Device Software Development Platform

Creation Review
2 June 2005
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Wind River Systems

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Agenda

- What is Device Software?
- Project Goals and Scope
- Sub-Projects
  - Target Management
  - Device Debugging
  - eRCP / WideStudio
- Participation
- Overlap with other projects
- Roadmap
- Status

What is Device Software?

Device software is software that runs on an embedded operating system inside a larger physical product. Device software applications are typically cross-compiled and deployed on a custom hardware target that is based on a different configuration than the development host. These custom targets are often constrained by processor type, processor speed, available memory, and hard real-time responsiveness. The embedded operating system is usually optimized for these constraints and is also designed to deal with on-chip peripherals such as communication modules, high-resolution timers, memory controllers, etc.

- medical devices (blood-test machines, EKG's)
- network equipment (routers, switches)
- consumer electronics (digital cameras, mobile phones)
- automotive applications (car infotainment, engine controllers)
- military applications (cruise missiles, combat systems)
- industrial devices (manufacturing robots, process instrumentation)

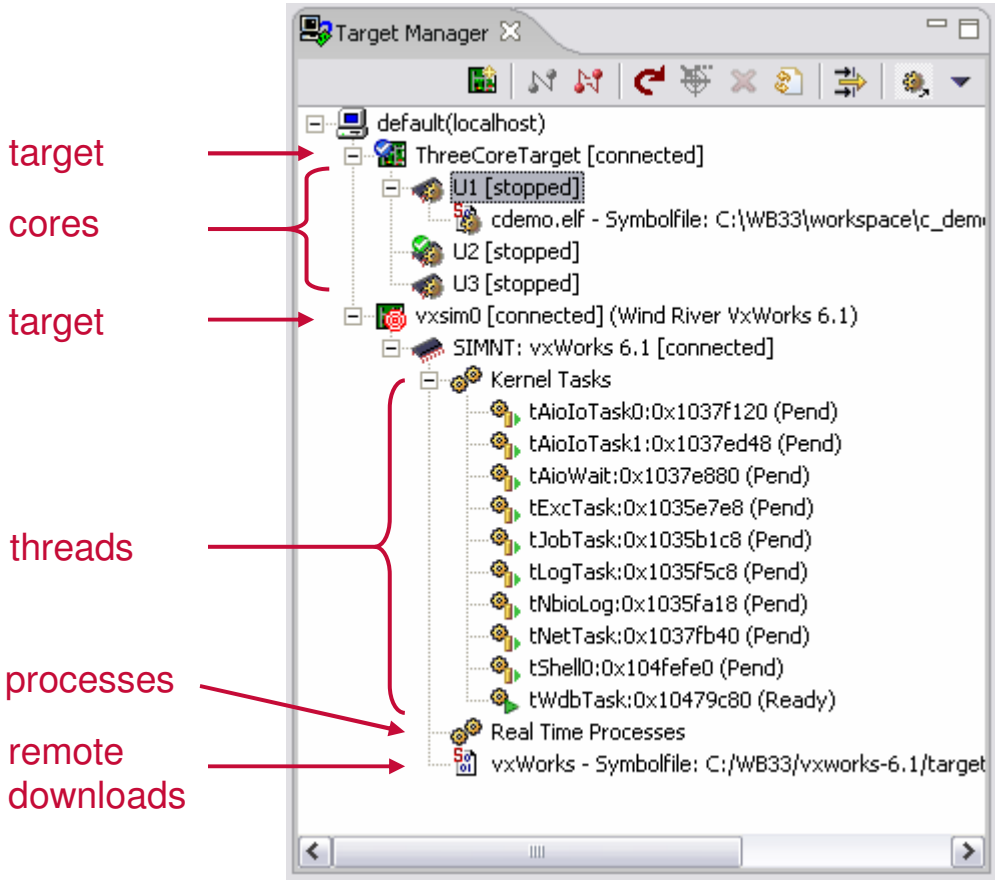
Project Goals and Scope

- Create an open, extensible, scalable, and standards-based development platform focused on the needs of the device software developer.

- Address 3 phases of the device software development
  - Hardware bring-up
    - Test prototype hardware
    - Verify basic functionality of the target processor(s), memory, and peripherals
    - Run diagnostics and simple software applications
  - Platform development
    - Bring up and configure target operating system and services
    - Build device drivers and board support packages
  - Application development
    - Create the applications for the combination of hardware and software that comprise the end product (the “device”).

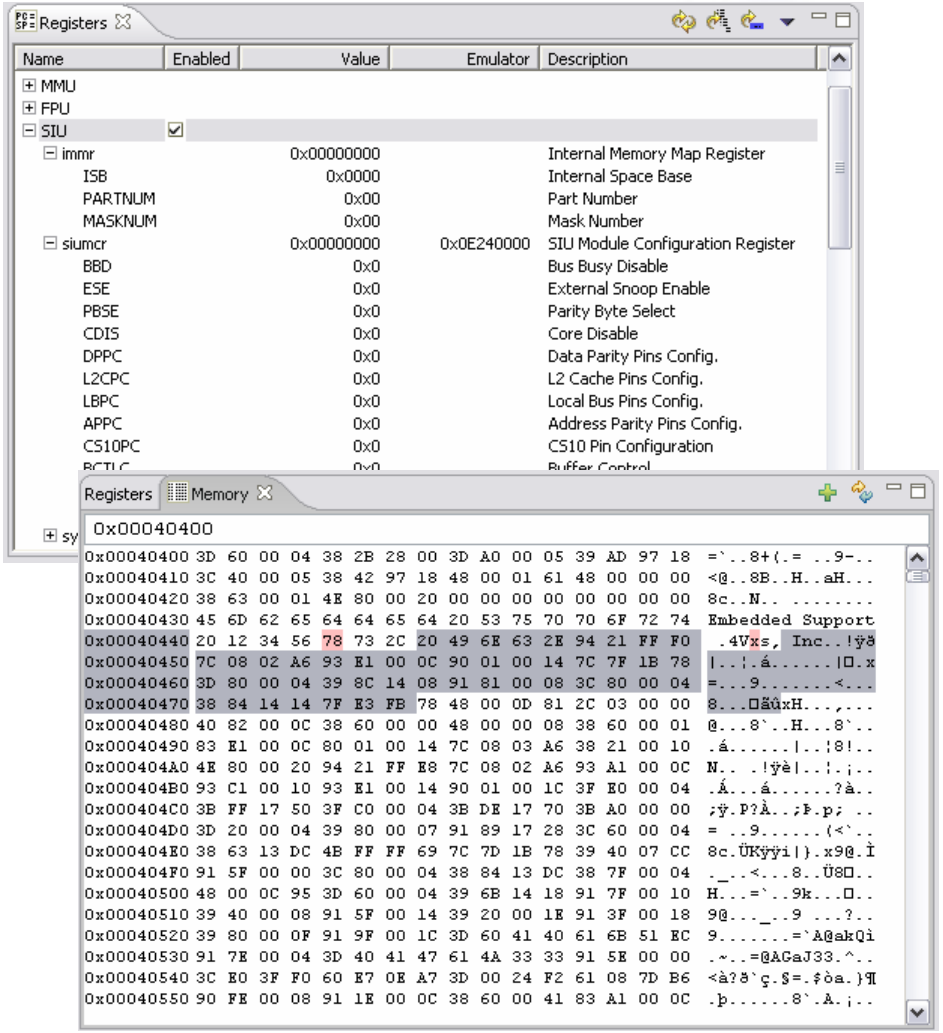
Sub-Projects – Target Management

- Create extensible frameworks and data models for remote target management.
- Support complex target scenarios: multiple processors, cores, processes, and threads.
- Support tasks such as: downloading software and data, launching single or multiple configurations, starting and stopping cores, debugging processes and threads, querying target information



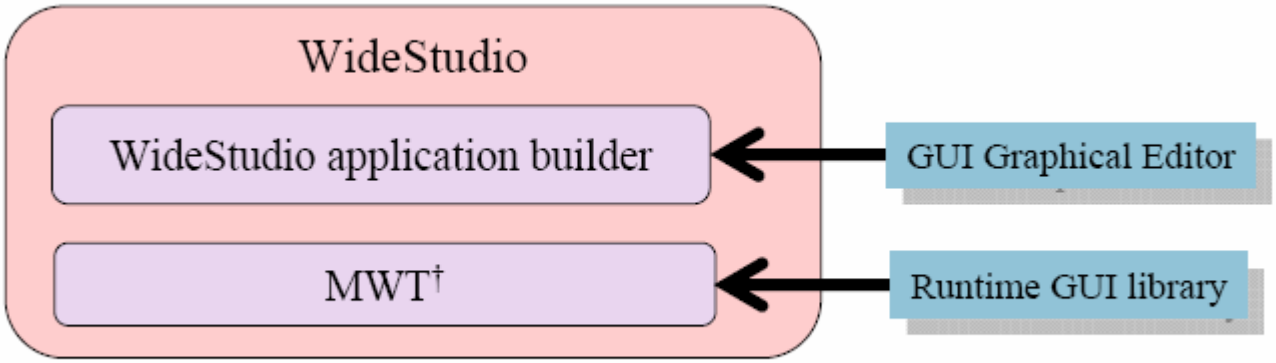
Sub-Projects – Device Debugging

- Create new frameworks and extensions to the existing platform debug framework to support the device software development phases.
- Cooperate with existing Platform and CDT debug teams to implement changes and extensions to the debug API's and debug views.
- Device Debug issues with existing debug framework
  - Slow targets – stepping speed is critical
  - Slow debug connections – data for view update is costly to read
  - Need for non-blocked GUI – keyboard should remain live to allow for stepping prior to completion of data view updates
  - Need for lazy data update – only update what is visible in the view
  - Need for low-level target access – peripheral visibility, register bit fields, memory access methods, interrupt service routine debugging
  - Multiple context debugging and data presentation



Sub-Projects – eRCP and WideStudio

- eRCP / J2ME tools
  - We are talking to the eRCP team about graduating eRCP to DSDP after the first release
  - The eRCP team is also interested in the formation of a sub-project focused on tools for J2ME development
- WideStudio / MWT
  - WideStudio is an embedded GUI platform with an embedded widget library
  - Fujitsu wants to create an open source project



Participation

- Project Management Committee
  - Doug Gaff (DD subproject), Wind River Systems (proposed PMC lead)
  - Martin Klaus, Wind River Systems
  - Adam Abramski, Wind River Systems
  - Michael Scharf, Wind River Systems
  - Rudi Frauenschuh (TM subproject), Wind River Systems
  - Other sub-project leads, including eRCP and WideStudio
- Interested contributors
  - Wind River Systems
  - Accelerated Technology
  - IBM
  - Intel
  - MontaVista
  - Texas Instruments
  - Timesys
- Interested users / specification-providers
  - QNX
  - HP
  - Freescale
  - …

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IBM

intel

Accelerated Technology
A Mentor Graphics Division

QNX Build a more reliable world

TimeSys

montavista

Texas Instruments

hp invent

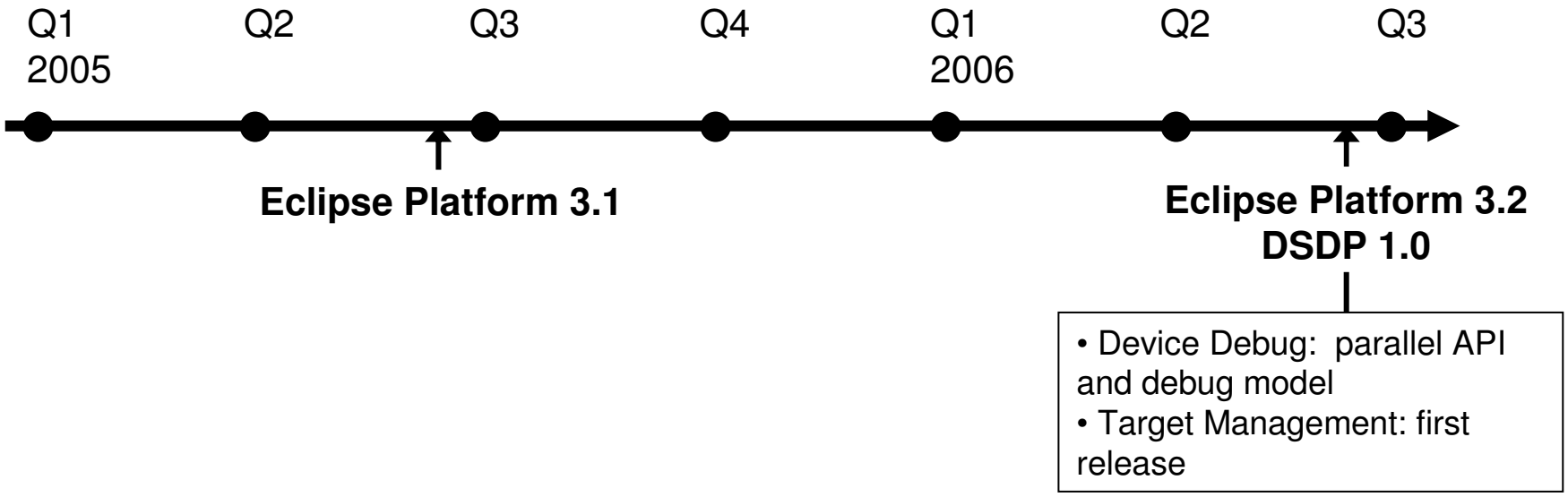
freescale semiconductor

Overlap with other Eclipse Projects (needs work)

Some of the technology proposed for DSDP will extend existing Eclipse technology.

- Platform
  - Debug – DSDP is proposing extensions to the existing debug framework
  - Editor – Wind River is pursuing contribution of a multi-language editor
- CDT / JDT
  - Build – Wind River is pursuing contribution of parts of our build system
  - Parsing
- PTP
  - Target Management
  - Debug
- TPTP
  - Target Management

Roadmap



NOTE: Depending on the nature of the changes in the Device Debug subproject, the API's may need to be merged in the 4.0 release of the platform.

Current Status

- Device Debugging
  - Preliminary discussions held at EclipseCon 2005
  - Chicago meeting (5/3 – 5/4): Wind River, IBM, QNX, TI, ATI, Intel
    - Discussed each company's proprietary debug solution on top of Eclipse
    - Discussed view requirements and possible API extensions
  - Next meeting in June to dive deeper into proposed API changes.
- Target Management
  - Currently gathering requirements from interested parties
  - Face-to-face meeting to be scheduled
- On-going discussions with eRCP and WideStudio teams