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The Distributed Real-Time Specification for Java: Status Report

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Abstract. [Plus two subsequent updates]

The Distributed Real-Time Specification for Java (DRTSJ) is under development within Sun's Java Community Process (JCP) as Java Specification Request 50 (JSR-50), lead by the MITRE Corporation. We present the engineering considerations and design decisions settled by the Expert Group, the current and proposed form of the Reference Implementation, and a summary of open issues. In particular, we present an approach to integrating the distributable threads programming model with the Real-Time Specification for Java and discuss the ramifications for composing distributed, real-time systems in Java. The Expert Group plans to release an initial Early Draft Review (EDR) for previewing the distributable threads abstraction in the coming months, which we describe in detail. Along with that EDR, we will make available a demonstration application from Virginia Tech, and a DRTSJ-compatible RTSJ VM from Apogee. **Update 30 March 08:** After several years of designing and implementing the DRTSJ on our (mostly Jonathan Anderson's) personal time, the DRTSJ reference implementation became functional enough to meet my research project's critical needs. But the EDR was still incomplete. I decided in October 07 to make an unplanned diversion of some money from my research project for some people to put some funded time on the DRTSJ in hopes of getting the EDR out by December 07 and then extended to February 08. Unfortunately, being able to pay for the uniquely qualified programmers required for this effort doesn't mean that I can actually get their time. Jonathan Anderson was an overloaded Ph.D.student, and Yun Zhang was distracted by other work deemed higher priority by her management. By the end of February 08 I could no longer justify the DRTSJ funds, and so I terminated the work. The reference implementation needs about a couple person-months of work, and the written spec likewise -- by us, probably considerably more if performed by the few people not already intimately familiar with the concepts and implementation. The nearly complete EDR and ancillary software are available to anyone who wishes to seek it from the JSR-50 Expert Group. **Update March 09:** I have found a project at MITRE sponsored by the DoD that is interested in funding the completion of the EDR, or at least a "distributed real-time Java." Funding is only part of the need, Jonathan's time is the other part. The prospective funding project is so important that it appears able to break Jonathan away from his current assignment. We are discussing what the project needs as a "distributed real-time Java," since our Reference Implementation is what MY research project needed. That has to be reconciled with Jonathan's constraints. If we reach a consensus on the time, funding, feature, and constraint issues, the resulting "distributed real-time Java" may differ in some respects from the current DRTSJ spec and RI. The prospective sponsor's interest in the "distributed real-time Java" he needs also being the DRTSJ is limited by the extra time and cost required to go through the JCP; that question is among those still being discussed. Perhaps a different funding source might be interested in taking it through the JCP. I expect these decisions to be resolved in early Spring 09.