AI innovation in federal healthcare

Catalyze AI capabilities with Red Hat technologies

> "Together with our partners in academia, industry and government, HHS will leverage AI capabilities to solve mission challenges and gain new insights into complex problems while ensuring that our solutions are ethical, effective, and secure."

DEPARTMENT OF HEALTH AND HUMAN SERVICES

The state of AI in federal healthcare: progress and barriers

Advances in artificial intelligence (AI) are transforming federal healthcare agencies, helping to improve outcomes and efficiency. Samples of use cases include:

▸ Accelerating detection of conditions that require timely intervention, such as sepsis.

▸ Providing decision support at the point of care.

▸ Enhancing population and cohort analytics and decision-making.

▸ Creating an ambient scribe that summarizes conversations between clinicians and patients, reducing the time clinicians spend updating the electronic health record.

▸ Predicting and preventing disease and supporting mental health.

▸ Reducing cardiac-related hospital readmissions.

▸ Evaluating medical images.

AI innovation in federal healthcare agencies is gaining momentum. The Food and Drug Administration (FDA) has received more than 300 submissions for drugs and biological products with AI components[1] and more than 700 submissions for AI-enabled devices.[2] As of 2023, device makers no longer need to start a new approval process to update their machine learning (ML) models.[3] "The 2023 Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence," directed 50 federal government entities to take specific actions to implement guidance across 8 policy areas. In 2024, the Office of Management and Budget (OMB) issued memorandum M-24-10, "Advancing Governance, Innovation, and Risk Management for Agency Use of Artificial Intelligence," and the Department of Health and Human Services (HHS) released its M-24-10 compliance plan in September 2024.[4]

Red Hat solutions for AI in federal healthcare agencies

Red Hat® tools and services help healthcare agencies build innovative AI applications that comply with federal government guidelines for safeguarded, security-focused, and trustworthy development, and provide the transparency and explainability expected in future guidelines. Unlike proprietary solutions, Red Hat's open source solutions work with healthcare agencies' existing IT investments, avoiding the time and expense of replacing existing data stores, applications, and lifecycle management tools.

---

1 *"Harnessing the potential of artificial intelligence."* fda.gov. 15 March 2024.

2 *"Artificial intelligence and machine learning (AI/ML)-enabled medical devices."* fda.gov. 7 Aug. 2024.

3 *"CDRH issues draft guidance on predetermined change control plans for artificial intelligence/machine learning-enabled medical devices."* fda.gov. 30 March 2023.

4 *"U.S. Department of Health and Human Services Compliance Plan for OMB Memorandum M-24-10."* hhs.gov. September 2024.

MLOps: Disciplined AI model building, training, and tuning

Red Hat OpenShift AI provides a framework for ML operations (MLOps), a set of workflow practices for efficiently deploying and maintaining ML models. Inspired by DevOps principles, MLOps helps healthcare agency teams integrate ML models into their software development processes, providing continuous monitoring, retraining, and deployment to maintain model accuracy as new data is gathered. The goal of MLOps is to create ML models that are accurate, reliable (produce replicable results), and trustworthy.
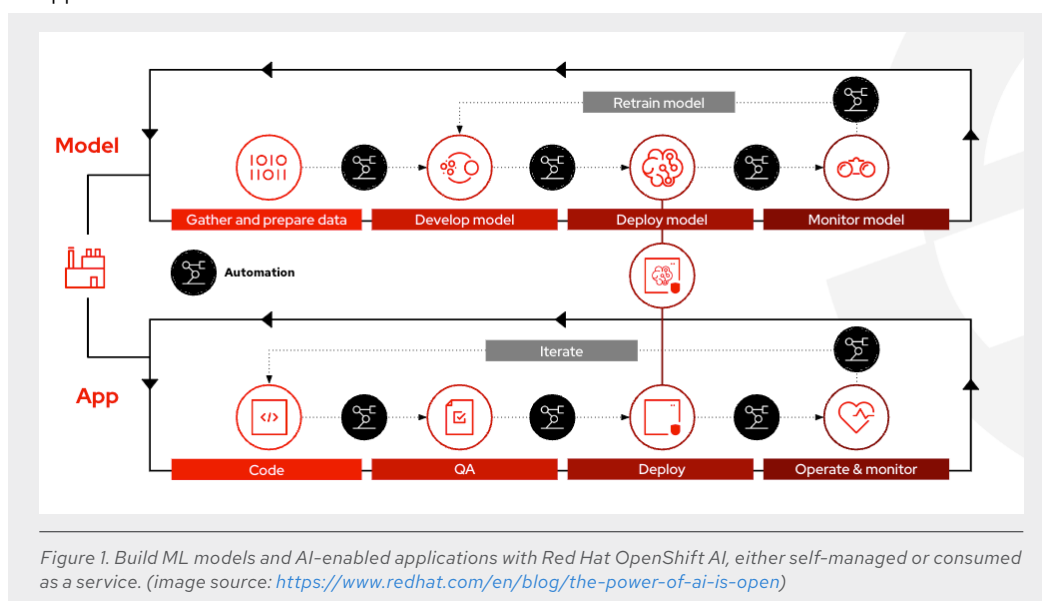
Red Hat OpenShift: Build models and applications once, deploy anywhere

Consider a healthcare agency that wants to build an ML model for disease prediction or medical image evaluation, deploying it in multiple locations across their hybrid cloud environment. With Red Hat OpenShift®, agency developers and system integrators can develop models and AI-based applications once and then deploy them anywhere: Hospitals, clinics, datacenters, or public clouds. AI/ML applications deployed on Red Hat OpenShift can scale to thousands of instances across hundreds of nodes. By automating DevSecOps workflows, Red Hat OpenShift helps agencies infuse security throughout the AI development lifecycle—improving quality and compressing development time.

Red Hat OpenShift AI: Foster collaboration between agency data scientists and developers

A companion to Red Hat OpenShift, Red Hat OpenShift AI brings together an agency's data scientists and developers, with oversight from IT, to develop, train, and fine-tune models, deliver AI-enabled applications, and bring models from experiments to production in less time (Figure 1). Data scientists can use OpenShift AI to:

▸ Build and tune models on any infrastructure within the agency enclave–cloud, on-premise, or edge, with self-service access to collaboration workflows and graphics processing units (GPUs).

▸ Retrieve and harmonize data from multiple internal or external sources. Optionally start with a foundation large language model (LLM), either the included IBM open source Granite family LLMs or another. Tune the foundation model for healthcare by using retrieval-augmented generation (RAG) to search for relevant knowledge.

▸ Deploy the model anywhere in a hybrid cloud environment. Models built on OpenShift AI are in a container-ready format that can be deployed consistently on any hardware.

▸ Fine-tune the model based on results, a continuous process comparable to iterating application code.

Figure 1. Build ML models and AI-enabled applications with Red Hat OpenShift AI, either self-managed or consumed as a service. (image source: https://www.redhat.com/en/blog/the-power-of-ai-is-open)

Red Hat Application Foundations: Increase developer productivity

Help developers build security-focused, innovative AI-based applications with Red Hat Application Foundations, a suite of modern software development capabilities delivered through a subscription-based service. These capabilities allow developers and data scientists to integrate their applications with other agency systems and applications, use application programming interfaces (APIs) and data streaming tools to train and refine ML models, and confidently develop innovative AI applications for clinicians and researchers that are ready to scale across hybrid cloud environments.

Defense-in-depth: Strengthen security and compliance

Red Hat's layered, defense-in-depth approach helps healthcare agencies implement security across the entire infrastructure and application stack, across the AI application lifecycle. Using Red Hat OpenShift, agency developers can build security into AI-powered applications, deploy those applications onto a hardened platform, and manage, automate, and adapt infrastructure and applications as government security and compliance requirements evolve.

TrustyAI: Meet expectations for explainable AI

Explainable AI refers to the ability of AI systems to explain their decisions in a way that humans can understand, which is especially important for healthcare decisions. An open source project that is part of Red Hat OpenShift AI, TrustyAI explains decision-making services and predictive models. More tools to make AI models transparent and explainable, such as SAS Viya and IBM Watsonx.ai, are available from Red Hat Ecosystem partners.

Develop internal AI/ML skillsets

Agencies can build their AI capabilities by engaging Red Hat consulting services. Experienced practitioners help with development and integration, providing knowledge transfer and documentation of the AI solution lifecycle in compliance with agency-specific and federal government guidelines for AI development and use.

AI in action in federal healthcare

Department of Veterans Affairs: Ambient scribe

The Department of Veterans Affairs (VA) is using natural language processing to assess veterans' health records and match them to ongoing clinical studies. The department is also piloting an ambient scribe that uses speech recognition to summarize patient encounters in structured clinical notes.[5] Physicians review the summaries, make necessary adjustments, and sign off on them before submitting the notes to patients' electronic health records. Check out other VA use cases for AI.

Department of Veterans Affairs: Identifying veterans at risk

The electronic health record (EHR) system for the VA contains a wealth of information that can be used to identify people at risk for conditions such as mental health issues or chronic kidney disease. Red Hat teamed with global consulting services provider Guidehouse and Philip Held, Ph.D. of Rush University Medical Center, to develop an AI/ML-based means of identifying veterans at risk for suicide ideation. Data scientists and developers used OpenShift AI managed cloud service to develop, train, and test ML models before deploying them.

---

5 *"VA working to reduce administrative burden with AI pilots."* MeriTalk. 29 May 2024.

Centers for Disease Control (CDC)

The CDC's Center for Forecasting and Outbreak Analytics (CFA) is using data science and ML to forecast infectious disease outbreaks. CFA's work includes building, testing, and improving open source models and tools; integrating models into routine practices; advancing leading-edge technology architecture; and establishing technical specifications for CFA and its partners to share data and methods for data collection, analysis, and more.

Catalyze AI innovation in your agency

Red Hat's open source technologies help federal healthcare agencies overcome the barriers to building safe, security-focused, and trustworthy AI models and applications. Potential mission rewards include improving population health, detecting disease outbreaks sooner, speeding time to market for new therapies, and improving patient and clinical experiences.

Explore a pathway to open source enterprise solutions

▸ Talk to a Red Hatter.

▸ Learn more about how Red Hat can help your agency or institution achieve its mission.

▸ Read about AI for the public sector.

About Red Hat

Red Hat helps customers standardize across environments, develop cloud-native applications, and integrate, automate, secure, and manage complex environments with award-winning support, training, and consulting services.

f facebook.com/redhatinc
✕ @RedHat
in linkedin.com/company/red-hat

North America	**Europe, Middle East, and Africa**	**Asia Pacific**	**Latin America**
1 888 REDHAT1	00800 7334 2835	+65 6490 4200	+54 11 4329 7300
www.redhat.com	europe@redhat.com	apac@redhat.com	info-latam@redhat.com

redhat.com
#1580492_0125