Clinical reasoning capabilities

Expand your organization's use of open source to propel innovation without vendor lock–in

Gain new insights from existing data

In healthcare, the ability to collect and interpret data is crucial for driving strategies towards the common mission of improved outcomes and reduced costs. Artificial intelligence (AI) and automation can support this mission by predicting patterns that provide important insights and bolster risk detection capabilities.

Strategies will vary by organization, but regardless of the initiative, there is a unique opportunity to insert a layer of optimization over the massive amounts of data that are generated. IDC estimates that approximately 270GB of healthcare and life sciences data was created (on average) for every person in the world in 2020.[1] AI can enhance the collection, analysis, and interpretation of that data in real–time. However, challenges exist in healthcare as data silos and fragmented solutions have created barriers in propelling such innovation forward.

Technology to help improve outcomes, increase quality of care, and reduce costs

Red Hat provides a complete solution for clinical reasoning strategies by combining validated patterns for data access and interoperability with process automation and AI, with support from consulting services to help accelerate time to market.

Red Hat's clinical reasoning solution uses application services for Red Hat® OpenShift®, enabling organizations to speed up the development and delivery of cloud–native applications that automate business decisions. This allows healthcare organizations to combine data from various sources and intelligently filter and present that data in real time while also layering in insights from AI tools. These insights can move various strategies forward, such as supporting clinicians at the point of care, assisting payers and health plans in detecting claims fraud, and predicting patterns that affect outcomes in patient populations.

Clinical reasoning is a prescriptive method of deploying Red Hat tools along with our consulting services. One example, for illustrative purposes, is to implement a clinical pathway for disease detection and treatment. Incoming data from beside monitors and periodic testing could propel process automation and clinical decision support to allow consistent treatment of each patient. The same data could also apply to a machine learning (ML) algorithm that looks for deeper patterns that may indicate a more serious underlying condition such as sepsis. When such a risk is detected, it can be sent back to the same process workflow to inform the right clinician at the right time.

By treating data as a product with its own life cycle, it can be delivered on demand to the requestor, regardless of geographic or organizational separation from the provider, and help organizations integrate with everything from electronic health information exchanges (HIEs) to electronic medical record systems (EMRs) to patient and provider portals. Red Hat Intelligent Data-as-a-Service (DaaS) provides connectors, message usage, a business rules engine, an action engine, federated access to data sources, and caching.

> "The three drivers of [artificial intelligence and machine learning] AI/ML adoption are improvement in operational and clinical efficiencies, insights at scale, and improving the patient and provider experience."[1]

> "Data is rapidly becoming the currency in healthcare, and yet less than 50% of organizations do not have a data management and governance structure."[1]

> "Healthcare organizations responding to IDC's Industry AI Path Survey indicated that improving the member and patient experiences was a key driver of AI/ML."[1]

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The Red Hat difference

Complete

AI tools on a single platform, a common application programming interface (API) for sharing data, and end-to-end process automation including ML and edge

Customizable

Meet the demands of evolving internal initiatives and external mandates

Flexible

Accommodate differences in workflow and facilitate operationalizing feedback loops

Innovative

Take advantage of improved capabilities that come from community-driven development

An open, flexible solution that meets your organization's unique needs

Open source solutions offer more flexibility and less risk of adoption than off-the-shelf or proprietary solutions with source code that can be easily accessed and changed. Subscription-based services and a software-defined, cloud-ready environment for virtualization provide security and scalability for additional cost savings and efficiency. An open source clinical reasoning solution benefits from the input of many organizations, large and small, and many contributors, including physicians and other clinicians, whereas some solutions are developed by a single vendor.

This reference architecture is fully compatible with Red Hat OpenShift Container Platform. Because it is built with open source technology, Red Hat's clinical reasoning solution is highly versatile and modular. Healthcare organizations can personalize it, integrate it with existing data sources and workflows, and incorporate their choice of machine learning solutions (custom, Red Hat, or other vendor) so they can take advantage of the best tool for the job. It also offers the flexibility to build a feedback loop within a clinician's workflow.

Organizations must have the ability to protect data and remain compliant. The Red Hat platform offers security-focused features like HIPAA-compliant infrastructure solutions (in the United States) to protect sensitive patient data, so they can safely share it within and across organizations. With Red Hat's open source approach, you can incorporate new technologies whenever you need to adapt to changing market dynamics, and adopt future innovation while ensuring your foundation is enterprise-grade and can be supported 24x7.

Get started

The Red Hat clinical reasoning solution follows a reference architecture that has been validated in multiple customer organizations, allowing the solution to be implemented more quickly and reliably. To learn more or to schedule a discovery session, visit redhat.com/health.

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.

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