



FY 2018–2024 U.S. DEPARTMENT OF VETERANS AFFAIRS ENTERPRISE ROADMAP EXECUTIVE SUMMARY

January 2, 2020

VA



U.S. Department of Veterans Affairs
Office of Information and Technology

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Purpose – The Department of Veterans Affairs (VA) Enterprise Roadmap

- Provides visibility into VA's IT modernization journey, where it must go, and how it will get there
- Illustrates VA's transformative initiatives and information technology (IT) modernization timelines
- Describes the Department's current and future views of its business and technology environment
- Documents VA's transition from a stove-piped environment of redundant systems and non-authoritative data sources to a Department that is optimized through managed and shared services, commercial-off-the-shelf (COTS) solutions, and strategic sourcing
- Demonstrates how IT will improve customer experience, trust in VA, and stewardship of taxpayer dollars
- Enables VA to better identify IT investments that have outlived their effectiveness and effectively plan for the modernization or replacement of these investments
- Informs long-term IT planning, prioritization, budgeting, and decision making across VA
- Addresses oversight concerns that VA lacks an IT modernization plan
- Supports the development of Portfolio and System Architecture
- Aligns to the Office of Management Budget (OMB) Memorandum A-11 and 13-09, President's Management Agenda (PMA), VA Secretary Priorities, VA Strategic Plan, VA IT Strategic Plan, VA OIT Digital Transformation Strategy, VA Business Reference Model, and VHA Health Information Strategic Plan

For more information on near and short terms plans for system and data architecture, refer to VA's Architecture and Engineering Service sources within the Demand Management Division of the Enterprise Program Management Office.

Structure - The VA Enterprise Roadmap Executive Summary

The Enterprise Roadmap provides an integrated view of the following OIT PLM Portfolios—Health Services, Benefits and Memorial Services, Corporate Services, and Technology and Platform Services.¹

The Strategic Capability Integration Framework (SCIF) is an OIT framework that underpins the Enterprise Roadmap.

OIT identifies 17 Capabilities within the SCIF that drive care, services, and benefits among OIT's PLM Portfolios.

As OIT institutionalizes PLM, Product Lines will replace SCIF Capabilities in the Enterprise Roadmap.²

The Enterprise Roadmap content will be refreshed on an annual basis.

To provide insight into each Portfolio, the next section of the Executive Summary will follow the structure below.

- A narrative summary of the respective Portfolio using a Portfolio Overview slide
- A summary of each Capability within the Health Services, Benefits and Memorial Services, Corporate Services, and Technology and Platform Services Portfolios, including:
 - Descriptions of the current environment, drivers, key transformative initiatives, and future environment
 - Milestones that document transformative initiatives and decommissioning timelines for Capability and system modernization (e.g., activities to be performed and functions to be replaced or enhanced)
 - Architecture diagrams and graphics (if available)

The Enterprise Roadmap was developed in collaboration with OIT's Account Management Office; Enterprise Program Management Office; Office of Information Technology Operations and Service; Office of Electronic Health Record Modernization; Office of Information Security; Office of Strategic Sourcing; Office of Quality, Performance, and Risk; U.S. Digital Service; Veterans Experience Office; and the Office of Business Process Integration.

¹ The Veteran Business Services Portfolio will be incorporated into the next iteration of the Enterprise Roadmap.

² Once this transition occurs, the Product Lines will be realigned to their respective PLM Portfolios in accordance with VA's PLM organizing construct.

Strategic Capability Integration Framework

Portfolio	SCIF Capability	VA Secretary Priority	OIT Strategic Goal	VA Priority Initiative(s)	PMA CAP Goal(s)
 Health Services	Electronic Health Record	<ul style="list-style-type: none"> Electronic Health Record 	<ul style="list-style-type: none"> Goal 5: Achieve seamless and secure data interoperability across VA, DoD, Federal, and commercial partners 	<ul style="list-style-type: none"> EHRM 	1, 2, 4
	Telehealth	<ul style="list-style-type: none"> MISSION Act 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> Telehealth Modernization 	1, 2, 4
	Community Care	<ul style="list-style-type: none"> MISSION Act 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> VA Choice 	1, 4, 9
	Other Health Information Technology	<ul style="list-style-type: none"> MISSION Act 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> Mental Health Joint Action Plan 	2, 4
	Supply Chain Management	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 3: Transform procurement and acquisition processes to support aggressive modernization efforts 	<ul style="list-style-type: none"> Supply Chain Modernization 	1, 2, 7, 11
 Benefits and Memorial Services	Benefits	<ul style="list-style-type: none"> Business System Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> Appeals Modernization GI Bill 	1, 2, 4, 9
	Memorials	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> IT Modernization 	1, 4
 Corporate Services	Customer Relationship Management	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> IT Modernization 	1, 2, 4, 5
	Finance & Acquisition	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> Financial Management Business Transformation 	1, 5, 7, 9, 10, 11, 12
	Human Resources	<ul style="list-style-type: none"> Business System Transformation 	<ul style="list-style-type: none"> Goal 4: Inspire a culture of digital transformation, IT modernization, and customer service 	<ul style="list-style-type: none"> HR Modernization 	1, 3, 4, 5, 6, 13
 Technology and Platform Services	Digital Modernization	<ul style="list-style-type: none"> Customer Service 	<ul style="list-style-type: none"> Goal 1: Deliver Exceptional Customer Experience 	<ul style="list-style-type: none"> Navigator – Contact Centers, Digital Access 	1, 2, 4
	Contact Center Modernization	<ul style="list-style-type: none"> Customer Service 	<ul style="list-style-type: none"> Goal 1: Deliver Exceptional Customer Experience 	<ul style="list-style-type: none"> Navigator 	1, 2, 4, 5
	IT Infrastructure	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> IT Modernization 	1
	Cloud Migration	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> IT Modernization 	1
	Data Center Optimization & Consolidation	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> IT Modernization 	1
	Trusted Information Sharing	<ul style="list-style-type: none"> Customer Service 	<ul style="list-style-type: none"> Goal 5: Achieve seamless & secure data interoperability across VA, DoD, Federal & commercial partners 	<ul style="list-style-type: none"> IT Modernization 	1, 2, 4
Analytics	<ul style="list-style-type: none"> Business Systems Transformation 	<ul style="list-style-type: none"> Goal 2: Drive IT and VA capability modernization through digital transformation 	<ul style="list-style-type: none"> Stop Fraud, Waste and Abuse 	2, 4, 9, 14	



Health Services Portfolio Overview

Current Environment	Drivers	Transformative Initiatives	Future Environment
<p>VHA's current organizational design does not support the aim of becoming a clinically-integrated, Veteran-driven organization, and improvements are needed in the delivery of services and benefits, diffusion of best practices, and enhanced employee engagement.</p> <p>VA's goal is to provide Veterans with the care they need at the right time, at the right place, and from the right provider.</p> <p>Accordingly, the Department is modernizing the way it delivers healthcare to over nine million Veterans by transitioning VHA from legacy IT systems to a modern, commercially-focused suite of applications.</p> <p>The Health Services Portfolio provides advanced technology solutions to enable this transition and ensure modern, high-quality, and efficient medical care delivery.</p>	<p>VHA has been the subject of several critical assessments over the last four years that highlight deficiencies in care, customer service, Veteran access, and integrated service delivery between VHA and the community. Enterprise risks contributing to its organizational deficiencies include lack of reliable data and analysis, inefficient human capital management, and disjointed performance management.</p> <p>Additionally, legislation, such as the VA Maintaining Internal Systems and Strengthening Integrated Outside Networks Act of 2018 (MISSION Act) and Anywhere to Anywhere, are fundamentally transforming the way that VA provides care and services to Veterans. The MISSION Act increases access to care through community providers and telehealth modalities. As a part of the MISSION Act, Anywhere to Anywhere will increase Veterans' access to care by connecting them to providers across state lines through the development of a national telehealth network.</p>	<ul style="list-style-type: none">• Electronic Health Record Modernization (EHRM)• Telehealth Modernization• VA Video Connect (VVC)• Community Care Modernization• Community Care Referral and Authorization (CCRA)• Status Query and Response Exchange System (SQUARES)• Suicide Prevention Package (SPP)• Defense Medical Logistics Standard Support (DMLSS)	<p>The Health Services Portfolio will provide innovative solutions to support VHA in becoming a high reliability organization (HRO) and delivering exceptional, coordinated, and connected care for Veteran health and wellbeing.</p> <p>More specifically, it will modernize care and service delivery by operationalizing the VA Secretary Priorities.</p> <p>VHA's Veteran-centric health modernization initiatives will enhance customer experience and improve Veterans' trust in VA through consistent and accessible customer interaction channels. By striving to eliminate regulatory barriers, VA will increase Veterans' access to care in their local communities and particularly improve access for those in rural or underserved areas.</p> <p>Other Health IT (HIT) systems will provide clinicians, administrators, and patients with the IT tools that are not part of the EHR but are needed to support healthcare delivery.</p>



Health Services Capability: Electronic Health Record

Current Environment

The Veterans Information Systems and Technology Architecture (VistA) consists of over 170 clinical, financial, and administrative applications. The legacy system supports more than 1,600 VA facilities nationwide as part of the largest integrated delivery network in the U.S.

As VA's legacy electronic health record (EHR) system, VistA has been essential to the Department's ability to deliver healthcare to more than nine million Veterans and their families.

Multiple modernization initiatives to enhance the legacy EHR system have led to more than 130 unique instances of VistA, so its full scope is undefined.

These disparate instances create challenges in coordinating care across medical facilities and result in a lack of standardized processes and non-authoritative data sources. VA is conducting site assessments to fully define the scope of VistA.

Providing quality healthcare is one of VA's highest priorities. To operationalize this Veteran-centric approach, **VA established the Office of Electronic Health Record Modernization (OEHRM) to oversee the implementation of the Cerner EHR.**

Drivers

VA was a pioneer of EHR development with VistA. However, after more than 40 years of use, **VistA lacks the interoperability with DoD and community care partners needed to better serve Veterans.**

VistA is extremely costly to maintain as VA's sole health information system. VistA limits the Department's ability to provide Veterans with a seamless care experience.

VA has explored various options to modernize VistA since 2001. However, **previous VistA modernization initiatives have failed to truly transform the EHR system or achieve interoperability.**

In recent years, **Congress and government agencies have increased oversight of VA's EHR**, interoperability, and data activities (e.g., the MISSION Act and Veterans' Electronic Health Record Modernization Oversight Act).

Technology advancements—such as open Application Programming Interfaces (APIs), SMART on FHIR apps, platform architecture, Cloud deployments, digital disruptors (e.g., Apple and Amazon), robotic process automation (RPA), Artificial Intelligence (AI), Machine Learning (ML), genomics, blockchain, and big data analytics—are the shaping evolution of EHR platforms.

Transformative Initiatives

- **Electronic Health Record Modernization (EHRM):** On June 2017, VA announced that the EHRM program will implement the Cerner EHR system. In accordance with VA's buy-first strategy, the Department will acquire the COTS solution rather than continue to enhance VistA. On May 2018, VA awarded a 10-year contract to Cerner Government Services, Inc., to replace VistA with the same EHR solution that DoD is deploying. In the interim, VA will continue sustaining VistA. EHRM will develop a single longitudinal clinical health record from active duty to Veteran status and ensure interoperability with DoD. EHRM will be a catalyst for fundamental change in the way VA delivers Veteran-focused, provider friendly care.

Future Environment

Full integration of the Cerner EHR will take several years, beginning with the initial operating capability (IOC) sites in March 2020. VA will deploy the Cerner EHR system to all VAMCs, clinics, Veterans Centers, mobile units, and ancillary facilities.

Once fully implemented in FY 2028, the Cerner EHR system will be VA's single authoritative source of Veteran health information for patients and providers. It will support improved health outcomes, patient safety, and quality of VA care.

Implementing the Cerner EHR system will allow patient data to reside in a single hosting site using a common system. **It will enable interoperability with DoD, improve care coordination, and strengthen overall care delivery.** The EHR system will also enable seamless transfer of records between providers and enhance VA's collaboration with DoD and community care providers. It will facilitate deeper engagement with patients, which will improve Veteran experience.

Additionally, the Cerner EHR will employ analytical tools to drive faster, smarter connections between military service and health outcomes. **The system will ultimately provide a full picture of Veterans' medical history.**



Electronic Health Record Milestones*

* Timelines may shift due to changes in resources and priorities

† Pre-decisional



Q1: Deploy Medical Appointment Scheduling System (MASS) pilot
Q1: Begin pre-work for Cerner EHR deployment and site-kick off
Q1: Plan data migration
Q2: Deploy Veterans Scheduling enhancements
Q2: Review MASS pilot
Q3: Establish VA/DoD EHRM Governance Board
Q3: Deploy 1VA Pharmacy nationwide
Q4: Award Cerner EHR IDIQ Contract and Task Orders 1-5

Q1: Determine MASS enterprise-wide expansion
Q1: Conduct Site Assessment Reviews at IOC sites
Q1: Sign EHRM Memorandums of Understanding (MOUs)
Q2: Discontinue further MASS deployments
Q2: Limit VistA development & congressional mandates
Q2: Award Cerner EHR Task Orders 6 & 7
Q3: Migrate Vx130 data to HealthIntent
Q3: Sign and deploy MED-COI MOU (DoD/VA)
Q3: Award Cerner EHR Task Orders 8 & 9
Q4: Initiate HealthIntent deployment
Q4: Test Cerner EHR end-to-end capability

Q1: Complete EHRM operational, interoperability, and privacy testing
Q1: Establish unified help desk
Q1: Initiate Cerner EHR IOC
Q2: Deploy Cerner EHR IOC final ATO and Cloud IOC
Q2: Map Cerner EHR IOC data
Q2: Deploy Cerner EHR at 1% of VA sites (10 in-total)
Q3: Deploy Cerner EHR at 2% of VA sites (30 in-total)
Q3: Deploy patient portal, dental, and pharmacy IOC
Q3: Initiate Cerner Standalone Scheduling enterprise-wide deployment – IOC
Q4: Deploy Cerner EHR at 3% of VA Sites (44 in-total)

Q1: Complete HealthIntent deployment
Q1: Deploy Cerner EHR at 5% of VA sites (83 in-total)[†]
Q2: Deploy Cerner EHR at 7% of VA sites (118 in-total)[†]
Q3: Deploy Cerner EHR at 10% of VA sites (165 in-total)[†]
Q4: Deploy Cerner EHR at 12% of VA sites (203 in-total)[†]

Q1: Deploy Cerner EHR at 18% of VA sites (299 in-total)[†]
Q3: Deploy Cerner EHR at 24% of VA sites (396 in-total)[†]
Q4: Deploy Cerner EHR at 26% of VA sites (438 in-total)[†]

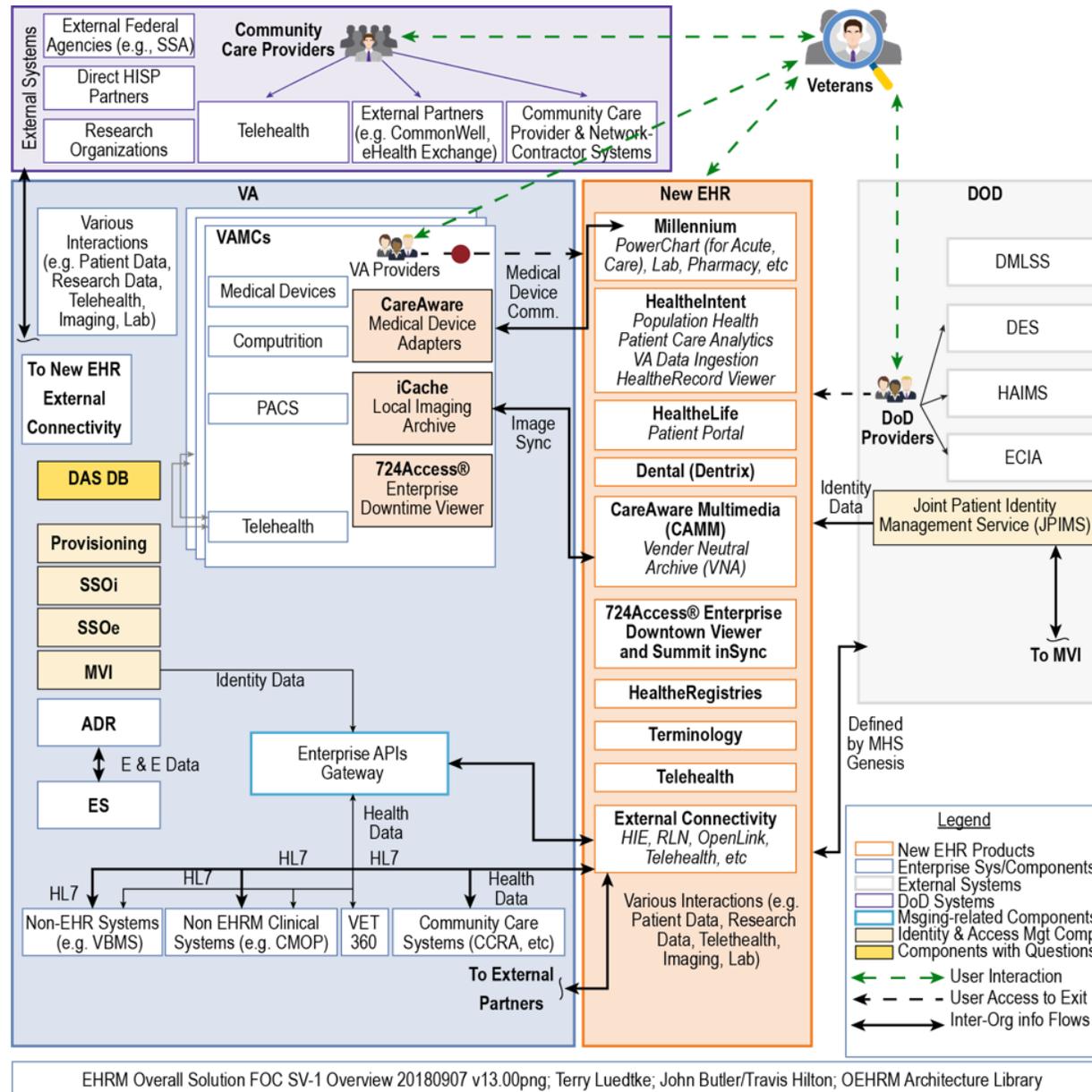
Q1: Deploy Cerner EHR at 33% of VA sites (548 in-total)[†]
Q2: Deploy Cerner EHR at 39% of VA sites (654 in-total)[†]
Q3: Deploy Cerner EHR at 44% of VA sites (736 in-total)[†]
Q4: Deploy Cerner EHR at 46% of VA sites (770 in-total)[†]
Q4: Complete Cerner Standalone Schedule enterprise-wide deployment – FOC[†]

Q1: Deploy Cerner EHR at 50% of VA sites (841 in-total)[†]
Q3: Deploy Cerner EHR at 55% of VA sites (925 in-total)[†]

Q1: Deploy Cerner EHR at 59% of VA sites (988 in-total)[†]
Q2: Deploy Cerner EHR at 61% of VA sites (1,014 in-total)[†]
Q4: Deploy Cerner EHR at 62% of VA sites (1,047 in-total)[†]



EHRM Future Environment Full Operating Capability Overview





Health Services Capability: Telehealth

Current Environment

VA is a leader in providing telehealth services and leverages technologies to provide care through three primary telehealth modalities: Clinical Video Telehealth, Home Telehealth, and Store and Forward Telehealth.

In FY 2018, VA provided care to more than 782,000 Veterans, or 13% of Veterans obtaining care at VA.

This equates to more than 2.29 million telehealth episodes of care among 50+ primary and specialty areas. Of these Veterans, 45% live in rural areas and may have otherwise had limited access to VA healthcare. However, less than 1% received care through a telehealth modality in the comfort of their home or other non-VA location.

To increase access to telehealth services, VA is implementing the Anywhere to Anywhere (ATA) Healthcare Program. Additionally, VA has announced connected care programs with Walmart, T-Mobile, and Philips that are designed to give Veterans more opportunities to connect with healthcare providers through telehealth.

Drivers

The Veterans E-Health and Telemedicine Support (VETS) Act of 2017 provided legislative authority to ATA, allowing VA clinicians to provide telehealth services to Veterans regardless of where they live. **Section 151 of the VA MISSION Act authorizes VA to establish the authority for its healthcare providers to deliver care through telehealth modalities across state lines, regardless of where a Veteran is located.**

According to Advisory Board, there are nationwide provider shortages in certain specialty areas. **VA expects telehealth demand to increase as access improves and Baby Boomers age.** Veteran demographics are evolving, and trends of increased women and younger Veterans will also impact future demand. **Digitally savvy Veterans are more comfortable with technology, desire transparency, and have different expectations for their care.** These trends will impact and disrupt how VA provides care and services.

Technology advancements—such as IoT, 5G, genomics, AI, wearable sensors, robotics, virtual reality, personal health apps, digital health assistants, direct-to-consumer and retail clinic kiosks, and clinical contact centers—are shaping future virtual care platforms.

Transformative Initiatives

- **Telehealth Modernization:** Transforming VA's use of new telehealth technology to deliver convenient, accessible healthcare to Veterans
- **VA Video Connect (VVC):** Mobile application that allows Veterans to access VA healthcare services on their smartphones, tablets, and personal computers
- **VA Online Scheduling (VAOS):** Tool that enables Veterans to self-schedule and request primary care appointments
- **Telecare Hubs and Services:** Network of telecare hubs to support the provision of clinical, urgent, and specialty care (e.g., tele-mental health)
- **Telehealth Management Platform (TMP):** Application for each VA facility's telehealth program that supports care by simplifying telehealth business processes
- **WebVRAM:** Application that enables synchronization of account credentials for providers to maintain access to EHRs

Future Environment

VA will shape the future of healthcare through telehealth expansion, as telehealth is a critical tool to ensure that the Department delivers convenient, accessible care to Veterans. VA's goal is to provide care through a telehealth modality to 20% of Veterans.

The Department's expansion of telehealth will focus on providing care in Veterans' homes or their preferred location. To enable this expansion, VA will establish a national telehealth network and leverage public-private partnerships.

VA will expand the availability of telehealth services and improve telehealth modalities through innovative technology to enhance provider productivity, patient experience, and care quality with support for on-demand and resource-based scheduling.

Full implementation of ATA will enable medical providers to deliver care to Veterans nationwide regardless of location, and virtual care will expand and enhance access to services to improve their timeliness.



Telehealth Milestones*

* Timelines may shift due to changes in resources and priorities

† Pre-decisional

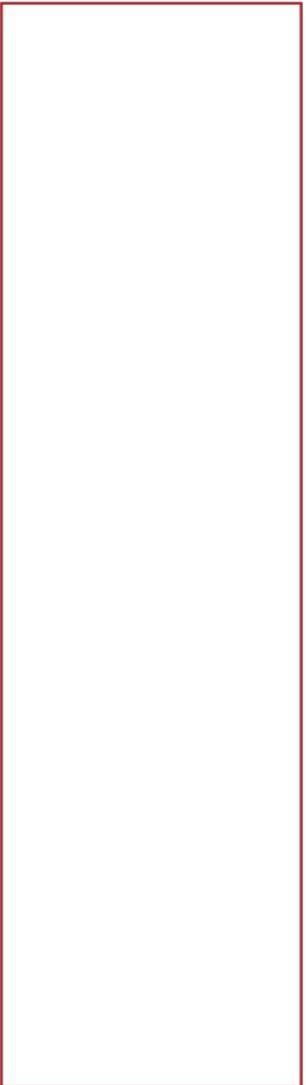


Q1: Enable VVC for ad-hoc scheduling
Q1: Deploy Faster Care for Veterans Act pilot
Q1: Deploy TMP inventory management capability
Q1: Release VAOS 4.1.2 MHV authentication & accreditation
Q2: Deploy TMP bidirectional scheduling capability pilot
Q2: Initiate Phase 1 of Minneapolis Tele-ICU expansion
Q3: Enable scheduling of telehealth appointments through VAOS
Q3: Deploy consult notifications from VistA in TMP
Q3: Deploy ARANZ Silhouette for wound assessment modernization in VISN 23
Q4: Deploy appointment notifications from VistA in TMP

Q1: Deploy Home Telehealth Vitals Transmission Development
Q1: Convert existing TMP integrations with VistA from RPC/VIA to HSEP/Cerner via HL7 messaging
Q2: Initiate bandwidth expansion at preliminary sites
Q3: Complete VA/DoD Tele-ICU Hub Program in VISN 23
Q3: Establish Tele-Primary Care (PC) & Tele-Mental Health (MH) Hub
Q4: Integrate VistA EHR pilot with TMP
Q4: Migrate the TMP to VAEC
Q4: Complete telehealth inter-facility access to CPRS utilizing WebVRAM
Q4: Expand VVC capability to 75% of Patient-Aligned Care Teams (PACT) and MH providers

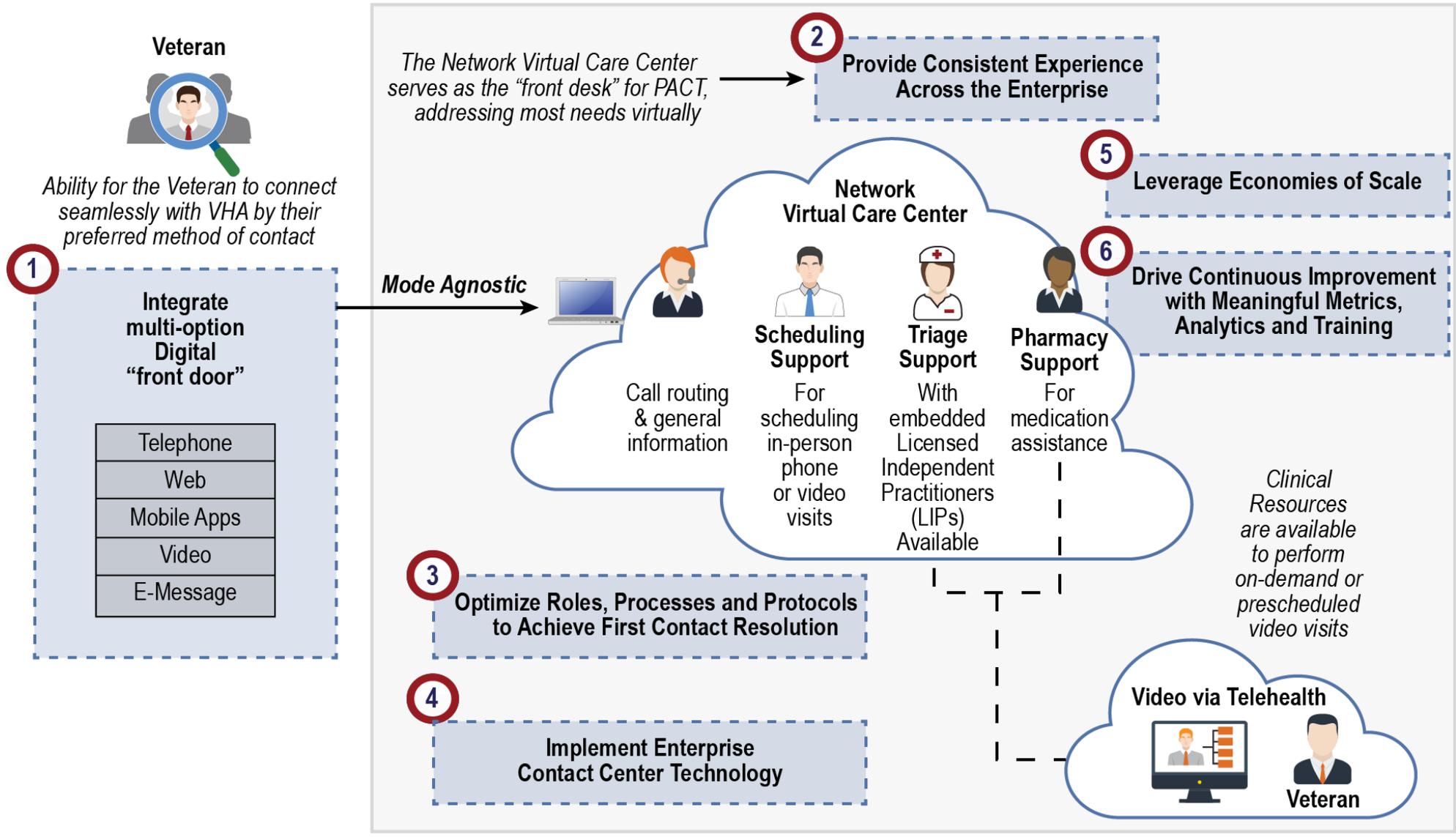
Q1: Continue telehealth bandwidth expansion at additional sites
Q3: Establish Tele-Urgent Care Hub
Q4: Integrate full VistA EHR with TMP
Q4: Expand VVC Capability to 100% of PACT and MH providers

Q1: Establish Tele-Specialty Care Hub
Q4: Expand VVC capability to 100% of ambulatory care providers





Future Environment of VA's Virtual Care Center Model





Health Services Capability: Community Care

Current Environment

VA's goal is to provide Veterans with the care they need at the right time and from the right provider. In some cases, this requires eligible participants to receive care from a local community care provider, paid for by VA.

As an IT capability, Community Care allows Veterans, providers, and VA staff to access tools for care coordination, referrals and authorizations, provider portals, electronic data interchange, provider payments, and revenue operations.

However, VA's patchwork of multiple separate community care programs is a bureaucratic maze that is difficult for Veterans, their families, and VA employees to navigate. VA has experienced challenges with claims processing and access to community care. Because **community care programs are not organized within a regional structure, programs often overlap in terms of type of function and service.** Additionally, the overall care coordination and exchange of health information consist of manual processes and workarounds that are often unreliable.

Drivers

Demand for community care is increasing, but the numerous existing programs create unnecessary complexity. VA's fragmented claims and payment process results in untimely claims processing and incorrect payments to providers. Additionally, **current community care patient accounting requires multiple systems, which results in disconnected information and inaccurate billing.**

In an effort to streamline VA's community care programs, the president signed the MISSION Act into law on June 6, 2018. The **MISSION Act will consolidate VA's existing community care programs into a single Community Care Program (CCP)** and empowers VA to build an integrated, holistic system of care that combines the best of VA and its federal, academic, and private sector partners.

Technology advancements—such as APIs, SMART on FHIR apps, HIEs, AI, big data analytics, and omnichannel customer relationship platforms—are shaping the future evolution of Community Care capabilities.

Transformative Initiatives

- **Community Care Modernization:** Streamlining disparate systems and processes for purchasing care into an integrated system under the consolidated CCP
- **Community Care Referral and Authorization (CCRA):** Enterprise-wide system used by community care staff to generate referrals and authorizations
- **Community Care Reimbursement System (CCRS):** System that will store all CCP information related to reimbursements to community providers
- **Provider Profile Management System (PPMS):** Records management system for provider agreements, credentialing, and authoritative source for all CCN providers
- **Fee Basis Claims System (FBCS):** Web-based platform to host and consolidate claim data into a single system for newly received purchased care claims
- **Claims Administration and Management System (eCAMS):** Enterprise solution for healthcare claims adjudication

Future Environment

The MISSION Act will fundamentally transform elements of VA's healthcare system, and successful implementation of the legislation will empower VA to deliver quality care and timely service.

The **consolidated CCP within the Community Care Network (CCN) will strengthen VA** by merging the Department's tangled web of community care programs into one that is simple for Veterans, VA employees, and community partners to navigate.

CCN will replace existing community care networks and provide access to high-quality care both inside and outside of VA. It will be simpler for Veterans to compare access and quality across facilities, allowing them to make more informed care choices.

VA will also **achieve transparency with community providers**, supporting accurate and timely payments while enhancing quality of care and Veteran satisfaction. Modern community care will utilize standardized and digital clinical workflows that provide **improved and consistent Veteran experience and deeper engagement with patients.** Ultimately, VA will seamlessly coordinate care and exchange information with community care providers.

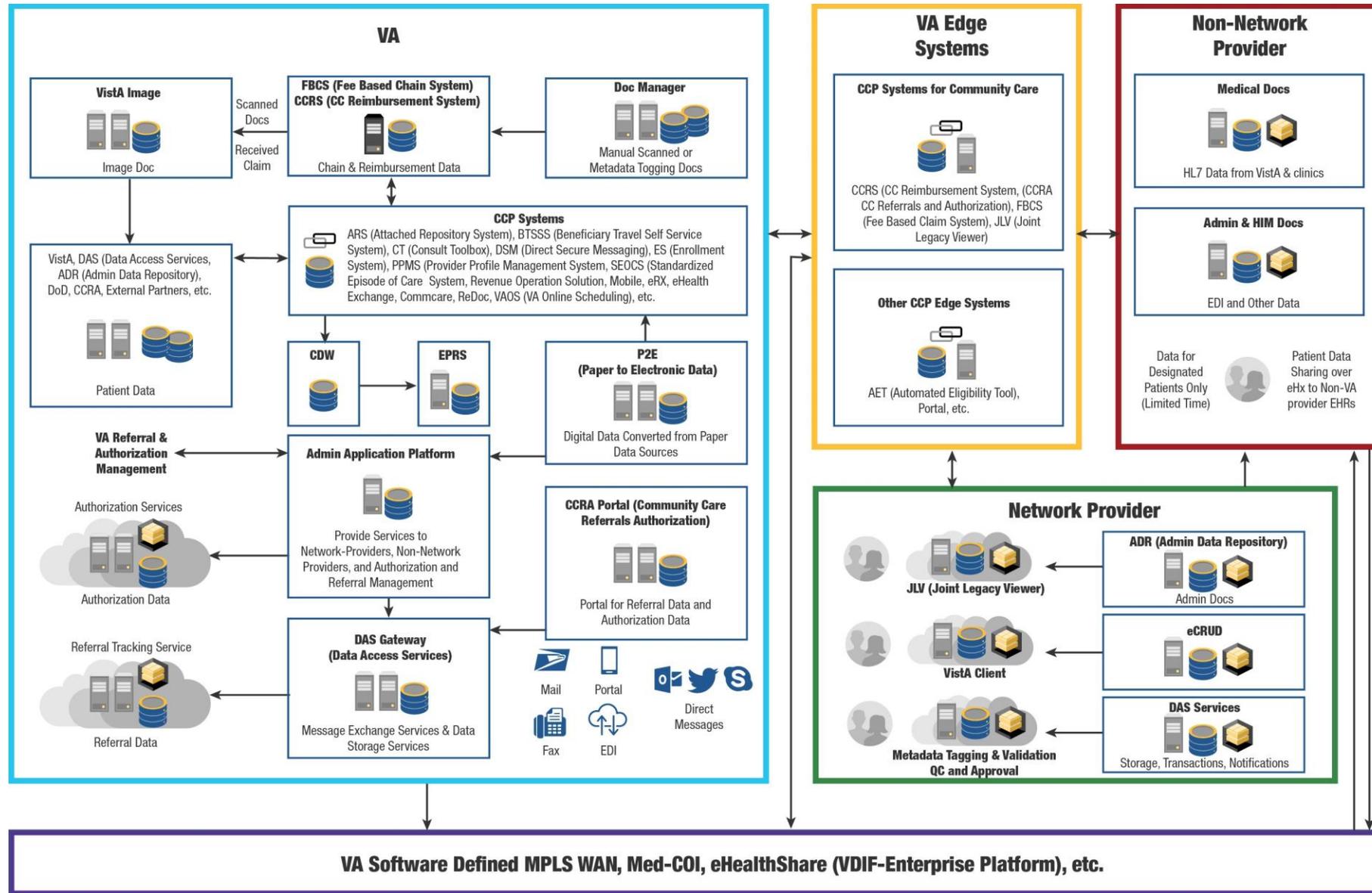
Community Care Milestones*

* Timelines may shift due to changes in resources and priorities
 † Pre-decisional

FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
<p>Q1: Deploy COTS Beneficiary Travel Self-Service System</p> <p>Q2: Deploy Community Provider Portal</p> <p>Q2: Deploy One Consult Toolbox 1.7</p> <p>Q3: Deploy ARS Claims & Capability</p> <p>Q3: Deploy centralized FBCS scanning</p> <p>Q3: Deploy REFDOC</p> <p>Q4: Deploy Provider Profile Management System (PPMS) nationwide</p> <p>Q4: Deploy CCRA pilot</p> <p>Q4: Deploy Community Care Enterprise Contact Center</p> <p>Q4: Release Care Coordination Standardized Episodes of Care (SEOC) Database for managing care bundles nationally</p> <p>Q4: Deploy GeWellNetwork nationwide</p>	<p>Q1: Deploy CC mobile application</p> <p>Q2: Deploy FSC Claims Processing System</p> <p>Q2: Deploy eCAMS pilot</p> <p>Q2: Enhance FBCS for auto-adjudication and touch by exception</p> <p>Q2: Deploy CCRS</p> <p>Q2: Deploy initial EDI server rebuild in HealthShare</p> <p>Q3: Deploy CCRA</p> <p>Q3: Deploy Claims Attachment Repository</p> <p>Q3: Deploy Enterprise Program Reporting Service</p> <p>Q3: Deploy PPMS CCN Integration enhancements</p> <p>Q3: Deploy MISSION Act decision support</p> <p>Q3: Deploy WebVRAM for CC staff</p> <p>Q4: Enhance CCRA – Care Coordination and eCAMS integration</p>	<p>Q1: Deploy Enterprise Program Reporting Services enhancements</p> <p>Q1: Deploy Pharmacy Opioid Monitoring</p> <p>Q1: Deploy Customer Patient Record System enhancements</p> <p>Q2: Deploy Integrated Billing/Accounts Receivable</p> <p>Q2: Deploy VA.gov enhancements</p> <p>Q2: Deploy PPMS enhancements</p> <p>Q3: Deploy CCRA enhancements</p> <p>Q3: Deploy Schedule Manager enhancements</p> <p>Q3: Deploy Data Access Services/Get the Data Back Interface enhancements</p>					



Community Care Future Environment Conceptual Architecture





Health Services Capability: Other Health Information Technology

Current Environment

Preventing Veteran suicides is VA's highest clinical priority. On average, 20 Veterans, active-duty Servicemembers, and non-activated Guard or Reserve members die by suicide each day. Of those 20, 14 were not in VA's care.

Therefore, VA is working to improve the transition from active duty to Veteran status, identification of at-risk Veterans, firearm and medication safety, and access to mental health services. **Every day, more than 400 Suicide Prevention Coordinators and their teams—located at every VAMC—connect Veterans with care and educate the community about suicide prevention resources.**

Additionally, VA offers a wide array of interventions designed to identify homeless Veterans, engage them in services, find pathways to permanent housing, and prevent homelessness from occurring.

VA has made significant progress in ending Veteran homelessness. **Since 2010, the number of Veterans experiencing homelessness in the U.S. has declined by nearly half,** and over 700,000 Veterans and their families have been permanently housed or prevented from becoming homeless.

Drivers

Psychosocial health is a significant component of the whole health of a Veteran. Additionally, social determinants of health play a vital role in the type of care that VA provides to Veterans. Consequently, **mental health, suicide prevention, and homelessness prevention are issues that VA must actively address.**

Veteran suicide is a national health crisis that requires coordination and collaboration between public, private, and nonprofit partners nationwide. The **2018 Executive Order Supporting Our Veterans During Their Transition from Uniformed Service to Civilian Life** directed DoD, VA, and DHS to develop a Joint Action Plan to provide access to mental health treatment and suicide prevention resources in the year following transition to civilian life.

Furthermore, the **2019 Executive Order National Roadmap to Empower Veterans and End Suicide** created a task force to develop a roadmap for empowering Veterans to pursue an improved quality of life, preventing suicide, and strengthening collaboration across the public and private sectors.

Technology advancements—such as AI, big data analytics, simulation modeling, and omnichannel customer relationship platforms—are shaping future solutions to address Veteran suicide and homelessness.

Transformative Initiatives

- **Status Query and Response Exchange System (SQUARES):** Web application that allows homeless service organizations to quickly confirm an individual's Veteran status and eligibility
- **Suicide Prevention Package (SPP):** Care system that collects data from Veterans and provides critical measures of their response to treatment
- **Suicide High-Risk Patient Enhancements (SHRPE):** Enhancements to EHRs that alert VHA staff of patients whose behavior may threaten their own or others' safety or compromise the delivery of quality healthcare
- **Recovery Engagement and Coordination for Health – Veterans Enhanced Treatment (REACH-VET):** Program that analyzes existing data from EHRs and identifies Veterans at risk for adverse outcomes, such as suicide, hospitalization, or illness
- **Clinical Administrative Systems:** Programs that track patients and influence staffing requirements, enhancing safety and efficiency within the clinical environment (e.g., Automated Patient Discharge and Clinical Staffing, which interface with SaaS, and Veteran and Staff Facing Scheduling)

Future Environment

VA will reduce risk factors for Veterans at high risk of suicide and assist every eligible homeless Veteran in acquiring safe housing, healthcare services, employment opportunities, and benefits assistance. The Department will also collaborate with communities to develop practical and innovative solutions to prevent Veteran suicides and homelessness.

Measurement-based care systems will enable effective screening and assessment of Veteran's suicide risk and better equip healthcare providers to reduce symptoms and improve recovery through enhanced care. This will facilitate **improved individual treatment plans and outcomes and minimize the risk of suicide.**

Other IT enhancements will allow VA to provide preemptive and critically needed care to Veterans in a timely fashion by implementing Health Provider Systems like Pharmacy programs (One VA Pharmacy, and Pharmacy Automated dispensing) and NCPS Patient Safety updates, thus reducing the likelihood of a negative patient safety outcome.



Other Health Information Technology Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



Q1 (SP): Advance Clozapine Modernization – establish FDA requirements
Q2 (Home): Initiate SQUARES 2.0 modernization
Q3 (SP): Establish Suicide High-Risk Patient Enhancements (SHARPE), Other Than Honorable Discharge (OTHD) Phase II
Q3 (Home): Initiate Google Doc pilot to enable data exchange regarding homeless Veterans with CC partners
Q4 (Home): Complete Google Doc pilot
Q4 (SP): Advance Clozapine Modernization – Establish Electronic Registration Program and Methadone Dispense Tracking Program
Q4 (SP): Deploy PTSD Checklist 5 updates

Q1 (Home): Complete SQUARES 2.0 modernization to improve Veteran identification & benefits eligibility
Q2 (SP): Complete Patient Record Flag (PRF) enhancement
Q2 (SP): Activate Computerized Patient Record System (CPRS)
Q3 (SP): Advance Clozapine Modernization – Deploy FDA requirements
Q4 (SP): Advance Clozapine Modernization – Deploy Electronic Registration Program and Methadone Dispense Tracking Program
Q4 (SP): Deploy SHRPE, OTHD Phase II
Q4 (SP): Deploy Suicide Prevention Package (SPP) Veteran Mobile Questionnaire enhancement

Q1–Q4 (SP): Expand Mental Health and Suicide Prevention services

Q1–Q4 (SP): Expand Mental Health and Suicide Prevention services





Health Services Capability: Supply Chain Management

Current Environment

VA's supply chain delivers clinical care to Veterans by managing the flow of supplies and equipment. **Currently, VA's supply chain system is comprised of a set of antiquated legacy and COTS systems with disjointed capabilities.** The lack of integration with other VA systems prevents the Department from achieving comprehensive financial, inventory, and supply chain management.

VA has had a lasting need to replace its antiquated supply chain management system and has attempted to modernize the system in the past. However, disparate modernization efforts have led to a proliferation of enhancements, workarounds, and add-on systems. This has resulted in a **fragmented supply chain environment that is difficult to maintain and accurately oversee.**

VA's current supply chain systems face numerous challenges. The **supply chain environment is not fully interoperable with other key VA systems.** Additionally, they are not equipped to address the complexity of decision making and integration required across functions, such as acquisition, logistics, and construction.

Drivers

Effective management of a supply chain is a major differentiator between high- and low-quality healthcare systems. Over the past decade, oversight bodies have identified ineffective performance by VA's supply chain. This performance leads to patient safety issues and inefficient resource allocation.

In 2016, the Commission on Care reported that VHA could not modernize its supply chain to overcome cost inefficiencies because it is burdened with antiquated IT systems that inhibit automation.

In 2017, GAO recommended that the Department consolidate and transform VA's medical supply chain organization, improve data standardization and IT systems, and standardize supply chain processes.

Additionally, one of **Secretary Wilkie's 2019 priorities is Business Systems Transformation, which includes VA's supply chain.** Business Systems Transformation is essential to VA empowering its employees to provide world-class customer service.

Technology advancements—such as AI, robotics, IoT, and blockchain—are shaping future solutions and competitive positioning in Supply Chain.

Transformative Initiatives

- **Supply Chain Transformation:** Developing an efficient supply chain environment that improves care and provides timely access to data focused on patient and financial outcomes
- **Defense Medical Logistics Support System (DMLSS) Pilot:** Implementing James A. Lovell Federal Health Care Center (JALFHCC), the joint VA/DoD facility, to understand the viability of enterprise-wide deployment
- **Defense Medical Logistics Support System (DMLSS):** VA is implementing DoD's on-premise, client-server-based government off-the-shelf (GOTS) supply chain system at VAMCs enterprise wide. DMLSS will promote greater operational efficiencies and will have positive impacts on quality of care, patient safety, and access to care through the adoption of a single supply chain management used by VA and DoD.
- **LogiCole:** Technical refresh of DMLSS that will be a single, Cloud-based application, which VA will determine its migration to once the application is operational

Future Environment

VA will pursue a holistic supply chain modernization effort that addresses people, training, processes, data, and automated systems, and it will leverage and strengthen its collaboration with DoD to modernize its supply chain.

Based on the success of the JALFHCC Pilot implementation, VA will deploy DMLSS as the supply chain management system at EHRM IOC sites. The Department will implement DMLSS at the Mann-Grandstaff and Seattle VAMCs four months before the Cerner EHR IOC.

VA will also collaborate with DoD on an enterprise-wide adoption of DMLSS to replace VA's existing supply chain solution. Its implementation of DMLSS will ensure that the right products are delivered to the right places at the right time. This decision leverages a proven system that DoD has developed, tested, and implemented.

DMLSS's synergies with the Cerner EHR and iFAMS will enable improved resource efficiency, responsiveness, regulatory compliance, access to care, quality, and safety when combined with data improvements. **VA will determine the transition timeline and process from DMLSS to LogiCole.**

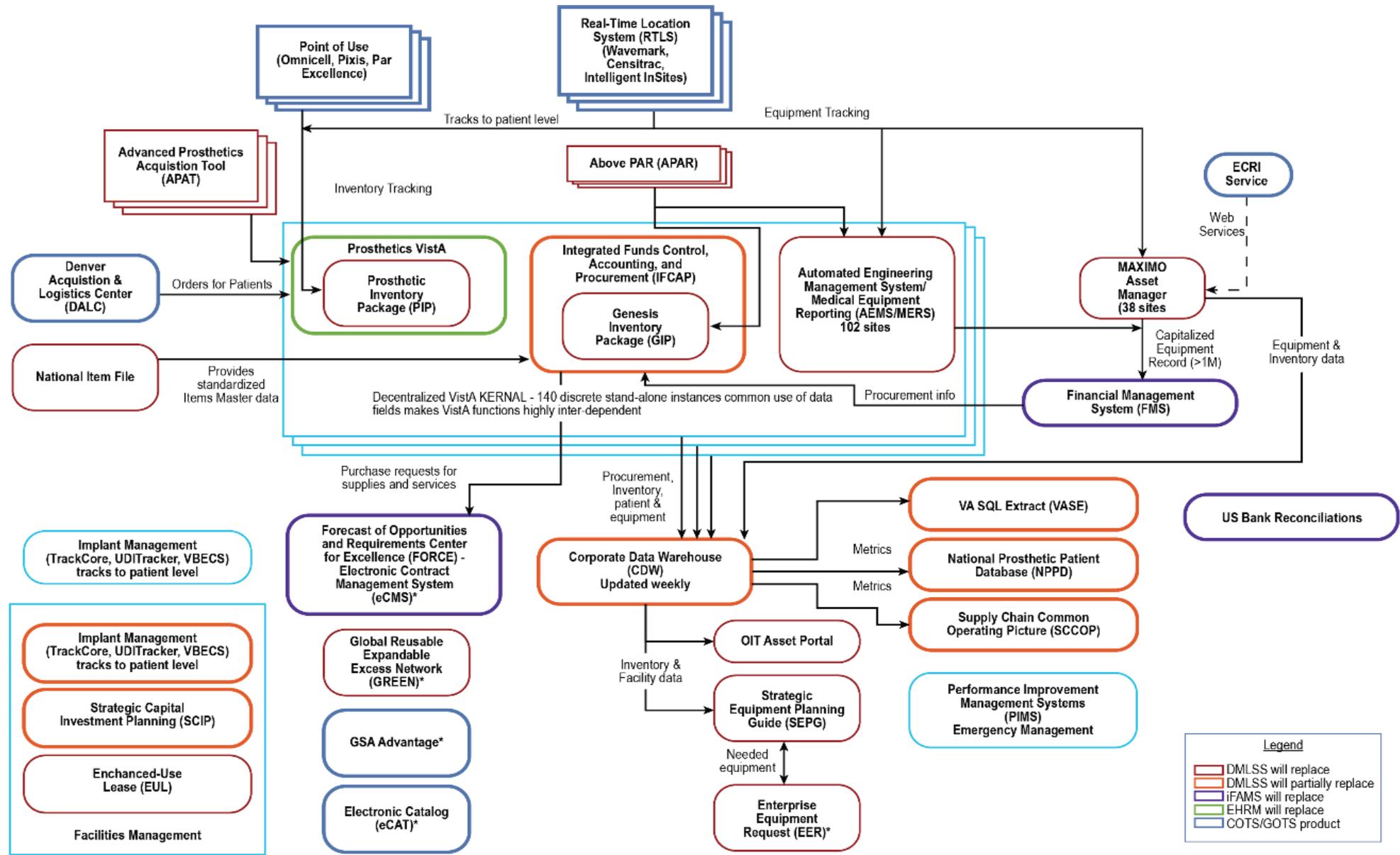
Supply Chain Management Milestones*

* Timelines may shift due to changes in resources and priorities
 † Pre-decisional

FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
<p>Q1: Initiate DMLSS Pilot at Captain James A. Lovell Federal Health Care Center (JALFHCC) Q2: Complete Inter-Agency Agreement (IAA) funds transfer for JALFHCC DMLSS Pilot</p>	<p>Q1: Initiate DMLSS deployment planning for rollout to EHRM IOC sites Q2: Deploy DMLSS Pilot at JALFHCC – IOC Q4: Complete deployment of DMLSS Pilot at JALFHCC to provide the joint VA/DoD facility a single SCM system – FOC Q4: Initiate DMLSS deployment at EHRM VA sites</p>	<p>Q1: Deploy DMLSS at 2% of VAMCs (3 in-total) Q3: Deploy DMLSS at 5% of VAMCs (7 in-total) Q4: Deploy DMLSS at 6% of VAMCs (9 in-total)</p>	<p>Q1: Deploy DMLSS at 9% of VAMCs (13 in-total)[†] Q2: Deploy DMLSS at 11% of VAMCs (15 in-total)[†] Q3: Deploy DMLSS at 14% of VAMCs (20 in-total)[†] Q4: Deploy DMLSS at 18% of VAMCs (25 in-total)[†]</p>	<p>Q1: Deploy DMLSS at 19% VAMCs (27 in-total)[†] Q2: Deploy DMLSS at 23% of VAMCs (33 in-total)[†] Q3: Deploy DMLSS at 28% of VAMCS (40 in-total)[†] Q3: LogiCole available for deployment at VAMCs[†] Q4: Deploy DMLSS at 34% of VAMCs (48 in-total)[†]</p>	<p>Q1: Deploy DMLSS at 39% of VAMCs (55 in-total)[†] Q2: Deploy DMLSS at 41% of VAMCs (58 in-total)[†] Q3: Deploy DMLSS at 46% of VAMCs (65 in-total)[†] Q4: Deploy DMLSS at 48% of VAMCs (67 in-total)[†]</p>	<p>Q1: Deploy DMLSS at 50% of VAMCs (71 in-total)[†] Q2: Deploy DMLSS at 52% of VAMCs (74 in-total)[†] Q3: Deploy DMLSS at 55% of VAMCs (77 in-total)[†] Q4: Deploy DMLSS at 57% of VAMCs (81 in-total)[†]</p>	<p>Q1: Deploy DMLSS at 59% of VAMCs (83 in-total)[†] Q3: Deploy DMLSS at 65% of VAMCs (91 in-total)[†] Q4: Deploy DMLSS at 70% of VAMCs (99 in-total)[†]</p>



Current Environment of VA Supply Chain Management Systems



★ Benefits and Memorial Services Capability: Benefits

Current Environment

The Benefits technology environment is currently built on a multi-systems approach and outdated hardware and software that are becoming increasingly obsolete. Legacy systems often fail to integrate, and even where integration exists, extensive duplication of customer data and functionality leads to non-authoritative data sources and complex system interfaces.

VBA must continue to utilize its legacy systems until new IT solutions are established to replace the functionality. These systems present technical difficulties with programming capabilities that result in inefficiencies and rework. For example, VBA employees currently use numerous workarounds for legacy systems, such as VBMS, to execute agency operations. There are several hundred workarounds and nearly 2,000 production defects for VBMS alone.

Ongoing system maintenance and development place a substantial financial burden on VBA and contribute to technical debt. VBA's legacy systems also inhibit the consideration of COTS solutions and managed services.

Additionally, VBA is dependent on external systems and agencies to complete claims processing. These dependencies perpetuate delays, prohibit timely processing, and create consistency and quality issues.

Drivers

Legacy systems pose significant risks to VBA's ability to provide benefits in a consistent, secure, and timely manner. The inefficiencies required to conduct business via legacy systems have led to inconsistent Veteran experience, and diminishing knowledge of these systems indicates an urgency for decommissioning efforts.

The VA Secretary's mandates and new legislation also drive Benefits modernization. **The Forever GI Bill, otherwise known as the Harry W. Colmery Veterans Educational Assistance Act**, expands access to GI Bill benefits, eliminating the requirement for Veterans to use their Post-9/11 GI Bill benefits within 15 years of their last 90-day period of active duty service.

The Veterans Appeals Improvement and Modernization Act of 2017 (AMA) will modernize the benefit claims and appeals process by providing Veterans with new options for seeking review, requiring improved notification of VA decisions, and improving the turnaround time and quality of Appeals Decisions.

Recent legislative changes will expand and simplify access to benefits for Servicemembers and Veterans. To achieve the requirements of new legislation, VBA must significantly enhance the Benefits IT environment. To enable Benefits transformation, VA will leverage Cloud, virtual exams, tele-counseling, AI, RPA, and APIs.

Transformative Initiatives

- **Caseflow:** Web-based application that will streamline the way benefit claims appeals are processed
- **Virtual Hearings:** Technology that enables Veterans to attend hearings from home or a location near their home with video conferencing equipment
- **Veterans Benefits Management System (VBMS):** System that processes disability compensation claims electronically, facilitating faster delivery of benefits
- **Benefits Delivery Network (BDN) Decommissioning:** Transition functionality of VBA's primary payment system to modernized systems
- **Benefits Integration Platform (BIP):** Modern, unified claims platform that integrates Benefits-related capabilities
- **eFolder Enhancements:** Improvements to VBMS eFolder to capture all Veteran non-health related information in one designated repository
- **VA Loan Electronic Reporting Interface Re-Design (VALERI-R) Enhancements:** Development of CRM capabilities within VALERI-R and integration with a vendor loan origination system to enable self-service during the loan process
- **Legacy System Decommissioning:** Veteran Service Network (VETSNET), Veterans Appeals Control and Locator System (VACOLS), Control of Veterans Records System (COVERS), Funding Fee Payment System (FFPS), Personal Computer Generated Letters (PCGL), Virtual VA (VVA)

Future Environment

The Board will drive toward application enhancements in order to intake decision reviews, to process appeals from VBA, VHA and NCA and to improve the timeliness of decisions. Virtual Hearing capabilities will be augmented to take advantage of strategic partnerships that improve availability of video conferencing equipment to Veterans near their homes.

VBA will drive toward application modernization, resulting in greater availability of standard platforms, common data sharing, and a standardized software delivery.

VBA will orient the future environment around a uniform, Veteran-centric approach known as BIP. Built on the technological foundation of VBMS, BIP will consolidate common services and capabilities and operate as VA's unified benefits and services platform. VBA will migrate all appropriate IT systems and functionality for LoBs to BIP. Using the BIP platform, it will establish authoritative customer data and reduce duplication across LoBs.

BIP will include the infrastructure for the management process and rules engine to create a central platform framework to modernize legacy systems. Furthermore, **VBA will integrate more functionalities into VBMS, increase use of COTS solutions, and decommission legacy systems.** It will also leverage the development of greater automation for claims processing with clearly defined rules and eligibility criteria.

VBA's transformative IT initiatives will enable customer service excellence, improve fiscal stewardship, and enhance seamless collaboration. They will also significantly improve the quality, accuracy, and timeliness of appeals and benefits/claims processing.

★ Benefits Milestones*

* Timelines may shift due to changes in resources and priorities
 † Pre-decisional

FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
<p>Q1 (Board): Deploy Caseflow Hearing Prep and initial Caseflow Queue</p> <p>Q2 (Board): Deploy Caseflow Reader and Caseflow Intake to Board of Veterans Appeals Administrative Staff</p> <p>Q2 (Board): Deploy Vets.gov Appeals Status Caseflow functionality</p> <p>Q3 (EDU): Implement Section 112 of the Colmery Act (Forever GI Bill)</p> <p>Q3 (Board): Deploy Caseflow Queue</p> <p>Q3 (CS): Update Gynecological Body System and Eye Disease Body System Ratings in the VA Schedule for Rating Disabilities (VASRD) – Disability Benefits Questionnaire (DBQ) and Information Exchange Packet Database (IPED) updates</p> <p>Q4 (Board): Deploy Caseflow Appeals Hearing Schedule</p> <p>Q4 (CS): Update Skin Rating Body System & Hemic Body System Ratings in VASRD (DBQ and IPED updates)</p>	<p>Q1 (VRE): Deploy tele-counseling to Veterans</p> <p>Q2 (Board): Caseflow AMA Initial Operating Capability</p> <p>Q3 (CS): Deploy VBMS API Exposure Customer Data (VA.gov) and Evaluation Builder</p> <p>Q3 (P&F): Migrate Beneficiary Fiduciary Field System (BFFS) to Microsoft 365 in VAEC</p> <p>Q4 (P&F): Deploy BFFS 4.9 and 5.0 Release</p> <p>Q4 (INS): Deploy the Life Insurance Policy Administration Solution (LIPAS) in VAEC – IOC</p> <p>Q4 (LGY): Deploy VALERI-R in VAEC to enable LGY Benefits Modernization</p> <p>Q4 (CS): Decommission Search & Participant Profile</p> <p>Q4 (CS): Update Infectious Disease in VASRD (DBQ/IPED)</p> <p>Q4 (CS): Enhance VA/DoD Bi-Directional Capabilities (EP Updates)</p> <p>Q4 (VRE): Deploy Virtual Assistant using AI to interact with Veterans</p> <p>Q4 (VRE): Deploy VBMS EMS Enhancements</p>	<p>Q1 (CS): Update Cardio Ratings in VASRD</p> <p>Q1 (CS): Deploy QMS 1.0 and EMS enhancements</p> <p>Q1 (P&F): Deploy BFFS Offline Client 3-in-1</p> <p>Q1 (EDU): Implement Section 501 & 107 of the Colmery Act (Forever GI)</p> <p>Q1 (LGY): Decommission FFPS and migrate to Web-Based LGY</p> <p>Q2 (CS): Enhance VA/DoD Bi-Directional Capabilities (Return Scanned STRs to DoD)</p> <p>Q2 (EDU): Deploy Centralized Mail Pilot for Returned Mail</p> <p>Q2 (Board): Deploy Virtual Hearing</p> <p>Q3 (INS): Deploy LIPAS to VAEC – FOC</p> <p>Q3 (VRE): Transition to Centralized Mail Platform and VBMS eFolder</p> <p>Q4 (EDU): Complete Centralized Mail & eFolder integration</p> <p>Q4 (BAS): Consolidate VBA Call Centers to the National Call Center</p> <p>Q4 (OFO): Enhance National Work Queue</p> <p>Q4 (CS): Decommission VETSNET MAP-D and COVERS</p> <p>Q4 (CS): Deploy Letter Creator Solution to VAEC</p>	<p>Q1 (CS): Update Musculoskeletal Rating in VASRD (DBQ and IEPD updates)</p> <p>Q1 (CS): Deploy CAPRI replacement on the Cerner EHR Platform</p> <p>Q1 (CS): Deploy Quality Management System Enhancements 2.0</p> <p>Q1 (EDU): Initiate EDU Payment Module Modernization to migrate to a modern VAEC hosted solution and transition from BDN</p> <p>Q1 (P&F): Deploy modern solution to store Federal Tax Information to VAEC</p> <p>Q3 (INS): Migrate debt claims function to LIPAS</p> <p>Q4 (LGY): Migrate LGY suite of applications to VAEC</p> <p>Q4 (CS): Complete VETSNET functionality transition to VBMS and fully decommission VETSNET (Awards & Share)</p> <p>Q4 (CS): Decommission Personal Computer Generated Letters</p> <p>Q4 (CS): Integrate Letter Solution into VBMS (all CS letters)</p>	<p>Q1 (CS): Update Neuro/Convulsive Ratings in VASRD (DBQ and IEPD updates)</p> <p>Q2 (CS): Update Mental Disorders Ratings in VASRD (DBQ and IEPD updates)</p> <p>Q4 (CS): Enhance Exam Request Functionality in VBMS</p> <p>Q4 (EDU): Complete transition of education benefits payment processing to the Finance Accounting Service (FAS) and awards processing to the Long-Term Solution (LTS)</p> <p>Q4 (LGY): Transform the Specially Adapted Housing and Special Housing Adaptions (SAHSHA) Program to integrate with CS, VHA, and VRE systems by adopting modernized, fully-integrated systems on the BIP</p> <p>Q4 (LGY): Modernize Loan Underwriting, Credit Verification, Guaranty Certainty Capability</p> <p>Q4 (LGY): Integrate LGY capabilities with the Lending Industry</p>	<p>Q1 (EDU): Decommission BDN</p> <p>Q1 (CS): Update Respiratory/Ears, Nose, and Throat/Auditory in VASRD (DBQ and IEPD updates)</p> <p>Q2 (CS): Update Genitourinary in VASRD (DBQ and IEPD updates)</p> <p>Q2 (CS): Deploy Digital Outbound Communications Capability (Office of Business Process Integration)</p>	<p>Q1 (CS): Update additional body systems in VASRD to more accurately reflect modern medicine and provide clearer rating decisions for VBA claims processors to evaluate the severity of disabilities and assign disability ratings (DBQ and IEPD updates)</p> <p>Q4 (EDU): Complete EDU Payment Modernization by deploying a VAEC hosted solution to integrate with VA systems and improve efficiency, ability, and security</p>	<p>Q1 (CS): Update additional body systems in VASRD to more accurately reflect modern medicine and provide clearer rating decisions for VBA claims processors to evaluate the severity of disabilities and assign disability ratings (DBQ and IEPD updates)</p> <p>Q1 (CS): Complete migration of images from VVA to VBMS</p> <p>Q4 (CS): Deploy Other VBMS Non-Rating Claim Automation and Improvements (e.g., Incarcerated Vet)</p> <p>Q4 (Board): Decommission VACOLS</p>

★ Benefits and Memorial Services Capability: Memorials

Current Environment

NCA oversees the largest cemetery system in the country with over 4 million Americans memorialized by burial in VA's national cemeteries. VA developed the Burial Operations Support System (BOSS) as NCA's main IT system to ensure that all aspects of the interment process are completed efficiently and effectively.

BOSS supports cemeteries nationwide with 3.5 million occupied gravesites and processes over 100,000 new interments annually. The **legacy system consists of 14 custom-developed modules** that are complex and difficult to update.

Collectively, these applications are referred as BOSS Enterprise, or BOSS-E.

Implemented in 1994, the system is no longer compatible with VA's needs, and **NCA's continued reliance on BOSS-E is a major risk.** The legacy IT system fails to comply with security and accessibility requirements, lacks integration with other Benefits systems, and relies on manual processes.

To transition to a modern solution and decommission BOSS, NCA is developing the Memorial Benefits Management System (MBMS).

Drivers

NCA's legacy IT systems cause operational inefficiencies and present security risks. Specifically, its legacy case management system, **BOSS-E, lacks the functionality of a modern software application.** It requires NCA personnel to manually perform scheduling via a text file that can be interpreted multiple ways. These manual processes can lead to high hold times and present opportunities for improper scheduling.

NCA must implement robust IT systems in order to address current risks, adapt to increasing Veteran interments, and ultimately enable efficient delivery of memorial benefits to Veterans.

Modern solutions are required to improve access to memorial benefits tracking and delivery as well as end-user functionality. Such solutions will enable NCA to continue to provide excellent customer service that is consistently positive for Veterans and their families in terms of ease, effectiveness, and emotional resonance.

Furthermore, **in his 2018 Memorial Day Proclamation, the president announced the development of a single-source tool to memorialize Veterans** and safeguard their legacy. Cloud technology and APIs are also driving the development of the Veterans Legacy Memorial (VLM).

Transformative Initiatives

- **Memorial Benefits Management System (MBMS):** Modern solution for Memorials that will automate manual NCA business processes and enable the Department to decommission legacy Memorials systems, platforms, and processes. VA will leverage and expand BIP functionality to incorporate NCA requirements and develop MBMS, increasing standardization and access to authoritative data across LoBs.
- **Burial Operations Support System – Enterprise (BOSS-E) Decommissioning:** Transitioning users from legacy Memorials systems by leveraging BIP capabilities, VA systems, and COTS solutions to decommission the 14 custom-built legacy systems within BOSS-E
- **Veterans Legacy Memorial (VLM):** Interactive online memorialization solution designed to honor the service and sacrifice of the nation's Veterans by allowing public contributions to Veterans' pages

Future Environment

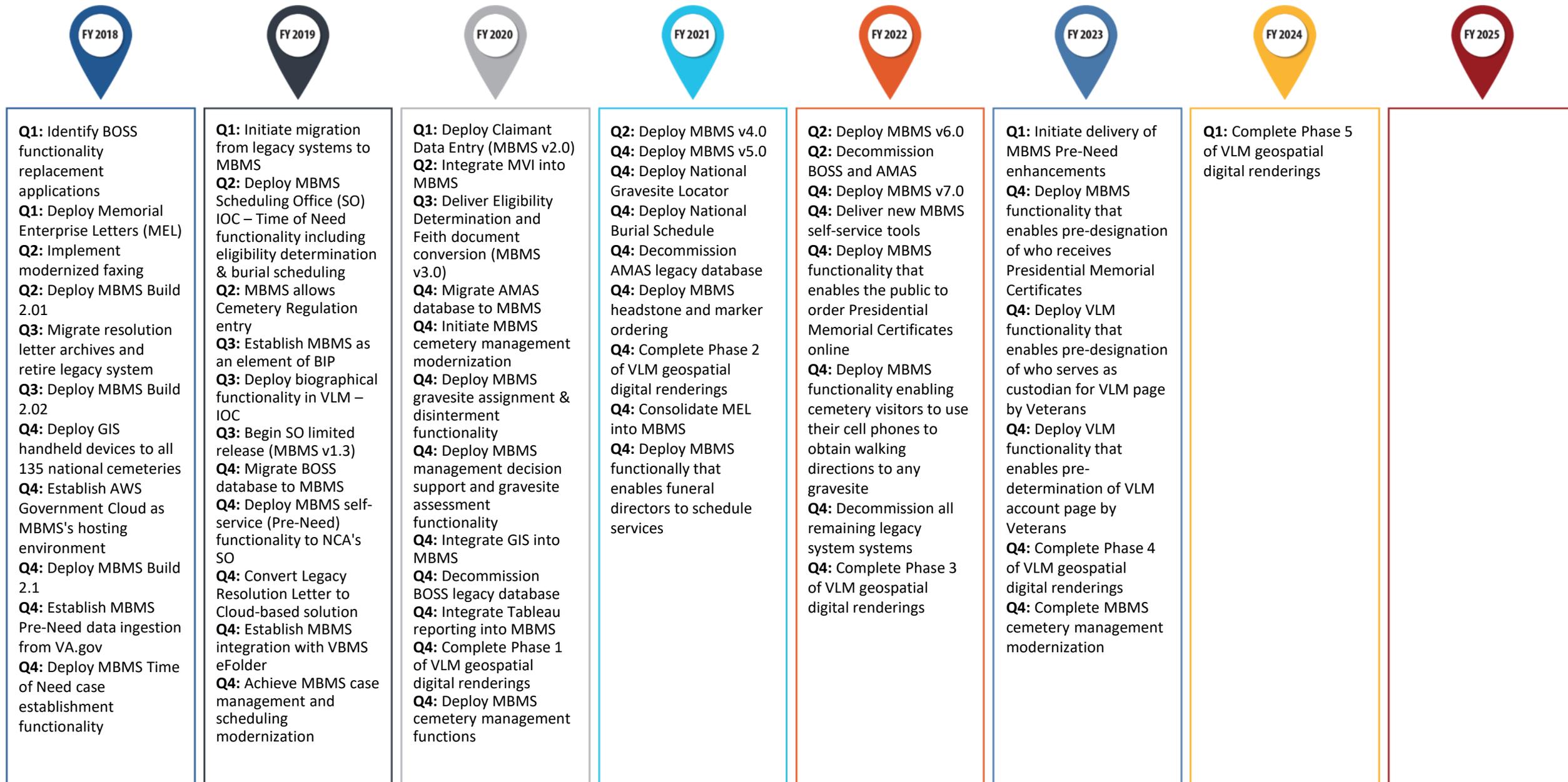
NCA will implement MBMS to replace BOSS-E and its legacy applications with a more cohesive, compliant, and functional enterprise platform that seamlessly integrates with VA's systems. **MBMS will streamline VA's management and operation of the cemeteries that NCA oversees** and will serve as NCA's system of record once VA migrates all BOSS-E applications to the modern platform.

Furthermore, **VA will leverage shared services in order to meet the needs of NCA and realize cost savings by reducing duplicative and antiquated systems.** NCA will use VA enterprise-wide solutions where available and purchase COTS solutions for services that are integral to NCA's mission but do not currently exist within VA. For these reasons, ensuring that Memorials functionalities connect effectively with systems in other Portfolios will be key to the success of Memorials modernization.

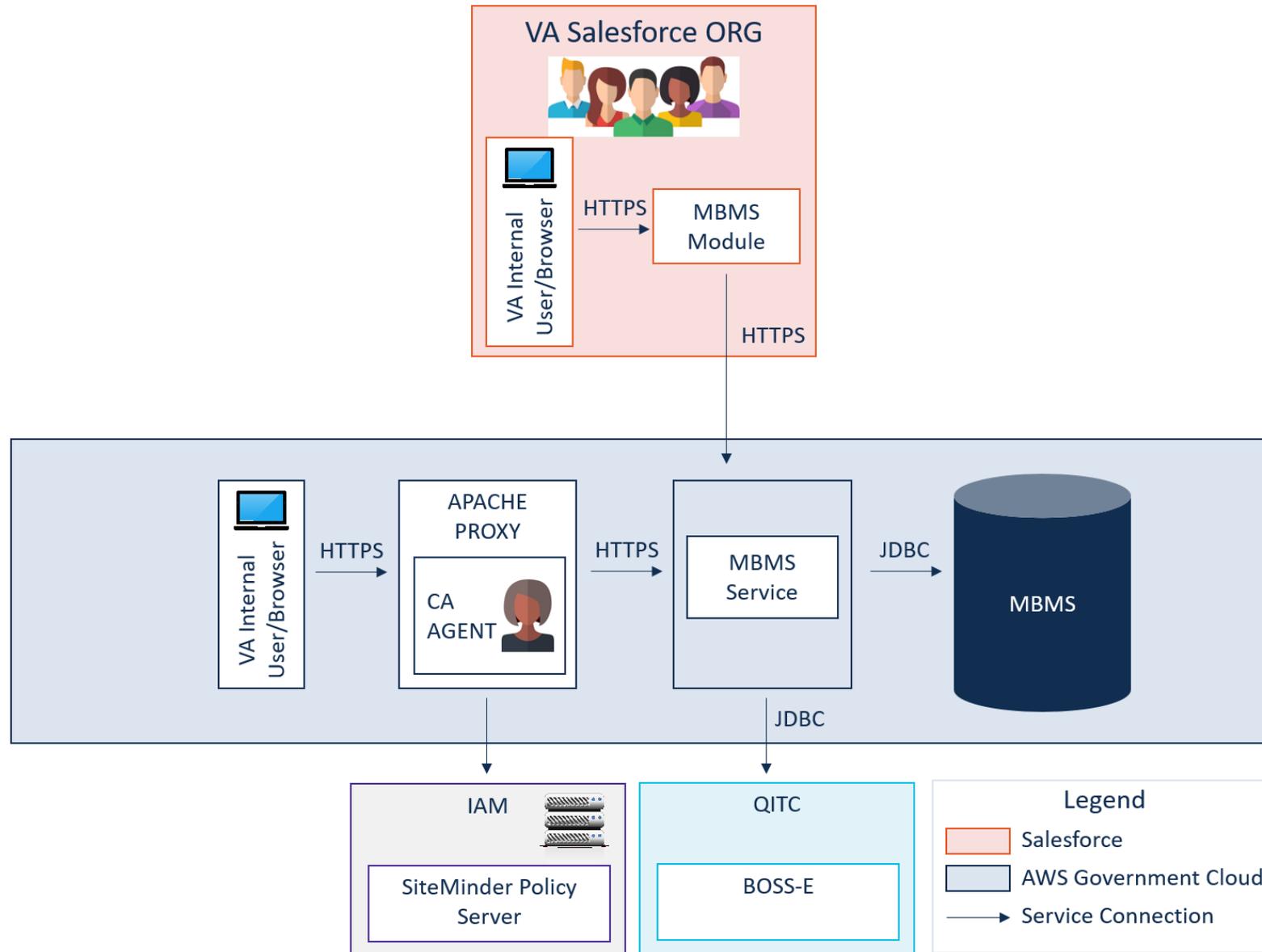
These features include **seamlessly referenced authoritative data from appropriate sources,** automated approvals, and GIS digital mapping that allows cemetery visitors to obtain walking directions to gravesites via their cell phones.

★ Memorials Milestones*

* Timelines may shift due to changes in resources and priorities
 † Pre-decisional



★ Conceptual Interim MBMS Infrastructure Design





Corporate Services Portfolio Overview

Current Environment	Drivers	Transformative Initiatives	Future Environment
<p>The Corporate Services Portfolio provides IT support to VA's Administrations, Staff Offices, and boards and consists of customer service and back-office operations that are integral to running the business at VA.</p> <p>Currently, the Corporate Services Portfolio relies on multiple outdated and interconnected systems that have outlived their effectiveness. VA's use of obsolete legacy systems and different platforms has created a fragmented environment with unstandardized processes and, as a result, inconsistent customer experience.</p> <p>However, through Corporate Services initiatives, VA is taking steps to transform its CRM, Finance and Acquisition, and HR technology to improve the Department's service to Veterans.</p>	<p>Both internal business imperatives from across VA and external guidance drive Corporate Services modernization efforts.</p> <p>The current Corporate Services technology environment leads to significant costs, operational risks, decreased efficiency, and unpredictable customer experience.</p> <p>Key legacy systems are extremely outdated, with VA's legacy financial and HR systems being over 30 and 50 years old, respectively. These legacy systems also fail to comply with federal regulations and mandates.</p> <p>VA's modernization strategy within the Corporate Services Portfolio is further guided by the PMA, OMB's mandate regarding financial shared services, and a government-wide Center of Excellence (COE) for call centers.</p>	<ul style="list-style-type: none"> • VA Integrated Enterprise Workflow Solution (VIEWS) • White House VA Hotline • Financial Management Business Transformation (FMBT) • Personnel and Account Integrated Data (PAID) System Decommissioning • HR Shared Services • Human Capital Business Reference Model (HCBRM) Alignment 	<p>VA envisions the Corporate Services Portfolio as an integrated service delivery platform that places Veterans at the center.</p> <p>Integrated systems will enable cost savings, operational efficiency, and improved access to benefits and services. This will ultimately strengthen the Department's ability to provide care and services to Veterans and enhance customer experience.</p> <p>VA will employ, and promote further adoption of, shared services within the Corporate Services Portfolio. In addition to shared services, the Department will use COTS and GOTS solutions to provide a modernized experience across functional areas. These solutions will allow VA to replace outdated legacy systems and comply with federal requirements.</p>



Corporate Services Capability: Customer Relationship Management

Current Environment

In an effort to effectively communicate with the population that it serves, VA uses various CRM technologies. These channels of communication are especially important for Veterans and their families, as they typically engage with VA during times of need.

However, **VAMCs and other VA facilities use differing CRM technologies, which has led to a proliferation of non-standardized tools and inconsistent experiences for customers.** VA currently utilizes legacy and commercial tools (e.g., Salesforce, Microsoft Dynamics 365, and ServiceNow) for both internal and external engagement purposes.

The Department is committed to creating an interactive experience with the Veteran that is consistent, easy, intuitive, and personalized. Therefore, VA is planning to transition all of its contact centers and associated CRM and knowledge management tools to a single enterprise application.

Currently, the **Veterans Experience Office (VEO) is engaging key stakeholders and using human-centered design techniques to elicit and document business requirements for an enterprise CRM platform.**

Drivers

VA's use of disparate CRM technology results in inconsistent Veteran experience and inhibits its ability to track a single engagement record. The **Department must develop a CRM strategy and implement a unified platform** in order to address these issues and provide excellent customer service.

One of VA's goals is to unify its CRM technology using best practices from the public and commercial industry. VA is currently working with the White House, OMB, and GSA to support a government-wide COE that is dedicated to call centers. This COE will assist VA in considering a unified CRM strategy for enterprise-wide deployment.

Furthermore, as a part of VA's CRM strategy, an enterprise CRM platform would enable cost efficiencies; improve Veteran engagement, trust, and access to services and benefits; and support data-driven, Veteran-focused organizational improvements.

PMA CAP Goal 1 (Improving Customer Experience) and CAP Goal 4 (IT Modernization) also drive CRM transformation. Technology drivers for this transformation include advanced analytics, AI (e.g., ML and natural language processing), Cloud, and standard APIs.

Transformative Initiatives

- **VA Integrated Enterprise Workflow Solution (VIEWS):** Modern enterprise solution that integrates correspondence and case management functionalities, enabling VA to better coordinate requests and correspondence from internal and external stakeholders (e.g., Veterans and their families, Congress, state and local officials, VSOs, the White House, and government agencies)
- **White House VA Hotline:** 24/7 crisis line for at-risk Veterans that interfaces with the Master Veteran Index (MVI) and will deliver additional reporting capabilities, self-service for Veterans, and improved call center capabilities

Future Environment

VA will create a “post channel” world in which multiple forms of interaction or omnichannel engagement (e.g., hub, chat, and secure messaging) blend to create the best customer experience.

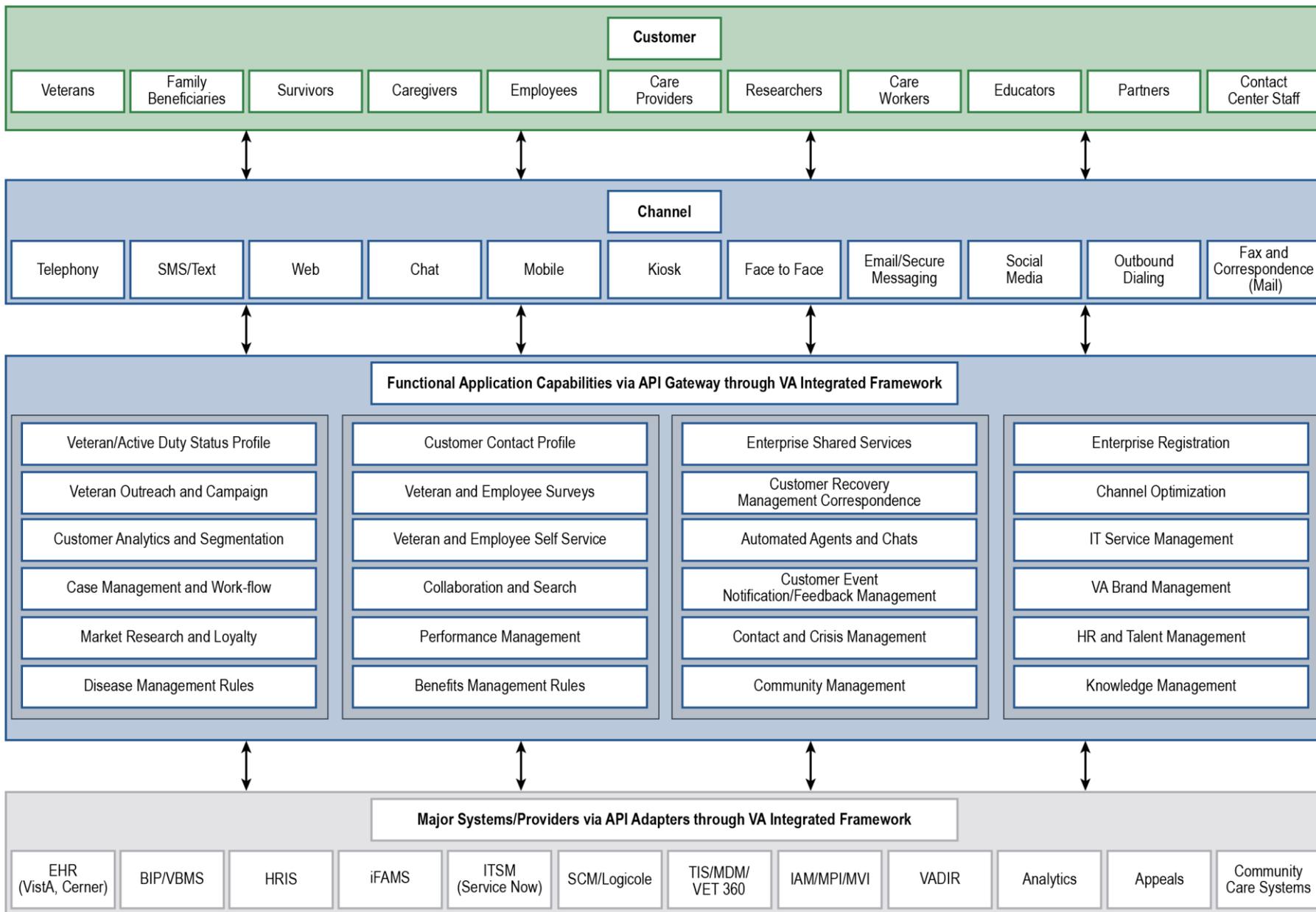
The **Department will define and implement a unified CRM strategy** built on an integrated commercial platform in order to improve Veteran, beneficiary, and partner access to VA through state-of-the-art CRM and self-service tools. Self-service will create a customer care feedback loop and customized self-service interactions.

Using an enterprise CRM platform, VA will gather data and communicate with Veterans through the channel of their preference. This platform will provide a consolidated interface and means of answering, tracking, and reporting contact points to improve customer experience and service delivery. Overall, it will more effectively serve Veterans through consistent engagement and access to VA care, benefits, and services.

The enterprise-wide CRM solution will ultimately allow VA to proactively deliver the right care to the right Veterans at the right time. The Department will be able to build long-term relationships as part of a holistic approach that treats Veterans— not just their conditions.



CRM Future Environment Reference Architecture





Corporate Services Capability: Finance and Acquisition

Current Environment

Like other systems in the Corporate Services Portfolio, **VA's current financial system, Financial Management System (FMS), is outdated and ineffective.** FMS is also non-compliant with several federal regulations, including U.S. Government Standard General Ledger requirements.

FMS has over 100 primary interfaces with legacy systems, and its hardware and software are no longer updatable.

This legacy software prevents the Department from fixing audit issues, including security and privacy concerns.

VA has cancelled two major efforts to replace FMS since 1999. Prior to the Financial Management Business Transformation (FMBT) program, VA's last attempt to implement a new financial system ended in 2010. This has led to a **proliferation of FMS enhancements and workarounds and the development of add-on systems, resulting in a fragmented financial system environment.**

To replace FMS, the **FMBT program is implementing the Integrated Financial and Acquisition Management System (iFAMS) as VA's modern financial management system.** The Department is carefully coordinating the implementation activities of iFAMS, the Cerner EHR, and DMLSS.

Drivers

VA's legacy financial and acquisition management systems are over 30 years old. It becomes more challenging to technically and functionally support these legacy applications each year.

VA is unable to meet federal financial regulations and mandates, including the Digital Accountability and Transparency Act of 2014 (DATA Act), due to its inability to update legacy code and the lack of integration between finance and acquisition systems.

Additionally, **OMB Memorandum 13-08, Improving Financial Systems through Shared Services**, directs all executive agencies to use a shared services solution for future modernizations of core accounting or mixed systems. In 2016, VA chose the U.S. Department of Agriculture (USDA) as its Federal Shared Service Provider (FSSP) to guide its migration to an integrated solution. However, in 2017, USDA officially notified VA that it would no longer serve as an FSSP in support of FMBT, prompting VA to solely manage the program.

PMA CAP Goals 1 (Improving Customer Experience), 9 (Getting Payments Right), and 11 (Improve Management of Major Acquisitions) also drive VA's financial modernization. Cloud, AI, and RPA will be key technology drivers for this modernization.

Transformative Initiatives

- **Financial Management Business Transformation (FMBT):** VA is implementing iFAMS, which will offer new features and capabilities that help users and stakeholders analyze data and ultimately improve the efficiency and effectiveness of financial and acquisition management. VA will benefit from real-time integration of financials through a single consolidated system, which will provide VA with a consolidated view of all acquisition and financial transactions. Additionally, iFAMS will deliver unprecedented functionality to track undelivered orders and expenditures.

Future Environment

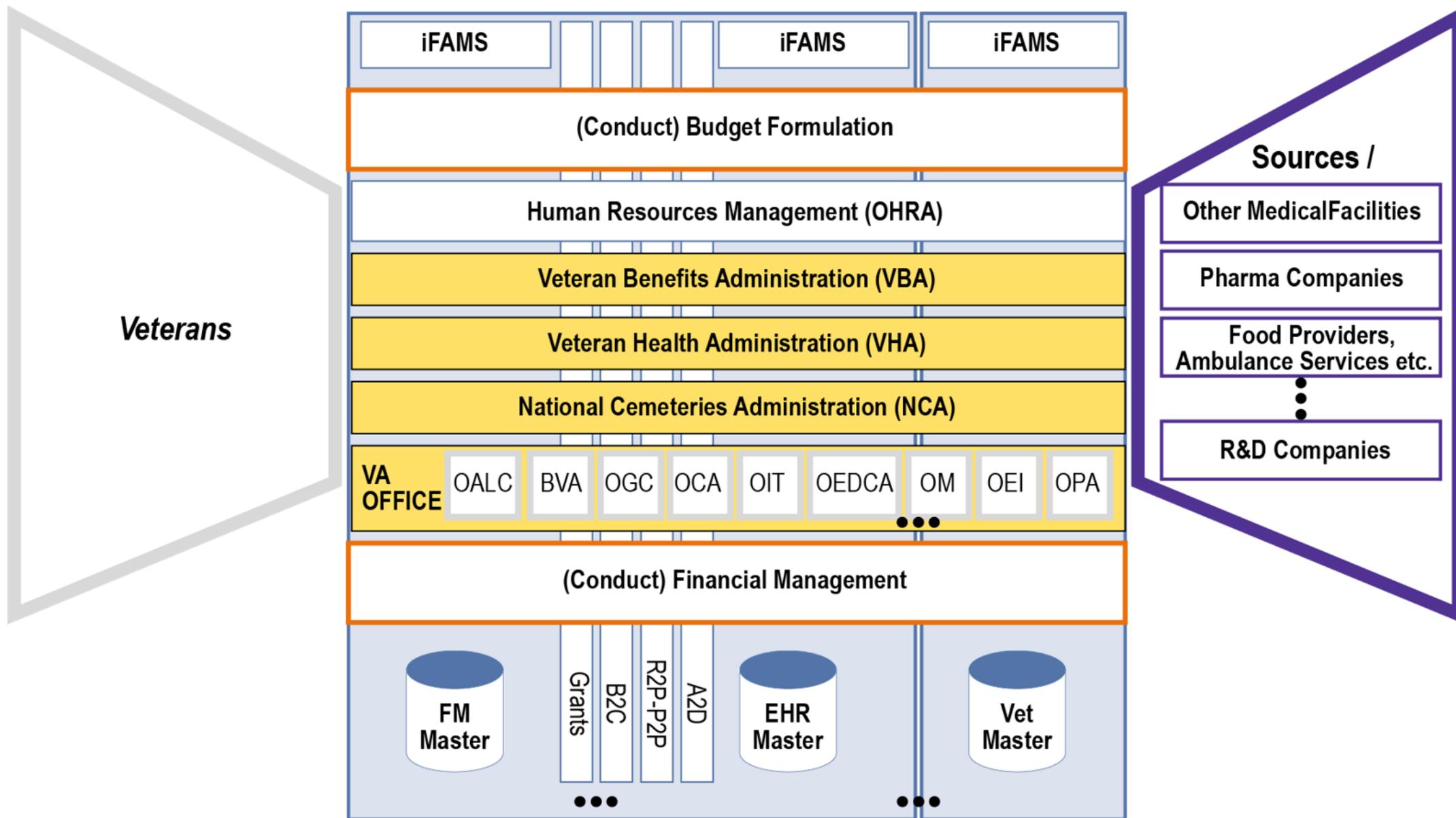
FMBT will deploy iFAMS—a streamlined, federally compliant, and Cloud-hosted financial and acquisition solution with transformative business processes and capabilities.

Through the iFAMS implementation, FMBT will **increase the transparency, accuracy, timeliness, and reliability of financial information across VA.** FMBT will fully implement iFAMS by FY 2027. This will result in improved fiscal accountability to American taxpayers and strengthen the Department's ability to provide care and services to Veterans.

Additionally, **iFAMS will enable VA to resolve a material weakness on its annual financial statements and increase the Department's operational efficiency, productivity, agility, and flexibility.** The system will also integrate with the Cerner EHR and DMLSS as well as provide additional security, storage, and scalability. Ultimately, **iFAMS will modernize VA's financial and acquisition management and reporting to comply with federal requirements.**

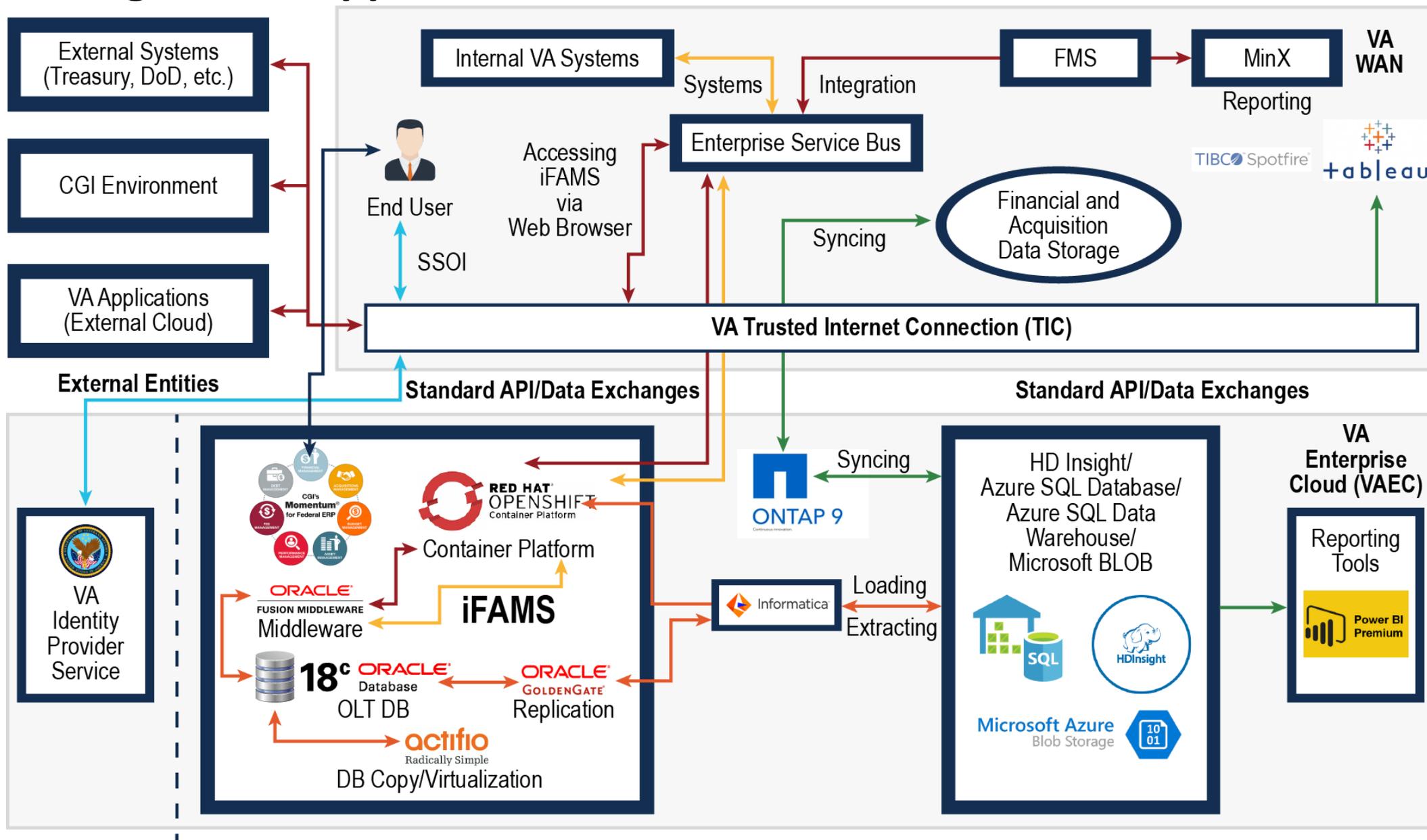


FMBT Future Environment Operational View



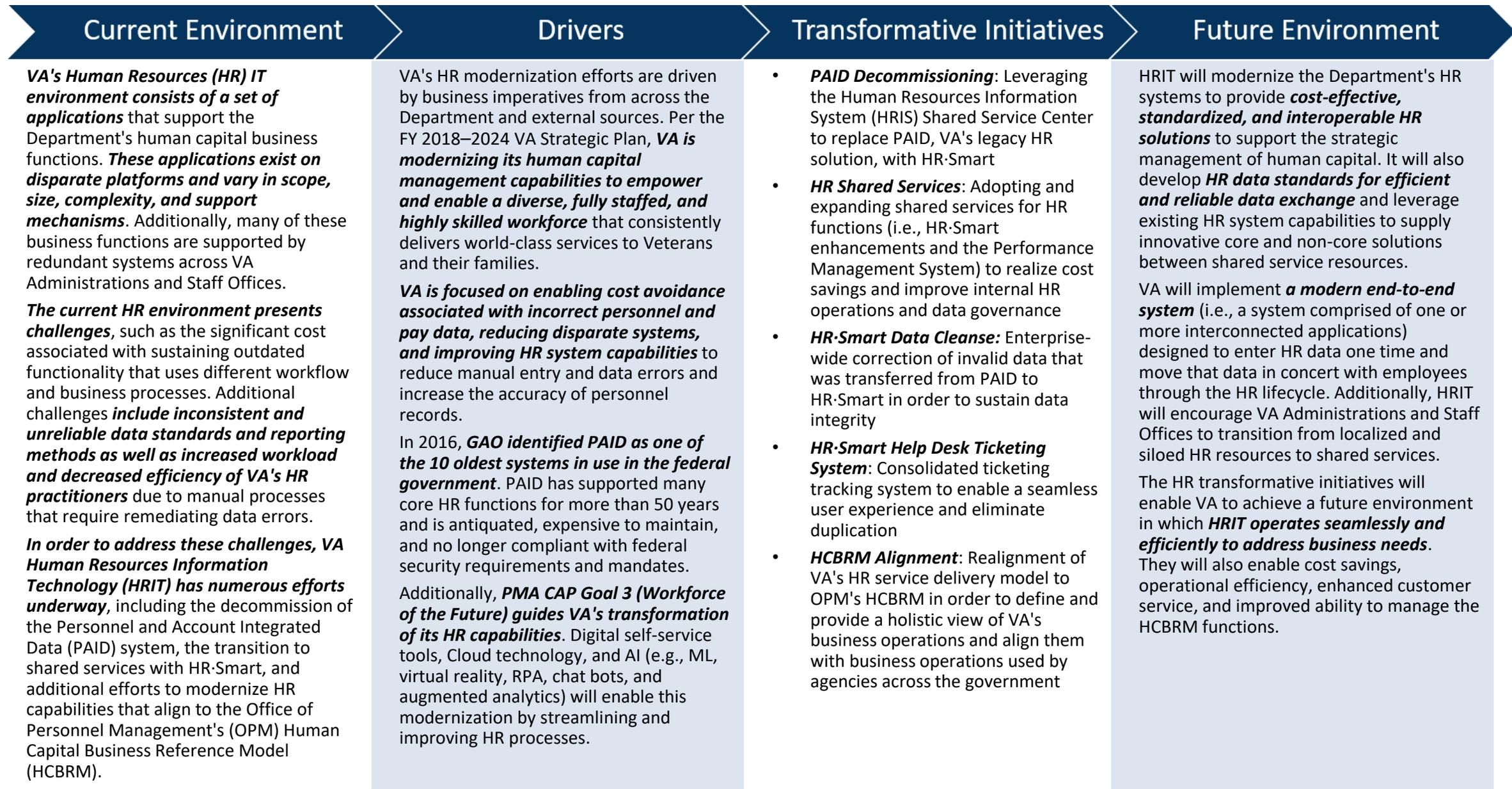


iFAMS High-Level Application and Data View



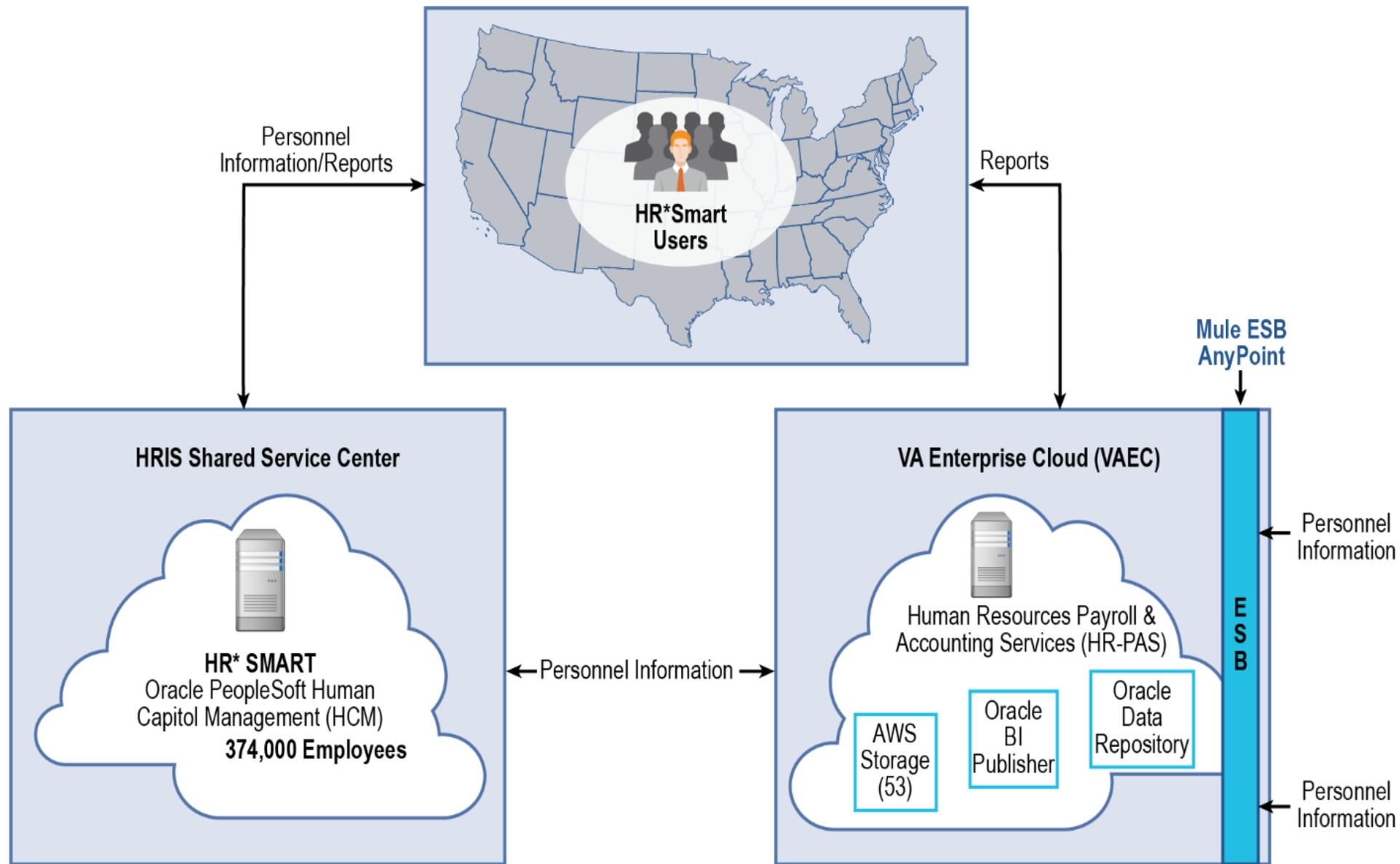


Corporate Services Capability: Human Resources





HR and Payroll Future Operational Environment





Corporate Services Portfolio Milestones*

* Timelines may shift due to changes in resources and priorities

† Pre-decisional



Q1 (F&A): Transition planning for USDA withdrawal from FMBT relationship with VA
Q2 (CRM): Deploy VIEWS – IOC
Q2 (F&A): Deploy iFAMS Budget Formulation functionality enterprise-wide

Q1 (CRM): Complete VIEWS Deployment
Q2 (HR): Deploy HR-Smart Manager Self-Service
Q2 (HR): Connect USA Staffing to HR-Smart
Q2 (HR): Deploy HR-Smart Ticketing System
Q3 (CRM): Decommission VAIQ
Q3 (HR): Decommission PAID
Q4 (HR): Deploy ER/LR Case Management System
Q4 (HR): Deploy Transit Benefit Program
Q4 (HR): Complete HR-Smart Enterprise Data Cleanse
Q4 (HR): Deploy Automated Classification
Q4 (HR): Deploy Data Warehouse & Business Intelligence Tool

Q1 (HR): Complete OPF Modernization
Q2 (HR): Deploy Manpower System
Q2 (HR): Deploy Workers Compensation and Safety System
Q2 (F&A): Complete iFAMS Integrated System and Performance Testing
Q3 (HR): Deploy Workers Without Compensation Capability
Q3 (F&A): Complete iFAMS NCA User Acceptance Testing
Q4 (HR): Deploy Performance System
Q4 (F&A): Deploy iFAMS at NCA – IOC
Q4 (HR): Deploy HR-Smart Enterprise Self-Service
Q4 (CRM): Implement CRM pilot†

Q1 (F&A): Deploy iFAMS at VHA Central Office†
Q2 (HR): Complete Talent Development Phase 1 of the HCBRM
Q3 (HR): Complete Talent Acquisition Phase 1 of the HCBRM
Q4 (HR): Complete Separation & Retirement Phase 1 of the HCBRM
Q4 (F&A): Deploy iFAMS General Operating Expense Function at VBA†

Q1 (F&A): Deploy iFAMS at VHA VISN 1 (VistA/IFCAP)†
Q2 (F&A): Deploy iFAMS Insurance (Annuities, Collections, Actuaries, Lump Sum) functions at VBA†
Q2 (HR): Complete Talent Development Phase 2 of the HCBRM†
Q3 (HR): Complete Talent Acquisition Phase 2 of the HCBRM†
Q4 (HR): Complete Separation & Retirement Phase 2 of the HCBRM†
Q4 (F&A): Deploy iFAMS at VHA VISN 20 (EHRM/DMLSS)†

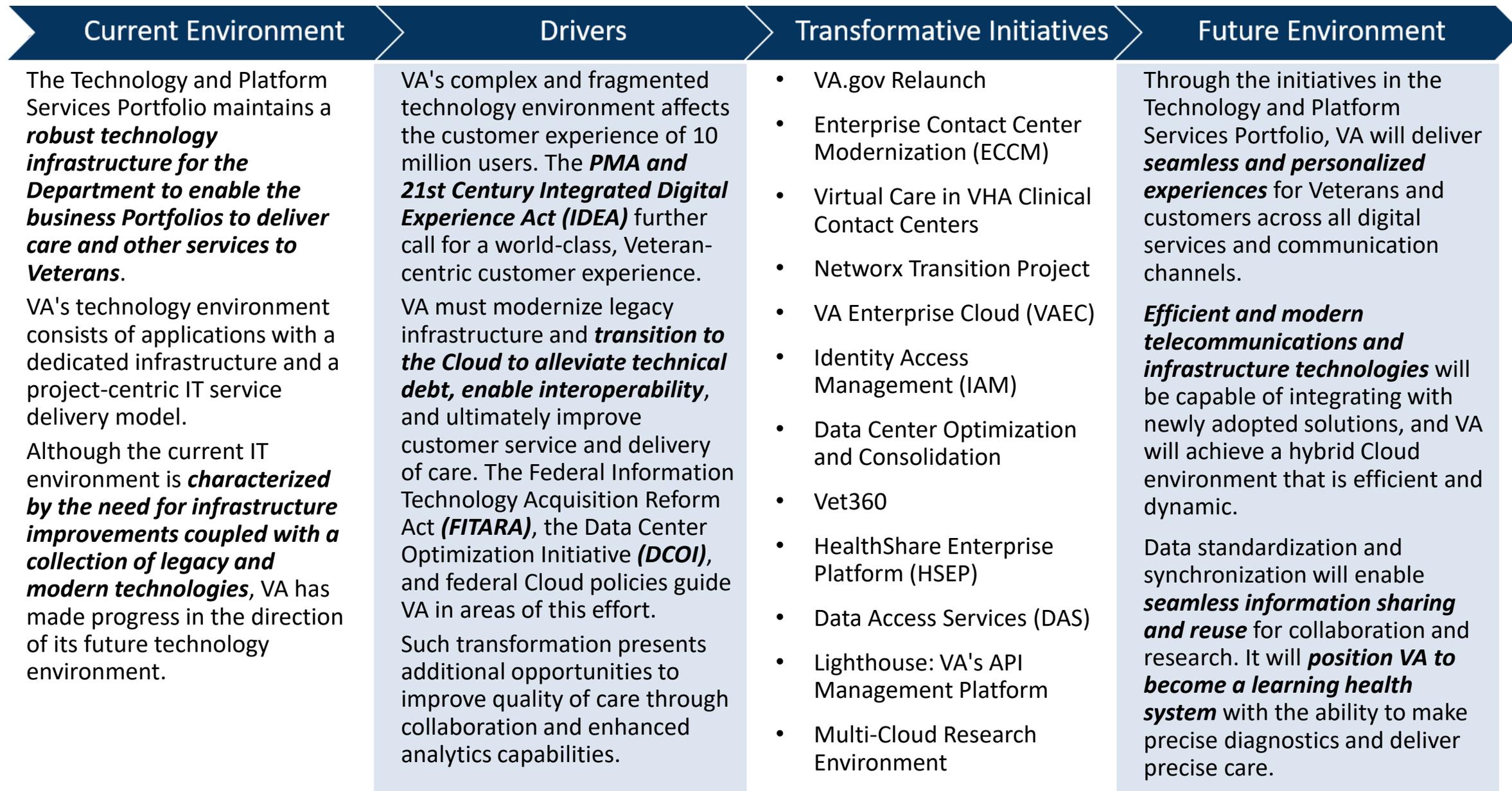
Q1 (F&A): Deploy iFAMS at VHA VISN 21, 22 (EHRM/DMLSS) and CPAC West†
Q2 (F&A): Deploy iFAMS to Office of Inspector General, General Administration, Pershing, Board of Veterans Appeals, Franchise Fund at VACO†
Q2 (F&A): Deploy iFAMS to OIT at VACO†
Q2 (HR): Complete Talent Development Phase 3 of the HCBRM†
Q3 (HR): Complete Talent Acquisition Phase 3 of the HCBRM†
Q4 (F&A): Deploy iFAMS Loan Guaranty Function at VBA†

Q1 (F&A): Deploy iFAMS at VHA VISN 19, 23 (VistA/IFCAP)†
Q1 (HR): Deploy Employee Compensation & Benefits Function of the HCBRM†
Q2 (F&A): Deploy iFAMS at VHA VISN 8 (EHRM/DMLSS), CPAC Florida (8)†
Q4 (F&A): Deploy iFAMS to Major (CFM) and Minor (VHA, VBA, NCA) Construction at VACO†
Q4 (F&A): Deploy iFAMS to Supply Chain at VACO†

Q2 (F&A): Deploy iFAMS Compensation and Pension Function (includes NCA Benefits) at VBA†
Q2 (F&A): Deploy iFAMS Acquisitions Wave at NCA†
Q3 (F&A): Deploy iFAMS at VHA VISN 9, 16, 17 (EHRM/DMLSS), CPAC Mid-South (8)†
Q3 (F&A): Deploy iFAMS Acquisitions Wave at VHA SAO West†
Q4 (F&A): Deploy iFAMS Veteran Canteen Service Integration†



Technology and Platform Services Portfolio Overview





Technology and Platform Services Capability: Digital Modernization

Current Environment

Whether it is shopping for car insurance, changing a mobile phone plan, or scheduling a dentist appointment, **Americans increasingly expect the places where they do business to offer easy-to-use digital tools for routine transactions.**

Veterans, caregivers, Servicemembers, Veterans Service Organizations (VSOs), and VA's other users are no different; they expect VA to offer an online experience on par with the private sector companies that they interact with in their day-to-day lives.

Through user research sessions, VA learned that **Veterans think about the Department as a single entity and are confused when VA services are presented under different brands or organizations.** VA ingested this customer feedback and is putting Veterans first by integrating disparate content, tools, and brands into one experience and **delivering a single, digital experience that is customized to each individual user.**

VA will leverage its Digital Modernization Principles to continue identifying ways to improve Veteran and employee experience.

Drivers

Over 10 million people access VA's digital tools and content each month. These users have a difficult experience when navigating VA websites, logins, and outdated tools that are a reflection of Department's stove-piped nature.

Users of VA's digital footprint believe it is challenging to find tools and services online and believe that VA designs its websites for the Administrations—not customers. In order to improve customer experience, VA will leverage APIs and Cloud technology to enable Digital Modernization.

The **21st Century IDEA** further solidifies the goal of creating citizen-friendly digital services. The legislation requires public-facing agency websites to have a consistent look and to be compliant with web standards developed by GSA.

Additionally, the **Foundations for Evidence-Based Policymaking Act of 2018** requires all federal agencies to designate a chief data officer, maintain comprehensive data catalogs, and ensure that all non-sensitive government data is available in machine-readable formats by default.

Transformative Initiatives

- **VA.gov Relaunch:** By dramatically upgrading VA's online front door, the Department is providing customers with exceptional service. The homepage content will focus on the top 20 tasks that 80% of Veterans need. VA.gov will have single sign-on, standard design across tools, and a personalized dashboard that will allow customers to view the items that they have outstanding with VA.

Future Environment

Through the relaunch of VA.gov, the Department is demonstrating that it is possible to transform its online experience.

With over 100,000 pages of content on VA.gov, the Digital Modernization Council and Web Brand Consolidation group will continue to **streamline VA's digital experience so it is more user-friendly for customers and more efficient for VA.** The Department will consider using AI to suggest possible areas of interest to users based on personal preferences.

The Department will **develop a modern experience for Veterans**—one that will put the Department at the leading edge of digital modernization across government.

VA will deliver **self-service tools on par with top private sector companies and have the best online experience in the federal government.** VA's Digital Modernization Vision will ensure that the Department will customize every digital service to the individual using it.

Digital Modernization Milestones*

* Timelines may shift due to changes in resources and priorities
 † Pre-decisional

FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025
<p>Q1: Deploy online scheduling enhancements</p> <p>Q2: Launch integrated sign-on for Vets.gov</p> <p>Q2: Launch updated appeals status tool</p> <p>Q2: Achieve medical imaging in Patient Portal</p> <p>Q3: Launch Benefits Intake API to enable third-party organizations (e.g., VSOs) to securely submit Veteran disability and pension claims directly to VA</p> <p>Q3: Deploy text message health appointment reminders nationwide</p>	<p>Q1: Consolidate VA's APIs</p> <p>Q1: Modernize VA.gov homepage</p> <p>Q1: Launch VA.gov sign-on</p> <p>Q1: Unify VA digital brand and customize user experience</p> <p>Q2: Achieve ability to access appeals status through VA Contact Centers</p> <p>Q2: Launch modernized compensation claim application</p> <p>Q3: Launch Health API to enable Veterans to interact with their own personal health data with mobile and web-based applications</p>	<p>Q3: Integrate EHRM into Patient Portal (VA.gov)</p> <p>Q4: Optimize user experience</p> <p>Q4: Implement new digital capabilities</p> <p>Q4: Launch Digital Transition Assistance Tools</p>	<p>Q1–Q4: Continue to improve VA's Digital Experience based on feedback from customers and current VA priorities</p>	<p>Q1–Q4: Continue to improve VA's Digital Experience based on feedback from customers and current VA priorities</p>	<p>Q1–Q4: Continue to improve VA's Digital Experience based on feedback from customers and current VA priorities</p>	<p>Q1–Q4: Continue to improve VA's Digital Experience based on feedback from customers and current VA priorities</p>	<p>Q1–Q4: Continue to improve VA's Digital Experience based on feedback from customers and current VA priorities</p>



Technology and Platform Services Capability: Contact Center Modernization

Current Environment

VA provides a wide range of services to 10 million Veterans, survivors, family members, caregivers, and personal representatives. During the delivery of these services, the **Department receives 140 million calls annually, which are serviced by over 9,300 call agents spread throughout VA's 1,800 contact centers.**

Veterans expect VA to offer intuitive customer experiences, self-service options for routine transactions, and exemplary customer service.

Accordingly, OIT strives to provide Veterans and business partners with services effectively and efficiently.

However, **VA currently lacks an omnichannel operating model that is coordinated across the enterprise.** This prevents the Department from providing a seamless Veteran experience that meet industry standards.

Therefore, **Veterans attempting to access VA services through contact centers have fragmented and variable encounters that include unanswered phone calls, long wait times, and overwhelming written materials.**

Drivers

VA's contact centers are the door to a complex environment that Veterans must navigate when contacting the Department. They are implemented by each Administration and regionally through VAMCs. This results in over 1,800 VA contact centers.

VA contact centers have varying levels of maturity based on their primary mission, funding, and leadership. **Each one operates in an independent, unstandardized manner** with fragmented equipment, technologies, and processes. **This creates multiple redundancies, inefficient operations, and an inconsistent customer experience.**

VA is serving as the lead agency for PMA CAP Goal 4, advising 14 other federal agencies in achieving improved customer experience. Furthermore, the **21st Century IDEA** is placing the focus on agency CIOs to more broadly assume the leadership role for customer experience.

Advances in AI (e.g., ML, chat bots, and voice assistants), advanced data analytics, virtual care platforms, and APIs will shape the future direction of enterprise contact centers.

Transformative Initiatives

- **Enterprise Contact Center Modernization (ECCM):** Consolidating the existing network of contact centers into an enterprise-wide Veteran Contact Center through a unified customer relationship management (CRM) and knowledge management (KM) platform and technology
- **Telecommunications:** Modernizing telephony technology and setting consistent standards across the Department by transitioning to a managed infrastructure service
- **Virtual Care in VHA Clinical Contact Centers:** Transforming hundreds of fragmented and antiquated call centers into modern, VISN/regional virtual care centers to achieve clinically meaningful first-contact resolution via omnichannel virtual triage

Future Environment

By breaking down institutionalized silos and transforming the Department's approach to customer service, **VA will deliver seamless and personalized experiences for all Veterans across every touchpoint and channel.**

Contact Center Modernization will deliver a unified experience that is consistent and benefits Veterans regardless of how they choose to interact with VA. Contact Center Modernization will use a **Veteran-centric omnichannel operating model in order to decrease complexity and provide ease of access for Veterans.** This model will support consistent and accessible customer interaction channels to enhance customer experience and quality of customer service.

The Department will provide a modern, streamlined, and responsive customer experience for those who contact VA contact centers. **It will improve the level of care available to Veterans by eliminating and unifying facilities and technology stacks and standardizing processes.**



Contact Center Modernization Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



FY 2018

FY 2019

FY 2020

FY 2021

FY 2022

FY 2023

FY 2024

FY 2025

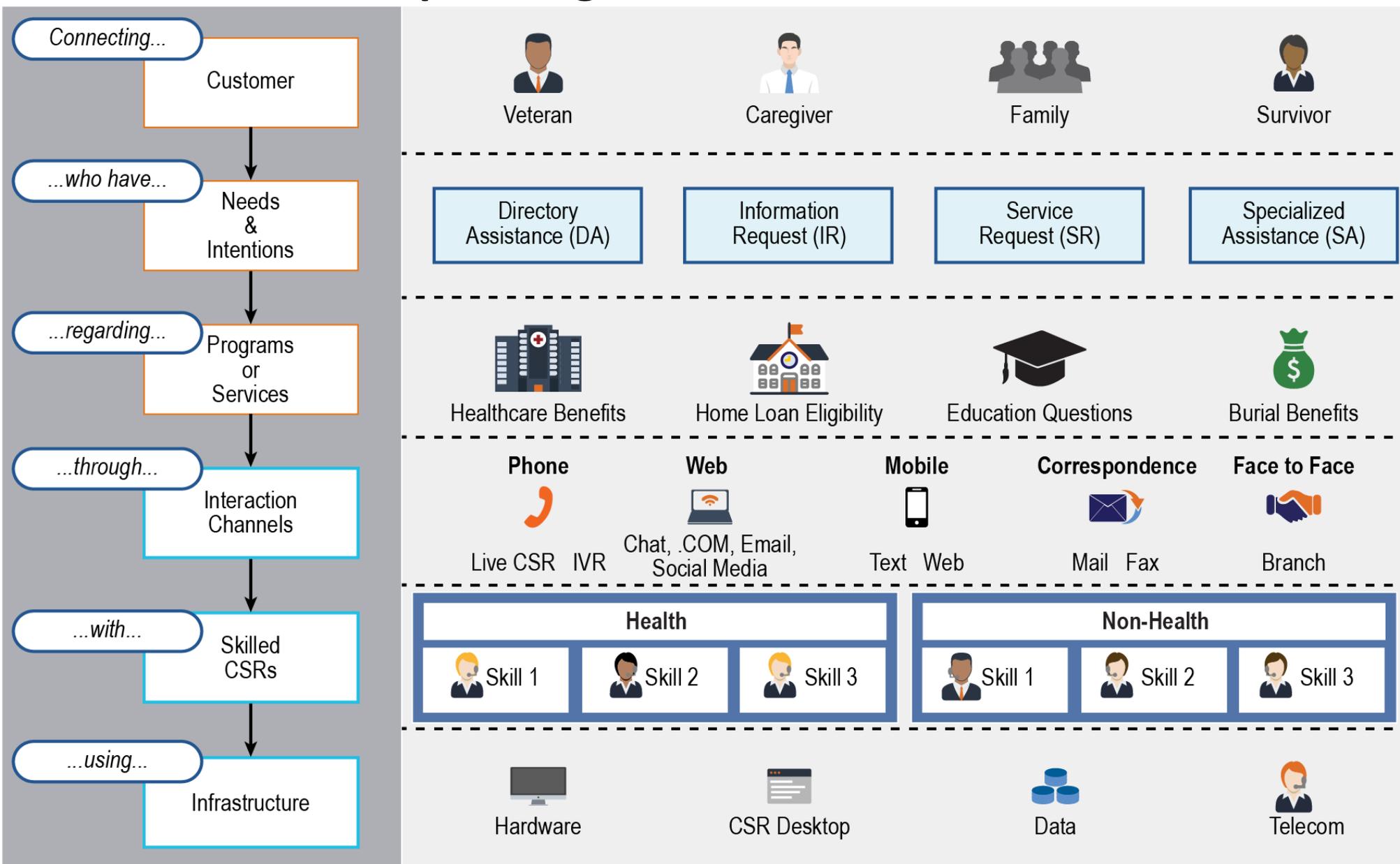
Q3: Identify and augment a robust Clinical Contact Center in each VISN
Q3: Initiate Phase 1 of Vet360 integration with contact centers
Q3: Implement Phase 1 of Veteran Signals (VSignals) for contact centers
Q4: Improve Veteran and employee experience through the expanded integration LIPs and telehealth into virtual urgent care
Q4: Establish a virtual urgent care provider pool to prevent EHRM access burden in collaboration with telehealth hubs
Q4: Initiate ECCM

Q1: Deploy customer experience training pilot
Q4: Implement VISN telephony solution
Q4: Implement customer experience training – FOC

Q1: Complete ECCM†



ECCM Veteran-Centric Operating Model





Technology and Platform Services Capability: IT Infrastructure

Current Environment

The cost of enhancing and maintaining VA's operational systems hosted on large and complex on-premise infrastructure is growing exponentially. **Sustainment, operations, and maintenance costs comprise more than 80% of VA's IT spend and are increasing**, leaving little funding for new investment in development, modernization, and enhancement.

Portions of VA's infrastructure are more than five years past end-of-life. Outdated desktops and laptops, under-strength network infrastructure, exponential storage growth, out-of-warranty phone systems, and under-capacity bandwidth contribute to an **unbalanced state of technical debt.**

VA requires infrastructure elasticity to take advantage of new capabilities and innovative technologies. The existing infrastructure is not architected to scale cost effectively; thus, the Department must replace and update hardware and software in many cases in a wall-to-wall fashion. Therefore, **VA is taking steps to refresh and update hardware and software at VA facilities.**

The Department is initiating procedures to migrate legacy solutions to modern, unmodified COTS solutions and conducting technical refreshes of wireless routers across all VAMCs as a result of integrating new solutions into enterprise operations.

Drivers

As the integrated framework upon which its digital services operate, **IT infrastructure is critical to VA's foundation.** Therefore, **as VA integrates new solutions and services into enterprise operations, such as EHRM, it must modernize its infrastructure** to meet the standards for additional resources.

Modernization of VA's IT systems is important to security, cost, and mission. However, **technical debt inhibits the Department's ability to optimize and transform**, as legacy infrastructure, systems, and processes are a barrier to IT and digital transformation. **Consequences of technical debt include increased risk of critical system failure, inhibited performance of new software applications, and legacy technology that is unable to respond to new business requirements.**

Technical debt will impede innovation and agility and hinder VA's ability to deliver improved experience and Veteran-centric services in a timely, reliable, and consistent manner.

In addition to technical debt, new IT systems (e.g., Cerner EHR) and bandwidth needs (e.g., telehealth) are driving infrastructure upgrades. Similarly, utilization of Cloud technologies, 3D printing, 5G, and managed services will shape future IT infrastructure modernization.

Transformative Initiatives

- **Networx Transition Project:** Transitioning to a flexible platform to support VA's migration to modern telecommunications and IT service offerings
- **Telephony Modernization:** Modernizing telephony systems to improve VA's ability to provision new services and reduce maintenance contract costs
- **Enterprise Service Desk Managed Service Provider:** Transitioning to a managed service provider to maintain an effective IT service delivery environment that manages customers' end-to-end services
- **Server and Storage Farm:** Providing rapid delivery of infrastructure, operational support, and lifecycle management and allow VA to only pay for what it uses
- **Mobile Device Services:** Leveraging Cloud services to provide full functionality on VA mobile devices
- **End User Computing as a Service:** Modernizing end user computing infrastructure by moving to a capably efficient managed services approach
- **Wireless Infrastructure Upgrade:** Modernizing the aging Wi-Fi infrastructure currently in place as well as expand coverage areas and capabilities

Future Environment

IT infrastructure modernization will increase capabilities to better respond to the needs of Veterans, business partners, employees, rapidly changing technology, and new modes of business delivery. **VA will provide efficient and modern telecommunications and infrastructure technologies with enhanced hardware and software capable of integrating with newly adopted solutions.** The Department will also achieve greater IT infrastructure cost transparency through its TBM implementation.

OIT will transition from a capital expenditure model, which is government-owned and operated, to an operating expenditure model, which is contractor-owned and operated (e.g., Anything as a Service [XaaS] or managed services). This model will expedite modernized infrastructure, provide greater scalability, reduce technical debt, and improve IT service delivery.

Furthermore, VA will have a fully deployed hybrid Cloud environment with improved wireless and mobile connectivity. Accordingly, **its digitally transformed IT infrastructure will expand the opportunities to capitalize on Cloud computing and reduced cost of operations.** As OIT accomplishes its Cloud computing objectives, VA architecture will become readily capable of leveraging managed services, allowing VA to reduce and control costs, increase efficiency, and provide scalability.



IT Infrastructure Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



FY 2018

Q3: Initiate deployment of ITIL including 7 key ITIL policies and processes enterprise wide – IOC
Q4: Initiate implementation of key IT infrastructure modernization plan
Q4: Refresh RADIUS Infrastructure
Q4: Refresh Wireless Technology in Region 5 and 6

FY 2019

Q1: Complete staff training on ITIL processes and procedures
Q1: Complete initial OLAs and implement foundation infrastructure management procedures
Q1: Replace network access points at 39 VA locations
Q3: Deploy Asset Management & Release Management ITIL policies
Q4: Implement CDM
Q4: Implement annual ITSM assessment & prioritize new ITIL policies

FY 2020

Q1: Initiate infrastructure refresh of 20% of VA's hardware on annual basis beginning with the end of life hardware†
Q1: Implement holistic analysis of system capacity and utilization in initially modernized infrastructure
Q2: Initiate transition of EOL voice systems to ECSC
Q4: Initiate implementation of telephony modernization phase 2 and 3 for 46 VAMCs and remote sites†
Q4: Complete infrastructure refresh of the first 20% of VA's hardware†

FY 2021

Q1: Deploy new modernization strategy and plan
Q4: Complete implementation of telephony modernization phase 2 and 3 for 46 VAMCs and remote sites†
Q4: Complete infrastructure refresh of the next 20% of hardware (40% complete)†

FY 2022

Q4: Implement telephony modernization phase 4 for 33% of VAMCs and remote sites with legacy systems†
Q4: Complete refresh of next 20% of hardware (60% complete)†

FY 2023

Q1: Develop VA infrastructure strategy and plan
Q3: Complete migration of Networx, WITS 3, and RLS contracts
Q4: Review and improve infrastructure capabilities and performance across VA environment and third-party services
Q4: Implement telephony modernization phase 4 for 66% of VAMCs and remote sites with legacy systems†
Q4: Complete refresh of next 20% of hardware (80% complete)†

FY 2024

Q3: Improve infrastructure effectiveness and efficiency based on Veteran service requirements
Q4: Complete telephony modernization phase 4 for 100% of VAMCs and remote sites with legacy systems†
Q4: Complete refresh of next 20% of hardware (100% complete)†

FY 2025

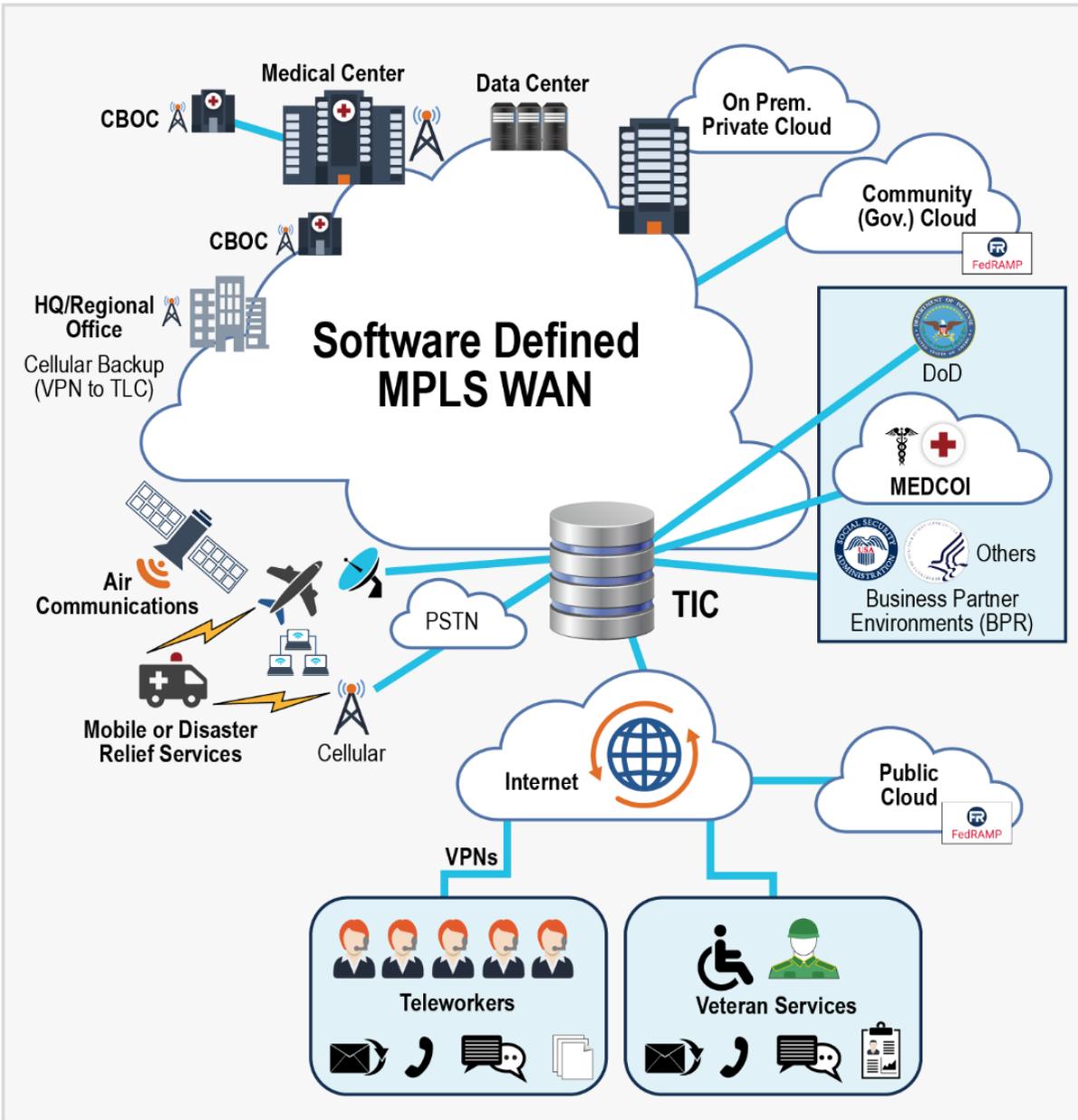
Q1: Re-initiate infrastructure refresh of VA's hardware beginning with the first 20%†
Q1: Develop future infrastructure strategy and plan based on evolved Veteran service objectives
Q2: Implement new infrastructure technologies and management capabilities enterprise wide
Q4: Complete infrastructure refresh of 20% of VA's hardware†



Proposed Future Enterprise Network and Infrastructure

- High Reliability, Scalability, On-Demand Network
- Cyber Secure/Hardened
- Protect the Data
- Multi-Level Security
- Cloud Based Services
- Unified “Network, Applications & Services” Management

- VA Priorities - Network/Services
- Cloud Agility
 - Infrastructure Redesign
 - Common Services
 - Integration
 - Artificial Intelligence
 - Robotics
 - Telemedicine





Technology and Platform Services Capability: Migration of Applications to the Cloud

Current Environment

The current environment of VA's IT enterprise is a significant factor in the need to migrate to the Cloud. For example, VA currently owns over 365 data centers that depend on legacy technology and create unnecessary and unsustainable pressures on the Department's IT budget. VA's large and complex IT infrastructure, with an exponentially growing volume of hardware and storage, is inconsistent with a modern Cloud computing strategy. Additionally, the current process for VA customers to adopt SaaS is time consuming and expensive.

To improve its delivery of Cloud services, **OIT has begun to refine its Cloud strategy** to incorporate recent realignments and reassignments within its organization. Additionally, **in April 2018, VA established the IOC for the VA Enterprise Cloud (VAEC) as well as the Enterprise Cloud Solutions Office (ECSSO) to implement and improve OIT Cloud governance structures and processes.**

In its implementation and operation of VAEC with ITOPS, ECSSO also partners and collaborates with OIS to ensure adherence to VA and FISMA security standards and to adapt and streamline Cloud security assurance processes.

Drivers

Cloud technology is a key enabler for IT modernization and is one of the cornerstones of the PMA. Cloud-based capabilities support faster development and provide modern, cost-effective IT solutions.

Accordingly, **the Report to the President on IT Modernization recommends bringing government to the Cloud and bringing Cloud to the government.** VA's migration to the Cloud responds to this report's recommendations as well as the federal Cloud strategy.

In 2010, **OMB established a Cloud First policy as part of the Federal Cloud Computing Strategy**, which the Department has adopted through VA Directive 6517. In accordance with recent updates to this strategy, **VA's ECSSO will supplement its Cloud First efforts with the Cloud Smart policy.** VA's Cloud First policy further supports the Department's buy-first strategy for acquisitions, focusing primarily on the procurement of managed services through Cloud vendors.

Transformative Initiatives

- **VA Enterprise Cloud (VAEC):** VA is implementing a multi-vendor Cloud solution for the development and deployment of VA Cloud applications that provides a set of common general support services for each application. VAEC simplifies the development of new applications in the Cloud and accelerates VA's migration of existing applications to the Cloud.
- **Enhancements and Strategy:** Enterprise Cloud strategy to deliver more responsive, cost-effective IT services and promote adoption of Cloud First and Cloud Smart policies, high-capacity contracts, public/community/private Cloud criteria, early adopters, and VAEC-specific Cloud computing EDPs
- **Identity Access Management (IAM):** VA's Enterprise Shared Service (ESS) for user authentication that coordinates secure access to VA resources for both internal and external users
- **Office 365:** Migration of all VA mailboxes to the Cloud via Office 365

Future Environment

VA will migrate to VAEC, a Cloud computing environment that will allow OIT to better leverage the latest technologies to more rapidly deliver improved services to Veterans. The migration will significantly reduce IT operating costs and enable VA to **shift from a capital expenditure model to an operating expenditure model.** This will result in more efficient and responsible stewardship of taxpayer dollars.

VAEC will be a business enabler that provides Veterans, VA employees, and business partners with on-demand services and applications that are accessible on user-preferred devices. **VAEC will form the foundation of an interoperable, scalable, and secure Cloud computing environment that can adapt to evolving business needs.** It will offer elastic data storage and computing capability to support innovative approaches for the delivery of integrated services to Veterans.

VAEC's future environment will include a fully implemented and operational enterprise Cloud Management Platform. **VA will achieve highly reliable and available infrastructure to develop and host Cloud services and applications across the Department.** This integration of Cloud will shorten the DevOps lifecycle and provide OIT and partners more flexibility to innovate and collaborate.



Migration of Applications to the Cloud Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



Q2: Achieve VAEC IOC
Q2: Achieve Azure environment IOC in VAEC
Q2: Establish Enterprise Cloud Solutions Office (ECSO) and governance policy
Q2: Achieve AWS environment IOC in VAEC
Q4: Develop a Cloud migration roadmap
Q4: Initiate VAEC service & performance improvement
Q4: Develop workforce training for existing staff
Q4: Migrate initial 10 applications to VAEC
Q4 (IAM): Move Terremark/Access Service components to the Cloud
Q4 (IAM): Migrate front-end java based components to the Cloud

Q1: Begin developing Cloud native architecture
Q1: Enhance VAEC management and monitoring functions
Q3: Establish criteria and standards for app development
Q3: Complete migration of all VA applications from the IBM/Terremark data center
Q3: Proof of concept – Migrate first Vista instance to VAEC
Q4: Monitor and review VAEC service performance and efficiency
Q4: Accelerate application migration to VAEC
Q4 (IAM): Move MPI and migrate remaining MVI consumers to the Cloud
Q4 (IAM): Virtualize Master Patient Index (MPI) at Austin Information Technology Center (AITC)
Q4 (IAM): Migrate 1 Consumer to Cloud

Q1: Improve VAEC service performance
Q2: Continue to review Cloud redundant services used at the local level for enterprise solutions
Q3: Continue to execute VAEC migration plan
Q4: Review VAEC migration program and develop roadmap for FY21 and beyond
Q4: Migrate additional Vista instances and disaster recovery capabilities

Q1: Continue to review new VAEC computing technology and revise VAEC strategy and plan
Q2: Automate VAEC security services
Q2: Automate VAEC scanning and testing services
Q3: Automate Cloud software development lifecycle
Q4: Continue to execute Cloud migration plan

Q1: Complete transformation of all applications migrated to the Cloud
Q3: Complete VAEC automation services in key areas (e.g., security, testing, and software development)
Q4: Enhance ECSO governance body and structure

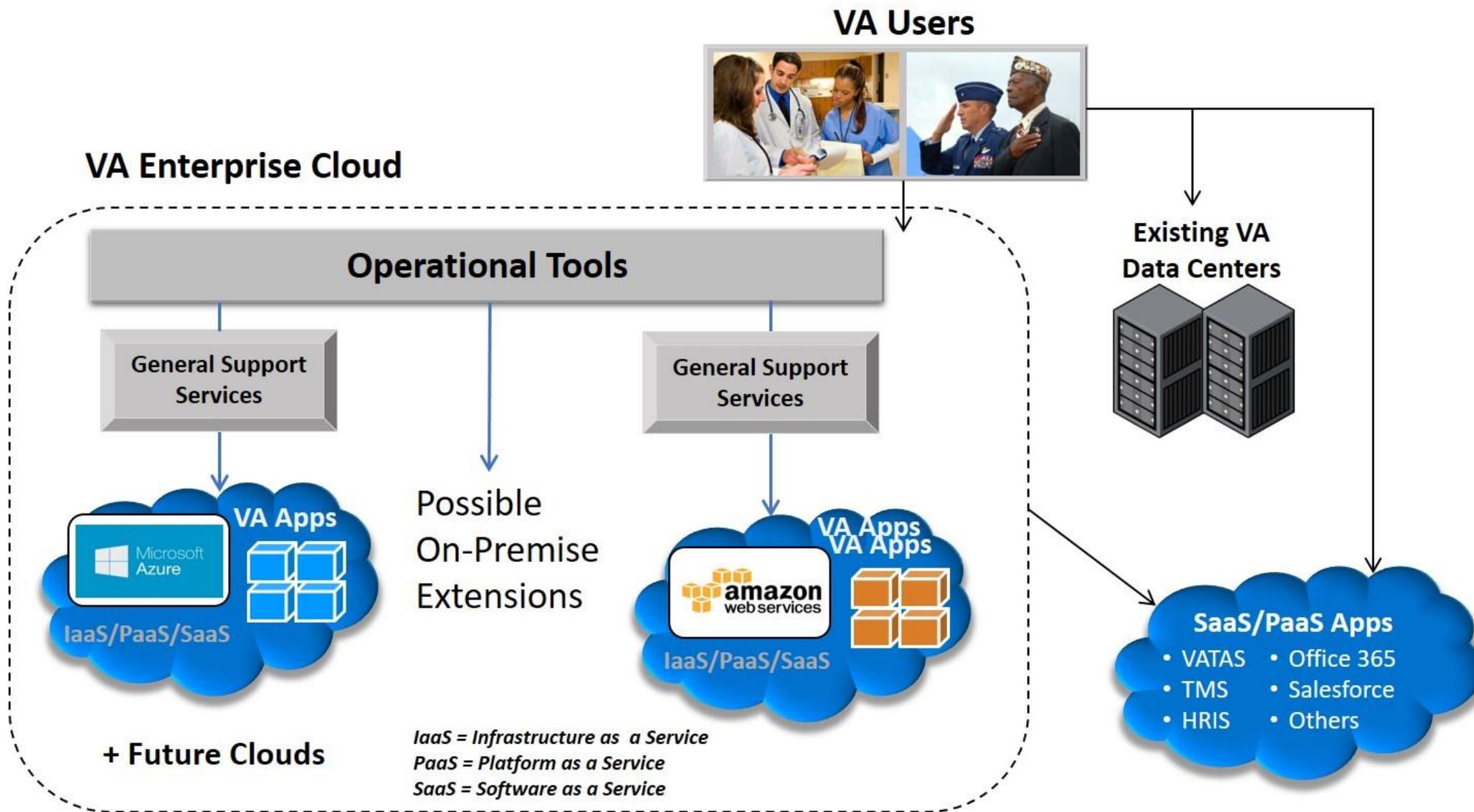
Q1: Continue to review new Cloud technology and evolve VAEC computing strategy
Q3: Continue to improve enterprise Cloud strategy and policies
Q4: Continue improving VAEC service performance and efficiency

Q1: Evolve technology strategy for VAEC computing practice
Q3: Expand VAEC to incorporate new Cloud service technology
Q4: Complete migration of 350 applications to VAEC initiated in FY18
Q4: Stabilize existing data center operation with VAEC

Q1: Adapt VAEC to new strategic technology trends
Q2: Evolve and improve strategy and direction based on evolution of VAEC and IT technologies



VAEC Architecture Future Environment





Technology and Platform Services Capability: Data Center Optimization and Consolidation

Current Environment

The **federal Cloud First and Cloud Smart policies and VA's Virtualization First policy are significantly reducing the number of physical servers in data centers, positioning VA to eliminate legacy hardware.** The effort to migrate applications to the Cloud is well underway; VA's ECSO has moved beyond IOC and is moving applications to the off-premise Cloud.

However, VA has several types of data centers that have evolved over the years and are based on mission requirements. **Many VA data centers contain aging, VA-owned equipment that is largely dependent on legacy technology.** Some of these legacy systems have no record of service or identified system owner.

This creates an issue when OIT needs to decommission or migrate data; without knowledge of service or application owners, progress may be halted or cause an interruption in services being used to assist Veterans.

Drivers

In 2010, OMB established the **Federal Data Center Consolidation Initiative (FDCCI)** to reduce the footprint of government data centers.

The **Federal Information Technology Acquisition Reform Act (FITARA) of 2014 enacts and builds upon FDCCI** by requiring agencies to submit annual reports that include comprehensive data center inventories, strategies to consolidate and optimize data centers, performance metrics and a timeline for activities, and yearly calculations of investment and cost savings.

In 2016, **the Data Center Optimization Initiative (DCOI) refreshed the strategy and standards for management of data centers.** DCOI required agencies to develop and report on data center strategies and fulfill closure goals for Tiered and Non-Tiered data centers while simultaneously meeting certain performance standards for those that were retained.

The **FITARA Enhancement Act of 2017 extended the data center requirements of FITARA until October 1, 2020.** As a result, OMB is updating and extending DCOI for another two years.

Transformative Initiatives

- **Data Center Optimization and Consolidation:** VA is identifying the services, tools, applications, and systems that are hosted in a data center and coordinating their transition to the Cloud with their respective owners. Coordination between VA organizations and services is vital to ensure that the services transition to the Cloud without interruption. VA is categorizing and classifying data center functions by mission requirements and availability needs. The Department is also recommending and executing data center consolidations to enhance operational efficiency and align physical data center facility operations with OIT organizational mission functions.

Future Environment

OIT will continue to invest in organizational change management and strengthen its staff through Cloud-focused training and OIT community engagement to understand the issues and concerns regarding this transition.

Existing applications will be evaluated for Cloud compatibility and may require application reengineering or refactoring as part of the migration process. **Assessment for migration will be based on several Cloud readiness factors** including cost, available services, application technology, sensitivity of information, and business requirements.

This future environment will help **reduce VA-owned data centers and the cost of sustaining on-premise infrastructure.** The benefits of a reduced and optimized infrastructure will include a highly reliable and available infrastructure as well as the use of effective and efficient data centers. This will enable VA to maximize functions and capabilities while reducing cost.



Data Center Optimization and Consolidation Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



FY 2018

Q1: Establish data center categories to identify rooms that are physically inseparable from non-IT hardware and/or that perform a specific, non-standard set of tasks
Q4: Complete 68 OMB-defined data center closures

FY 2019

Q1: Implement new OMB guidance for DCOI for FY19 and beyond, updating strategy accordingly
Q1: Continue executing Phase 1 of data center consolidations
Q1-Q4: Begin planning and executing Phase 2 and Phase 3 of data center consolidations

FY 2020

Q1-Q4: Continue to sunset additional data centers migrated in Phase 1, 2, and 3 of data center consolidations

FY 2021

Q1: Complete execution of Phase 1 data center consolidation
Q1-Q4: Continue to sunset additional data centers migrated in Phase 2 and 3 of data center consolidations

FY 2022

Q2: Complete execution of Phase 2 data center consolidations
Q1-Q4: Continue to sunset additional data centers migrated in Phase 3 of data center consolidations

FY 2023

Q1: Complete execution of Phase 3 data center consolidations

FY 2024

Q1: Enhance the efficiency of remaining data centers after Cloud migration
Q4: Complete deployment of at least 1 survivable Campus Support Center at each VAMC

FY 2025



Technology and Platform Services Capability: Trusted Information Sharing

Current Environment

Since the establishment of the Department, VA has experienced challenges in achieving interoperability.

Disparate modernization initiatives and lack of an enterprise interoperability strategy have led to non-standard user interfaces, data exchanges, performance monitoring, and security challenges.

VA collects and stores information from multiple channels, lines of business (LoBs), systems, and applications. Due to the numerous sources of information, the Department has not established a standard or common understanding of maintaining information for uniformity. Additionally, **information sharing and reuse is limited at VA.**

VA has invested significant resources to improve interoperability and data standardization. Along with other modernization efforts, the Virtual Lifetime Electronic Record (VLER) and Joint Legacy Viewer (JLV) have improved VA's interoperability capabilities.

The Department's API Management Platform, Lighthouse, is also improving interoperability. VA's venture into public-facing apps is powered by Lighthouse, which enables vendors to directly link new technologies to internal VA data. The Department expects Lighthouse to be a pivotal step in its digital transformation.

Drivers

Healthcare data interoperability plays a key role in all four of VA's top priorities—from implementing the MISSION Act and EHRM to transforming VA's business systems and delivering better customer service. Interoperability between VA and DoD specifically is the lynchpin for EHRM, VA's highest-profile IT modernization initiative in its history.

In healthcare, data exchange standards and protocols form the foundation for interoperability and health information exchange (HIE) initiatives.

The lack of a single VA environment for data interoperability and exchange limits the ability to share and understand information in a common manner.

Furthermore, the **21st Century Cures Act aims to achieve improved interoperability.** Relatedly, the Office of the National Coordinator for Health Information Technology (ONC) and the Centers for Medicare & Medicaid Services (CMS) have outlined their approach to information blocking, APIs, and FHIR standards for interoperability. In addition, ONC's Trusted Exchange Framework and Common Agreement rule is intended to establish baseline technical and legal requirements for sharing electronic health information nationwide across disparate networks.

Transformative Initiatives

- **Vet360:** Data source platform that integrates and stores common data across VA systems and applications and will become the authoritative data source (ADS) for shared and common VA data across the Administrations and Staff Offices
- **HealthShare Enterprise Platform (HSEP):** Platform to unify and modernize access to all VistA-based health and non-health data currently maintained in the 130+ VistA instances that will support the migration of patient data from VistA to the Cerner EHR and facilitate broader HIE
- **Data Access Services (DAS):** System of Enterprise Middleware Services that enables intra- and inter-agency data transport, transformation, and storage capabilities between data producers and data consumers
- **Lighthouse:** VA's API Management Platform that employs an open-source API gateway platform on a private VA Cloud to connect data from many sources and will allow critical health data to flow securely between patients and their healthcare providers

Future Environment

Vet360 will build the foundation for VA's enterprise master data management solution. It will streamline data collection and dissemination to ensure that there is accurate information in a central repository. Veterans will have the ability to update information and a comprehensive view of their Master Records.

HSEP will improve enterprise access to all VistA-based health and non-health data and enable seamless communication between all points of care. Synchronized data will support EHRM and enable healthcare research and quality and performance management and reporting.

Lighthouse will establish a universal health language with external partner systems that will use APIs and ESS to exchange, process, and present information. VA will consume and reuse APIs across the ecosystem, allowing OIT to more rapidly deliver new technology and services. Veterans will be able to manage their own health experience within a secure and interoperable environment.

VA will partner with the third-party developer community to enable Veterans to seamlessly access their data. The Department will implement its first public record-sharing platform available to all Veterans, which will allow them to access their personal medical records via the iPhone's Health app in near real time.



Trusted Information Sharing Milestones*

* Timelines may shift due to changes in resources and priorities
† Pre-decisional



FY 2018

Q1 (HSEP): Complete initial migration of 13 VIE applications
Q2 (API): Achieve API Management Platform IOC
Q3 (HSEP): Integrate HSEP in AWS
Q3 (API): Launch Benefits Intake API
Q3 (HSEP): Integrate HIE with EHRM
Q3 (Vet360): Incorporate Veteran contact information as a data source and integrate Vets.gov
Q4 (Vet360): Deploy APIs for LoBs to consume
Q4 (HSEP): Enable HSEP in-production at AITC & PITC
Q4 (HSEP): Initiate Veterans Health Information Exchange (VHIE) transition to HSIE
Q4 (HSEP): Initiate Veterans Data Integration and Federation (VDIF) transition to HSEP
Q4 (API): Launch Facilities API

FY 2019

Q1 (API): Launch Veteran Verification API and Health API
Q2 (Vet360): Integrate VBMS as a notification preference consumer
Q2 (Vet360): Add CRM Member Services as a Contact Information consumer
Q3 (API): Connect Cerner and API Platform
Q3 (API): Achieve interoperability between HSEP and API Platform
Q3 (HSEP): Transition VHIE to HSIE†
Q3 (HSEP): Migrate all 13 VIE apps to HSEP
Q4 (Vet360): Add legacy Veteran & non-Veteran information as new data sources
Q4 (Vet360): Add Veteran Rating data as a new data source
Q4 (Vet360): Add VBMS as an Address Validation API consumer
Q4 (Vet360): Transition Vet360 Address Validation direct consumers to API Management Platform
Q4 (Vet360): Implement Veteran Predischarge data integration with VADIR and MVI
Q4 (Vet360): Migrate platform to VAEC-AWS
Q4 (HSEP): Transition major VDIF services to HSEP†
Q4 (DAS): Complete migration of DAS from AITC to VAEC-AWS

FY 2020

Q1 (HSEP): Complete interim HSEP – Cerner hybrid HIE†
Q1 (Vet360): Establish Enterprise Rating Data API
Q1 (Vet360): Add Veteran Interaction Summary as a data domain and establish Enterprise API
Q2 (HSEP): Initiate transition to Cerner HIE†
Q2 (Vet360): Integrate Cerner with Veteran Profile Service and Push Notifications
Q2 (Vet360): Enhance Predischarge integration with VADIR and MVI to include contact information data
Q2 (Vet360): Add the Payment address data domain to Veteran Profile API
Q3 (Vet360): Integrate VBMS, LGY, Community Care, and White House VA Hotline as a new Veteran Contact Information API consumer
Q4 (Vet360): Add Homeless and Fraud Indicators to Veteran Profile API
Q4 (Vet360): Integrate MBMS with Vet360 APIs

FY 2021

FY 2022

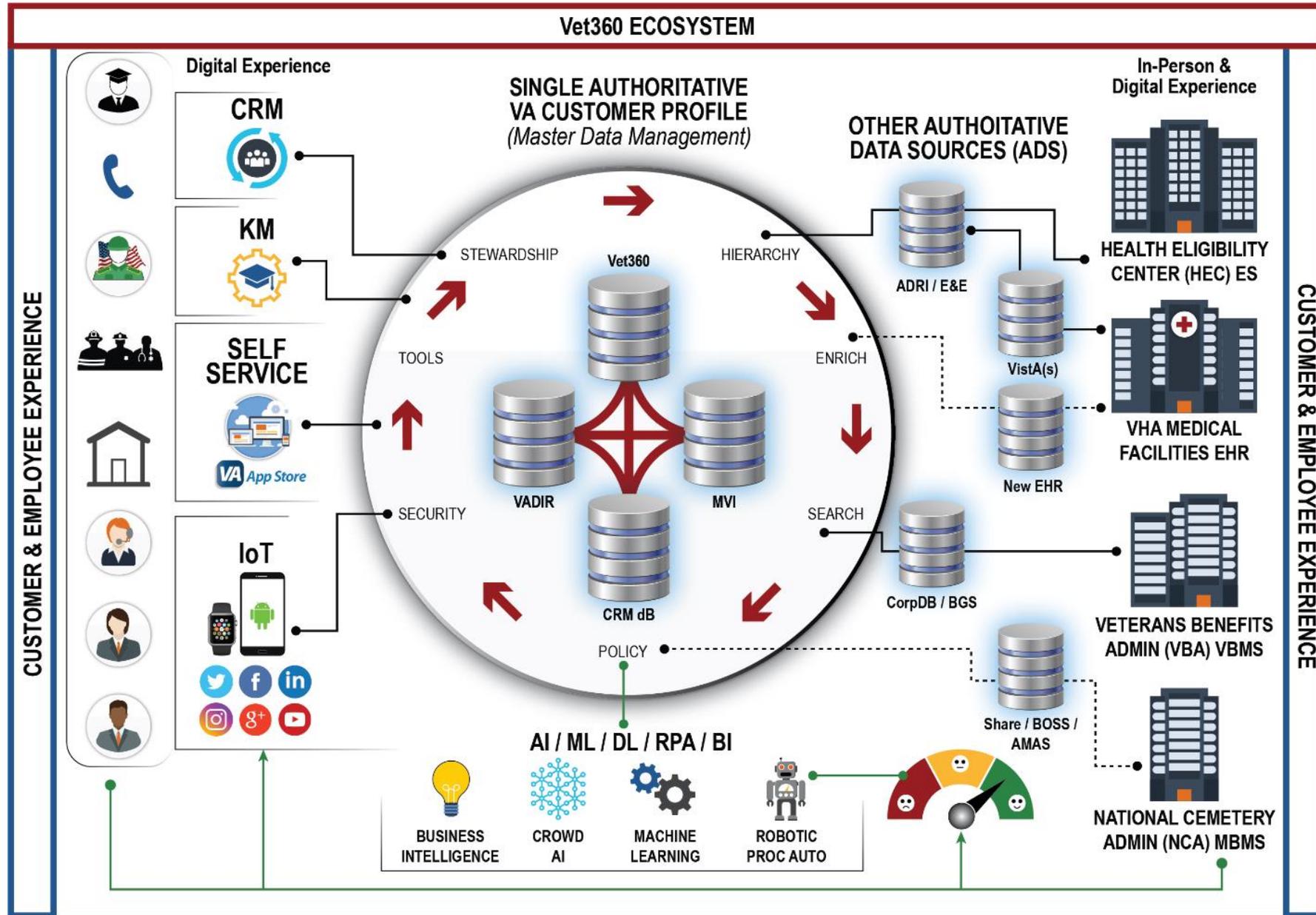
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FY 2024

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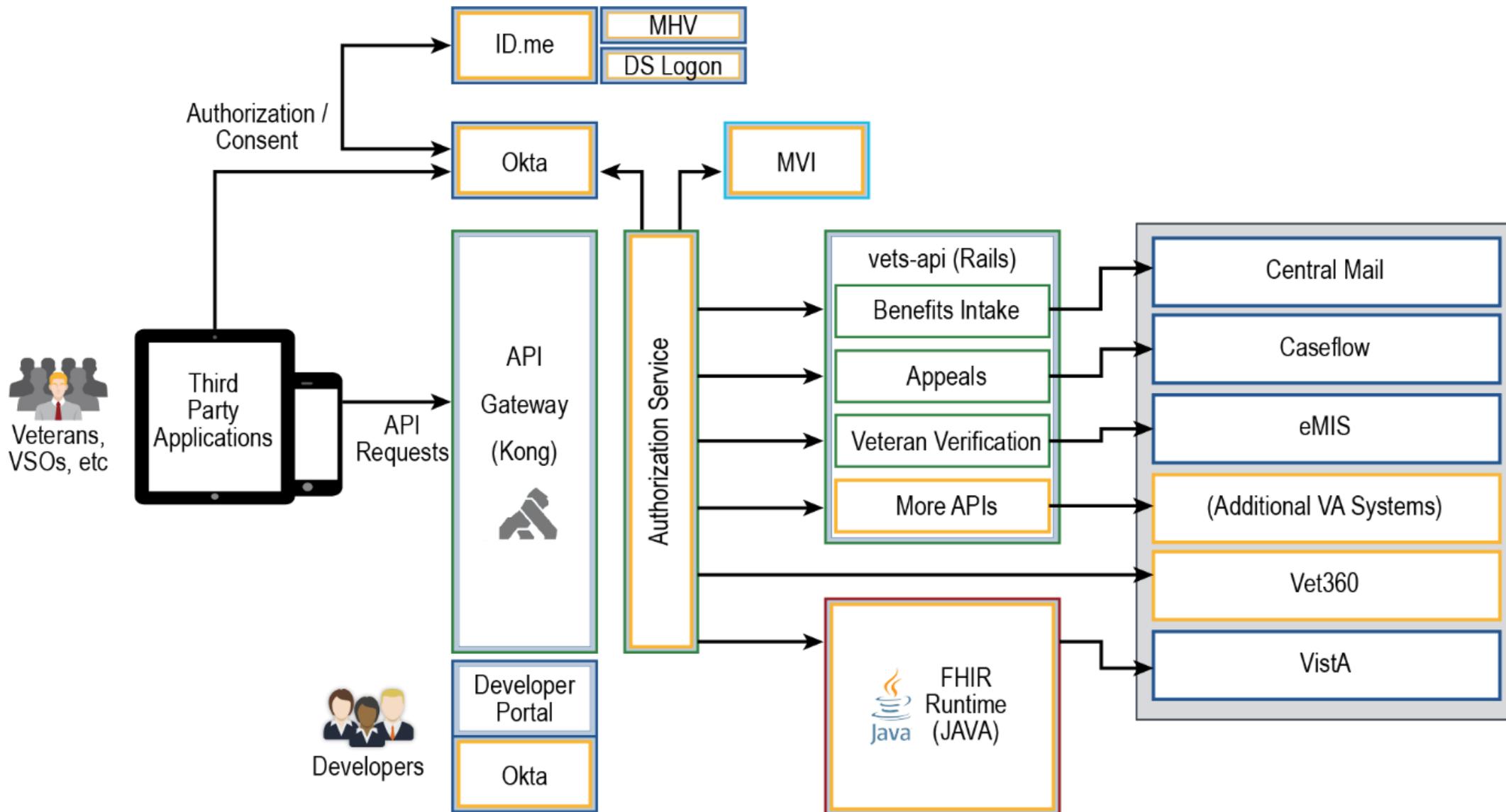


Vet360 Ecosystem





VA's Future Environment of API Architecture





Technology and Platform Services Capability: Analytics

Current Environment

VA uses analytics as one of its tools to improve healthcare for Veterans. The Department has one of the largest healthcare-related data repositories in the world. However, **VA's analytical capabilities have long lagged behind other federal agencies and industry counterparts.**

Although VA collects patient data from tens of millions of individuals on a variety of health conditions, it has had difficulty sharing this information with researchers tasked with developing advance medical treatments. Overall, the **current Analytics environment is fragmented and constrained by infrastructure and resource limitations.**

VA is exploring ways to improve how it uses data to make real-time, fact-based decisions. It has focused on how its healthcare system utilizes data to reduce statistical variations in levels of care.

As part of its suicide prevention efforts, VA is collaborating with the Department of Energy (DOE) and Lawrence Berkeley National Laboratory to use its EHR and Million Veteran Program (MVP) genomic data to identify Veteran suicide risks. The initiative aims to leverage this data along with DOE's experience with AI to apply deep learning strategies to the challenge of addressing these risks.

Drivers

As the largest integrated healthcare system in the U.S., **VA requires innovative ways to collect, manage, and report data throughout the system.**

VA's historically limited capabilities in comparison to other federal agencies and commercial healthcare systems restrict its ability to utilize its data to improve care and outcomes. For this reason, VA must invest in analytical tools and train their workforce to better analyze and interpret data, utilizing analytics to improve quality of care.

Key analytic use cases include predictive outcomes modeling; risk modeling; population health; chronic disease management; utilization management; health economics and cost of care; quality and safety insights; precision medicine; claims and appeals intelligence; and fraud, waste, and abuse management.

Key drivers of VA's big data research include EHRM, the public Cloud and IT transformation, and network bandwidth and multi-Cloud interconnect. Additionally, the **Executive Order on Maintaining American Leadership in Artificial Intelligence** will drive AI research and development activity within government agencies.

Transformative Initiatives

- **DOE Partnership:** Partnership through MVP that aims to advance medical treatment for Veterans by utilizing large sets of data to identify trends that support the development of new treatments and preventative strategies
- **Data Commons:** De-identifying VA data for data commons and collaborative research with DoD, industry, and community and academic partners
- **Multi-Cloud Research Environment:** Hybrid, multi-Cloud environment that will be coordinated by a system orchestrator and consist of phenomics, imaging, genomic, and de-identified data
- **Research Administrative System (RAMS):** Multipurpose tool that will improve the efficiency of research administration
- **Predictive Analytics:** Capabilities and systems to provide real-time analytics and enable VA to review nationwide outcomes and patient safety issues in real time

Future Environment

The Department will add data scientists to all research VAMCs and implement predictive and personalized medical practices with robust integration of big data to deliver meaningful outcomes. The **future Analytics environment also includes a seamless integration with the Cerner EHR and cognitive tools.** This will help VA become a learning health system with the ability to make precise diagnostics and deliver precise care.

To support this effort, **VA will develop a solution architecture for an analytical system that will allow data scientists and researchers to develop and manage research cases.** Throughout the development and implementation of the analytical system, VA will establish study data marts (subsets of a data warehouse organized for a specific analysis) that will be designed with the tables and tools required for analysts to do their jobs.

Additionally, the **scope of the VA-DOE partnership will expand to focus on other areas of care that are critical to Veteran health (e.g., prostate cancer and heart disease).** Through this initiative, AI will enable VA to identify risks and provide preventative care for illnesses that significantly impact the Veteran population.



Analytics Milestones*

* Timelines may shift due to changes in resources and priorities

† Pre-decisional



FY 2018

Q1: Deploy Manual System Orchestrator V1.0
Q2: Develop Enterprise Architecture V1.0
Q3: Complete Research Administration Management System (RAMS) development
Q3: Deploy Manual System Orchestrator V2.0
Q4: Implement 10 study marts at DOE and 3 study marts with Federal Information Security Management Act (FISMA) data in the commercial Cloud
Q4: Establish Master Veteran demographics
Q4: Deploy medical and clinical image analytics pilot
Q4: Define outcome metrics and measures for all VA service lines
Q4: Develop Enterprise Architecture V2.0

FY 2019

Q3: Deploy outcome measures pilot
Q4: Implement 8 study marts in the commercial Cloud
Q4: Complete RAMS implementation at VAMCs nationwide

FY 2020

Q1: Operationalize DOE Argonne genomic enclave
Q2: Operationalize DOE Lawrence Livermore enclave for imaging
Q2: Operationalize research enclaves within VAEC
Q2: Develop Enterprise Architecture V3.0
Q3: Pilot deployment of outcome measures
Q4: Implement commercial Cloud & study marts
Q4: Implement study marts at the University of Chicago (UoC) Data Commons and begin work on VA data
Q4: Initiate data de-identification pilot within VAEC
Q4: Deploy Manual System Orchestrator – FOC

FY 2021

Q1: Complete Cloud migration
Q4: Implement 25 study marts at DOE – FOC
Q4: Expand medical and clinical image analytics pilot (6-9 additional image types)

FY 2022

Q2: Initiate collaborative program management integration for data analytics initiatives

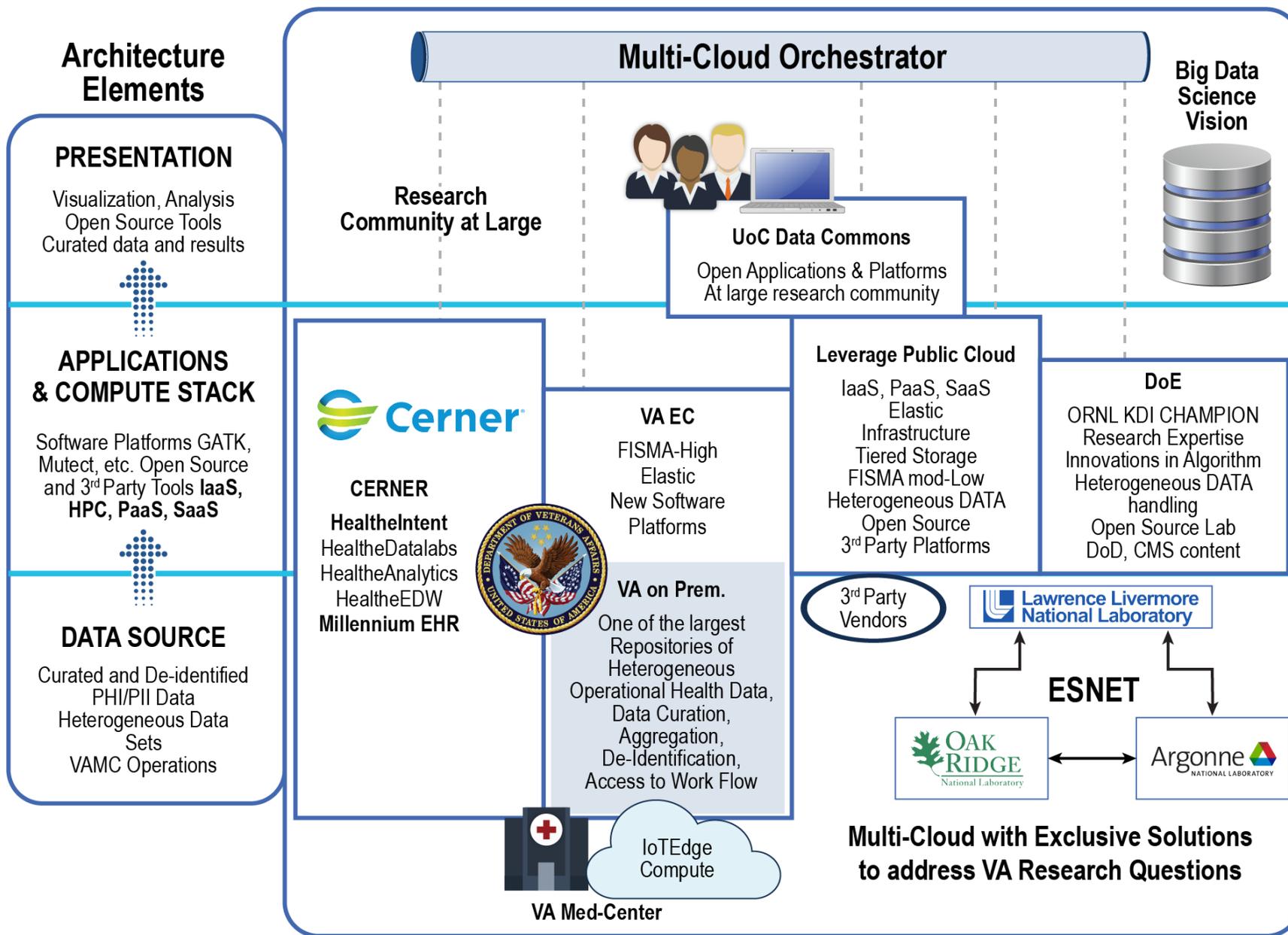
FY 2023

FY 2024

FY 2025



VA's Multi-Cloud Research Environment



OIT Transformation

OIT is transitioning into an organization that fundamentally improves the way Veterans interact with VA. OIT understands the need to enable our business partners to provide the access, care, benefits, and services to Veterans. The following are items that will enable OIT Transformation.

DevOps Integration

Development and Operations (DevOps) is a software industry concept that improves IT service delivery to customers. DevOps identifies the interdependence between the programming activities of software development and the IT operational environment that supports software deployment. Traditionally handled separately within EPMO and ITOPS, OIT will integrate development and operations to enable frequent delivery of incremental releases with high reliability.

Technology Business Management

Technology Business Management (TBM) is a value-management framework for IT organizations predicated on transparency of cost, consumption, and performance. This transparency provides technology leaders and their business partners with the facts they need to collaborate on business-aligned decisions. The TBM framework is characterized by continuous improvement and enabling organizations to deliver value. By FY 2022, OIT will meet the OMB mandate to fully report all IT Towers and Cost Pools in the TBM taxonomy and will operate at Level 5 (Business Driver) of TBM maturity.

IT Governance

IT Governance responsibility spans the culture, organization, policy and practices that provide for IT management and control across five key areas: alignment, value delivery, risk management, resource management, and performance management. Utilizing the Governance Framework, IT Governance will touch all levels of OIT. The Committee level Governance Bodies (GS 14–15 level) will feed information/analysis to the Councils (SES and above). The Councils will feed important information covered in their meetings to the ITGB.

Enterprise Data Management

Enterprise Data Management (EDM) is the holistic development and execution of data management plans, policies, and practices that develop, protect, and deliver the value of data and information assets across the enterprise. VA's wide-ranging definition of EDM embodies its Data Strategy Goals. Often cited as a strategic asset, VA will leverage its data as a primary component to enable improved benefits and service delivery.

Product Line Management

Product Line Management (PLM) is an operating construct that aligns IT resources and funding to the enterprise's most critical business capabilities. OIT Leadership established the PLM Working Group to evaluate the benefits of adopting a PLM methodology. The PLM Working Group developed an initial Portfolio and Product Line construct and initiated a pilot based on Digital Experience. Based on the success of the pilot, OIT will adopt PLM across the organization. During FY 2019, it will begin implementation of this new model with goals to finalize the PLM structure, assign ownership for each Product Line, conduct initial Product Line analyses, and formalize Product Lines.

Strategic Sourcing

OIT established the Office of Strategic Sourcing (OSS) to provide more accountable IT product and service procurement for VA. OSS's work encompasses the entire sourcing lifecycle and includes implementing a Centers of Excellence (COE) to streamline and leverage best practices. OSS is transforming OIT to be a customer of choice to suppliers, thereby attracting the best talent and the best price.

OIT Transformation (continued)



Enterprise Cybersecurity

VA, its core constituents, and external partners are subject to a wide variety of constantly evolving cyber threats. Given the high degree of connectivity, interdependence, and reliance on integrated open platform technology, meeting cybersecurity challenges requires strategic attention and collaboration across the entire VA ecosystem. VA has a critical mission that includes acting as an effective steward of Veteran and VA data, protecting VHA biomedical equipment, and safeguarding VA's information systems and infrastructure from continuously evolving cybersecurity threats. VA's strategic cybersecurity goals and objectives are identified below.

Goals

Objectives

1

Enhance Enterprise Cybersecurity and Privacy Risk Management

- Create an agency-wide cybersecurity and privacy risk management strategy
- Integrate cybersecurity and privacy into enterprise-wide risk management programs and processes
- Enhance the High Value Asset (HVA) risk management program
- Integrate the NIST Cybersecurity Framework with VA's existing cybersecurity risk management processes

2

Ensure Secure Interoperability Both Within and Outside VA

- Ensure that data is protected regardless of its location
- Ensure that access methods are secure, flexible, and support VA business processes
- Leverage shared security and privacy capabilities
- Collaborate with partners and third-party providers to meet VA cybersecurity and privacy requirements

3

Deliver Exceptional Customer Service

- Partner with stakeholders to provide security and privacy services that add business value
- Integrate cybersecurity policies, standards, architectures, and services with business and IT processes
- Enhance VA-wide governance processes that link cyber investments with mission outcomes

4

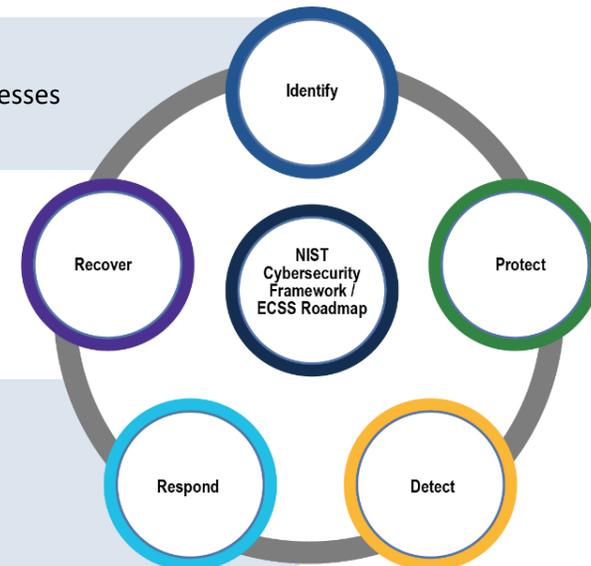
Enable Secure and Resilient Business Operations

- Improve cyber hygiene to minimize exposure to potential attack vectors and cyber threats
- Employ mechanisms to take a proactive approach to cybersecurity and privacy threats
- Validate and enhance cross-organizational incident response and continuity of operations plans
- Accelerate adoption of innovative and effective cyber technologies to address cybersecurity and privacy gaps

5

Cultivate a VA Cybersecurity and Privacy Workforce and Culture

- Recruit, train, and sustain a cybersecurity and privacy capable workforce
- Enhance VA cybersecurity and privacy commitment and accountability across the organization
- Develop a privacy and cybersecurity-aware VA culture
- Integrate a VA cybersecurity and privacy workforce planning capability



Next Steps

- Publish the FY 2018–2024 VA Enterprise Roadmap Executive Summary
- Publish the comprehensive FY 2018–2024 VA Enterprise Roadmap aligned to VA's IT Strategy
- Collaborate with Business Partners and VA Staff Offices
- Introduce to OIT Governance Boards to review the major components and drive meaningful and strategic IT management governance decisions
- Inform long-term IT planning and prioritization activities, and support Enterprise and Platform Architecture efforts
- Collaborate with Strategic Sourcing and ITRM to gather data on reinvestment strategies, cost savings, and cost avoidance
- Leverage the VA Enterprise Roadmap to inform VA Enterprise and System Architecture
- Update VA Enterprise Roadmap on an annual basis

Acronyms and Abbreviations (A–HR)

Acronym	Description
ACTIV	Advanced Computational and Translational Initiative for Veterans
ADS	Authoritative Data Source
AI	Artificial Intelligence
AITC	Austin Information Technology Center
AMAS	Automated Monument Application System
API	Application Programming Interfaces
ARS	Attachment Repository System
ATA	Anywhere to Anywhere
ATO	Authority to Operate
AWS	Amazon Web Services
BAS	Benefits Assistance Services
BDN	Benefits Delivery Network
BIP	Benefits Integration Platform
BOSS	Burial Operation Support System
BOSS-E	Burial Operation Support System-Enterprise
Board	Board of Veterans Appeals
CAP	Cross-Agency Priority
CapEx	Capital Expenditures
CAS	Cloud Advisory Services
CBOC	Community-Based Outpatient Clinic
CC	Community Care
CCP	Community Care Program
CCN	Community Care Network

Acronym	Description
COE	Center of Excellence
COMS	Cloud Operation and Migration Services
COVERS	Control of Veterans Records System
COTS	Commercial Off-the-Shelf
CP&E	Compensation, Pension, Burial and Education
CMS	Centers for Medicare & Medicaid Services
CRM	Customer Relationship Management
CPRS	Computerized Patient Record System
CSP	Cloud Service Provider
CSR	Customer Service Representative
CTRTS	Clinical Trainee Registration Tracking System
CUCM	Cisco Unified Communications Manager
CX	Customer Experience
DAS	Data Access Services
DATA Act	Digital Accountability and Transparency Act of 2014
DC	Data Center
DCC	Data Center Consolidation
DCOI	Data Center Optimization Initiative
DevOps	Development Operations
DMLSS	Defense Medical Logistics Standard Support
DoD	Department of Defense
DOE	Department of Energy
DRC	Decision Ready Claims
DSI	Data Services Interchange

Acronym	Description
eCAMS	Electronic Claims Administration and Management System
ECCM	Enterprise Contact Center Modernization
ECSS	Enterprise Cybersecurity Strategy
eCMS	Electronic Contracting Management System
ECSC	Enterprise Cloud Session Control
ECSO	Enterprise Cloud Solution Office
EDI	Electronic Data Interchange
EDIPI	Electronic Data Interchange Personal Identifier
EDM	Enterprise Data Management
EDU	Education Service
EHRM	Electronic Health Record Management
EIN	Employer Identification Number
EIS	Enterprise Infrastructure Solutions Telecommunications Contract
EPMO	Enterprise Program Management Office
EOL	End of Life
ERP	Enterprise Resource Planning
ESB	Enterprise Service Bus
EVSS	Enterprise Veteran Self-Service
ESS	Enterprise Shared Services
F&A	Finance and Acquisition
FAS	Financial Accounting Service
FBCS	Fee-Based Claims System
FCVA	Faster Care for Veterans Act
FDA	Food and Drug Administration
FDCCI	Federal Data Center Consolidation Initiative

Acronym	Description
FFPS	Funding Fee Payment System
FHIE	Federal Health Information Exchange
FHIR	Fast Healthcare Interoperability Resources
FITARA	Federal Information Technology Acquisition Reform Act
EHR	Electronic Health Record
FISMA	Federal Information Security Management Act of 2002
FMBT	Financial Management Business Transformation
FMS	Financial Management System
FOC	Full Operating Capability
FSC	Financial Services Center
FSSP	Federal Shared Service Provider
FY	Fiscal Year
GAO	Government Accountability Office
GCLAWS	General Counsel Legal Automated Workload System
GenISIS	Genomic Information System for Integrated Science
GIS	Geographic Information System
GSA	General Services Administration
GUI	Graphical User Interfaces
HCBRM	Human Capital Business Reference Model
HDR	VA Health Data Repository
HIE	Health Information Exchange
HIT	Health Information Technology
HR	Human Resources

Acronyms and Abbreviations (HRO–RLS)

Acronym	Description
HRO	High Reliability Organization
HRIS	Human Resources Information System
HRIT	Human Resources Information Technology
HSE	HealthShare Enterprise
HSEP	HealthShare Enterprise Platform
HSIE	HealthShare Information Exchange
HVA	High Value Asset
IAA	Inter Agency Agreement
laaS	Infrastructure as a Service
IAM	Identity & Access Management
IBM	International Business Machines
ICU	Intensive Care Unit
IDEA	Integrated Digital Experience Act
IDIQ	Indefinite Delivery Indefinite Quantity
iFAMS	Integrated Financial and Acquisition Management System
IOC	Initial Operating Capability
IoM	Institute of Medicine
IOSS	Infrastructure Operation Support Services
IoT	Internet of Things
IRM	Information Resource Strategic Plan
ISA	Interoperability Standards Advisory
IS	Insurance Service
IT	Information Technology
ITIL	IT Infrastructure Library

Acronym	Description
ITIL	IT Infrastructure Library
ITOPS	Information Technology Operations and Services
ITSM	IT Service Management
JALFHCC	Captain James A. Lovell Federal Health Care Center
JLV	Joint Legacy Viewer
LoB	Line of Business
LDSI	Laboratory Data Standard Interchange
LGY	Loan Guaranty Service
LIP	Licensed Independent Practitioners
LTS	Long Term Solution
MAC	Migration of Applications to the Cloud
MAP-D	Modern Award Processing Development
MASS	Medical Appointment Scheduling System
MBMS	Memorial Benefits Management System
MDM	Master Data Management
MEF	Mission Essential Function
MEL	Memorial Enterprise Letters
Med-COI	Medical Community of Interest
MGMT	Management
MH	Mental Health
MHV	MyHealthVet
ML	Machine Learning
MISSION	Maintaining Internal Systems and Strengthening Integrated Outside Networks
MoA	Memorandum of Agreement

Acronym	Description
MOU	Memorandum of Understanding
MPI	Master Patient Index
MVI	Master Veteran Information
MVP	Million Veteran Program
MYP	Multi-Year Planning
NCA	National Cemetery Administration
NCC	National Call Centers
NCPS	National Center for Patient Safety
NFSA	Network Flow Security Analytics
NIST	National Institute of Standards and Technology
NOD	Notice of Disagreement
NWQ	National Work Queue
OALC	Office of Acquisition, Logistics, and Construction
OCA	Office of Congressional and Legislative Affairs
OEDCA	Office of Employment Discrimination and Complaint Adjudication
OEI	VA Office of Enterprise Integration
OGC	Office of General Counsel
OIG	Office of the Inspector General
OIT	Office of Information and Technology
OLA	Operational Level Agreement
OM	Office of Management
OMB	Office of Management and Budget
ONC	Office of the National Coordinator for Health Information Technology
OPA	Office of Public and Intergovernmental Affairs
OpEx	Operating Expenditures
OPM	Office of Personnel Management
OSS	Office of Strategic Sourcing

Acronym	Description
OTH	Other Than Honorable Discharge
PaaS	Platform as a Service
PACT	Patient Aligned Care Team
PAID	Personnel and Accounting Integrated Data
PAMPI	Problems, Allergies, Medications, Procedures, Immunizations
PCGL	Personal Computer Generated Letters
PEO	Program Executive Office
PC	Primary Care
PITC	Pittsburgh Information Technology Center
PLM	Product Line Management
PMA	President's Management Agenda
PPBE	Planning, Programming, Budgeting, and Execution
PPMS	Provider Profile Management System
PRF	Patient Record Flag
PSIM	Physical Security Information Management
PTSD	Post Traumatic Stress Disorder
P&F	Pension & Fiduciary Service
QMS	No context provided by OBPI
RADIUS	Remote Authentication Dial In User Service
RAMP	Rapid Appeals Modernization Program
RAMS	Research Administrative Management System
REACH VET	Recovery Engagement And Coordination for Health – Veterans Enhanced Treatment
REFDOC	Referral Documentation
RFE	No Context provided by OBPI
RLS	Regional Local Service

