and to resolve data privacy and security concerns.

The position works closely with the CDO and Data Office to review and offer feedback on data sharing agreements between state agencies. The CDO and CPO also support engagement with the Data Steward Council that was formed in 2018 in discussions of data sharing policies and data goals among executive branch agencies. Their combined efforts facilitate the deliberate and thoughtful use of data across agencies to inform policy choices and agency strategy.

Data Sharing Memorandum of Understanding (MOU)
The **Data Sharing MOU** is an agreement that was signed between 62 executive branch offices and agencies in October 2018 to alleviate the confusion and red tape around inter-agency data sharing. It provides a common framework that sets expectations, rules, and processes around data sharing for agencies across the enterprise. The MOU demonstrates the Commonwealth's commitment to data sharing and to the protection and safe use of private and personal data.

Data Use License Agreement (DULA)
Under the MOU framework, Executive Branch agencies use DULAs to agree on the terms and details of data sharing for a particular purpose or project, and to ensure that all relevant laws and regulations are followed in the process.

Data Steward Council (DSC)
The DSC is responsible for establishing, reviewing, and implementing the statewide Data Sharing MOU and for advising on standards and protocols to help state agencies safely and securely share protected data. The Council is also available to facilitate the completion of DULAs and to help agencies troubleshoot any challenges that may arise in that process. DSC membership includes representatives from each Secretariat, plus the Governor's Office.

Data Sharing MOU and DSC Results
The framework and broader data-sharing program had resulted from work by the Governor's Cross-Secretariat Operational Council (XOC), which concluded that confusing rules and regulations, little support for data-sharing logistics, and the lack of a cost-effective replicable process limited agency data-sharing. The council reviewed 287+ bespoke data sharing agreements and found that they took 133 days, on average, to complete.

Today, the average time to complete an MOU has dropped by 50% and the EOTSS

Data Office has developed a broader data-sharing program, including managing legal and technical logistics, training data-sharing coordinators and stakeholders, and providing secure environments to pipe, store, and analyze protected data for data-sharing projects.

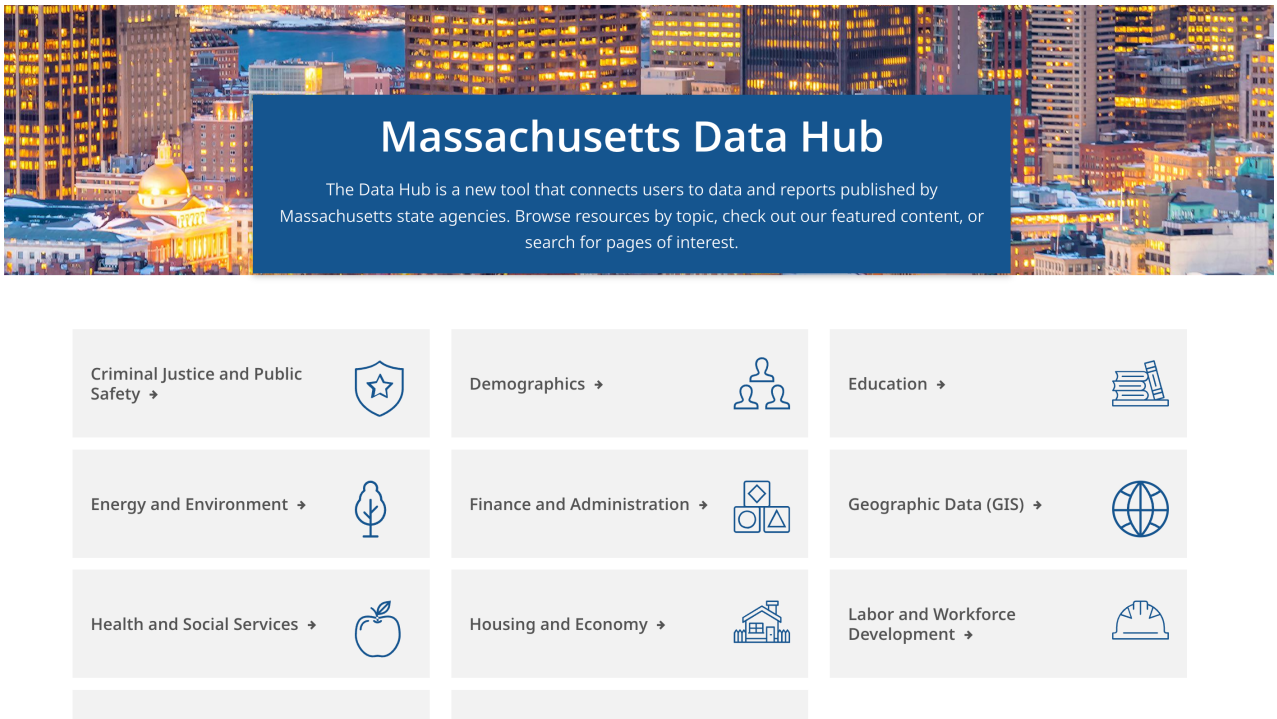
Enterprise Data Projects

Since October 2018, the Data Office has commenced and completed several multi-agency data-sharing projects. Early projects included the creation of **public-facing data sites** to meet the Department of Public Utilities' (DPU) statutory reporting requirements for transportation network companies (TNCs) and the 2019 effort with the Department of Transitional Assistance (DTA) to help address **"churn" among SNAP recipients**.

In addition to playing a critical role in supporting the state's COVID-19 response and cross-secretariat engagements (as outlined in other sections of this report), more recent Data Office accomplishments include:

- **"Learn to Earn"**: This ten-agency initiative was launched by the Governor's Office to make available de-identified, aggregated data about common clients of transitional assistance programs and how they progress towards economic stability. The Data Office stood up an architecture that intakes data from ten Education, Health and Human Services, Housing, and Labor and Workforce agencies and matches individual participants across programs to analyze patterns in how MA Massachusetts residents utilize transitional, training, and education programs, and how program participation correlates with employment. 44 staff across participating agencies now have access to data products for decision-making. After launching phase one of this critical initiative in October 2021, the team shifted focus in March to the Phase two of the project, with the goal of producing products by the end of FY22.
- **Early Childhood Integrated Data System (ECIDS)**: In 2020-2021, the Data Office stood up an architecture that intakes data from seven Education and Health and Human Services agencies providing early childhood development programs and (for the first time) matches individual participants across programs to analyze patterns in how families utilize birth-5 programming by demographics, areas where families may be underserved, and how program participants perform on grades K-3 success metrics. 45 staff across participating agencies have access to data products for decision-making. The data has been used to examine the rate at which children combine and transition between key programs to identify service gaps. In the current phase of the project, improvements based on user feedback will allow users to cross-filter demographic categories and program combinations and view the data at more disaggregated geography to hone into specific gaps and service patterns, and allow users to look at enrollment differences pre- and post-COVID.

- **HRD Diversity Dashboard:** Built and launched a **public-facing dashboard** of the Commonwealth's workforce focused on time trends and demographics. The product improved data transparency and allowed state agencies and the public to self-serve the data, cutting down the time HRD spends servicing internal and external reporting and information requests. Phase II, slated for completion in late 2022, will extend the product to employment flows – including hires, promotions, transfers, and terminations.
- **Differential Privacy:** From Oct 2021-Feb 2022, the Data Office worked in conjunction with MIT Lincoln Labs to adapt and implement **a set of innovative statistical privacy tools** developed at Harvard insert the following text after Harvard and explore their applications within administrative datasets to reduce barrier to data sharing and allow for more detailed and robust internal and public data reporting, while reducing risks to individual privacy. A pilot implementation focused on early childhood development programs is underway to evaluate applicability.



Lastly, the Data Office just launched the first phase of the Commonwealth's **new Data Hub**. This new mass.gov portal offers new categorization and improved search functionality to help users more quickly and easily locate data published by state agencies on and off mass.gov. The Team has worked with 60+ agencies (and counting) to improve the content on their data pages, and to cross link data sets by topic to allow for broader search capabilities, eliminating the need for a constituent

to be an expert on where certain data sets are kept, and by which agency.

A Look Ahead for Digital and Data

Since the appointment of the Commonwealth's first Chief Digital & Data Officer in 2017, the state has made great strides in improving the constituent digital experience and transforming how residents, visitors, businesses, and government agencies interact with government. Moreover, the Executive Branch has developed and maintained a robust data and information strategy to facilitate data sharing amongst state agencies and the public. Agencies are using data and data analytics to make more informed decisions with respect to policy choices, programs, and constituent services.

The pandemic has reinforced the importance of citizen-centric digital services to increase access to essential services and ensure the continuity of government operations. COVID-19 also heightened interest in and the use of data analytics in agency decision making, communications, and policy choices.

Today, the Chief Digital Officer and the Chief Data Officer positions have been bifurcated into separate roles within the EOTSS Senior Leadership Team. While they manage their respective teams and work towards different core missions, they frequently collaborate on EOTSS projects and cross-agency engagements given the overlapping nature of their business.

Looking ahead, EOTSS plans to develop a roadmap to update the Commonwealth's Digital and Data strategies over the next three years. They also plan to build off the momentum of the 2021 "Findability" and RMV initiatives to map out the next phase of Mass.gov content improvements using constituent feedback and web analytics to improve the user experience.

Similarly, the Data Office seeks to expand the new Massachusetts Data Hub portal and build off the Commonwealth's existing data-driven government framework to further promote inter-agency data sharing initiatives. They also plan to expand the Data Analytics program into a more formal application-based process whereby agencies can apply to EOTSS for business intelligence funding as well as services.

Lastly, both teams plan to expand the use of Artificial Intelligence (AI) – chatbots, virtual assistants, voice recognition, and commands. With the success of the COVID-19 and vaccine chatbots, they are working to now implement an enterprise chatbot that can be leveraged for the broader Mass.gov platform and agency business applications to connect the state's residents, businesses, and visitors more efficiently with the information they seek.

Cross-Agency Strategic Engagements

Overview

EOTSS regularly collaborates on cross-secretariat and cross-agency engagements ranging from the procurement of large multi-million-dollar applications and systems to the deployment of new technology-enabled business solutions.

A consulting team from the **EOTSS Office of Strategy Management (OSM)** often takes the lead and pulls in other divisions and subject matter experts as needed depending on the scope of the engagement.

These efforts are true partnerships between the agency business and IT organizations as they work with the Strategy Team to define the problem, redesign business processes, oversee procurements, and manage the technology implementations.

Demand for Strategy Services has increased steadily over the last several years. Through the team's collaboration with partner agencies, EOTSS has gained success in influencing and directing agencies to make smarter choices and better decisions in technology procurements.

Past engagements include technical support on agency-driven, constituent-focused IT improvement projects such as:

- Modernizing the **DTA food and transitional assistance system** (BEACON),
- Migrating the **Department of Children and Families (DCF)** child

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welfare information system to a web-based solution

- Developing and deploying the **Registry of Motor Vehicles (RMV)** online permit test and Supervised Driving Receipt
- Improving the Executive Office of **Energy and Environmental Affairs (EEA) online licensing and permitting system**

More recent examples of the Strategy Team's efforts include collaborations on critical business and technology initiatives at the Executive Office of Housing & Economic Development (EOHED), the Executive Office of Labor & Workforce Development (EOLWD) and the Executive Office of Public Safety & Security (EOPSS).

Housing & Economic Development Engagements

Department of Housing & Community Development (DHCD) Rental Assistance Discovery & Strategy Workshops

The Strategy Team conducted a series of discovery workshops from July to September of 2021 to understand the challenges that the **Department of Housing & Community Development (DHCD)** was facing in response to a surge in emergency rental assistance funding and applications. They assessed DHCD's plan to buy an end-to-end technology solution.

The Strategy Team developed and delivered recommendations to DHCD to mitigate project risks and increase chances of success – including a draft roadmap for implementation through manageable, incremental steps based on need and priority. Additionally, the team recommended working with Strategy to conduct a lo-fi proof of concept for a centralized case management system first to determine feasibility of the solution, define challenges and risks, and arrive at a unified workflow for all stakeholders involved.

DHCD Proof of Concept

From September to November of 2021 the Strategy Team developed a low-fidelity proof of concept (POC) of a standard, central case management process for DHCD. The team interviewed staff at three of the 12 regional administering agencies (RAAs) – drafting three example case management processes, identifying differences and pain points in these processes, and then consolidating them into one standardized workflow.

The Proof of Concept was well-scoped and served as an effective way to learn what was unknown in a short period of time to inform DHCD on how best to proceed in procuring a central case management system.

DHCD Case Management System Procurement

Based on the DHCD engagements, the Strategy Team developed a procurement

strategy and prepared a comprehensive procurement package for DHCD's central case management system.

Completing the proof of concept allowed DHCD to proceed to a procurement with greater understanding of their current state, validation that a unified workflow was technically feasible, and a better-defined future state. The discussions with DHCD about procurement goals, scope, and approach were grounded by better understanding of their stakeholder's needs and priorities, where their biggest decision points were, and what the actual deltas were likely to be with respect to different options for the future state system.

The Strategy Team expects DHCD to receive better proposals and cost estimates through the procurement process as a result.

Labor & Workforce Development Engagements

In the COVID-19 Response section, this report highlighted the critical collaborations between EOTSS and EOLWD with respect to UI Online, DUA's pandemic response, and the standup of the new PUA program across the Commonwealth. EOTSS has also worked closely with EOLWD on recent engagements concerning the new **Paid Family and Medical Leave (PFML) program** and newly-created **Department of Family and Medical Leave (DFML)**.

Paid Family and Medical Leave (PFML)

Beginning in 2019, EOTSS partnered with Executive Office of Labor and Workforce Development (EOLWD) on the creation of **digital content** and **strategies** for DFML and the rollout for the Commonwealth's **Paid Family and Medical Leave (PFML)** system – conducting early user research and prototype testing that was critical to a successful launch of the PFML program.

The EOTSS Strategy Team, working with EOTSS Procurement and Legal Departments, conducted market research, developed DFML's technology and procurement strategy, managed the procurement, and assisted with negotiating contracts with three vendor partners hired to implement an end-to-end solution for delivering paid family and medical leave benefits to the Commonwealth. From FY20 through FY22, Strategy, working with Mass Digital, helped oversee and manage the implementation of the paid leave program and the transition to live operations.

Paid Family and Medical Leave (PFML) is the first digitally native public service in Massachusetts. On January 1, 2021, eligible workers were able to claim benefits for paid medical leave and paid paternity and maternity leave. Unlike other benefit programs, PFML has no physical customer-facing service centers and has been primarily web-based since its inception.

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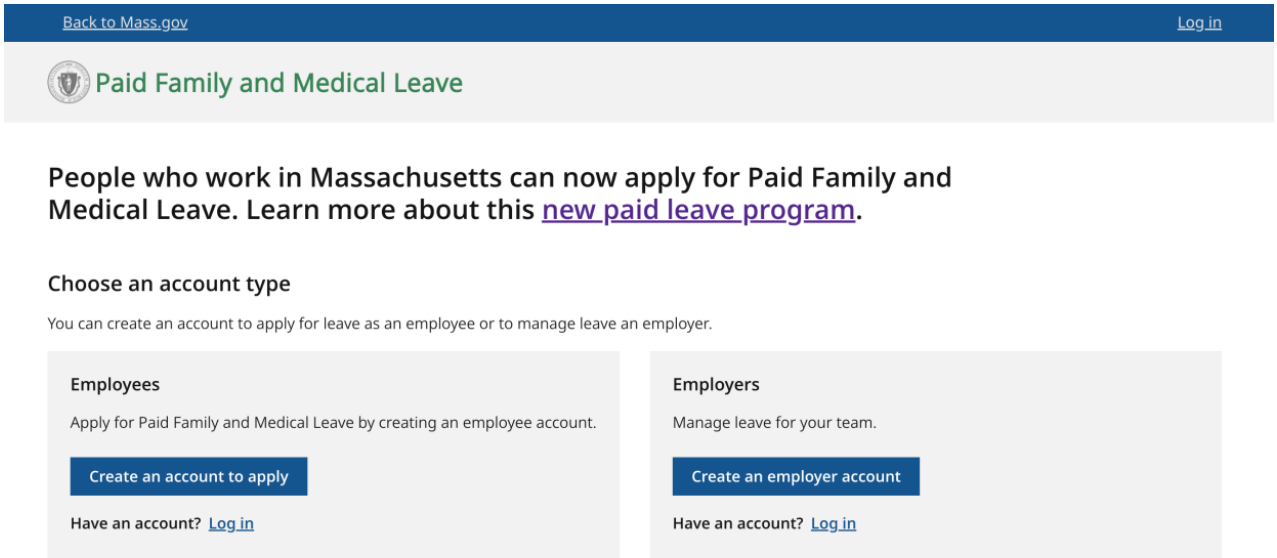

This successful engagement allowed for the build out of the underlying framework for the PFML benefit program ahead of the January 2021 launch date. **Claimants can apply and manage their benefits 100% online via a modern, streamlined, mobile-friendly, user-friendly, web-based program**. Additionally, data analytics and citizen feedback allow for continuous improvements to the system moving forward.

HRD Leave Assist/Leave Management System

HRD requested a short-term leave/absence system to provide a central repository to process, store, and track information on Executive Branch employee leave requests in time for the Massachusetts PFML program to go live.

The Strategy Team was responsible for managing the project, gathering requirements, and working with the EOTSS Operations team to develop the Leave Management System workflow in Service Now and coordinating training for HR users.

Public Safety & Security Engagements

A top priority of EOTSS is to address or increase responsiveness to crises affecting citizens and businesses in the Commonwealth. We have adopted an IT policy and Public Safety policy frameworks in support of this priority, as well as developed readiness and preparedness frameworks to ensure the continuity of government services.

Moreover, EOTSS regularly collaborates on EOPSS programs, projects, and initiatives with a focus on IT and cybersecurity. Recent Public Safety engagements have stemmed from the 2018 Criminal Justice Reform Law and 2021 Police Reform Law.

Criminal Justice Reform

Governor Baker signed the landmark **Criminal Justice Reform Law** in April of 2018, which brought a number of important reforms to the criminal justice system along with new data collection and reporting standards. The law also established a new Justice Reinvestment Policy Oversight Board (chaired by the EOTSS Secretary), charged with monitoring the development and implementation of justice reinvestment policies relative to the collection, standardization, and public availability of data.

Track-Kit

Collaborating with Lt. Governor Polito and EOPSS, the EOTSS team developed and deployed a statewide **Sexual Assault Evidence Collection Kit Tracking System** – known as 'Track Kit'. This web-based system provides sexual assault survivors the ability to track the location and status of their kit from point of collection through transportation, testing, and final storage. 'Track-Kit' offers survivors an experience that is mobile-friendly, anonymous, confidential, and free. Track-Kit not only empowers survivors; it provides medical facilities, law enforcement departments and laboratories the ability to monitor and manage their workflows to ensure that no reported sexual assault evidence collection kit ever goes untested.

Since it's deployment in March of 2020, Track-Kit is being used in over 80 medical facilities, over 400 law enforcement agencies, two criminal forensic laboratories, and the 11 district attorney's offices. Based on the widely adopted use of the tracking system, EOPSS is now able to publicly report on how long it takes to administer, transport, and analyze sexual assault evidence collection kits throughout the entire state.

Since it's deployment in March of 2020, Track-Kit is being used in over 80 medical facilities, over 400 law enforcement agencies, two criminal forensic laboratories, and the 11 district attorney's offices.

In the last year, additional features and

functionality have been deployed to further improve the system. Now Track-kit will monitor the number of kits at each medical facility and automatically generate a new order from the supplier when inventory drops below a certain threshold. Most importantly, the system is now capable of tracking toxicology kits that are administered to a survivor to determine whether drugs, or other substances, were present in the survivor's system. Massachusetts became the first state in the country to launch this feature.

Office of the Child Advocate (OCA)

To improve transparency and public access to Commonwealth data, the EOTSS Data Office partnered with the OCA to design a **new interactive data website** that allows members of the public and researchers to visualize the state's juvenile justice system data sets.

Through phase one of the project, which was completed in November 2020, the new site improves data transparency, meets statutory reporting requirements around the juvenile justice system, and reduces the number of public information requests to participating agencies. 2021 saw the completion of phase two – where the Data Office updated existing data and added new system touchpoints. Ongoing upkeep and maintenance were then transitioned to the OCA.

Criminal Justice Reform Cross-tracking System

A number of key departments within EOTSS are partnering with EOPSS on the creation of a comprehensive criminal justice cross-tracking system, designed to bring together disparate data sets maintained by criminal justice agencies, such as the DOC, Sheriffs, Parole, the Trial Court and Probation. Aspects of the data would be used to inform public policy and internal agency decision making.

This is an enormous undertaking that involves a number of key criminal justice stakeholders. To build and support the establishment of this data sharing platform, the Commonwealth has partnered with Google Cloud. Harnessing the power of Google Cloud Platform, the cross-tracking system will make legislatively required demographic data available to the public via dashboards, data visualizations and access to previously hard to access data sets. To facilitate the data sharing between so many agencies, the project team leveraged the EOTSS developed data use license agreements (DULA). The DULA process provided a framework to facilitate the successful agreement of 20 key agency heads on what data will be shared within this system, and how it will be shared and secured.

Phase 1 of this project is scheduled to be released to the public toward the end of the Summer of 2022.

Police Reform

Governor Baker signed **An Act Relative to Justice, Equity and Accountability in Law Enforcement in the Commonwealth** into law in January of 2021. EOTSS

is engaged with EOPSS and other public safety partners in three areas created by the new statute: the establishment of the MA Peace Officer Standards and Training (POST) Commission, the creation of a Law Enforcement Body Camera Task Force, and the enactment of new training requirements and protocols for the Municipal Police Training Committee (MPTC).

Massachusetts Peace Officer Standards and Training (POST) Commission

The **Massachusetts Peace Officer Standards and Training (POST) Commission** is charged with creating a mandatory certification process for police officers, as well as processes for decertification, suspension of certification, or reprimand in the event of certain misconduct.

At the time this report is being published, EOTSS is serving as the technical and business level staff to the POST Commission. The Chief Engagement Officer and several members of the EOTSS' Strategy Team, the Chief Operating Officer and team as well as the IT recruiting team have been assisting the POST Commission as they begin to hire and standup their organization. This engagement involves a VIP level of care regarding the deployment of technology equipment, business applications and collaboration tools, security protocols, and identity management.

Municipal Police Training Committee (MPTC)

The Strategy team worked with **Municipal Police Training Committee (MPTC)** to evaluate whether its existing for-purpose training software would continue to meet MPTC's expanded needs. Strategy delivered a report summarizing the team's assessment and recommendations, which spanned conducting a competitive procurement and hiring expert staff to better support MPTC's technology systems and improve the working relationship with MPTC's vendor. Strategy also managed the preparation phase of MPTC's procurement by issuing a RFI jointly for MPTC and POSTC and providing guidance to MPTC on their RFR and SST. One Strategy team member is also participating as a voting member of the SST, to help support the vendor evaluation and selection process.

By supporting the competitive procurement, Strategy ensured that MPTC was well-equipped to represent their requirements, including those stemming from the police reform bill to the technology vendor that they will work with in the near/medium term.

Additionally, MPTC worked with the Mass Digital video staff to produce 17 Bridge Academy classroom videos and 11 Bridge Academy practical videos to educate 20,000 police officers throughout the Commonwealth. Topics include Single and Multiple Officer Response to an Active Shooter, Unknown Risk and High-Risk Motor Vehicle Stops, and Lifts and Carries.

Body Camera Rollout & Law Enforcement Body Camera Task Force

The EOTSS team worked with EOPSS and the Massachusetts State Police to design, build and deploy the body camera program. Specifically, EOTSS provided technical support in designing and managing the network infrastructure at all State Police facilities and cruisers that support the operation of the program.

Furthermore, EOTSS participates as a member on the newly-formed Law Enforcement Body Camera Task Force. More specifically, the Task Force is responsible for proposing regulations and establishing a uniform code for the procurement and use of body-worn cameras by law enforcement to promote consistency throughout the Commonwealth, should law enforcement choose to use body cameras. Moreover, the Task Force must propose minimum requirements for the storage and transfer of audio and video recordings collected by body-worn cameras.

To fulfill its mandate, the Task Force is conducting public hearings to collect and consider testimony from the public regarding the use of body worn cameras by law enforcement. EOTSS is providing technical guidance to fellow members as part of its engagement and service on the Task Force.

Enterprise Programs

Overview

As the lead enterprise information technology (IT) organization for the Executive Branch, EOTSS seeks to improve and promote and better service delivery to its constituent agencies.

EOTSS works toward this goal by making investments in the development and deployment of centrally managed programs that more efficiently deliver solutions through modern technologies, enterprise leadership and expertise, and economies of scale.

Examples of EOTSS enterprise program leadership can be found in just about every section of this report from the COVID-19 response to the Modern Workplace Program and other programs being deployed at the enterprise level. However, this section highlights several of the lesser-known enterprise programs developed and improved upon these past two years.

e-Discovery

The EOTSS e-discovery Team supports secretariats and agencies in the Executive Branch by providing technical tools and services for searching electronically stored email data located in multiple Commonwealth email systems and files. Legal departments across the Executive Branch are increasingly relying on digital tools to perform their work. To meet this increasing demand, the EOTSS e-discovery Team is actively engaged in the implementation of enterprise software capable of ingesting large volumes of electronic data from multiple sources beyond email data, such as desktop applications and network share drives.

This enterprise software solution offers Commonwealth lawyers the capability of using cutting-edge search, analysis, and visualization tools. The Commonwealth's investment in this type of robust enterprise software is expected to increase transparency and operational efficiencies in responding to legal requests, including

public records requests (PRRs), subpoenas, and litigation holds. The e-discovery-as-a-service program offered by EOTSS to the executive branch agencies has been successful and well-received by the agency users. Using this service has greatly reduced the laborious process by agency legal staff and support staff to locate, identify, retrieve, and index the files. In some cases, hundreds of hours of staff time were used in preparing and extracting these files for legal review and response.

In 2020, the E-discovery Team fielded over 750 requests from state agencies. That number grew to more than 850 requests the following year, and the team is on a similar pace so far in 2022.

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Enterprise Print Services

The Commonwealth's Managed Print Services pilot formed under the Governor's Cross-Secretariat Operational Council (XOC) and further evolved into the new **Enterprise Print Services** program to better support a remote workforce and leverage digital print capabilities.

This past year, EOTSS introduced the enterprise consolidated print services model – a vendor-agnostic, software-driven solution that provides for a centrally-managed, secure service for on premise and remote printing. This program also eliminates thousands of individual desk printers in lieu of high-volume, multi-functional devices staged strategically throughout agencies – reducing operating costs, service call volume for maintenance and repairs, and the consumption of consumables such as toner.

EOTSS is currently rolling out the new solution at its agency locations and will then coordinate the broader enterprise rollout for FY23.

EOTSS Print & Mail Operations

Beyond the Enterprise Print Services Program that speaks to multi-function printers, copiers, and scanners in agency locations, EOTSS also operates a high-capacity print and mail operation within its footprint at the Massachusetts Information Technology Center (MITC) in Chelsea, MA and the Boston Mailroom at the McCormack Building.

The Chelsea Print Service operates 7 days per week and provides high-capacity production printing services for customer agencies – including agency reports and business application output (e.g. RMV Titles, Registrations and Letters, MassHealth Eligibility Determinations, Approvals, Denials, Notices, Treasury Checks, and UMASS Notices). The print service offers Standard (Simplex) printing and Special (Duplex) printing, form design and maintenance, and uses 3 Xerox high-capacity production cut sheet printers.

The Chelsea Mail Service includes bursting, folding, inserting, metering, pre-sorting, barcoding, and postage services for customer agencies. The mail service staff operate 8 Inserters, 2 Metering Machines, and 1 Fluence Automation Barcoder/ Sorter 6 days per week.

	Chelsea Print Room Volume		**Chelsea Mailroom Volume**	
Secretariat	FY 2020	FY 2021	FY 2020	FY 2021
ANF	321,649	124,625	10,877,578	9,948,445
DOT	4,598,577	3,049,340	2,804,383	2,639,614
EDU	5,249	38	3,279	6,869
EED	836,389	731,889	609,065	502,403
EHS	45,489,948	23,895,860	12,109,867	5,267,845
ELW	513	-	7,673	18,009
ENV	28,495	29,215	37,531	37,417
EPS	69,360	53,554	-	891,698
OTH	1,486,289	1,001,210	534,657	653,619
TSS	237,810	-	217,551	-
Grand total	**53,074,279.50**	**28,885,731**	**27,201,584**	**19,959,050**

Lastly, the EOTSS Boston mailroom in the McCormack Building provides interoffice mail, courier, and USPS window service (including mail drop-off, pickup, postage and metering services). The associated courier service delivers mail 3 days per week to 19 Staniford Street (Hurley), 100 Cambridge Street (Saltonstall), 600 Washington Street, 1000 Washington Street, 251 Causeway Street, and 200 Arlington Street in Chelsea (MITC).

The print and mail operations have experienced a decrease in volume during the pandemic and the state's shift to a hybrid workforce model.

Contract Management Office & Enterprise software licensing

To ensure EOTSS is being a good steward of taxpayer dollars, it established an enterprise-wide software licensing and contract management program. EOTSS is in the process of further building out the Contracts Management office – which handles enterprise-wide IT contracts, software licensing, contract/licensing compliance, Cloud Services, Software as a Service (SaaS), and overall IT procurement support/ guidance to other state agencies. This team worked with the Operational Services Division (OSD) to rewrite and implement the Commonwealth's newer and more streamlined information technology terms and conditions for state contracts.

This office handles the core hands-on work, overseeing these IT contracts and working with various vendors. This office routinely reviews and engages in major Request for Responses (RFR's) initiated by numerous state agencies. Additionally, this team upon request will engage in contract negotiations, development of statement of works and program deliverables.

This centralized procurement and management approach has resulted in the negotiation of highly discounted enterprise volume licensing agreements with several major software providers, resulting in annual savings for the Commonwealth by way of license costs, maintenance, and cost avoidance for over deployment of licenses.

Since January of 2020, this office has completed over 300 contract transactions, supporting internal contracting, enterprise contracting, and other agencies – and partnered with the Operational Services Division on more than 12 statewide contracts. The office has realized more than $34 million in enterprise agreement savings for the Commonwealth during this period.

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Perhaps more importantly from a security perspective, this enterprise structure ensures that software deployments and systems across the Commonwealth are up to date with the latest releases, including security patches and bug fixes. The cost avoidance gained in maintaining up-to-date software systems can be measured in operational impacts to government services resulting from security breaches or system failures due to unsupported or compromised software.

IT Enterprise Recruiting

Agency IT and agency leadership, along with their respective agency finance and human resources teams, work with EOTSS leadership and the EOTSS human resources department to develop and manage the **IT staffing strategy and programs** for the Commonwealth's Executive Branch.

As part of the budgetary and strategic planning processes, agencies and their respective CIO offices define strategic objectives and how best to utilize existing resources. EOTSS has an internal position management process, and other secretariats deploy similar processes for their respective IT organizations.

Once an individual leaves the organization, their role and functions are reviewed to determine if the position aligns with strategic objectives or if a different role is needed. When a new role is identified, HR works with the respective IT leadership team to develop the role and responsibilities, and a well- defined recruitment strategy is in place to source and identify top candidates.

A dedicated EOTSS recruitment team handles both internal needs as well as those of Executive Branch agencies. Where staff are being redirected in responsibility, the manager, in consultation with IT leadership, identifies training opportunities to best equip the individual for new roles or responsibilities.

IT Accessibility & Adaptive Technology

The agency ensures that all Mass.gov and agency applications and systems comply with the latest federal and state IT Accessibility laws, regulations, and guidance – in addition to industry best practices.

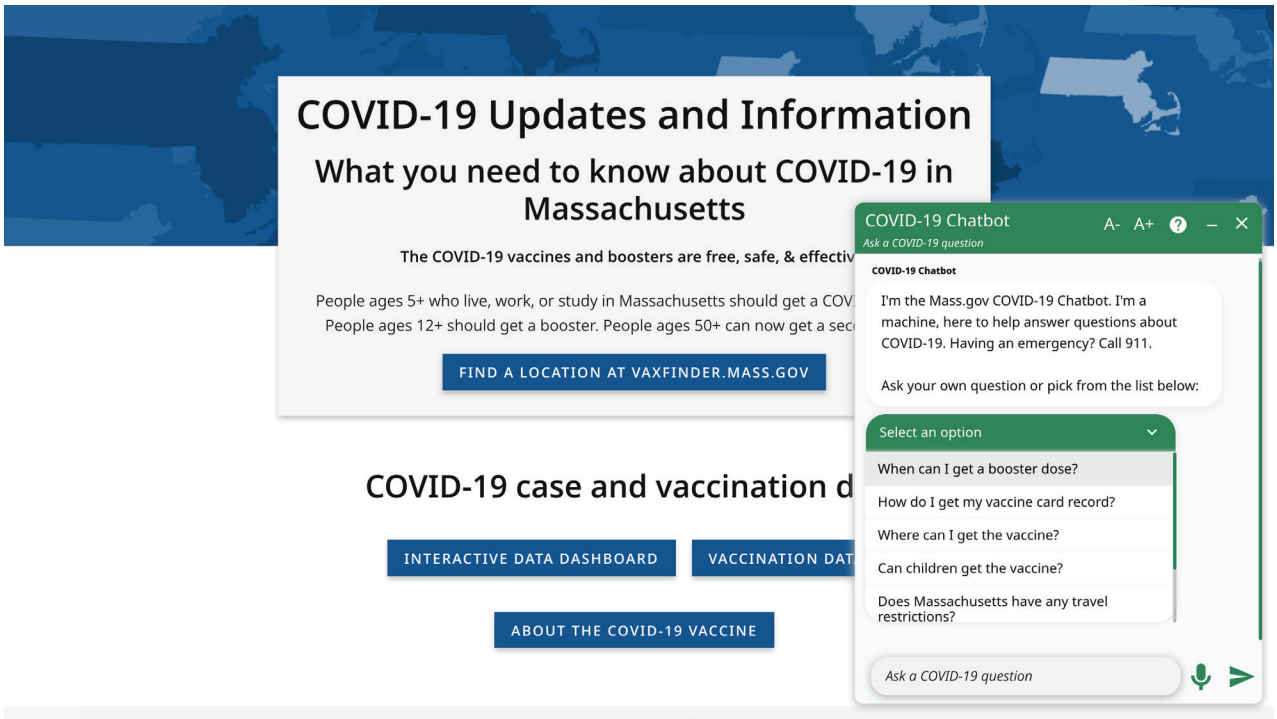
Accordingly, **EOTSS offers information, guidelines, techniques, and resources** for ensuring websites and applications are accessible to all and comply with the Commonwealth's accessibility policy. EOTSS plans to update its guidance on IT Accessibility in FY22 and FY23 – including the Enterprise IT Accessibility Standards, **Web Accessibility Standards**, the IT Accessibility Guide, and the IT Acquisition Access Compliance Program.

The agency also regularly collaborates with a working group chaired by the Massachusetts Office on Disability (MOD), A&F, and several EOHHS agency designees to review IT accessibility policies and guidelines with respect to end user hardware and software, collaboration tools, constituent accessibility, and procurements.

Enterprise Chat Bot

Based on the success of the COVID-19 and My Vax Records chatbots, EOTSS is developing a plan to expand the use of a chatbot across **Mass.gov** to connect the state's residents, businesses, and visitors more efficiently with the information they are seeking.

Expanding the use of Artificial Intelligence (AI) – chatbots, virtual assistants, voice recognition and commands – is a top priority for improving the citizen experience when interacting with government services.



Service Catalog & Customer Engagement Review

EOTSS recently embarked on a multi-year customer engagement initiative (the EOTSS Customer and Service Engagement Enhancement Program) to provide enhanced service to partners in the Executive Branch, Independents, and Constitutional Offices.

Through this program, EOTSS aims to increase transparency around service offerings and costs, ensure service offerings match customer needs, and promote greater trust and satisfaction through an improved customer experience and fulfillment.

First and foremost, the team is launching a **new Product & Service Catalog** that provides state agencies and customers a more detailed description of the available products and services coupled with transparent pricing and an improved customer

interface.

Additionally, EOTSS is **re-structuring the customer success team** to focus on assisting and guiding agencies and staff in acquiring the requested products and services needed. Traditionally, the EOTSS team has focused on ensuring agencies completed the necessary procurement process forms to receive the requested services; under this new model, the team will focus on ensuring agencies and staff's orders are appropriately accounted for and successfully fulfilled.

Through this program, EOTSS aims to increase transparency around service offerings and costs, ensure service offerings match customer needs, and promote greater trust and satisfaction through an improved customer experience and fulfillment.

To accomplish this, EOTSS will provide pre-engagement technical and business consulting, project management where needed, customer and product support, and order fulfillment assistance. Furthermore, the team will establish a customer quality assurance process.

Lastly, the rollout of a new product and service catalog also provides the opportunity to evaluate which services should be included in **EOTSS' chargeback**. EOTSS leadership launched an internal initiative to take advantage of this opportunity and transform the chargeback system into a more predictable and transparent cost-recovery model. The cost-recovery model for each service, whether existing or new, is being reviewed and redesigned to establish a clear and consistent charging methodology that best reflects the cost of that service.

As we move forward, we continue to prioritize strong communications, collaboration and strengthening our commitment to customer success. In this regard, EOTSS has committed to a comprehensive restructuring of our customer relationship management model that is designed to improve upon our ability and capacity to successfully meet the challenges that our agencies and customers are faced with in the delivery of government services.

ServiceNow

EOTSS stood up the ServiceNow platform to help IT service management (ITSM) for agencies supported by EOTSS.

Agencies traditionally use the platform to report IT issues and request IT services

and products. However, over the last 18 months, agencies have come to EOTSS with requests to use the ServiceNow platform for business needs outside of ITSM.

Examples of recent cross-agency collaborations on ServiceNow include:

1. **Executive Office for Administration and Finance:**
   - Human Resources Division (HRD) online forms
2. **Executive Office of Education (EOE)**
   - Executive Office online forms, back-end support, and enhancements
   - Department of Elementary and Secondary Education (DESE) forms and back-end support
   - Department of Higher Education (DHE) student complaint portal
   - Department of Early Education and Care (EEC) Background Record Check portal
3. **Executive Office of Public Safety and Security (EOPSS)**
   - Municipal Police Training Committee (MPTC) asset inventory management system
   - Department of Criminal Justice Information Services (DCJIS) Criminal Records Access Unit (CARU) call center inquiries
4. **Executive Office of Labor and Workforce Development (EOLWD)**
   - Department of Family Medical Leave (DFML) online forms and back-end support
5. **Office of the Child Advocate (OCA)**
   - Juvenile Justice data sites

MassGIS

The MA Bureau of Geographic Information Systems (MassGIS) resides at EOTSS and is the state's one-stop-shop for interactive maps and associated descriptive information. The EOTSS team coordinates GIS activities in state and local government and sets GIS data standards. MassGIS serves a broad constituency including government, private sector, non-profit, and educational customers which means that the data they provide supports emergency response actions, real-estate research, environmental planning and management, transportation planning, economic development, and engineering services.

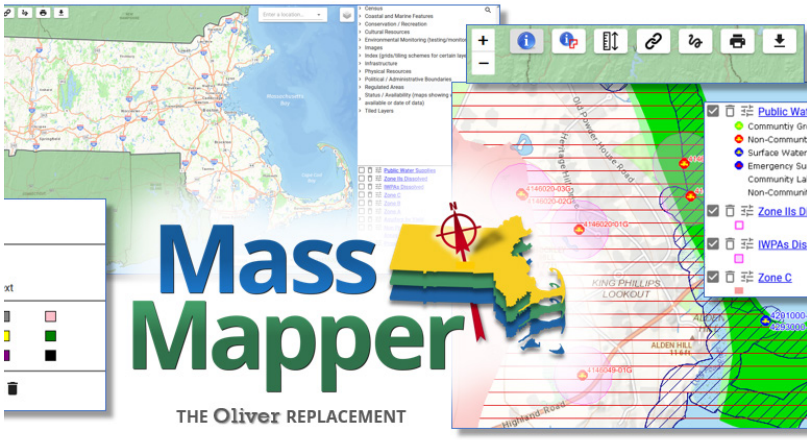
Over the past two years, the GIS team was instrumental in providing data and maps for the following enterprise projects (among others):

- **Statewide Land Cover Mapping:** In collaboration with EOEEA and the US National Oceanic and Atmospheric Administration's Office of Coastal Management, MassGIS completed statewide landcover mapping based on 2016 aerial imagery. This was an important new data set for many constituent groups.
- **Automated Intake** of Municipal Parcel Mapping Updates: MassGIS receives parcel mapping updates for as many as 200 cities and towns per year. This application provides a web portal for the upload and automates the tracking, storage, and initial QA of the delivery. This automation saves about 15 minutes per delivery.
- **Statewide Mapping of Solar Arrays:** For the Department of Energy Resources, MassGIS used **imagery analysis software** to identify solar arrays statewide on 2019 imagery; the cleared area around each array was mapped and the land cover present under each array on 2010 aerial imagery was mapped. The land cover types on what are now solar arrays was summarized by town and statewide.
- **STEM On-Line:** Partnered with the Lt. Governor's Office to create an **interactive map** that shows the school districts where various STEM programs have been implemented. Within the map a user can click on a school district and see the STEM programs offered. The application also enables users to filter school districts by the number and type of STEM programs.

Read more information about **MassGIS' customer base and Action-Impactful Projects**.

MassGIS Mass Mapper

In October of 2021, the Baker-Polito Administration announced the launch of MassMapper, a new online interactive mapping tool developed by MassGIS. This new tool enables municipalities and private sector organizations – especially those in the land survey, engineering, and real estate industries – to better interact with the Commonwealth. MassMapper offers an enhanced user experience for many of its primary uses like site design, land inventory, and public policy planning.



MassMapper replaces the existing, legacy online mapping tool, OLIVER, which has been in use in its current form for over a decade. The new tool is powered by a modern, lightweight, open-source software that will offer improved performance and overall user experience, including on mobile tablet

devices. The upgrade to MassMapper represents one of many ongoing initiatives in the Executive Office of Technology Services and Security's overall mission of modernizing the Commonwealth's legacy IT and cybersecurity infrastructure to offer a more efficient, effective, and secure government to the people we serve.

In addition to offering a faster, cleaner, and more intuitive user experience, **MassMapper** offers a number of new features:

- **Map Markup:** Users now have markup capabilities to customize the map, including the ability to add text, draw boundaries, etc.
- **Geo-Fencing:** Ability to geo-fence an area by drawing a boundary to pull data from a targeted location on a map – a task that is particularly helpful when downloading data for a targeted location into Excel/CSV files.
- **PDF Work Product:** Users can now create a PDF of a customized map for an improved final work product for users to share with their customers.

MassMapper was developed with capital funding secured in Governor Baker's General Governmental Bond Bill, which the Legislature passed into law in 2020 to invest in Commonwealth cybersecurity posture and IT infrastructure modernization initiatives. The interactive mapping tool's new capabilities were developed through extensive outreach to solicit user feedback from the public and private sector, as well as thorough product testing prior to its launch. MassMapper can be accessed on any device: computer, tablet, and mobile.

MassGIS also offers Muni Mappers, a by-request, custom-built mapping service that incorporates local data provided by the municipality for a more customized mapping tool at no cost to the municipality. This service is largely leveraged by smaller municipalities in the Commonwealth with limited resources for IT services, making the procurement of expensive commercial products infeasible.

Interoperable Communications Bureau

The EOTSS Interoperable Communications Bureau provides infrastructure, planning, and support to promote interoperable communications amongst first responders, public safety, public health, and other government services across a growing spectrum of communications tools. Read for more information about the **Massachusetts Statewide Communication Interoperability Plan**.

Commonwealth of Massachusetts Interoperable Radio System (CoMIRS)
CoMIRS is the statewide public safety radio system that provides operable and interoperable communications for state, regional and local government agencies supporting over 16,000 users. The CoMIRS Program Management Office's mission

is to modernize the Commonwealth's interoperable public safety radio system and to provide the infrastructure, planning, and support needed for mission critical radio communications. Read for more information about the **Commonwealth of Massachusetts Interoperable Radio System**.

In partnership with EOPSS and MA State Police, EOTSS selected a vendor to replace the statewide public safety radio system with a new P-25 standards-based interoperable digital system (CoMIRS) that will offer enhanced communications capabilities through improved reliability, increased capacity, and expanded coverage. This is a multi-year project that will extend into 2025.

AlertsMA

AlertsMA is a communications platform offered by the Executive Office of Technology Services and Security (EOTSS) that allows Massachusetts government organizations to notify employees, contractors, and the public in near real-time about emergency safety situations and other important events on work or personal devices. Alerts can be sent using an individual's preferred communication methods, including via text, voice, email, and more.

AlertsMA is used to send both statewide and targeted messages to employees and contractors. This includes geo-targeted or location-specific messages. The following are examples of the types of AlertsMA notifications sent to Commonwealth employees and contractors in FY21/FY22:

- Weather situations - Including 200K+ emails, phone calls, and/or texts sent by the Human Resources Division to staff who were ordered not to report to their work location due to severe weather.
- Vaccine attestation - Including ~50K+ emails, phone calls, and/or texts reminding staff to complete their online vaccine attestation form.
- State House safety - Including ~1K+ emails, phone calls, and texts sent by the Bureau of the State House with building entry and exit instructions during protests/demonstrations. In addition to Executive Branch employees and contractors, other people who work in the Massachusetts State House can also opt-in anonymously to receive safety alerts.
- Emergency Management - Including numerous messages sent each month by the Massachusetts Emergency Management Agency to both agency staff and external partners about statewide emergency operations, dispatch shifts, wireless emergency alerts, and more.

The power of this messaging platform was leveraged to bolster the Commonwealth's COVID-19 communications strategy, which is highlighted in this report under "COVID-19 Response and Recovery," in the following ways:

- messaging statewide COVID-19 instruction and guidance;
- delivering community-specific communications;
- providing eviction support messaging in support of DHCD;
- following up with the vaccine waitlist; and,
- launching public-based keywords to ensure the public was aware of the evolving COVID-19 guidance and travel restrictions.

Going forward, the Commonwealth plans to continue to use AlertsMA to send critical communications to help protect the lives and property of citizens, visitors, and business across Massachusetts. Residents can use the AlertsMA resident portal www.mass.gov/alertsma-for-residents to subscribe to receive notifications in their preferred communication method and language.

IT Capital Investment Portfolio & Program Management

Overview

EOTSS oversees the IT capital investment portfolio and related program management through its **Office of Capital Planning**. The EOTSS Secretary in collaboration with the IT Investment Advisory Board (IIAB), reviews and recommends projects to the Governor and the Secretary for Administration & Finance (A&F) for inclusion in the annual **Capital Investment Plan (CIP)**.

As the stewards of IT capital investments, EOTSS and the IIAB have implemented an enterprise framework that promotes standardization and consistency across the Executive Branch. The framework drives overall IT investment strategy and works towards the long-term goals of modernizing legacy IT infrastructure, ensuring the continuity of government services, improving constituent-centric digital services, and enhancing the state's cybersecurity posture.

Through this framework, EOTSS brings together leadership from both an agency's business and IT organization to develop a mutual understanding of the business case for a project and to set expectations for the planning process and desired outcomes. These efforts promote communication and collaboration, help establish and manage priorities for the agencies and specific projects and reinforce the enterprise standard operating environment.

IT Capital Bond

The strong working relationship between the Baker-Polito Administration and the Legislature is evidenced by their ongoing commitment to improving government and making government work for the Commonwealth's many residents, businesses, and visitors.

Their commitment was again reinforced through passage of a **An Act Financing the General Governmental Infrastructure of the Commonwealth**, which was signed by Governor Baker on August 7, 2020. The "General Government Bond" included

more than $1.82 B in new capital bond authorizations for various capital planning agencies.

Among the $1.82 B was $660 M in new IT capital bond authorizations to be managed through EOTSS. These new authorizations provided much-needed fiscal relief as previous IT bond authorizations were slated to run out of available funding in FY21. The current IT capital plan is still funded through these authorizations. However, given the size and scope of the investments needed to fund enterprise modernization efforts and large-scale projects, it is anticipated that new authorizations will be needed in the near future.

As a result, the Baker-Polito Administration filed new General Government Bond legislation on January 14, 2022, to authorize new capital spending in the coming years and extend the duration of certain expiring authorizations from the 2020 law. This new bill proposes $185 M in new authorization for EOTSS to provide continued funding and support for cybersecurity, IT infrastructure, and application modernizations initiatives in FY24 and beyond.

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IT Investment Advisory Board (IIAB)

The **IT Investment Advisory Board (IIAB)** advises the Commonwealth Chief Information Officer on prudent investments in the IT capital investment portfolio and related programs.

The IIAB is chaired by the EOTSS Secretary and brings together key executives from across the Commonwealth who have experience in information technology investment portfolio management, in approving and overseeing capital projects, and in resolving high-level business issues as they arise.

The Board's composition is not necessarily representative of specific agencies interests per se, and members do not represent the specific interests of their respective organizations. Rather, members address the general interests of the Commonwealth with respect to the investment of taxpayer dollars in technology projects that improve the delivery of government services.

The IIAB meets at least monthly at the direction of the Secretary to review new

project business cases, to consider emergency and contingency funding requests, and to review the progress of ongoing IT capital projects. The Board also advises the Secretary on the policies and standards for the overall IT capital planning process.

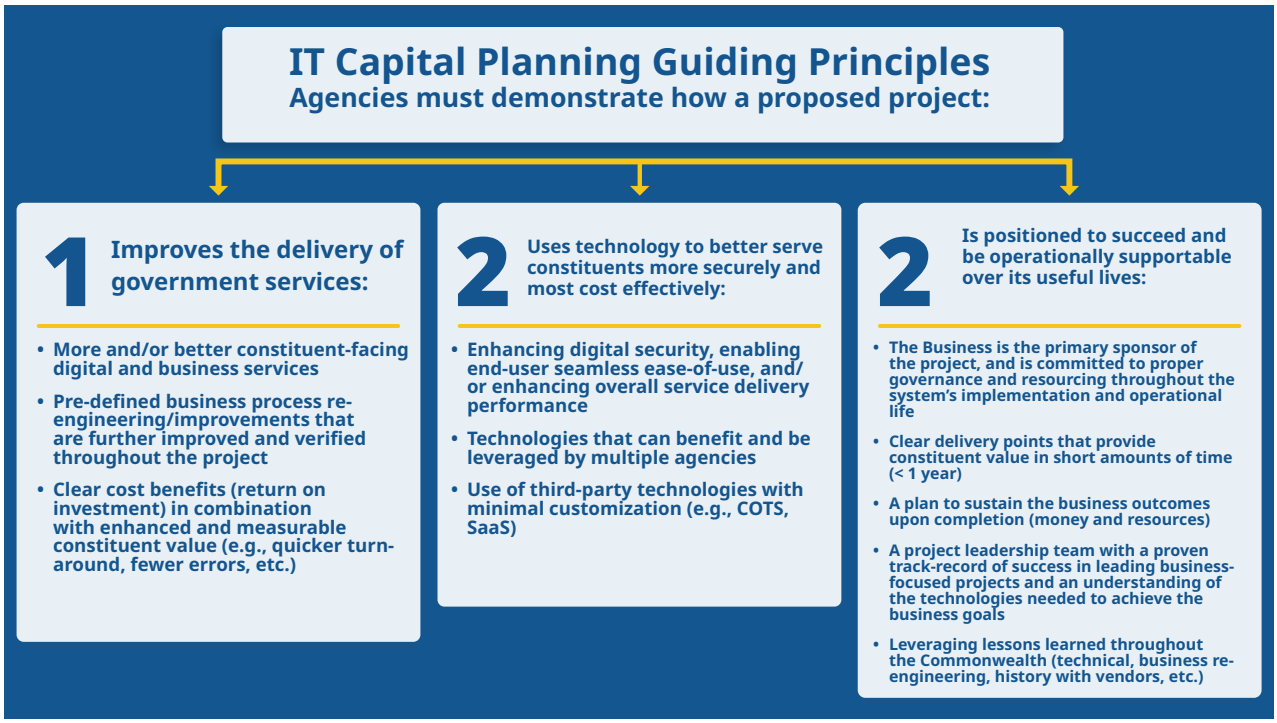
IT Capital Planning Process

The EOTSS Office of Capital Planning kicks off its annual **capital planning process** in November with the issuance of new guidance for the coming fiscal year. Ongoing project funding requests are then due in early December, while requests for new projects must be submitted mid-month.

Through a series of collaborative planning meetings and presentations before the IIAB, the EOTSS Secretary and IIAB work within A&F guidelines to submit their recommended projects to the Governor for inclusion in the **annual CIP**.

Agency funding requests typically exceed available bond cap authorization for a given fiscal year, so difficult decisions must be made. Programs and projects are prioritized in line with new statutory and regulatory requirements, the Administration's priorities, the EOTSS statewide IT roadmap, and SCIO IT strategic plans.

As part of the IT Capital Planning Process, all on-going and newly proposed projects are also rated by the IIAB against the principles listed below. The principles work largely in order (e.g. First, demonstrate a project serves a constituent need, then show how technology is leveraged and finally, demonstrate a high probability of success). However, there are some cases where this hierarchy may not strictly apply.



Read more information on the **policies, standards, & guidance** for the IT capital planning process, the IIAB business-case standard, and the IT project lifecycle.

Capital Portfolio Management

In addition to preparing the annual IT capital plan recommendations to A&F and the Governor, the EOTSS Office of Capital Planning also actively manages the IT capital project portfolio throughout the project lifecycle to ensure successful project outcomes in an efficient and cost-effective manner.

EOTSS achieves these goals through regular reporting requirements and collaborative stakeholder engagement in line with industry best practices.

For example, monthly **Performance Metrics Reports** are required for all active IT capital projects, and the **IIAB** typically requests specific project presentations from agencies at its monthly meetings. Additionally, the EOTSS team schedules quarterly deep dives with Secretariat business owners and SCIOs and liaises regularly with Program/Project owners and the A&F Capital Office.

Moving forward, the team is also designing a program of project 'health checks' (on critical projects) by an independent third party.

The EOTSS collaborative approach to portfolio management and project monitoring is critical for ensuring projects are delivered on-time and within their allotted budgets. The regular reporting and check-in schedule helps identify and mitigate risks early on, creates consensus around the achievement of project milestones and determines that agencies have a sound project delivery strategy all the way through to completion and implementation.

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FY22 CIP & IT Capital Investment Portfolio

On June 14, 2021, the Baker-Polito Administration released its **Capital Investment Plan**, providing for the Commonwealth's capital needs in Fiscal Year 2022.

The **IT Capital Plan** builds upon the Administration's prior accomplishments, while also establishing new IT and cybersecurity capital priorities and advancing IT and

cybersecurity policy objectives. It prioritizes the Commonwealth's continuing transformation to a standardized, resilient, and secure technology foundation and framework that supports the delivery of government services to our residents, businesses, and visitors. This plan also provides for key investments in agency business applications across the Executive Branch, several constitutional offices, and independent agencies.

Highlights from the IT capital plan include:

- **Business Applications Development ($64.9 million):** EOTSS continues to lead and oversee ongoing IT transformation initiatives across the Commonwealth with a focus on supporting agency efforts to improve the experience of constituents accessing government services. In FY22, priorities include but are not limited to: the replacement of the Commonwealth's Unemployment Insurance online claims system; the modernization of the Department of Public Health's Vital Records system; and the build-out of the Executive Office of Education's data reporting and analytics platform.
- **IT Technical Infrastructure Modernization ($42.1 million):** EOTSS continues to make investments to digital infrastructure, networks, and hosting services to enhance the resiliency of the Commonwealth's information systems and business applications, ensuring the uninterrupted delivery of government services to constituents and stakeholders, while also extending the technology foundation to support workforce mobility.
- **Cybersecurity Program ($15.5 million):** Cybersecurity is a top priority for the Commonwealth and has become increasingly more prominent for state and local governments across the country with the rapid shift to remote work. EOTSS continues to strengthen the Commonwealth's cybersecurity capabilities across the Executive Branch secretariats and agencies, as well as independents, constitutionals, and other entities by establishing standards, processes, and systems to best protect constituent data and Commonwealth business applications. This program includes the continued buildout of the Commonwealth Security Operations Center and the implementation of security technologies and programs such as vulnerability management, security awareness and incident analysis.
- **Operational Efficiencies ($7.1 million):** EOTSS continues to aggressively seek out innovative technology solutions that improve operational efficiency in state government. In FY22, several initiatives will develop streamlined capabilities in the areas of electronic health records within the Health and Human Services secretariat, Massachusetts Environmental Police workforce management, and statewide case management systems.

While several ongoing programs mentioned above will continue into FY23, the chart below highlights 6 significant programs and projects that will wrap in FY22.

Agency	Program	Objective & Outcomes		Investment
EOTSS	Workforce Mobility Program	A transformational program that revitalizes the Commonwealth's workforce by enabling the workforce to easily access and edit documents securely from any device to meet the needs of the citizens, supports collaboration and workflow efficiency by digitizing manual processes, and further strengthens our cybersecurity posture and protects citizen data. This was achieved by supporting remote work locations across the executive branch by implementing Office 365 and migrating email and file shares to a common cloud location and adding productivity tools for all, improving the desktop support service infrastructure and process, and standardizing the procurement of end user hardware. Almost 19,000 new workstations and laptops were deployed by this program.	FY19	$53,000,000 (including professional services of $31.7M and device deployments of $21.3M

Agency	Program	Objective & Outcomes		Investment
EOE		This project replaced the Department of Early Education and Care's (EEC) legacy applications for performing background checks with a modern solution. The new system ensures the timely staffing of programs with qualified educators, improve constituent services, and improve business processes, data integrity, and security. In addition to closing out the background check work, this project connects directly to the integrated Digital Data Services (DDS) capital project at EOE and lays the foundation for future "person centric" work at EEC and across the Secretariat.	FY18	$11,500,000
EOEEA	Drinking & Waste Water Analysis	This project creates online documentation for laboratories to submit Per- and polyfluoroalkyl substances (PFAS) data in drinking water and wastewater. The development covers collecting data, providing a quality control filter on collected data, and a reporting tool that is accessible by the public.	FY21	$750,000

Agency	Program	Objective & Outcomes		Investment
EOTSS	Elevation Mapping for Central and Eastern MA	MassGIS (Bureau of Geographic Information) is participating in a United States Geological Survey (USGS) Project to perform detailed elevation mapping in Central and Eastern MA over two fiscal years. Funding is matched by federal USGS grant awards for the acquisition of detailed elevation mapping in Central and Eastern MA, Funding partners (MassDOT, EOEEA, CapeCod Commission) have committed 38% of state match. This project will complete the state's detailed elevation mapping.	FY21	$1,000,000

Agency	Program	Objective & Outcomes		Investment
EOANF	Contract Lifecycle	The Operational Services Division (OSD) has developed a Strategic Sourcing Workload Application known also as Contract Lifecycle Management. This application enables OSD to see the status of contracts in development, pre-award, and post-award. It includes programmable flow charts that automatically alert other Units of due dates for specific tasks. In addition to Strategic Sourcing, other units within OSD that will benefit include:	FY21	$310,000
EOHED	Digitize Real Estate Appraiser license	As a result of a regulatory requirement to create a Real Estate Appraiser license and integrated it into the EOHED on-line platform (ePlace) to avoid processing inefficiencies and reduce processing errors which impact customer service.	FY22	$150,000

Annual IT Spending over $250,000

Pursuant to **Chapter 222 of the Acts of 2020,** EOTSS is required to provide a detailed account of all IT-related project expenditures (not only expenditures included in the annual CIP) totaling $250,000+ over the previous 12-month period:

"provided further, that not later than June 30, 2022, the secretary of technology services and security shall submit to the state auditor, the house and senate committees on ways and means and the joint committee on state administration

and regulatory oversight a complete accounting of and justification for all project-related expenditures totaling $250,000 or more over the previous 12-month period, regardless of source of funds or authorization for such expenditure;"

A summary by secretariat can be found below. In FY21, there were 80 active IT projects across the Commonwealth, compared with 67 in the prior year. In total $359M was invested in IT projects in FY21, compared to an almost $220M invested in the same period last year. EOHHS and EOTSS remain the principal investors in IT, accounting for 69% of investments in FY21 compared with 64% in FY20.

Investment Activity (projects >$250K)

	FY 2021			FY 2020		
Executive Office	Number of projects	Investment ($000s)	% of total projects	Number of projects	Investment ($000s)	% of total projects
HHS	10	$192,910	54%	8	$101,118	46%
TSS	7	$52,072	14%	9	$38,455	18%
LWD	6	$43,294	12%	9	$10,805	5%
PSS	12	$19,662	5%	9	$7,472	3%
DOT	28	$19,092	5%	19	$32,149	15%
EDU	5	$16,369	5%	3	$15,978	7%
ANF	7	$10,843	3%	5	$9,445	4%
EEA	5	$4,998	1%	4	$3,738	2%
HED	0	$0	0%	1	$430	0%
Total	80	$359,240	100%	67	$219,590	100%

Please note: Due to the June 30th reporting deadline, amounts reported in the enclosed report are actuals through May 14,2021 and forecasts through June 30th – since final FY21 numbers are not reported until after the Accounts Payable period at the end of August.

Read the full report on **EOTSS FY21 Investment activity (IT projects greater than $250,000.00)**.

A Note on Executive Order 569

In late 2016, Governor Baker signed **Executive Order 569 - Establishing an Integrated Climate Change Strategy for the Commonwealth**. The order instructed secretariats to develop a **statewide Climate Adaptation Plan** that incorporates observed and projected climate trends, along with guidance for state agencies to address impacts through adaptation and resiliency measures to ensure the sustainability of government operations and continuity of services.

As a result, EOTSS has incorporated climate change and resiliency planning into the IT capital planning framework. The CIP has seen a corresponding increase in investments in state-owned assets and projects that conserve energy, improve adaptive capacity, and promote the sustainability and continuity of government services. For example, critical systems have migrated to multiple 3rd party cloud hosts – offering scalability, recovery, and security benefits of multiple cloud environments. Cloud migration also offers sustainable, energy-efficient solutions utilizing more modern technologies and server platforms than state-owned data centers.

Fiscal Year 2022 Financials

Overview

As covered in the IT Capital Investment Management section of this report, many EOTSS programs and projects are funded through the **IT capital plan** – which is included in the Governor's annual **Capital Investment Plan (CIP)**.

However, the secretariat also receives funding through the General Appropriations Act (GAA) each fiscal year, as well as via an interagency chargeback model. Federal grant funding may also be made available to EOTSS in certain years (e.g. the pending federal Cybersecurity Grant Program for state and local governments that was included in the Infrastructure Investment and Jobs Act).

GAA funding and chargeback revenue fund daily cybersecurity and IT operations and services that benefit agencies across the enterprise – not just EOTSS. New maintenance and operating costs generated by capital investments are also sustained and "operationalized" through these funding sources to ensure their long-term viability.

FY22 EOTSS General Appropriations Summary

Below, please find a summary of EOTSS current appropriations, as signed by Governor Baker on July 16, 2021 in the **FY22 General Appropriations Act**.

Budgetary Recommendations		**$50,056,559.00**
1790-0100	Executive Office of Technology Services and Security	3,105,778.00
1790-0300	Technology Shared Services for the Public	2,733,931.00

Budgetary Recommendations		**$50,056,559.00**
1790-1700	Core Technology Services and Security	44,216,850.00

Intergovernmental Service Spending		**$146,475,223.00**
1790-0200	Technology Shared Services Chargeback	75,836,100.00
1790-0201	Technology Pass Through Chargeback	30,000,000.00
1790-0400	Print and Mail Services Chargeback	2,904,232.00
1790-1701	Core Technology Services and Security Chargeback	37,734,891.00

Supporting the Commonwealth's hybrid workforce and maintaining continuity of government operations throughout the ongoing COVID-19 pandemic continued to be top priorities for EOTSS in FY22. The agency also maintained focus on funding for programs and initiatives related to technology modernization and cybersecurity enhancements across the Commonwealth as part of the EOTSS Standard Operating Environment (SOE) rollout. Read more for a detailed summary of the **EOTSS annual operating budget and line-item language** included in the FY22 GAA .

Most of these programs are highlighted in earlier sections of this report, such as:

- Unified Security Operations Center (SOC) costs
- Further implementation of the Security Incident Event Management (SIEM) software platform across the Commonwealth
- Deployment of modern workplace single-device platform throughout the Executive Branch
- Continued migration of applications and infrastructure out of state data centers and into Cloud, 3rd party on-premise, and SaaS hosting solutions
- IT Strategy Services to agencies
- Business Intelligence and Data Analytics support for agencies

- Added capacity for the EOTSS centralized software and IT contract compliance program

Modest FY22 funding increases also included:

- $2.9M for Service Now enhancements to further build out of IT service management (ITSM) platform across the enterprise.
- $1.4M for cloud hosting and maintenance costs such as Commonwealth Information Warehouse (CIW), EOHHS Virtual Gateway, Mass GIS, MoveIT, and several HHS programs
- $348,000 for operationalization of AlertsMA capital investments
- $240,000 for Adobe Sign enterprise licenses to facilitate hybrid workforce model

EOTSS Chargeback Model

EOTSS is authorized by the Legislature to chargeback agencies/entities for services provided. EOTSS operates under a "cost-recovery" model and uses a "chargeback methodology" to recover its expenses.

Anticipated expenses are recovered through monthly billings. Expenses recovered can include (but are not limited to):

- EOTSS direct labor support
- Hardware and software maintenance
- Vendor management costs
- Equipment leases/TELP's (if applicable)
- Massachusetts Information Technology Center (MITC) rent

Use the following links to download a more detailed **FY22 Chargeback Rate Schedule** for the **EOTSS Chargeback Model**.

In FY22, EOTSS leadership kicked off a new project aimed at reviewing and updating its chargeback model and methodology. This project—coupled with the broader customer engagement initiative—seeks to improve customer service and fulfillment through improved cost transparency, greater insight into product & service offerings, and a revamped approach to ensuring customer success.

Looking Ahead to FY23

While the budget for the next fiscal year has not yet been finalized, you can read more about the Baker-Polito Administration's **FY23 budget recommendations for EOTSS**.

The H2 budget request includes a 9% increase over FY22 spending (exclusive of chargeback cap space) to $164.8M in total proposed spending for FY23. Most of this increase represents the operationalization from capital of programmatic cybersecurity investments and cloud hosting and management costs that are fundamental to the EOTSS enterprise mission and scope.

This request continues the tradition of annualizing the programmatic functions and operating costs associated with capital investments that are not always incorporated into the baseline EOTSS operating budget. A reliance on capital funding creates uncertainty in the sustainability of individual programs from year to year and obscures the true annualized costs of providing essential IT and security services for the entire Executive Branch.

A Look Ahead for EOTSS

Overview

The role of the state CIO across the country has grown exponentially in importance these past two years given the significance of technology and resilience in the COVID-19 pandemic response.

Never has the CIO been more influential with agency business leadership in shaping strategies for remote employee collaboration and support, business process redesign, and constituent service delivery. Moreover, the reemphasis on ensuring the continuity of government operations is expediting IT modernization efforts and the move to digital solutions at a rapid pace. State agencies are increasingly looking to emerging technologies in automation, artificial intelligence, and Human Centered Design concepts to encourage operational resilience and improve the citizen government experience.

The Commonwealth is no exception. The new COVID-19 reality, coupled with the collaborative approach fostered by the EOTSS Secretary and MA CIO, has renewed interest in digital service delivery and reignited IT modernization efforts here at home.

Most importantly, the open dialogue, enhanced information sharing, and focus on collaboration has proved invaluable in driving the buildout out of a true 24x7x365 enterprise Security Operations Center (SOC) and the rollout of a revamped Cyber Incident Response & Reporting framework for all agencies. EOTSS continues to work with our state agency security teams, public safety, homeland security and cybersecurity

State agencies are increasingly looking to emerging technologies in automation, artificial intelligence, and Human Centered Design concepts to encourage operational resilience and improve the citizen government experience.

organizations within Massachusetts (as well as nationally) to foster readiness and preparedness for cyber threats.

We continue to invest and build out our security technology framework and capacity with aligned vendor partners, and organizations such as the Mass Cyber Center, the Advanced Cyber Security Center, National Association of Chief Information Officers, and State Ramp. These strategic alliances provide the Commonwealth and EOTSS additional expertise and capacity, training and awareness, and all-important communications around cyber threat management.

EOTSS will also continue to focus on providing cybersecurity awareness training for state and local government through grant programs and other funding opportunities. Additionally, we are working with state, higher education and local leaders to build out a regional shared-security services model in which our cities and towns can opt in to receive standardized security operation services such as active network monitoring, threat detection and threat mitigation.

Finally, EOTSS in partnership with EOPSS will seek state and local cybersecurity grant funds via the federal infrastructure bill. We expect this program to kick-off in the Summer of 2022.

Overcoming Obstacles to Success

Looking out over the next 12-24 months, EOTSS sees the following three potential obstacles to successful completion of priority IT and cybersecurity programs and projects across the enterprise:

1. Increased cybersecurity threats to government entities and vendor partners
2. Recruiting and retaining appropriately skilled employees and contractors
3. Global supply chain delays

Cybersecurity Threats
COVID-19 amplified many of the IT and cybersecurity challenges facing all levels of government, including a dramatic increase in threats and scams as governments transition to an increasingly remote and hybrid workforce. Preparation for cyber threats is an ongoing and hyper-focused effort. It is critical for the Commonwealth to remain in a state of readiness and preparedness to best position itself to mitigate potential cyber threats and maintain continuity of government services for the customers and constituents we serve.

Government and industry best practices indicate that our enterprise cybersecurity approach improves agility, effectiveness, and efficiencies of state governments by promoting collaboration and breaking down silos across enterprise-level and agency-specific programs. Unified security operations, incident response, and

reporting across all agencies is a huge step in the right direction, and EOTSS will continue to evolve on the cybersecurity front to remain ever vigilant to emerging threats.

Recruiting and Retention

A strong labor market (particularly in technology), spurred by the ongoing economic recovery, may make it increasingly difficult for the Commonwealth to recruit and retain top talent in cybersecurity, IT, and digital services. IT recruitment and employee retention has long been a challenge for state governments across the country, and historically, states could not compete with private sector salaries, bonuses, and benefits in these areas. With the increased focus on technology and digital solutions to power our everyday tasks, coupled with evolution of the remote and hybrid workplace, recruiting and retention may prove even more difficult moving forward.

Global Supply Chain Delays

The pandemic exposed and exacerbated inherent issues within the global supply chain infrastructure that companies, consumers, and citizens rely on for everyday products and services. Most relevant to EOTSS is the global microprocessor and "chip" shortage. Like other states and countries around the world, the Commonwealth is finding significant delays in the delivery of IT hardware and other products dependent on microprocessors. As a result, agencies and their end users are experiencing significant delays in the delivery of new laptops, servers, and network infrastructure (to name a few areas). EOTSS expects these delays to continue through 2022 and into 2023, which could potentially delay completion of priority enterprise programs and projects in certain areas.

Seize the Opportunity

The Commonwealth finds itself at a transformational moment as technology becomes ever-more integrated into the way agencies conduct business.

Now is the time to leverage the COVID-19 acceleration towards digital-centric services and a more resilient state government as EOTSS continues to lead the charge in modernizing our state-owned IT systems and services, strengthening the Commonwealth's cybersecurity posture, and improving the constituent digital-government experience.

Looking to FY2023 and beyond, cybersecurity, resiliency & continuity mobility, and accessibility remain the four cornerstones of the EOTSS enterprise cybersecurity framework and Standard Operating Environment approach.

For the first time in its history, the Commonwealth will close in on unified security operations, vulnerability management, and incident response protocols. Hybrid-cloud and third-party hosting solutions will provide more resilient and accessible options for agencies, residents, and businesses. The deployment of a standard operating environment, with a consistent technology stack across all agencies, will promote agility and efficiency across the entire Executive Branch. And, core network and IT infrastructure upgrades will lead to uniform, scalable, and secure connectivity for all agencies.

For the first time in its history, the Commonwealth will close in on unified security operations, vulnerability management, and incident response protocols.

With the establishment of EOTSS in 2017 as the Commonwealth's lead technology organization, the focus has been and will remain on ensuring that the enterprise technology and digital investments are appropriately planned for and in line with business and technology strategic drivers. Continuing engagement and direction by EOTSS to guide and influence technology decision making is a cornerstone of the organization's success. Through continued engagement, we will work with agencies to prioritize, prepare and deliver successful technology and digital solutions.

The path to today's success in IT modernization and digital transformation was not an easy one, and new obstacles will no doubt impede the road ahead. However, the Commonwealth has proven equal to the task at hand and is ready to face tomorrow's challenges.

Appendix

EOTSS Reports

EOTSS Annual Legislative Reports
EOTSS is required to issue an annual legislative report on various aspects of IT consolidation in the Commonwealth as we as the secretariat's operations and efficiencies.

- **EOTSS EOY 2021 Legislative Report**
- **EOTSS EOY 2020 Legislative Report**
- **EOTSS EOY 2019 Legislative Report**

Telecom report
This **report** highlights efforts undertaken by EOTSS with Executive Branch partners to identify and realize savings by performing an audit of Executive Branch telecommunications network and assets.

IT spending reports
All IT-related project expenditures over the previous 12-month period.

- **EOTSS FY21 $250K+ IT Projects Report**
- **EOTSS FY20 report to the Legislature on Commonwealth IT procurements**

Information Governance Framework
This **report** provides independent planning, execution, and management of the necessary policies, standards, practices, technologies, and tools to support our information lifecycle, risk, and compliance needs at an enterprise level.

EOTSS Press Releases

News and Announcements

- **Municipal Fiber Grant program**
- Baker-Polito Administration **Awards $3.5 Million for Local Technology**

Infrastructure

- Baker-Polito Administration **Hosts 2021 Massachusetts Virtual Digital Government Summit**
- Baker-Polito Administration Announces **Preregistration System for Mass Vaccination Locations to Launch Friday, Updates on Dose Distribution in the Commonwealth & Designated Vaccine Clinic Days for K-12 Educators, Staff & Child Care Workers**

EOTSS Related Policy Links

- **Enterprise Policies, Standards, & Guidelines**

Statutory Authority

- Session Law, Acts of 2017, **Chapter 64 of the Acts of 2017**
- **M.G.L. c. 6A, s. 7A**
- **M.G.L. c. 7D**

Administrative Directives

- **Administrative Directives** issued by the EOTSS Secretary and CIO for the Commonwealth

Other Policy Links

- Operational Services Division (OSD) **Contract User Guide for ITS77**
- **Enterprise Information Security Policies and Standards**

EOTSS Annual Report 2022 Graphics

- Here are the **Graphics and accompanying text** used in the EOTSS Annual Report 2022

EOTSS Organizational Links

- **End User Support Services**
- **Service Desk**
- **CommonHelp Desk**
- Strategy Management & Consulting Services – **The Office of Strategy Management (OSM)**

- Office Of Municipal and School Technology (OMST)
- Bureau of Geographic Information Services (MassGIS)
- Interoperable Communications Bureau
- Commonwealth of Massachusetts Interoperable Radio System
- IT Capital Investment Management – EOTSS Office of Capital Planning
- IT strategic planning
- Enterprise Technology Policy & Planning
- Massachusetts Digital Service
- MA Technology Careers
- AlertsMA
- IT Accessibility

EOTSS Board and Commission Involvement

- Body Cam Task Force
- State 911 Commission
- Justice Reinvestment Policy Oversight Board (JRPOB)

EOTSS Collaborations and Partnerships

Federal & State Partnerships

- Executive Office of Public Safety and Security (EOPSS)
- Commonwealth Fusion Center (CFC)
- Massachusetts State Police Cyber Crime Unit (CCU)
- Mass National Guard (MANG)
- Massachusetts Emergency Management Agency (MEMA)
- Mass Cyber Center (MCC) operated by the Mass Tech Collaborative
- MA State Legislature and the new Joint Committee on Advanced Information Technology, the Internet, and Cybersecurity
- Multi-State Information Sharing Analysis Center (MS-ISAC)
- US Department of Homeland Security (DHS)
- Cybersecurity and Infrastructure Security Agency (CISA)

- National Cybersecurity and Communications Integration Center (NCCIC)
- Advanced Cyber Security Center (ACSC)
- StateRAMP

National Grant Opportunities

- National Governor's Association (NGA) To Partner With 7 States On Enhanced Cybersecurity Strategies
- New Cyber Defense Feed Protects Government Systems in Live Trial Across Four States
- National Cybersecurity Center (NCC)

Municipal Partnerships

- Community Compact Cabinet Information Technology grant program
- Community Compact Cabinet (CCC)
- IT Best Practices Program
- CCC Connector Portal

Strategic Partnerships

- Mass Cyber Center
- The National Association of State CIOs (NASCIO)
- SAFECOM
- SAFECOM members
- National Association of State Technology Directors (NASTD)
- Massachusetts Virtual Digital Government Summit

EOTSS IT Capital Plan

- Office of Capital Planning
- FY2022 Capital Investment Plan (CIP)
- FY2023 Capital Investment Plan (CIP)
- 2020 General Government Bond Bill
- IT Investment Advisory Board (IIAB)
- IT Capital Planning Process

EOTSS Fiscal Year 2022 Financials

- **FY2022 General Appropriations Act**
- **FY2022 Appropriations**
- **FY22 Chargeback Rate Schedule**
- **EOTSS Chargeback Model**
- **Governor's FY2023 Budget Recommendations**
- **EOTSS FY21 Investment activity** (IT projects greater than $250,000.00)