

The Next Frontier for Java Technology

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Abstract

As it has in every other computer generation, software design for embedded systems is undergoing a transformation as the complexity of typical systems increases. This increase in software complexity arises as various technical and financial factors in the embedded systems industry cause system designs to specify an increasing proportion of the function of embedded devices to be implemented in software. As this trend continues and software architectures for embedded systems begin to approach the size and complexity of software systems for general-purpose computers, the need for advanced programming languages, which support real-time and distributed programming models, and integrated design, development and analysis tools will increase. In addition, finding processes and disciplines which increase programmer productivity, long a desired goal among general-purpose software vendors, will become important for embedded software development teams.

A number of consumer embedded devices, such as cellphones, currently use Java technology as an application-software runtime. The next frontier for Java technology is for embedded system-software runtimes where execution predictability is a key requirement and for systems with large and complex software architectures. Java enables the reality of this future through the Real-Time Specification for Java. This evolution will provide all embedded developers with the advantages and productivity gains of the Java language and platform.

The Real-Time Specification for Java addresses many issues in the Java Language and runtimes which cause unpredictability and will allow programmers to write applications which execute predictably. Thus, Java technology will be an option for embedded software development teams.