



QNX Solutions for Java™ Developers

The PERC Product Family

Product Line Overview

WHY JAVA MAKES SENSE FOR EMBEDDED SYSTEMS

- ◆ **Abstraction** - say more with fewer words, dividing concepts and details
- ◆ **Reliability** - reduce likelihood of programming errors
- ◆ **Separation of Concerns** - isolate contributions of diverse developers
- ◆ **Ease of Maintenance** - portability across multiple architectures
- ◆ **Scalability** - promote modular composition of components

Atego solutions address both hard real-time and soft real-time needs:

- ◆ **Embedded / Soft Real-Time** - Actions performed on time have greater value than other actions. Empirical measurements and heuristic enforcement of resource budgets are commonly used.
- ◆ **Hard Real-Time** - Actions not performed on time have zero or negative value. Commonly, compliance with timing constraints is proven with theoretical static analysis techniques prior to deployment.
- ◆ **Safety Critical** - Actions not performed on time can result in catastrophic consequences to life or property. Typically, certification to DO-178B or equivalent guidelines is required.

Today's embedded systems are more demanding and varied than ever. With application areas as diverse as fleet telematics, industrial automation, civil avionics, and military field equipment and network infrastructure, project success depends upon equally diverse tools.

But one thing that hasn't changed is the need for efficient, dependable, and predictable software development - the kinds of benefits commonly associated with the Java development paradigm.

Atego, a decades-long industry leader in embedded and real-time tools and pioneer in Java platform technologies, has brought together these two strengths to meet the needs of today's mission critical developers. A participant in the Java Community Process and key contributor to the development of standardized RTSJ profiles for hard real-time and safety critical applications, Atego is uniquely positioned deliver useable Java technology.

The Atego approach starts with cleanroom implementations based on standard Java platforms, and the existing RTSJ specification. By defining profiles that both subset and supplement established standards in an open, standards-based forum, Atego has developed technologies for three complementary market segments: complex, dynamic soft real-time; deeply embedded and high-performance hard real-time; and certifiable safety critical applications.

ATEGO REAL-TIME VM SOLUTIONS

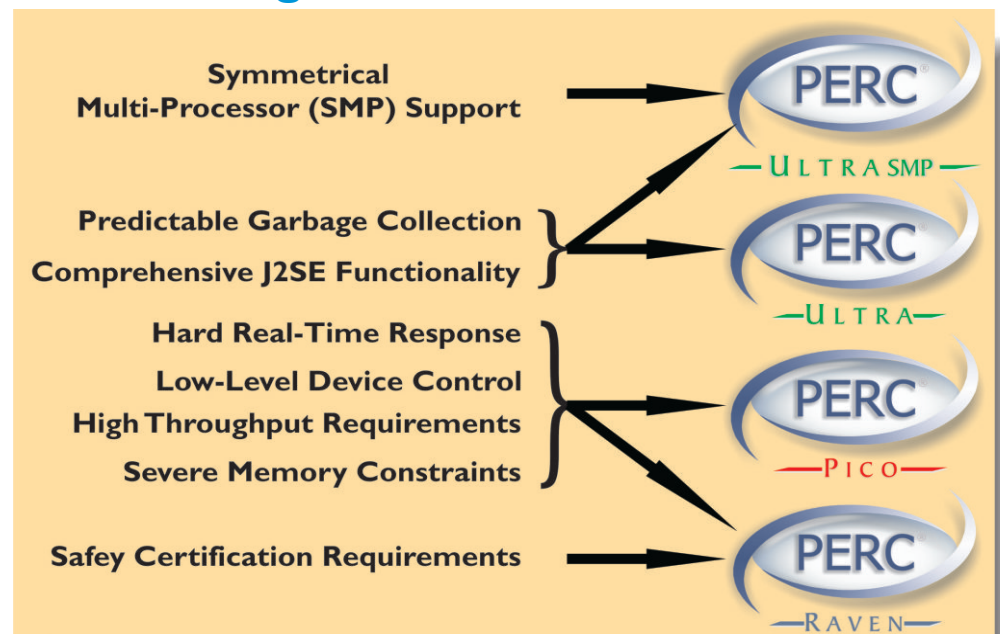
Beginning with the PERC virtual machine, which has fueled tens of thousands of successful application deployments, Atego has developed patented technologies and incorporated them into products which enable developers to build critical applications faster and with higher reliability than is commonly achieved with other technologies even working in conjunction with legacy language code.

PERC Ultra is typically used for applications that need to use the rich features of Standard Edition Java libraries, coupled with predictable performance. PERC is a mature, proven and not an experimental program offered by competitors. It has been field tested in more applications than any other real-time virtual machine system.

PERC Pico is the Atego solution specifically designed for applications with demanding requirements for small footprint, fast execution, and low level device access. Benchmarks have shown Pico applications can run as fast or faster than comparable C/C++ programs, while being fully predictable and memory efficient.

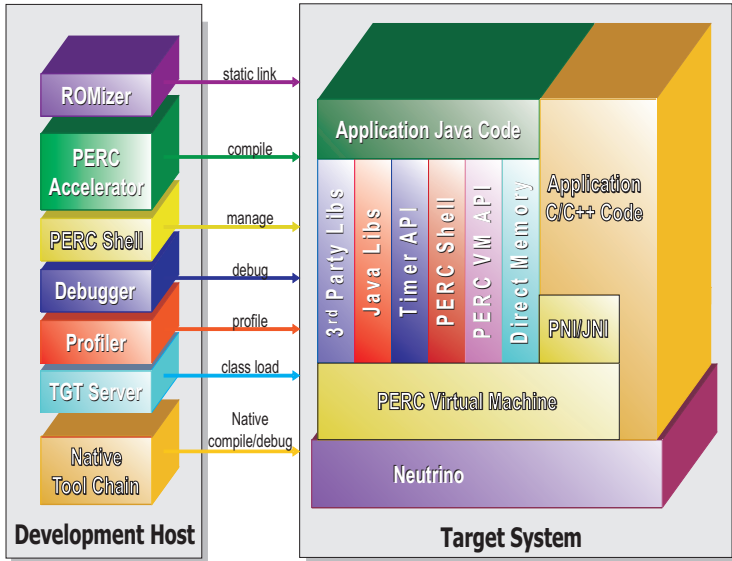
PERC Raven carries on the long Atego tradition of safety-critical technologies which are in use in many of the most safety intense applications operating today, including diverse avionics, space, and transportation systems where lives are on the line. PERC Raven applies safety constraints which provide the basis for fulfilling safety certification requirements.

Which Atego Solutions Match Your Needs?

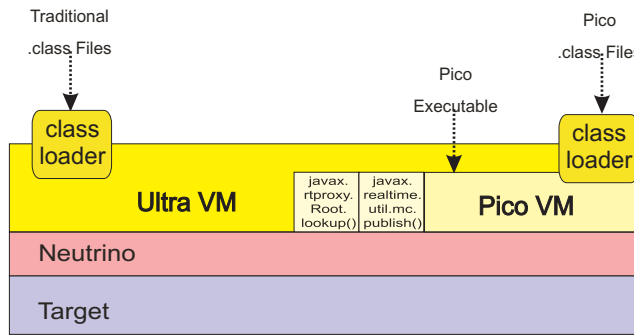
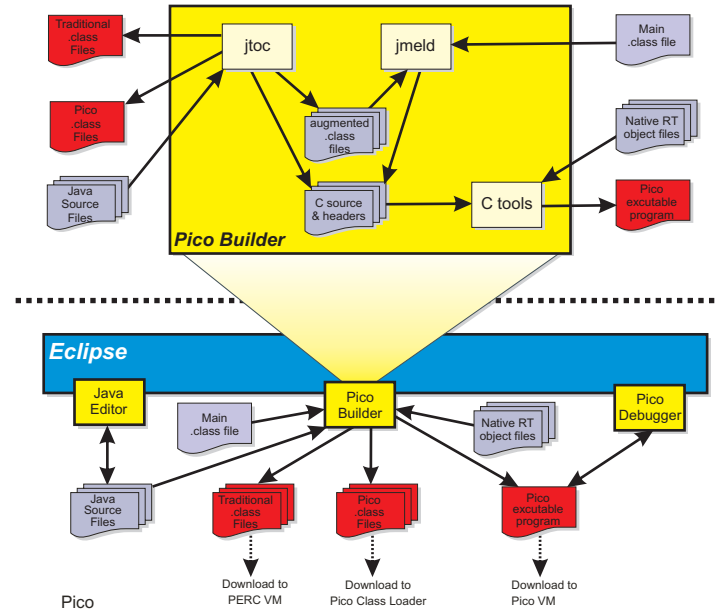


Product Line Overview

PERC Ultra Toolchain



PERC Pico Toolchain



PERC Ultra + PERC Pico with QNX

Benchmark	PERC Pico	Gnu C	Sun HotSpot
Sieve (standalone)	83	100	256
Sieve (CaffeineMark)	111	100	164
Loop (CaffeineMark)	88	100	286
Logic (CaffeineMark)	154	100	228
Method (CaffeineMark)	141	100	152

PERC Pico Benchmarks

This table represents *unoptimized* PERC Pico benchmark performance compared to gcc and Hotspot.

Figures denote relative execution times, therefore lower numbers reflect faster performance.

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