

The Java Advantages

This maturing technology assists clinical care delivery and patient safety.

by Matthew W. Morgan and John A. Lauer

Integrating clinical care processes is a priority for all healthcare organizations. Nevertheless, patient information — essential in the delivery of high-quality, cost-effective care — remains elusive. Doctors, nurses and other clinicians spend more than a third of their time searching for data, most of which remains buried in paper-based arrangements. Not only is precious clinician time wasted, but worse, decisions may be less than optimal, adversely affecting patient safety. The need persists for integrated, comprehensive, computer-based patient records (CPRs) to support best practices.

Java enables modernization and integration of disparate IT systems. As the computer industry shifts from myriad proprietary technologies to a few consensus standards, such as Unix, Windows NT and the Web, healthcare IT personnel are realizing that they must adopt new ways to simplify operational systems.

Originally deployed as a programming language for the Web, Java has evolved into an industry-proven, object-oriented language that offers a robust and secure structure for building and managing client-side, enterprisewide applications. Clinicians and developers alike are becoming increasingly aware, as Java gains acceptance for new healthcare IT strategies, that its platform offers some distinct advantages, particularly in modernizing the architecture of patient care software. Java extends the reach and usability of CPR technology in a variety of environments. Several characteristics make Java beneficial to clinicians.

Platform neutral

Java-based applications can be deployed on Windows and other types of workstations and personal digital assistants (PDAs). This platform neutrality allows clinicians to use their favorite desktop, laptop or handheld device to securely access data.

Network centric

Java was developed specifically to operate in a distributed, networked environment. It allows Web access to sophisticated interactive applications, such as physician order entry and clinical decision support. Clinicians are never more than a network connection away from viewing current information and making informed decisions. Integration of clinical decision support tools, such as Web-based medical libraries and Java-based rule engines, enable clinical alerts that are vital to patient safety improvements.



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Cost-effective deployment

Java-based software systems are easier and more cost-effective to install than traditional client-server computing technologies. Java applets can be loaded on demand by a Web browser, and Java provides additional technologies to load, save, use and update these applications automatically, eliminating the need for clinicians to manage their own desktop.

Industry-proven programming language

Java object technology offers significant advantages over procedural languages in increased reliability and availability of applications. It works behind the scenes to eliminate the software housekeeping required in hybrid object languages, such as C++, in which failure to attend to internal complexities can lead to application failures.

Transaction processing

Distributed object methods and transaction support via Enterprise Java Beans allow development of complex, multitiered transaction processing applications and high data integrity.

Graphic user interface

Java technology provides a platform-independent framework to support the design of graphic and intuitive user interfaces. It can be used to create enterprise-class CPR applications and improve the usability of legacy applications. Plus, its Web orientation enables the visual and functional integration of clinical knowledge resources.

Clinical support

Java's features allow creation of an intuitive, interactive clinical desktop to support evidence-based medicine and best clinical practices. The integrated environment allows clinicians to quickly and easily review patient information, document notes, access enterprise and Internet-based knowledge sources, and enter clinical orders. Its direct value to physicians is the acceleration of computerized physician order entry — a crucial step forward in leveraging the CPR to prevent medication-related errors and improve patient safety.

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