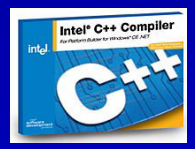
인텔 Bulverde (PXA 27X) 모바일 개발툴 솔루션 !



Intel®
SDT

EPI
XDB-MAJIC

Host Environment

Tools on Host
IDE
Compiler
Assembler
Linker/Loader
Librarian
Debugger

OpenDebug
Software

Intel IDE or CodeWarrior

Intel C++ Compiler

Intel IPP, Libraries, Intrinsic Sup,
VTune Performance Analyzer

Intel XDB Debugger

EPI XDB-MAJIC
OpenDebug™ Interface to MAJIC

EPI MAJIC-MX JTAG Probe

Target
Environment

MAJIC-MX
JTAG Probe

PXA270

Intel® Mainstone Target

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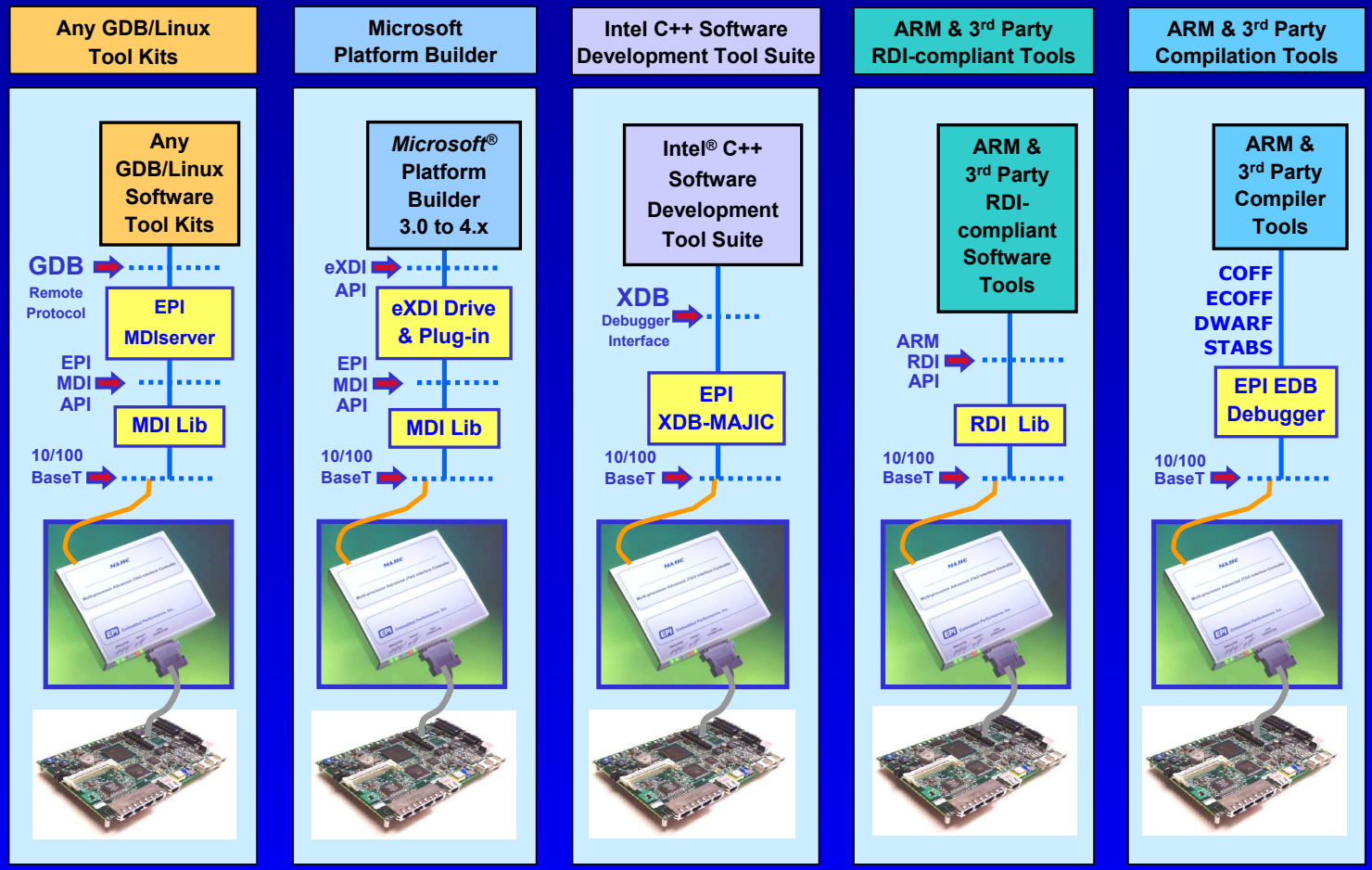
Development Environments supporting Intel XScale® microarchitecture



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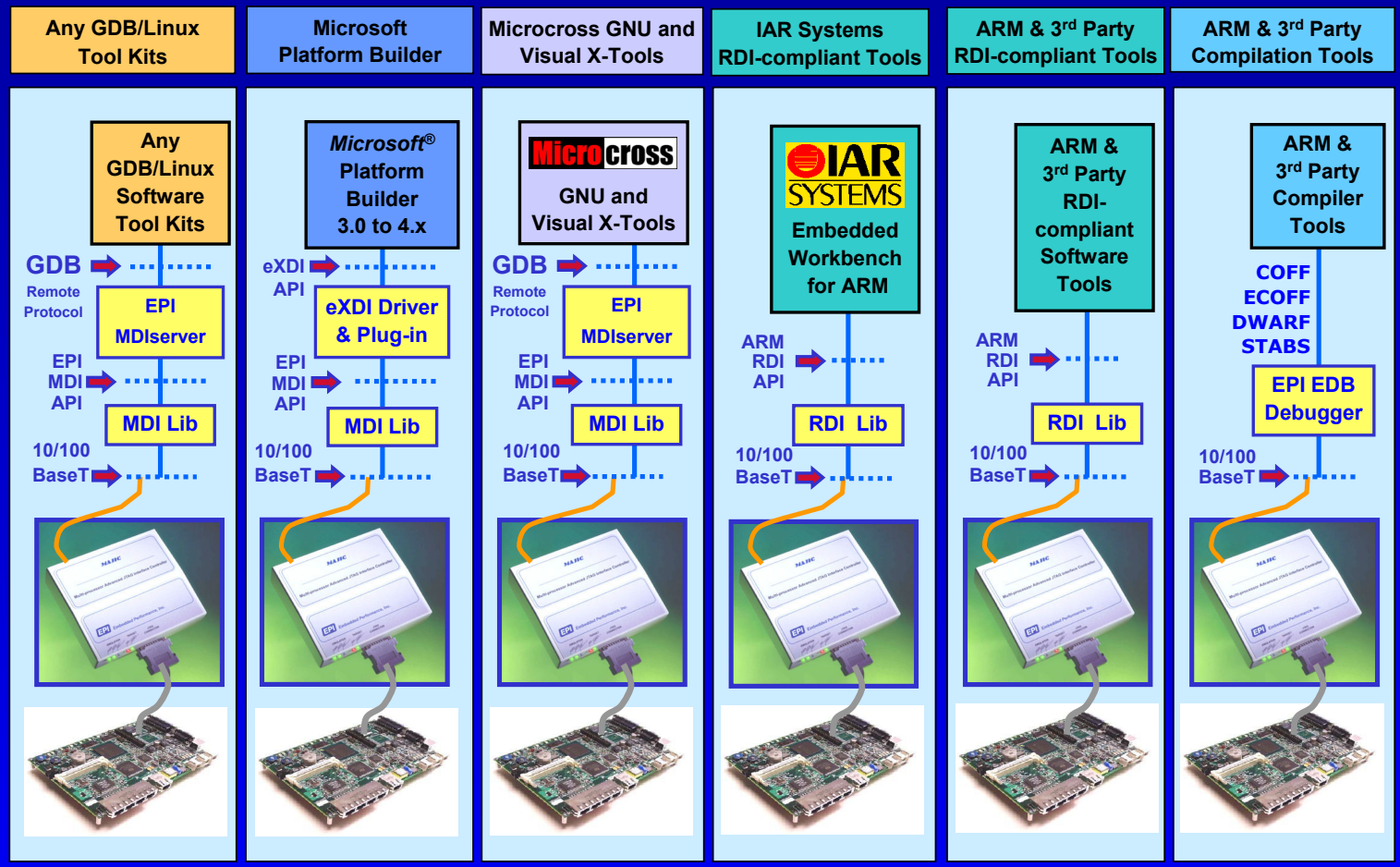
EPI Development Environments for ARM



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MAJIC™ Multi-processor Advanced JTAG Interface Controller

MAJIC Development System Features:

- **Ideal for SoC based applications**
- **Non-intrusive, uses no target resources**
- **Supports a wide choice of on-chip debug interfaces**
- **Supports a wide variety of CPU cores**
- **Supports on-chip hardware breakpoints**
- **Unlimited software breakpoints**
- **Programmable JTAG Clock (TCK = 0 to 40 MHz)**
- **Programmable trigger-in and trigger-out connections**
- **Ethernet and Serial I/O Ports for fast, flexible host interface**
- **High speed download (>200k bytes per second) of application code**
- **Network compatibility allows shared and remote operation**
- **Internal RISC Processor assures fast operation**
- **Flash Memory for easy firmware updates to support for additional CPU cores or on-chip debug interfaces.**
- **External AC adapter compatible with all international power sources**
- **Support Risc : Xscale / ARM / MIPS**

MAJIC

- **Sleep-mode support**
- **LED's display operation status**
- **Open API for debugger interface**
- **EDB integrated debugger**

Major features of the MAJIC include:

Ethernet Interface

The 10base-T/100base-T Ethernet interface provides many advantages over serial or parallel interfaces to the host. Download of your application code is over ten times faster than with serial interface. This will significantly reduce the amount of time spent waiting for code changes to download to your target board.

Network connection allows remote operation of the MAJIC. Now you can access the lab setup directly from your desktop. This allows multiple engineers to share a common test bench.

Flash Memory

The MAJIC firmware is easily upgraded without the need to replace ROMs.

Install new configuration kits easily and quickly using the simple program provided. You can add support for multiple CPU types to the MAJIC with a simple firmware upgrade.

New firmware updates will be available on the our FTP site. Use the simple program provided to automatically program the updated firmware into the on-board flash memory.

Flash memory makes it easy to program an IP address into the MAJIC for point-to-point ethernet connection to a PC or workstation.

Internal RISC Processor

The use of a high performance internal RISC processor allows fast response to debugger operations such as single stepping, reading and writing memory, reading and writing registers, and downloading of application code to the target.

MAJIC^{PLUS} Version Includes Trace

For a version that includes execution tracing, see the MAJIC^{PLUS} data sheet.

Status LEDs

The MAJIC provides five LEDs which show the operational status of the emulator. These LEDs also indicate the results of the built-in self test that is automatically performed upon startup.

Choice of Configuration Kits

You may configure the MAJIC to support one or more of the supported combinations of CPU core and on-chip debug interface. Each configuration kit includes the firmware, user license and interconnections necessary to support the CPU that you have chosen. Please refer to the Configuration Kit data sheet for detailed specifications on the CPUs and on-chip interfaces currently supported.

Programmable JTAG Clock

The MAJIC features a programmable TCK with a 0 to 40 MHz range. This allows you to tailor the JTAG operation to match the performance of your target. It also means that you can use the MAJIC with low speed ASIC emulators or with devices that feature sleep mode operation.

Convenient Reset Switch

A convenient reset button on the MAJIC is protected against accidental activation, yet is easily accessible by the user when a complete system reset is desired.

Programmable Trigger Control

The MAJIC provides the user control over both the trigger-in and trigger-out signals. The trigger-in signal may be used to create a breakpoint or synchronize execution. A trigger output may be set to define execution status, indicate memory accesses, or indicate a memory test failure.

International Power Supply

The MAJIC operates from a standard 5V power source. It comes with an external UL/CE approved AC adapter whose AC input range is compatible with all international AC voltage and frequency ranges. A standard three-wire power connector is compatible with readily available power cords through the world.

Specifications:

MAJIC

JTAG clock(TCK):	0 to 40 MHz Programmable
Trace clock(DCK):	0 to 100MHz (MAJIC^{PLUS})
Download Speed:	>200k bytes/sec (Typical)
Target voltage:	1.8~5.0V
Serial interface:	RS232C 1900-115.2k baud
Ethernet interface:	10/100Base-T, TCP/IP
Triggers:	Trigger input Trigger output
Trigger Control	
Trigger In:	Off, Run sync, Break
Trigger Out:	Off, Run sync, Memory access, Memory test error
Trigger Levels:	TTL
Indicator LEDs:	Power, Status, Run, Connect. Ethernet
Size:	2.0 H x 7.4 W x 6.5 L (inches)
Weight:	2.25 lbs
Input power:	5 VDC +/- 5%, 4.0 A
Power connector:	2.1 mm coaxial, center positive, male
Temperature:	Operating 0 - 40 degrees C
Humidity:	Operating 15% - 95% RH
Safety/EMC	CE

External AC Adapter

Output:	5 VDC, 4.0 A
Input voltage:	90 - 264 VAC
Input frequency:	47 - 63 Hz
Input power:	0.8 A
Size:	1.6 H x 2.8 W x 4.8 L (inches)
Weight:	10.3 oz
Compliance:	UL, CUL, CE, TUV
AC connector:	EN 60320/13
DC connector	2.1 mm coaxial, center positive, female

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M A J I C MX for Intel® XScale™ MicroArchitecture :

- Ideal for Intel XScale based applications
- Supports the Intel PXA210/250 applications processors, IOP310/321 I/O processors, and IXP425/2400/2800 and IXP1100 Network processors, Bulverde
- 10/100Base-T Ethernet and serial I/O ports for fast, flexible host interface
- Supports the Intel XScale on-chip trace
- Programmable JTAG clock (TCK = 2kHz to 40MHz)
- Programmable trigger-in and trigger-out connections
- Ethernet and serial I/O ports for fast, flexible host interface
- High-speed download of application code
- Network compatibility allows shared and remote operation
- Works with EDB, or third party RDI 1.5.1 compliant debuggers
- Wind River Tornado BackEnd Support
- Proven to work with Intel DBPXA250, IQ80310, IQ80321, ADI 80200EVB, BRH Development Platform...etc.
- Unlimited software breakpoints

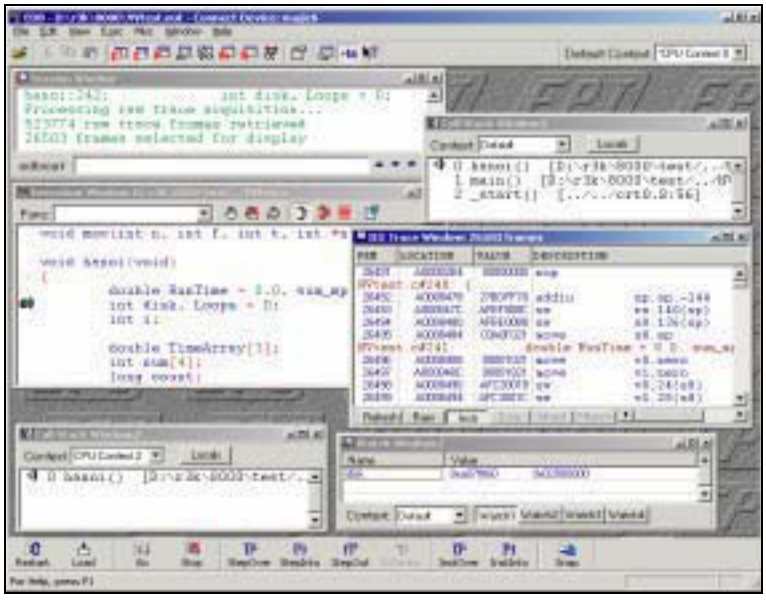
M A J I C MX™

- Non-intrusive, uses no target resources
- LEDs display operational status
- Supports on-chip hardware breakpoints

EDB Source-level Debugger

Key Features of EDB:

- Extensive Set of GUI Debugger Window Types
- Compatible with a wide selection of compilers including: EPI, ARM, GNU-gcc, Mentor, Metaware, MontaVista-gcc, Wind River gcc and Diab.
- Sophisticated Breakpoint Control Features
- Supports the Most Extensive List of ARM, MIPS, and Intel XScale Cores in the Industry
- Customizable RTOS Support
- Extensible Debugger Command Language
- Multiple Context Support
- Integrated GUI Support for MAJIC Series Intelligent JTAG Debug Probes
- Integrated Execution Tracing Window with Source Code Annotation
- Application Access to Host I/O System via EPI-OS facility
- Flash Programming Utilities & Sample Files



EDB features Integrated Trace Display

Intel SDT Supports Leading Target Environments

EPI provides Virtual.One.Stop™ Support from Tools-to-Targets

Operating System	Win CE .NET	Palm* OS	Symbian* OS	Nucleus* OS	OS Independent
Tool Suite	Platform Builder	Intel® SDT	Intel® SDT	Intel® SDT	Intel® SDT
IDE	Platform Builder IDE	CodeWarrior or Intel IDE	CodeWarrior or Intel IDE	CodeWarrior or Intel IDE	CodeWarrior or Intel IDE
Compiler	Intel C++ Compiler Plug-in (for Platform Builder)	Intel C++ Compiler (Tool Suite)	Intel C++ Compiler (Tool Suite)	Intel C++ Compiler (Tool Suite)	Intel C++ Compiler (Tool Suite)
Debugger	Platform Builder (Debugger Extensions)	XDB (Palm OS Plug-in)	XDB (Symbian OS Plug-in)	XDB Nucleus OS Plug-in	XDB
Debugger Interface	eXDI Driver + Trace Plug-in	XDB-MAJIC	XDB-MAJIC	XDB-MAJIC	XDB-MAJIC
JTAG Probe	MAJIC-MX	MAJIC-MX	MAJIC-MX	MAJIC-MX	MAJIC-MX
Target Processors	Intel® PCA processors	Intel® PCA processors	Intel® PCA processors	Intel® PCA processors	Intel® PCA processors

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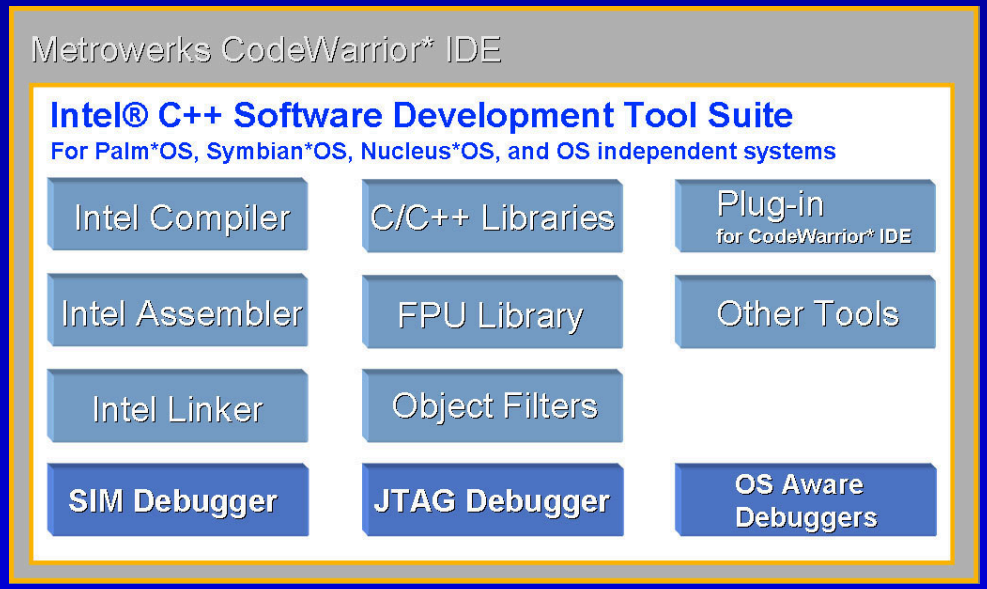
Intel C++ Software Development Tool Suite



Full support of Intel® Personal Internet Client Architecture (Intel® PCA) processors

- **Microarchitecture Instruction set (e.g. Intel® Wireless MMX™ technology)**
- **SoC (peripherals, on-chip FLASH, etc.)**

Optimization advantages

- **Tools are highly optimized for Intel PCA processors**
- **Best system and application performance by using Intel Tools**

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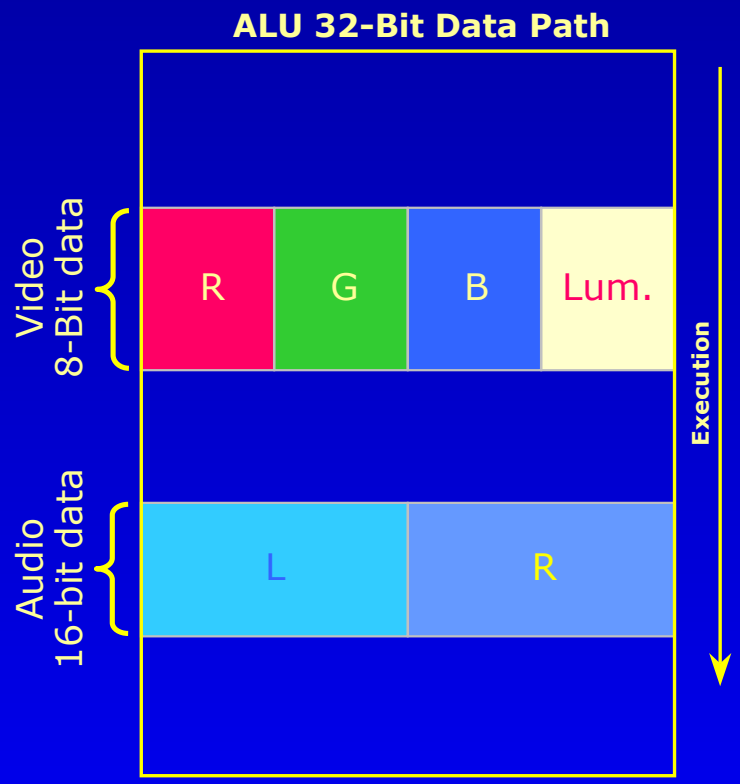
Intel C++ Compiler Supports Wireless MMX™ Technology

- PXA270 (Bulverde) introduces Wireless MMX™ technology (Wireless Multi-Media eXtensions)
- Hardware: data path functions as 8-bit & 16-bit parallel data paths to support parallel SIMD instructions
- 2X or 4X performance gain for specific data types
- Software: Vectorizer is a compiler optimization feature that analyzes C structures and produces appropriate SIMD code which can be executed faster with Intel® Wireless MMX™ technology



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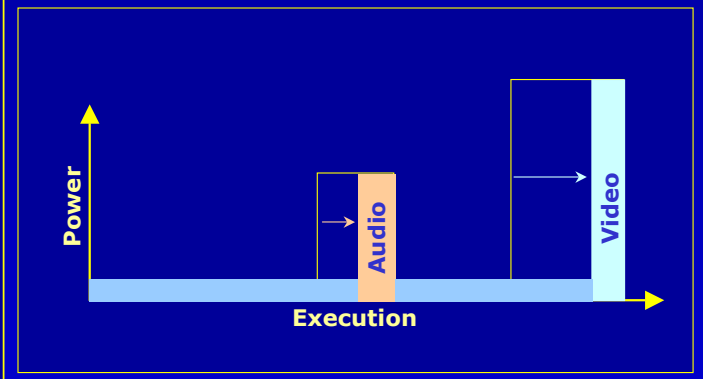
Intel C++ Compiler

- Improve performance to save power
- Supports PXA270 Wireless MMX™ instructions (Multi-Media eXtensions)
  - Assembler Instructions
  - Intrinsic Function support
  - Vectorizer optimization switch analyzes C structures to create appropriate SIMD code



- Inline assembler calls optimized routine form source level
- Floating point emulation library adds FP support without FPA HW
- PACE Native Object Support to link optimized XS code into 68K code
- gcc source and binary compatibility
- Support for double load and store
- Support for inter-procedural optimization

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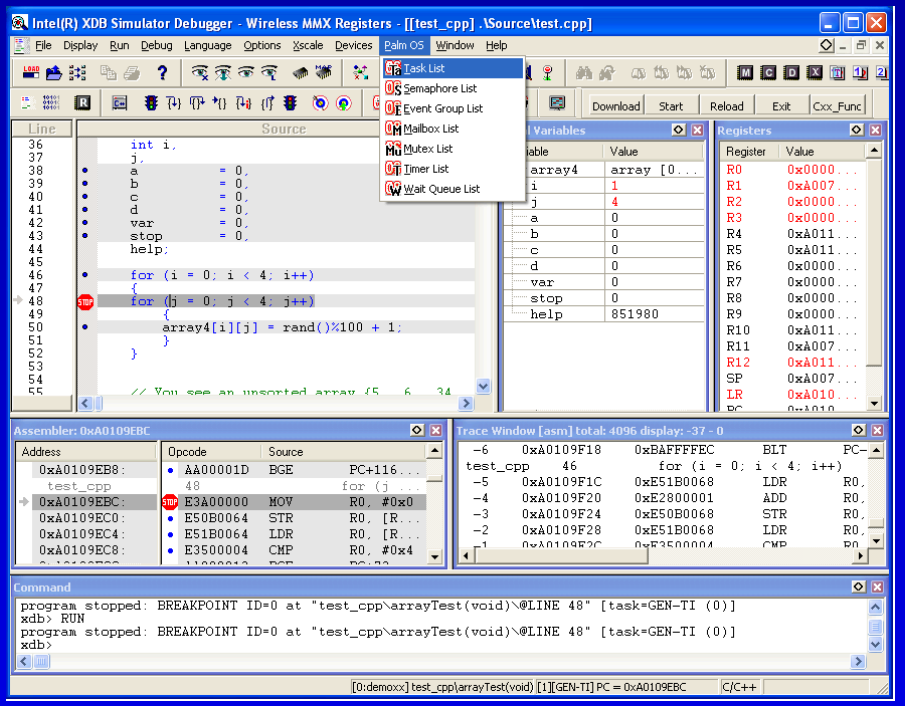
Intel XDB Debugger

- Same GUI for
  - Simulator
  - JTAG debugger
  - ROM monitor debugger
- OS-awareness plug-ins
  - Palm* OS
  - Symbian* OS
  - Nucleus* OS
- Supports all XScale processor features
- Displays WMMX registers
- Execution trace support improves debug efficiency
- Coprocessor & peripheral register support
- Page Table viewer



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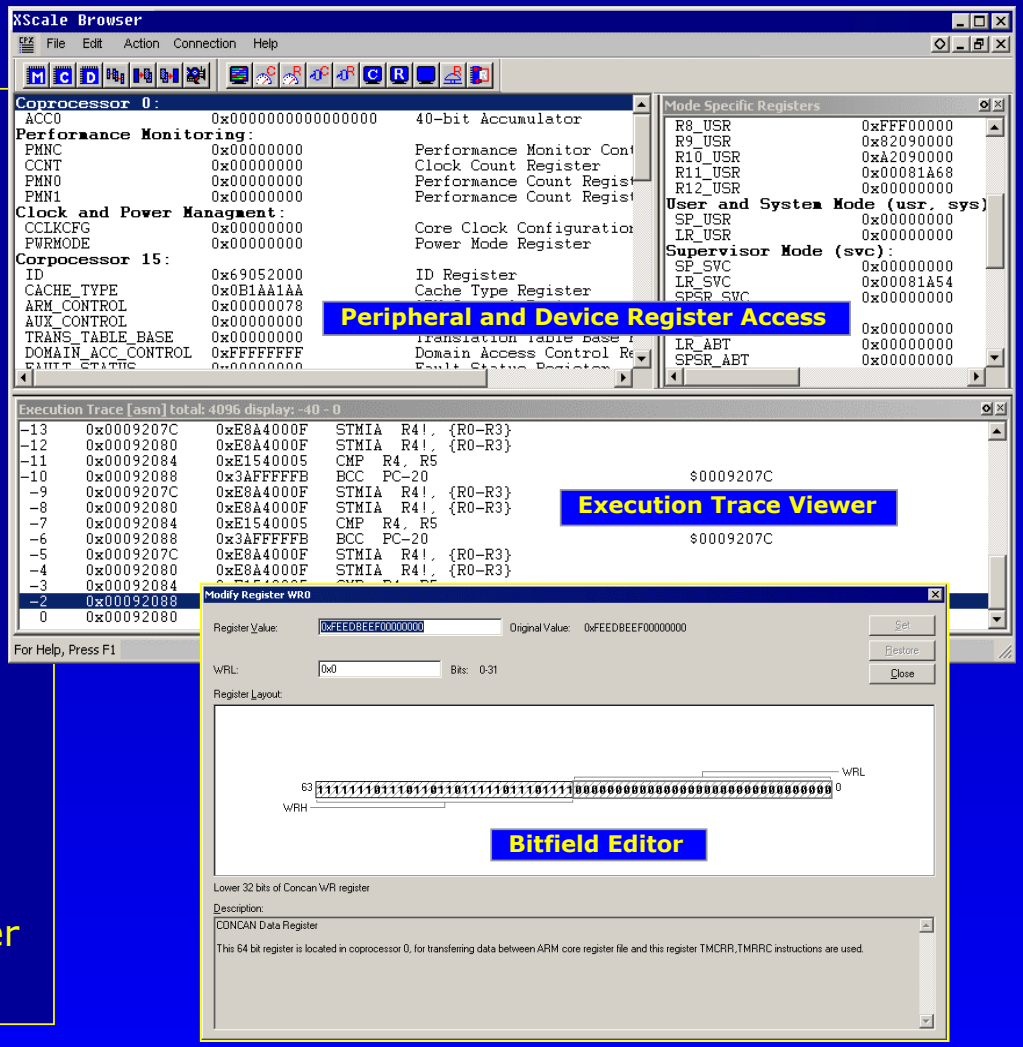
Intel XDB Debugging

- Provides direct access to Intel® PCA processor specific features
- Intel® XDB Browser
  - Execution trace viewer
  - Peripheral register window
  - Coprocessor window
  - Page table viewer
  - Supports eXDI driver
  - Intel® Wireless MMX™ technology register access
  - Works with embedded Visual C++ through Microsoft ActiveSync*
  - Works with Platform Builder through JTAG or TCP/IP



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Intel C++ Software Development Tool Suite

- Optimized for Intel XScale® Microarchitecture Advantages – Intel® Personal Internet Client Architecture processors
- Optimized tools include:
  - C++ Compiler System
  - JTAG-Debugger
  - OS awareness plug-ins
- Compatible with EPI OpenDebug™ Software and MAJIC® Intelligent JTAG Probes

- Operating System Support:
  - Palm* OS
  - Symbian* OS
  - Nucleus* OS
- IDE Integration into
  - Metrowerks CodeWarrior 4.2 and 5.x, including PNOs

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Intel® SDT Maximizes Benefit From Architectural Features

- Compiler fully supports pipeline of the Intel XScale® microarchitecture:
  - Supports Intrinsic Functions (inline optimized modules)
  - Provides Inter-Procedure optimization (across functions)
  - Includes highly optimized Floating Point emulation library
  - Supports Intel® Wireless MMX™ technology in the assembler, intrinsic functions and vectorizer optimizations
- Debugger supports all on-chip features, including
  - Instruction execution tracing
  - JTAG non-intrusive debugging
  - Access to coprocessor and peripheral control registers

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Intel® C++ Compiler

For Microsoft eMbedded Visual C++*
For Platform Builder for Microsoft Windows* CE .NET

Features	Benefits
Full Intel XScale® Microarchitecture support	Full utilization of the Intel XScale® Micorarchitecture to create highly optimized applications for XScale™. Get better performance and save battery life time.
Full Intel® Wireless MMX™ Technology Support	The new Intel® Wireless MMX™ instructions are supported by three levels: - Assembler Instruction Support - Intrinsic Function Support - Vectorization Optimization Switch Get an additional performance benefit on multimedia applications.
Inline Assembler	Call optimized assembler routines directly from C/C++ source level (GNU style)
Vectorizer	This compiler optimization feature analyzes C structures and produce appropriate SIMD code which can be executed faster with Intel® Wireless MMX™ technology. Utilize vector instruction Performance benefits in a portable way.
Support of: Microsoft*	Sophisticated compiler solution, which is COFF (Codeview 4.0) binary format compatible
Floating Point Emulation Libaries	High Performance floating point emulation libraries allow floating point usage without floating point processor.

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Features & Benefits

Intel® C++ Software Development Tool Suite
for Palm OS*, Symbian OS*, Nucleus* OS and OS-Independent Systems

Features	Benefits
Full Intel XScale® Microarchitecture support	Full utilization of the Intel XScale® Micorarchitecture to create highly optimized applications for XScale™. Get better performance and save battery life time.
Full Intel® Wireless MMX™ Technology Support	The new Intel® Wireless MMX™ instructions are supported by three levels: - Assembler Instruction Support - Intrinsic Function Support - Vectorization Optimization Switch Get an additional performance benefit on multimedia applications.
Inline Assembler	Call optimized assembler routines directly from C/C++ source level (GNU style)
Vectorizer	Analyzes C structures and produces appropriate SIMD code which can be executed faster with Intel® Wireless MMX™ technology. Portable vector instructions that enhance performance.
ARM*, GNU Support	Sophisticated compiler solution: ELF, COFF (DWARF 2.0) binary compatible
Floating Point Emulation Libaries	High Performance floating point emulation libraries allow floating point usage without floating point processor.
PNO (Pace Native Object) support	Native XScale code can be linked to "68K" application code. That speeds up XScale optimized code-portions within a Palm*OS 5.x based application

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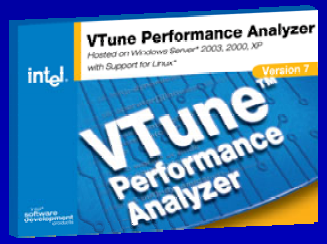
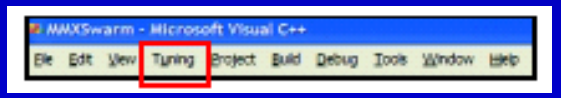
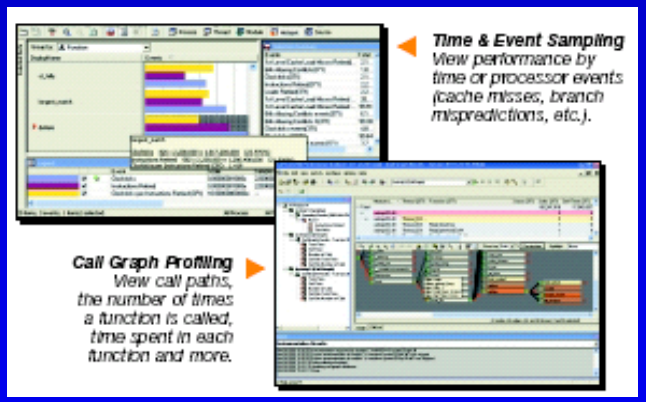
VTune™ Performance Analyzer 7.1

- Save time in the development cycle by identifying "hot spots" for review
- Identifies performance bottlenecks in Source Code using three modes
  - 1. Sampling – events and time based
  - 2. Call Graph – presents program flow
  - 3. Counter Monitor – monitors process against the CPU
- Supports Intel® PXA25x, PXA26x and PXA27x processors
- Major New Features:
  - Sampling Over Time View
  - Support for up to 64 processors (HPC support)
  - Selective Calibration
  - New importing capability: view data from other VTune™ analyzer sessions



Integrates cleanly into MS Visual Studio development environment.*





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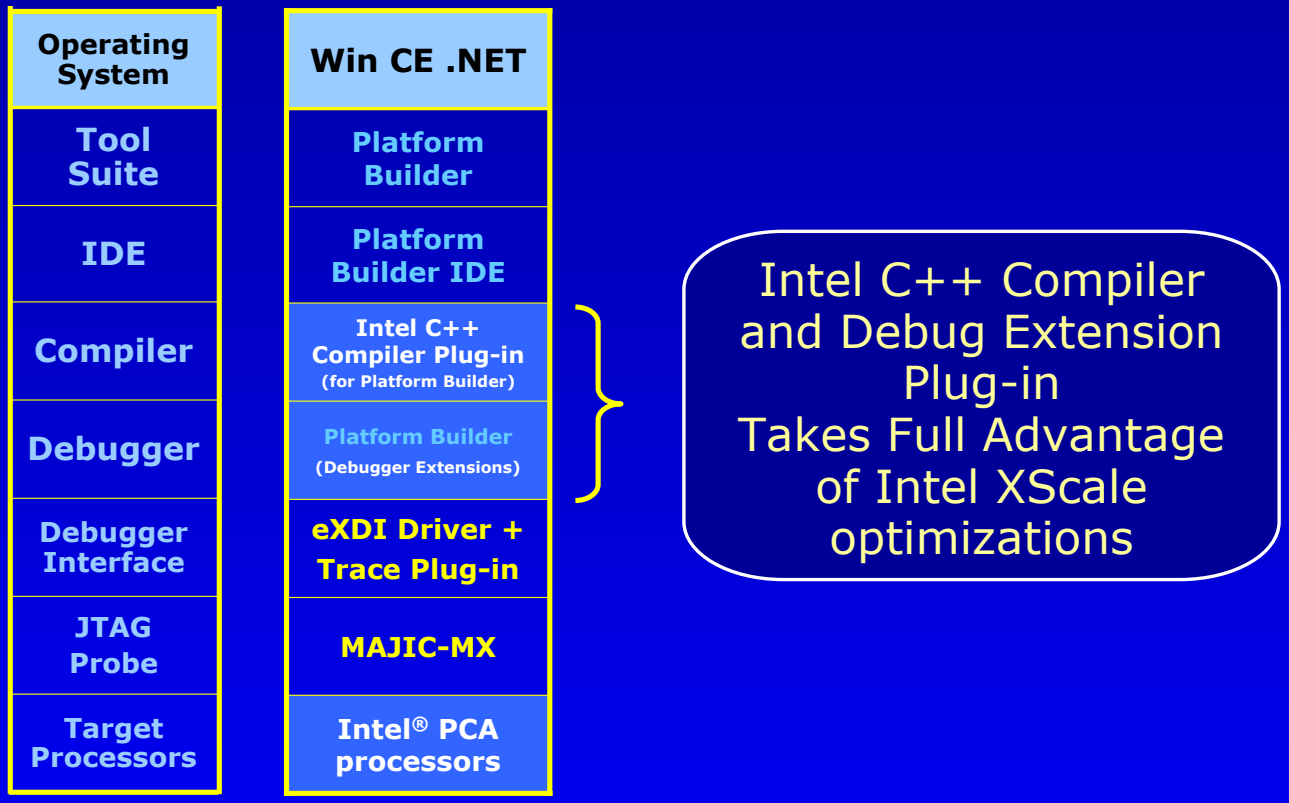
Intel C++ Compiler and Debug Extensions Plug-in

EPI provides Virtual.One.Stop™ Support from Tools-to-Targets



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Intel® Tools for Microsoft Win CE Environment

- Intel® C++ Compiler 1.2
  For Microsoft eMbedded Visual C++*
  - → ISV solution
- Intel® C++ Compiler 1.2
  for Platform Builder for Microsoft Windows* CE .NET
  - → **OEM solution**
- Availability
  - Intel C++ Compiler 1.2 for Microsoft eMbedded Visual C++: Included in Intel® C++ Compiler 8.0 for Windows
  - Intel C++ Compiler 1.2 for Platform Builder for Microsoft Windows* CE.NET: **Standalone product**

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On EPI Web Site

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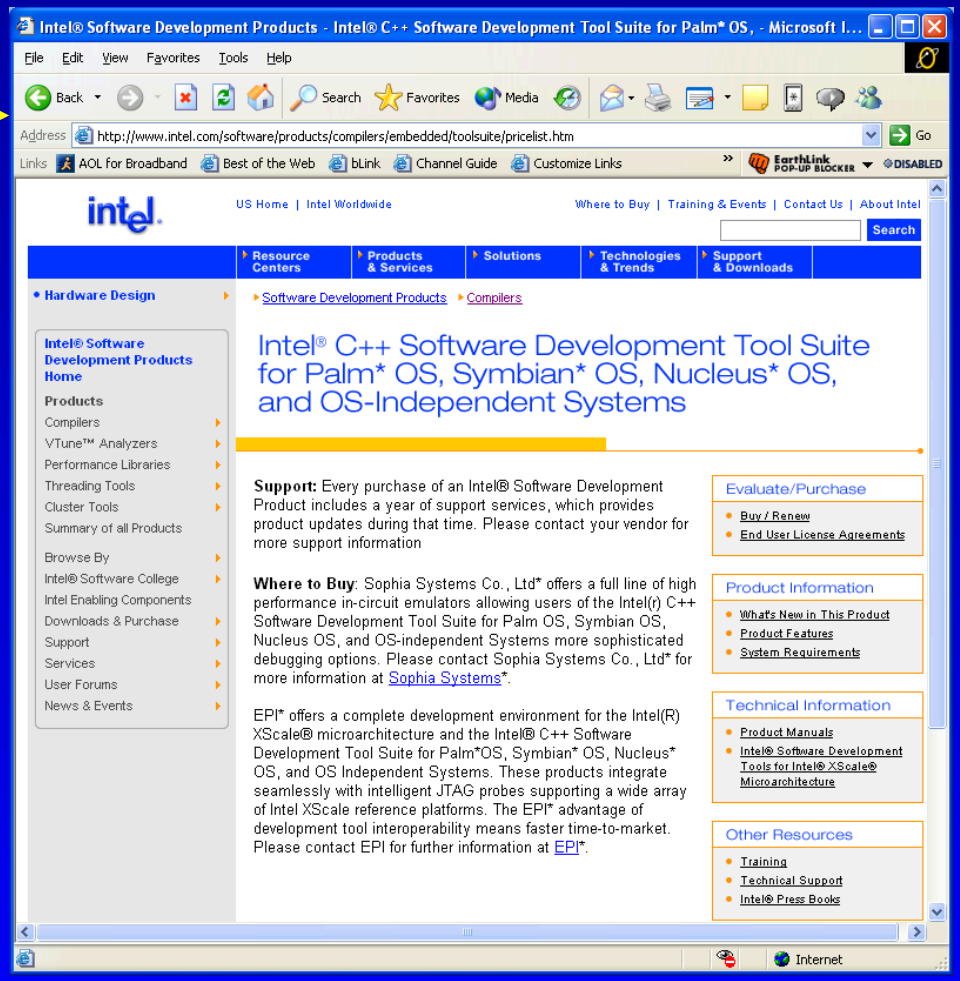
On Intel Web Site

- Buy/Renew page
- Eval copies no longer available from Intel
- **Contact EPI** or Sophia for everything related to Intel SDT for XScale
- Intel SPD and product lines pushing everything our way
- Intel operating like REAL partner



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