GAIN BETTER HEALTH INSIGHTS

Using open source to advance clinical decision support

BRIEF

Intel and Red Hat are leaders in building open IT infrastructure that meets the increasingly complex requirements of the healthcare industry.

"You have to present the decision-making support at the point where the clinician can assimilate and act on it. Otherwise it's disruptive, rather than helpful."

JOYCE SENSMEIER
VICE PRESIDENT OF INFORMATICS, HEALTHCARE INFORMATION AND MANAGEMENT SYSTEMS SOCIETY (HIMSS)[1]

70% of hospitals and acute care facilities view CDS tools as a top business priority.[2]

MANAGE A GROWING VOLUME OF PATIENT DATA

Healthcare professionals care for patients in a rapidly changing clinical environment, adapting to shifting state and federal regulations and patient care that is transitioning from fee-for-service to value-based. In addition to these structural changes, technology is undergoing a seismic shift as healthcare organizations work to incorporate electronic health records (EHRs), mobile devices and applications, and smart monitoring devices, such as wearables, into core healthcare systems.

The ability to collect and interpret the massive amount of data generated by these sources offers clinicians remarkable insights into treating individual patients and managing health outcomes for various patient populations. It also helps to build a feedback loop into clinicians' workflows to continually improve recommendations. As that data volume increases, however, so does the complexity of storing, managing, and retrieving the data, making it harder for clinicians to access the right information when it matters most.

CREATE AN OPEN, FLEXIBLE SOLUTION TO SHARE INFORMATION

Clinical decision support (CDS) is a technology solution that combines data from all these sources and presents relevant information and recommendations to clinicians as they are examining and treating patients. That data can take the form of patient records, relevant clinical guidelines and studies, diagnostic support, or care alerts or reminders—all designed to create a better view into a patient's health.

The Red Hat® CDS architecture uses Red Hat Decision Manager, which is built on JBoss® Drools, an open source engine. The architecture is fully compatible with Red Hat OpenShift® Container Platform and is accessed via an application programming interface (API). Red Hat Decision Manager is a predictive engine that analyzes data and makes recommendations using guidelines and rules, such as diagnostics, drug interaction, and allergy data. Predictions generated by JBoss Drools are integrated into the clinical care workflow to facilitate the most effective recommendation and optimize patient outcomes.

Red Hat Decision Manager supports Decision Model and Notation (DMN), a standards-based graphical language, to easily develop, modify, and customize the rule base as needed. Organizations can empower clinicians and healthcare professionals to generate predictions and take appropriate action—for instance, to use a patient's likelihood of readmission as a prompt to engage with the care coordination team to ensure that next steps are taken.

The Red Hat CDS architecture also uses Red Hat Fuse to help organizations integrate with electronic health information exchange (HIE) and electronic medical records (EMRs) to access holistic patient information.

1 *HIMSS Media, "Leveraging open source to advance clinical decision support," 2018. https://www.redhat.com/en/resources/open-source-clinical-decision-support-himss-analyst-paper*

2 *HIMSS Media and Red Hat, "Advancing clinical decision support," July 2018. https://www.redhat.com/en/resources/clinical-decision-support-analyst-paper*

CONNECT HEALTH DATA, DEVICES, AND SYSTEMS

The Red Hat CDS architecture running on Intel processors creates an open, agile CDS platform that is ideally suited to the complexities of the healthcare environment. Intel processors improve architecture performance and costs, reducing total cost of ownership (TCO) by 65%.[3]

Open source solutions offer more adaptability than off-the-shelf or proprietary solutions, with source code that can be easily accessed and modified. Subscription-based software and a software-defined, cloud-ready environment for virtualization provide flexibility and scalability for additional cost savings and efficiency gains. An open source CDS architecture benefits from the input of many contributing physicians and organizations, as opposed to being developed by a single vendor team. The active and continuous feedback from participating physicians and other healthcare professionals creates a feedback loop that helps refine workflows and improve quality of care.

To efficiently share such data, organizations must have the ability to protect the data. The Red Hat architecture running on Intel processors offers strong security to protect sensitive Internet of Things (IoT) and patient data so it can be safely shared within and across organizations.

BUILD COLLABORATION AND ADAPTABILITY FOR THE FUTURE

In the future, medical technology, EHR, data analytics, and data privacy and security regulations will continue to shift and evolve. A Red Hat open source CDS architecture, built on the strength of Intel processors, can help healthcare organizations integrate, streamline, and manage rapidly changing technology to get clinicians the intelligence they need, when they need it, to care for patients and communities.

To learn more about Red Hat open source solutions that support CDS, contact your account representative or visit redhat.com/health.

3 Up to 65% lower four-year TCO estimate example based on equivalent rack performance using VMware ESXi virtualized consolidation workload comparing 20 installed two-socket servers with Intel® Xeon® processor E5-2690 (formerly Sandy Bridge-EP) running VMware ESXi 6.0 GA using guest OS Red Hat Enterprise Linux 6.4 compared at a total cost of $919,362 to ve new Intel® Xeon® Scalable Platinum 8180 (formerly Skylake) running VMware ESXi 6.0 U3 GA using guest OS Red Hat Enterprise Linux 6 64-bit at a total cost of $320,879 including basic acquisition. Server pricing assumptions based on current OEM retail published pricing for two-socket server with Intel® Xeon® processor E5-2690 v4 and two CPUs in four-socket server using E7-8890 v4—subject to change based on actual pricing of systems offered.

ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.

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