

WebSphere software



WebSphere - Mobilize your e-business

The right platform, ...and the right tools

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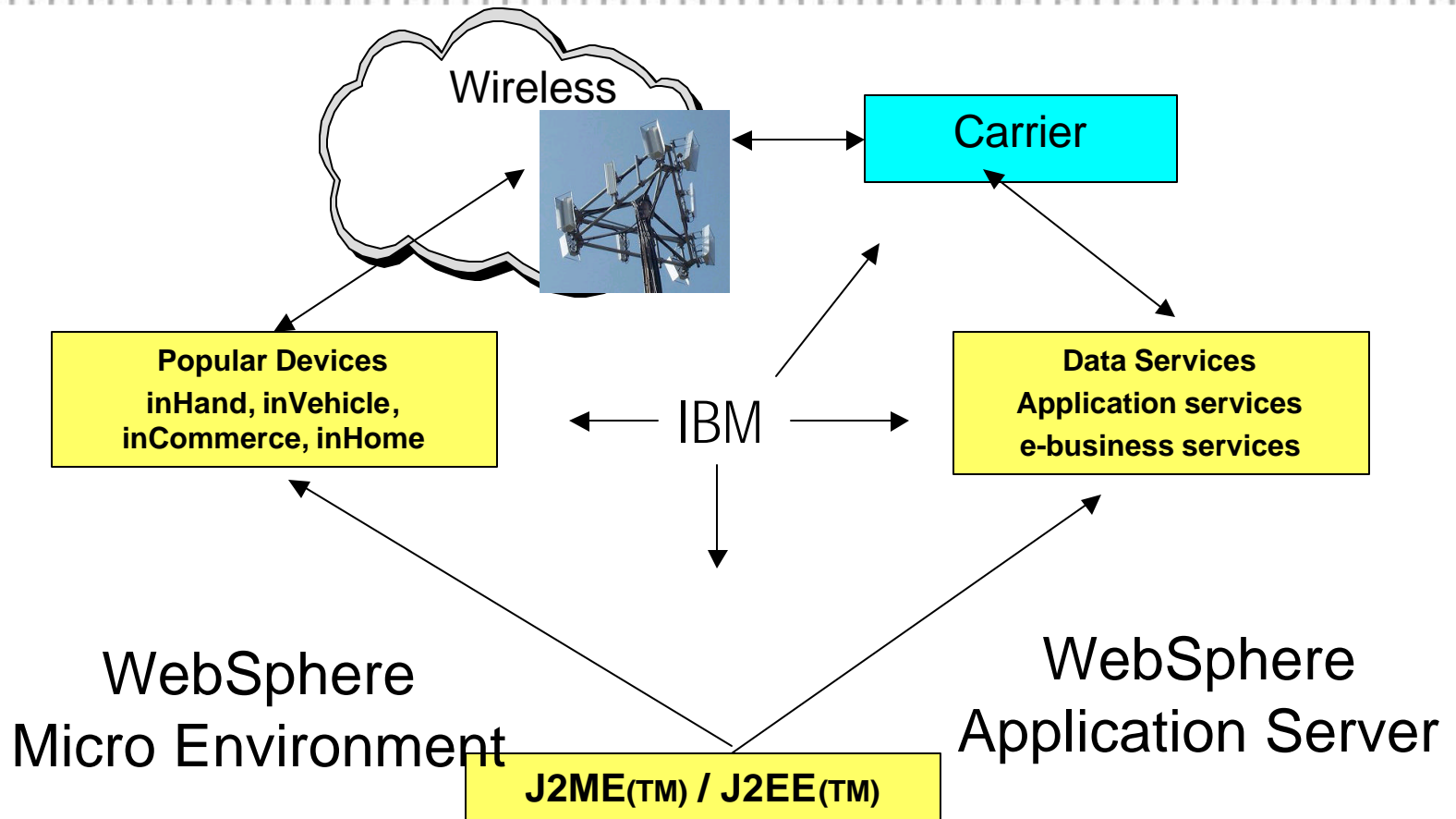
IBM Software Group



Strategy - Mobilize your e-business

- Combine the power of WebSphere
 - On the server to extend e-business applications
 - Through the use of open standards, and Middleware to interact and transact
- With the convenience of devices
 - inHand, inHome, inVehicle, inCommercial
 - Connecting devices to Content, information, data and transactions
- To mobilize e-business...
 - Interact, Transact and Connect with new Data Services
 - Device management solutions for control of content, services
- IBM has created two things
 - The right platform - WebSphere Everyplace family of products
 - The right tools - WebSphere Studio family of tools

WebSphere Micro Environment



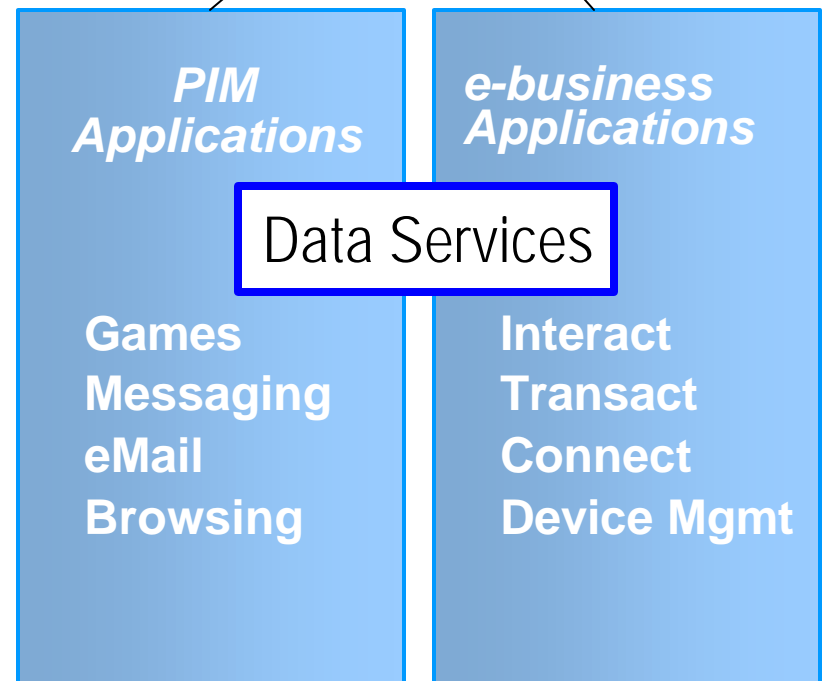
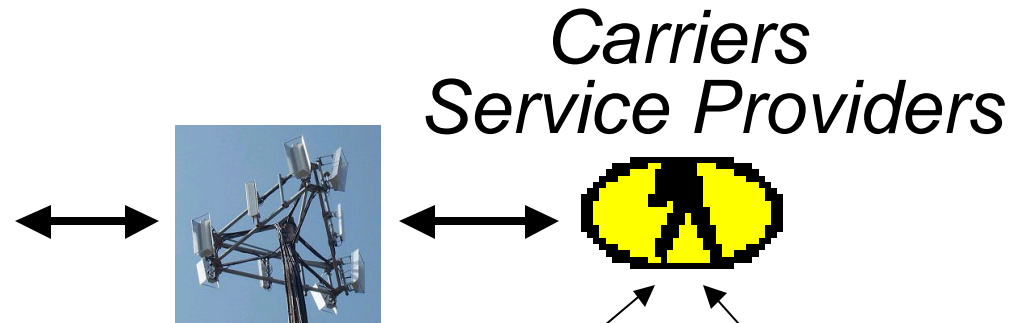
WebSphere delivers "The Platform" for end-to-end e-business

WebSphere Application Server - Deploy J2EE applications

WebSphere Micro Environment - Deploy J2ME applications

Higher Value Data Services = Higher Value Devices

e-business devices



Any Device, any Service, on any Server
Modular Device to Services Architecture
Flexible, Reliable, Scalable, Secure

IBM Device Platform

A strong foundation to build upon...

Interact

Voice
Multi Modal
Text-to-speech
Ink

Via Voice

HTML
WAP
MIDlets
Applets
Portlets
SMS
JSAPI
MPEG4
MP3
SVG
Jini
*ML

Transact

Applications
Data Services
Access M/W
J2ME
App Management

WebSphere Micro Environment

HTTP
UDDI
SOAP
WSDL
SynchML
OSGi
MQe/JMS
JCA
JDBC
SSL

Access

User Administration
Security / Privacy
Authentication
Content
J2SE^(TM) / J2EE^(TM)
Device Management

WebSphere App Server

- Modular architecture - select what you need
- Open Standards for ease of integration - Device to Services
- Production level products - Scalable / Maintainable

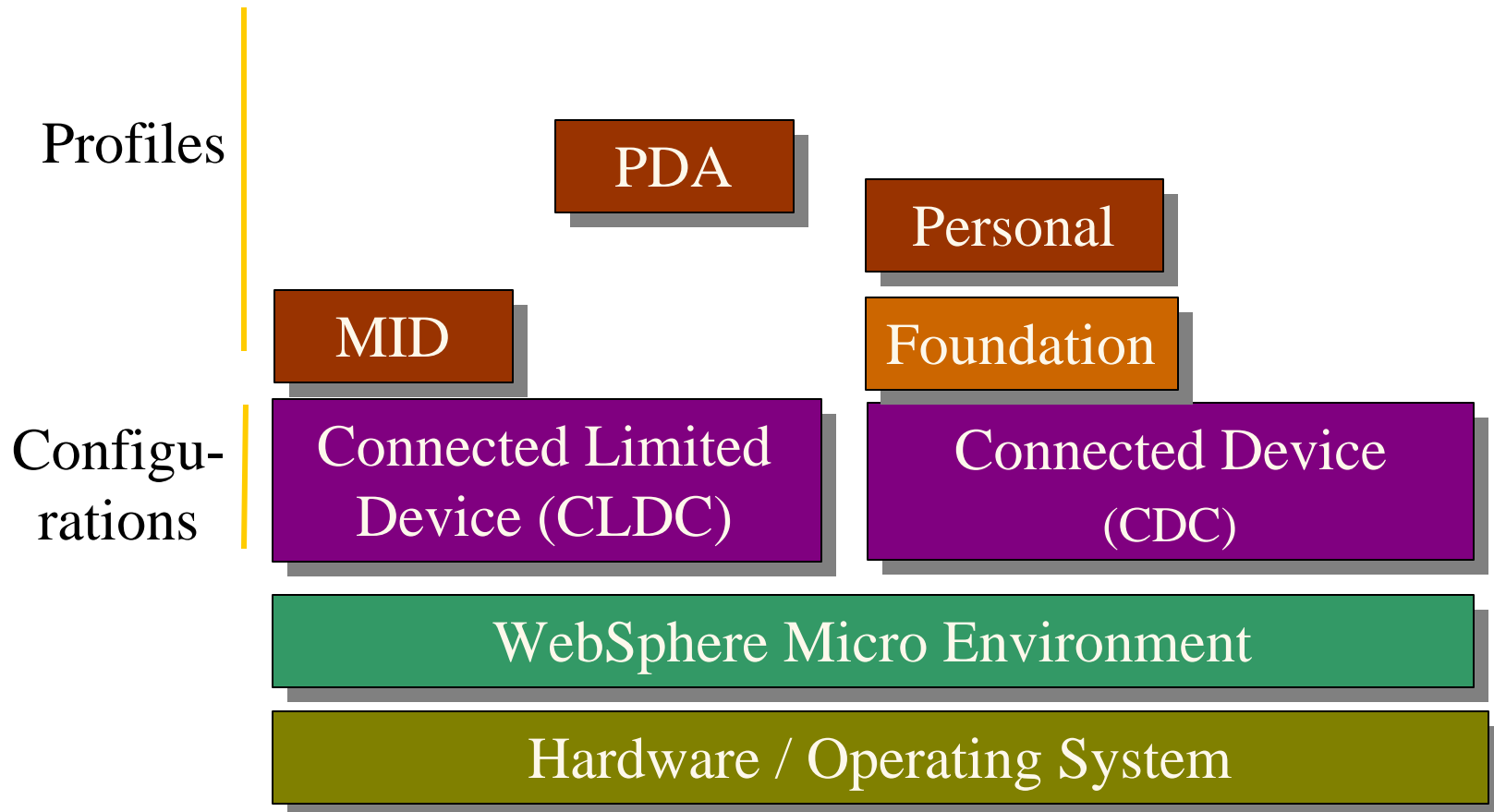
Modular

Open

Scalable

Maintainable

J2ME Profiles and Configurations



WebSphere software Consistent implementation = portability IBM

WebSphere Micro Environment - J2ME Technology



V 1.3	V 1.4	V 4.0	V 5.0	
	RTSJ	RTSJ	RTSJ	
		Personal (NG)++ Foundation	Personal (NG)++ Foundation	
	CDC	CDC 1.0_01	CDC 1.0_01	
	MIDP CLDC	MIDP 1.0a CLDC 1.0a	MIDP ext. MIDP 1.0a CLDC 1.0a	MIDP 2.0 (NG)** CLDC 1.1 (NG)**
CLDC				
1Q/01	3Q/01	1Q/02	3Q/02	
	JDK 1.3	JDK 1.3	JDK 1.3	

GA
Beta

** TCK test suite required from JCP in order to test / certify as JavaPowered
++IBM releases tested profiles and configurations using Web Update as they become available

WebSphere Micro Environment Delivers

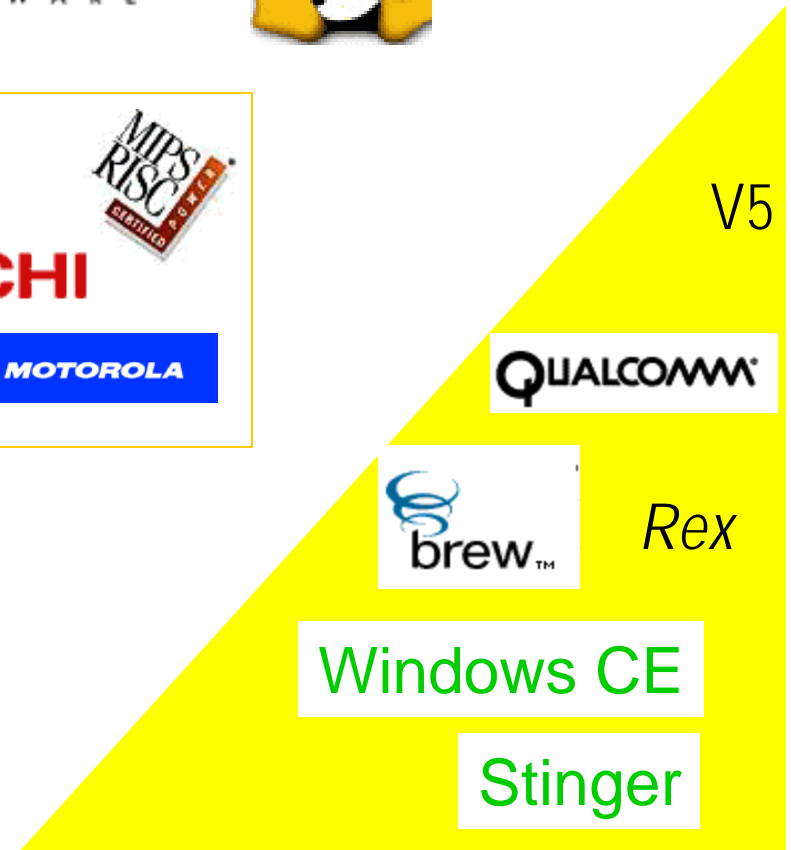


Pocket PC

WebSphere software

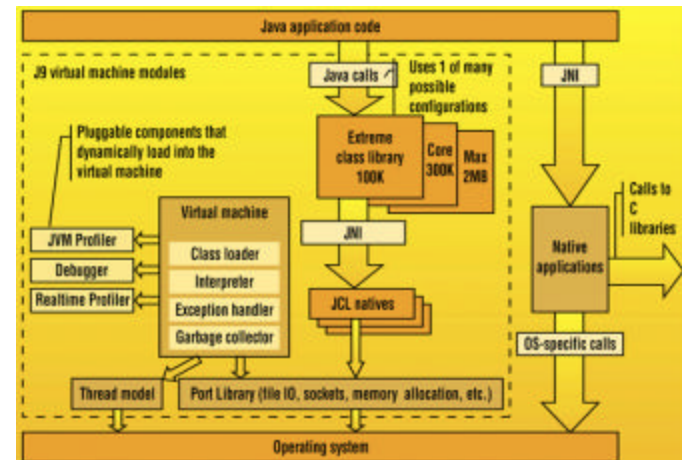


IBM covers more platforms than any other



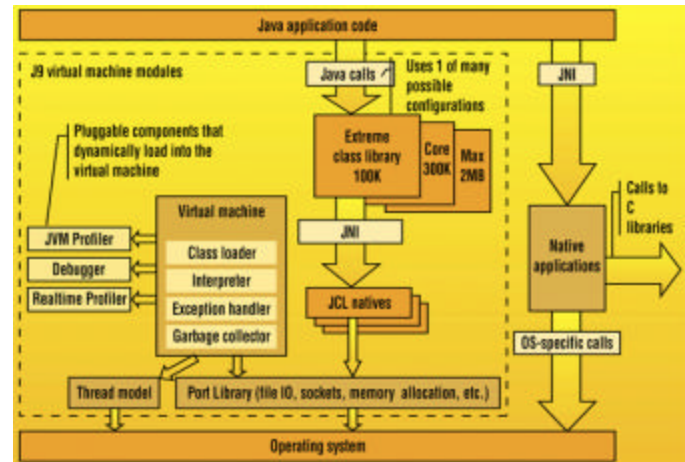
J9 Virtual Machine

- Designed from bottom-up for embedded systems
- Newest JDK 1.3 spec - Java Powered Production level product
- Device memory configuration aware
 - Memory segments (ROM, RAM, fast, slow, removable)
 - excellent for OSGi, and real time systems
 - Execute in place (XIP) capability
 - “instant on”
- Fastest interpreter
 - Mixed mode – interpreter, AOT, JIT
 - NEW AOT for ARM
- Pluggable Garbage Collector
 - Accurate, incremental, compacting
 - Real time ready



J9 Virtual Machine cont'd

- **Scalable**
 - Single VM for the full range of Java requirements
 - Build with pluggable components
 - Dynamically linkable for maintenance
 - Statically linked for size
- **Tightly integrated with the RTOS**
 - Uses native thread where available
 - Act like a native application
- **Use native widgets when possible**
 - Native look and feel
 - Take advantage of native widget
- **Resource management - security**
 - Memory, threads, sockets, etc



Time to Market - Rely on Products, not Reference Implementations

WebSphere - Product

- Runtime inclusive of all licenses and license fees
- Testing and certification complete
- Supported by IBM
- Optimized and tuned for platforms
- Customer concentrates on Application

Your Application

\$ WebSphere Micro Environment

WebSphere software



KVM_(TM) - reference implementation

- Not a product only a license
- Licensor must develop product
- Fees charged - Tests / Test Cases
- Licensor must run and compete certification and all releases
- Licensor needs to assign staff to do development, certification

Your Application

\$ Product VM 

\$ Testing/Certification 

\$ Development VM 
(Sun Authorized VM)

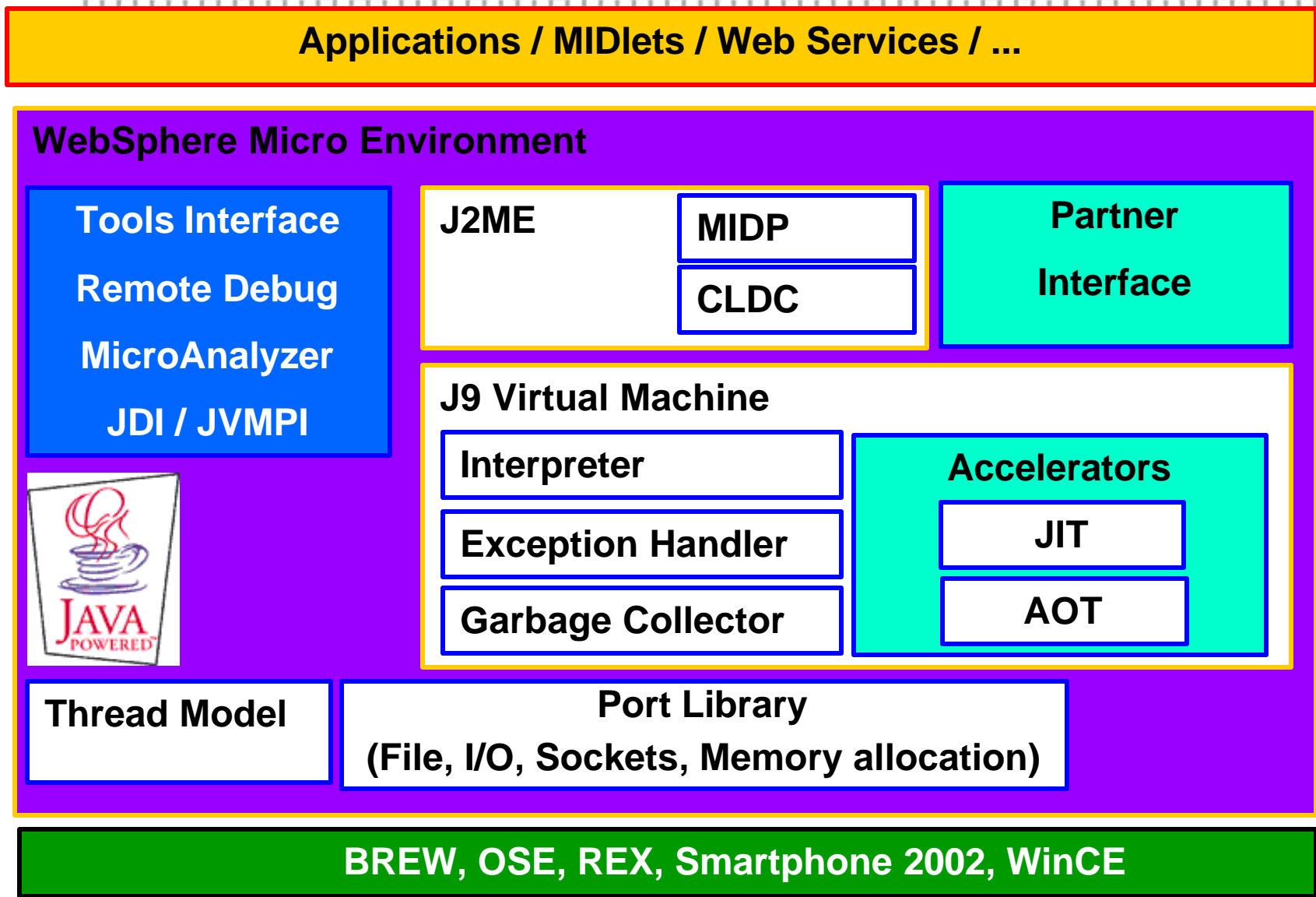
KVM



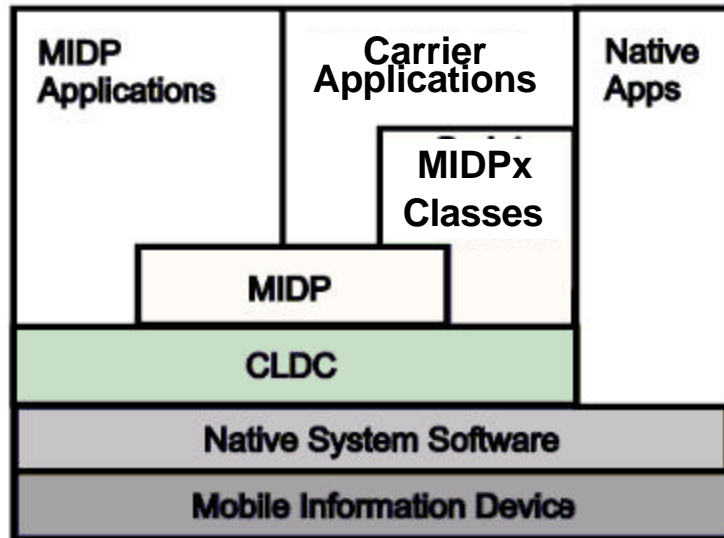
What Competitors say

- IBM does not have compatible technology
 - Untrue - IBM is a licensee - "Java Powered" Products
 - <http://java.sun.com/j2me/licensees.html>
- Sun contract even if you select IBM
 - Untrue - IBM licenses Java technology from Sun
 - Does not require separate contract with Sun Microsystems
 - IBM will indemnify customers, in writing, backing up our products
 - IBM has clear, concise business terms and conditions

WebSphere Micro Environment - Cellular Telephone



MIDP Extensions - OTA - New in Version 5.0



Carrier Specific Extensions

- Extra Images
- MIDP OTA specification

+ Util

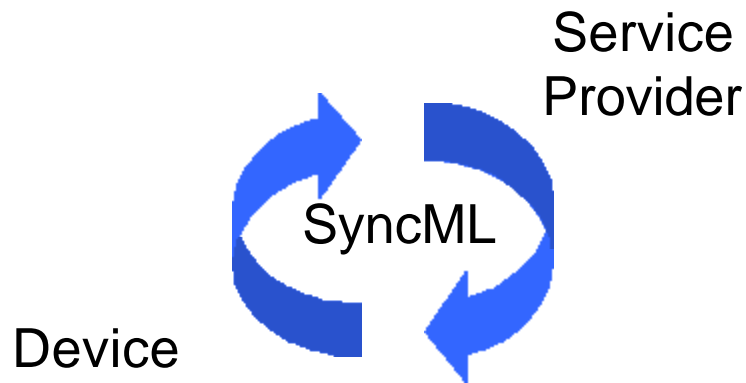
- referring URI
- Exit URI
- MasterVolume

+ Media Package

- MIDlets with Mime Type Handlers
- MIDlets play sound clips
- Two tone sounds
- Activate handset vibrator

- Business Benefit - Carrier control over application flow
 - Where application originates / where it returns to when complete
 - Additional media functions

Application Provisioning - Version 5.0 (Beta)



Wireless Communications

- TCP/IP, SyncML
- + Wireless Devices
- MIDP, Personal
- + Assets synchronized
- Files, MIDlets, Applets,...
- + Data Model
- SyncML/DM + Carrier Extns
- =Application Provisioning

- Business Benefit - Customers demand for additional services
 - Applications can be provisioned, updated, maintained
 - New features, software updates, fixes can be deployed
 - Refresh without re-flash...

WebSphere Micro Environment - PDA

Applications / Applets / Web Services / AWT applications

WebSphere Micro Environment

Tools Interface

Remote Debug

MicroAnalyzer

JDI / JVMPi



J2ME

Personal

CDC/Foundation

Partner

Interface

J9 Virtual Machine

Interpreter

Exception Handler

Garbage Collector

Accelerators

JIT

AOT

J
N
I

Thread Model

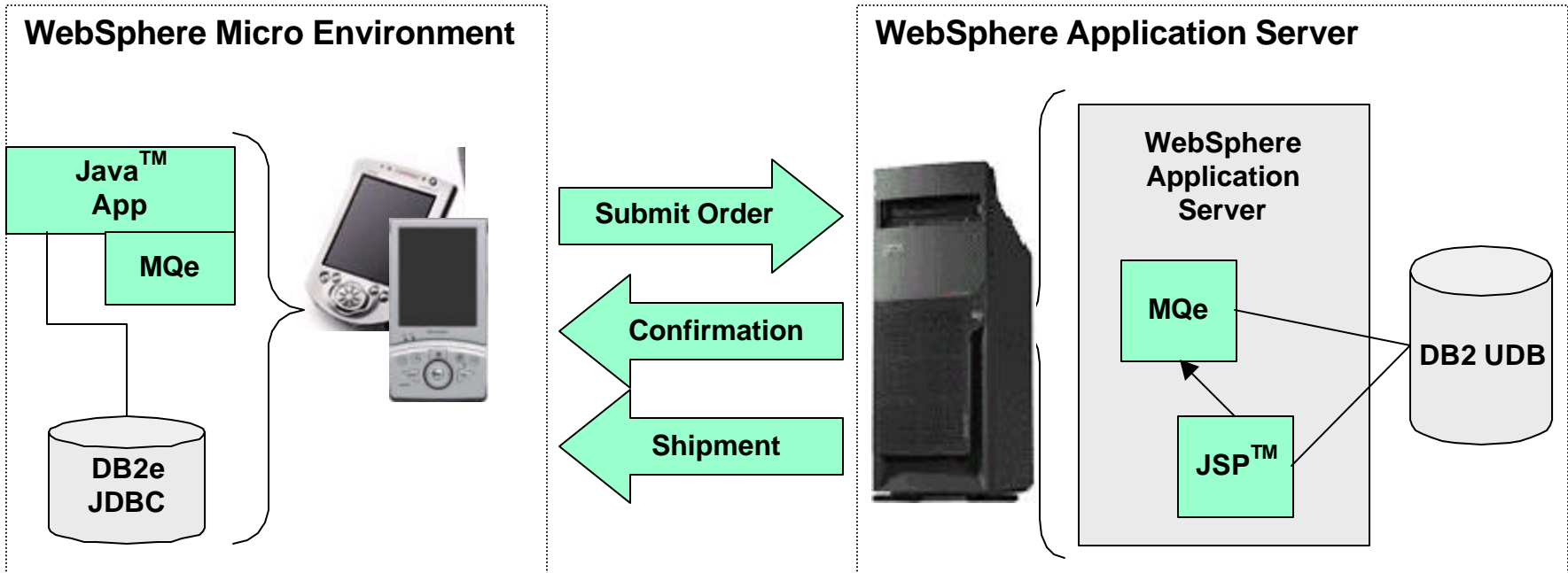
Port Library

(File, I/O, Sockets, Memory allocation)

RTOS - PocketPC, WinCE, Linux, POSIX

Server, Middleware and Device Integration

Store and forward - Device-to-Services Solution



Device Software

WebSphere

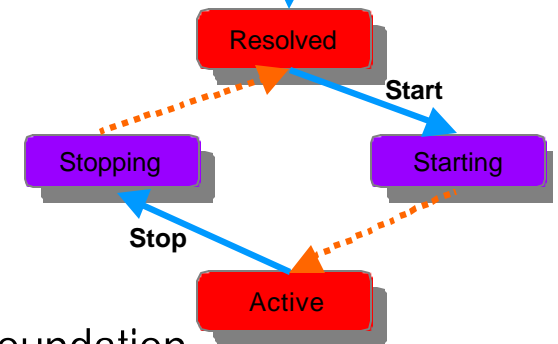
Order Entry System			
*WT	MQe	DB2e / JDBC	
Native U/I		WME	DB2e
Device U/I		J2ME	
Operating System (RTOS)			



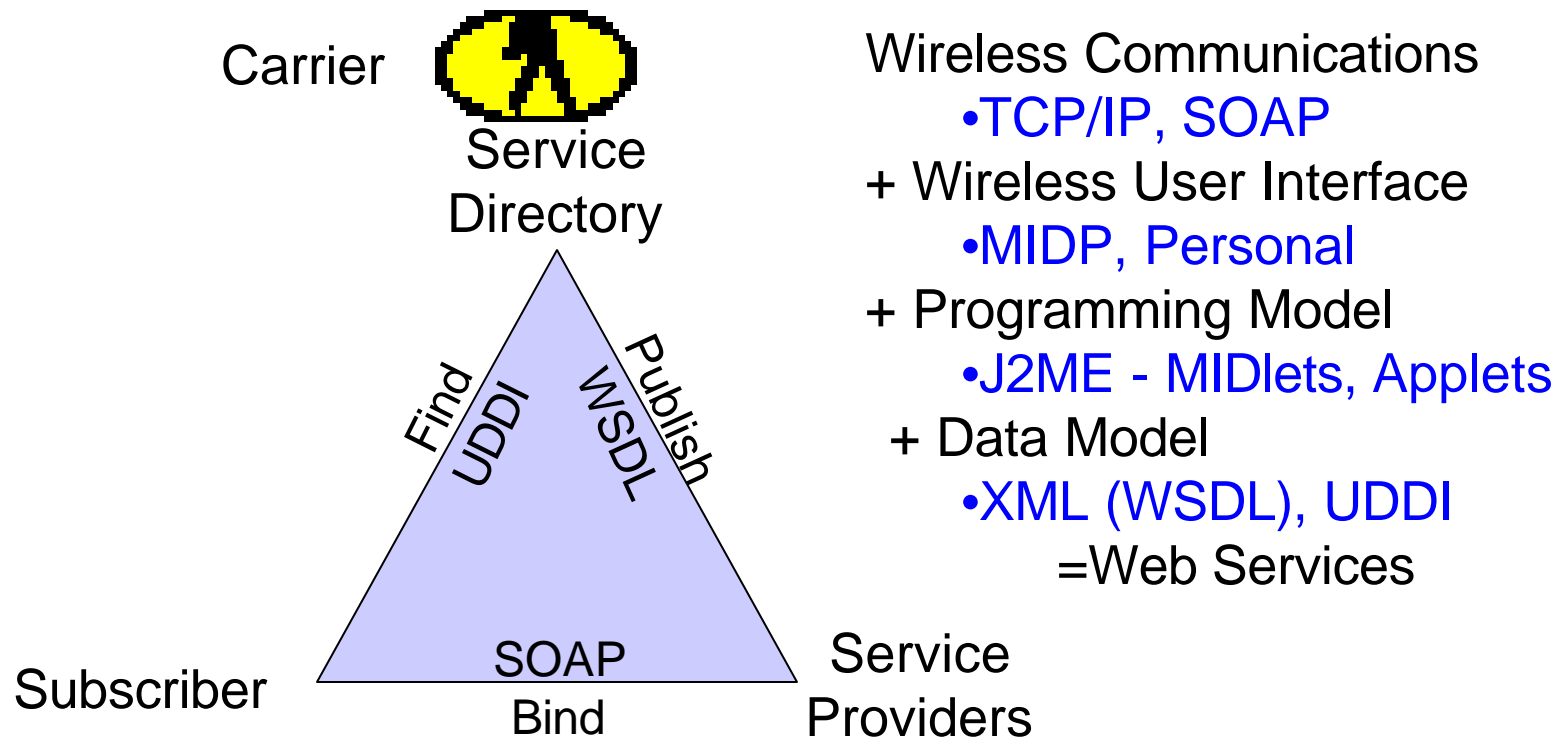
Device Maintenance

- Device Provisioning at the Solution level
 - Install, maintain, uninstall Runtime Environments
 - Resolves dependencies - prereqs / coreqs (Bundles)
 - Checks manifest before invocation
- Device Management
 - Device Agent keeps track of deployed apps
 - Enables system management of device software
- System Management Framework (SMF)
 - IBM implementation of OSGi gateway on top of Foundation
 - Uses open standard (OSGI.org)
- Business Benefit
 - "Controlled" software on millions of devices
 - "Controlled" invocation on each device

WebSphere software



Web Services - Vision for future



- Business Benefit - Higher value data services (B2C, B2E, B2B)
 - Carrier maintains control of directory of services
 - With or without hosting the content
 - Enterprise data services become available to mobile professionals

WebSphere Micro Environment - The Right Platform

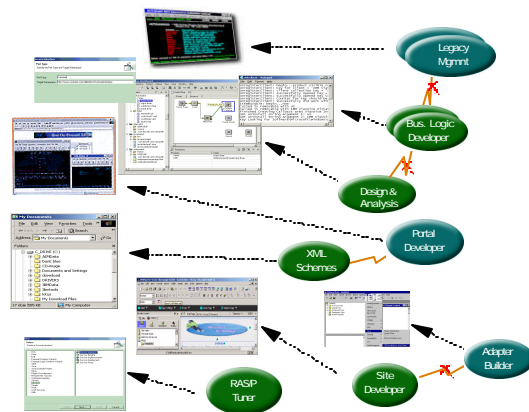
- Device to Services - Entertainment / Information / e-business
 - It's not about browsing, its about e-business
 - Mobilize using IBM Middleware (DB2e, MQe, WebSphere)
- Time to Market - Respond Quickly to meet demand
 - Product Level Platform - Pre-tested, Pre-certified, supported
 - Up front licensing of tools and runtimes without hidden charges
 - Best value/cost proposition
- Footprint and Speed - Fast, compact and tuned for each device
 - Proven in independent testing
- Device Maintenance - provisioning, software updates / mgmt
 - Tivoli SMF, OSGi

WebSphere software

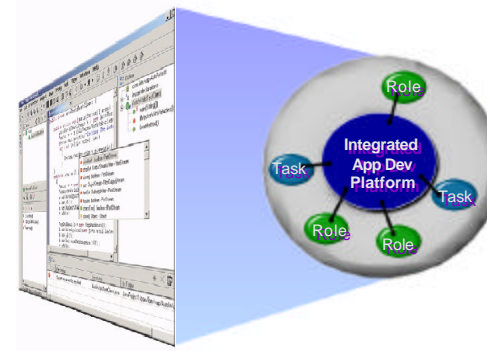
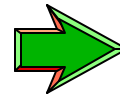


Eclipse Tools

Seamless integration of best of breed tools from many vendors



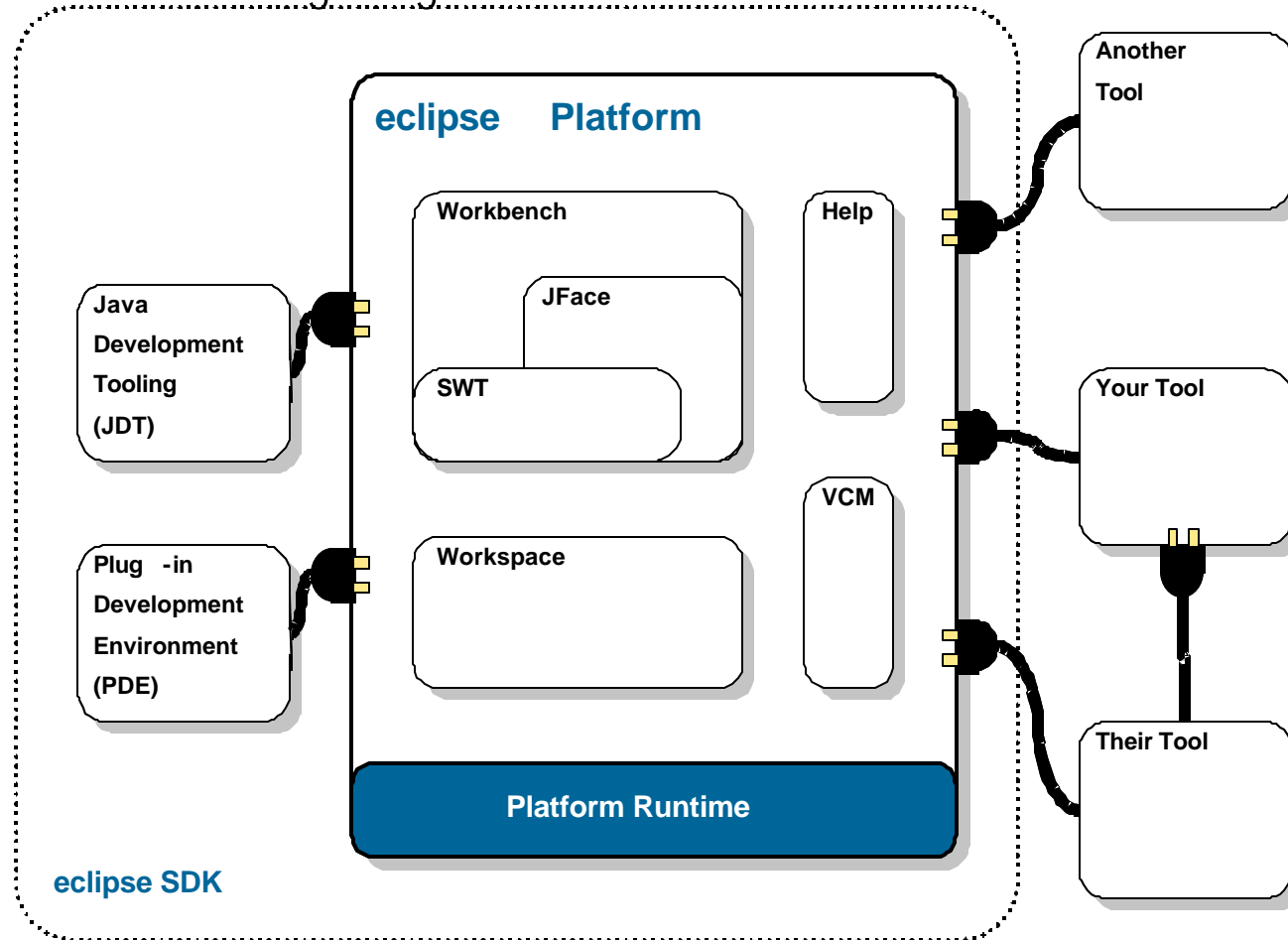
Most AD environments involve more than one tool from multiple suppliers



Best-of-breed tools working together as an integrated environment

Eclipse Structure

Framework for integrating tools



Wide Industry Support / Adoption

- Altoweb
- Asist
- Bowstreet
- BrowserSoft
- Cast Software
- CollabNet
- CommerceQuest
- Computer Assoc.
- Compuware
- Crystal Decisions
- Embarcadero
- Fujitsu
- Holosofx
- Instantiations
- Interwoven
- LegacyJ
- LogicLibrary
- Macromedia
- Merant
- Mercury Interactive
- Midcomp Intl.
- MontaVista
- MKS
- NeuVis
- Peregrine
- QSSL
- Rational
- Red Hat
- Serena
- Sitraka
- Skyva
- Starbase
- SuSE
- Telelogic
- TogetherSoft
- Versant
- Versata
- Wily Technology

"Rational Software has been an early adopter of the Eclipse platform because we believe it delivers high value to software teams. We've been working closely with IBM to integrate our products into Eclipse...."

Dave Bernstein, Sr VP of Products, Rational Software

"The Eclipse community will allow developers to collaborate on enhancements to the Workbench technology and more rapidly integrate it within their own applications."

Brian Behlendorf, co-founder and CTO, CollabNet

"This has long been a dream of developers, and now IBM is providing the integration framework to make it possible." *Arun Gupta, CTO, NeuVis Software*



www.eclipse.org

WebSphere software



The Right Tools



Contribute

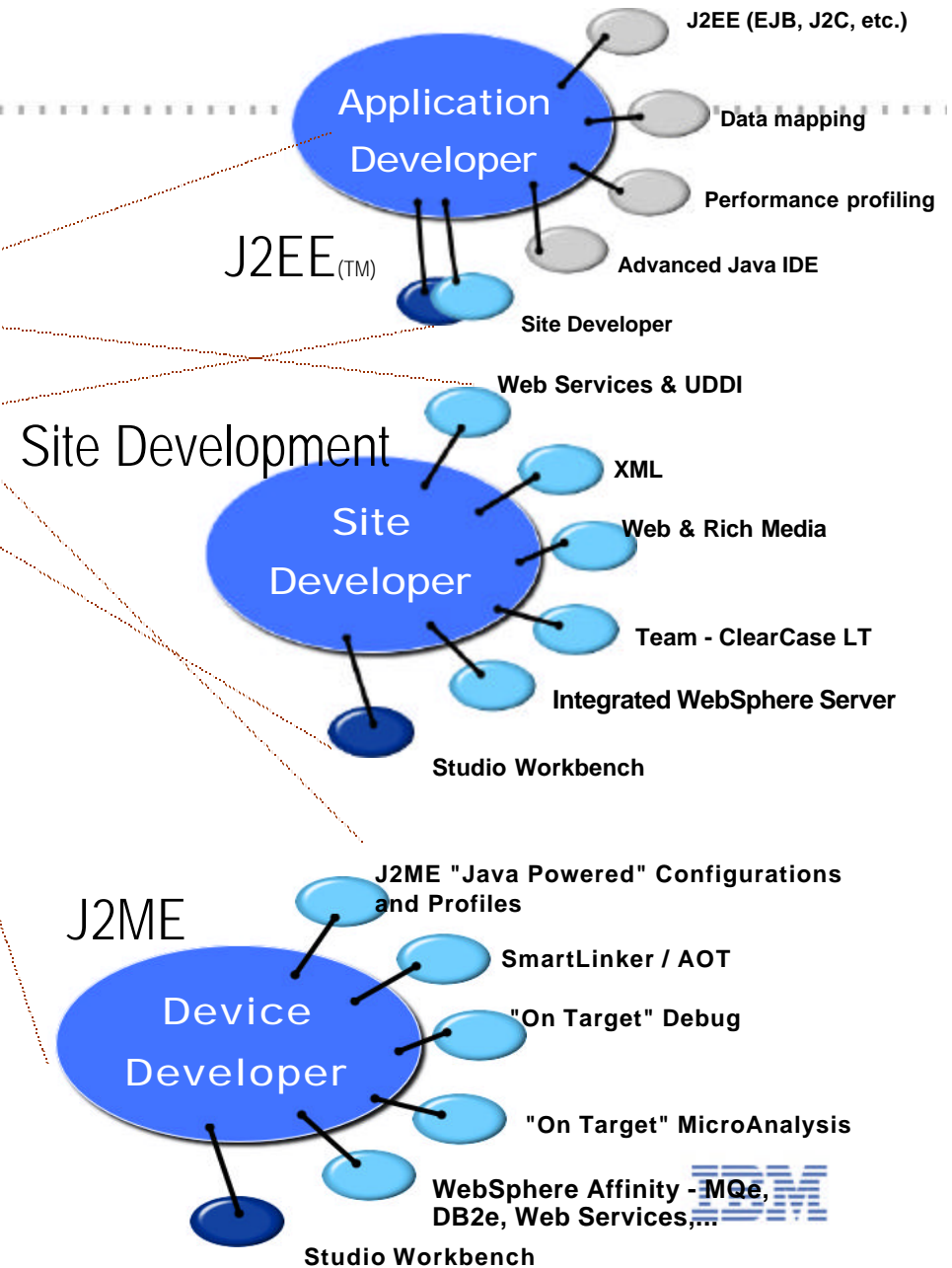


Adopt



www.eclipse.org

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WebSphere Studio Device Developer

SmartLinker
AOT Compile
"On Target"
Debug
MicroAnalyzer

Development
Tooling
(JDT / IDE)

Plug-in
Development
Environment
(PDE)

WebSphere Studio Workbench

Workbench
- Common Services

JFace

SWT

Workspace

Help

VCM

Platform Runtime

OEM Tools

- BREW
- Rational Rose
- Provisioning

Native Extn

- C/C++ dev't

Other Tools

- Lifecycle
- Testing
- Emulators
- Productivity

Workbench SDK

WebSphere software

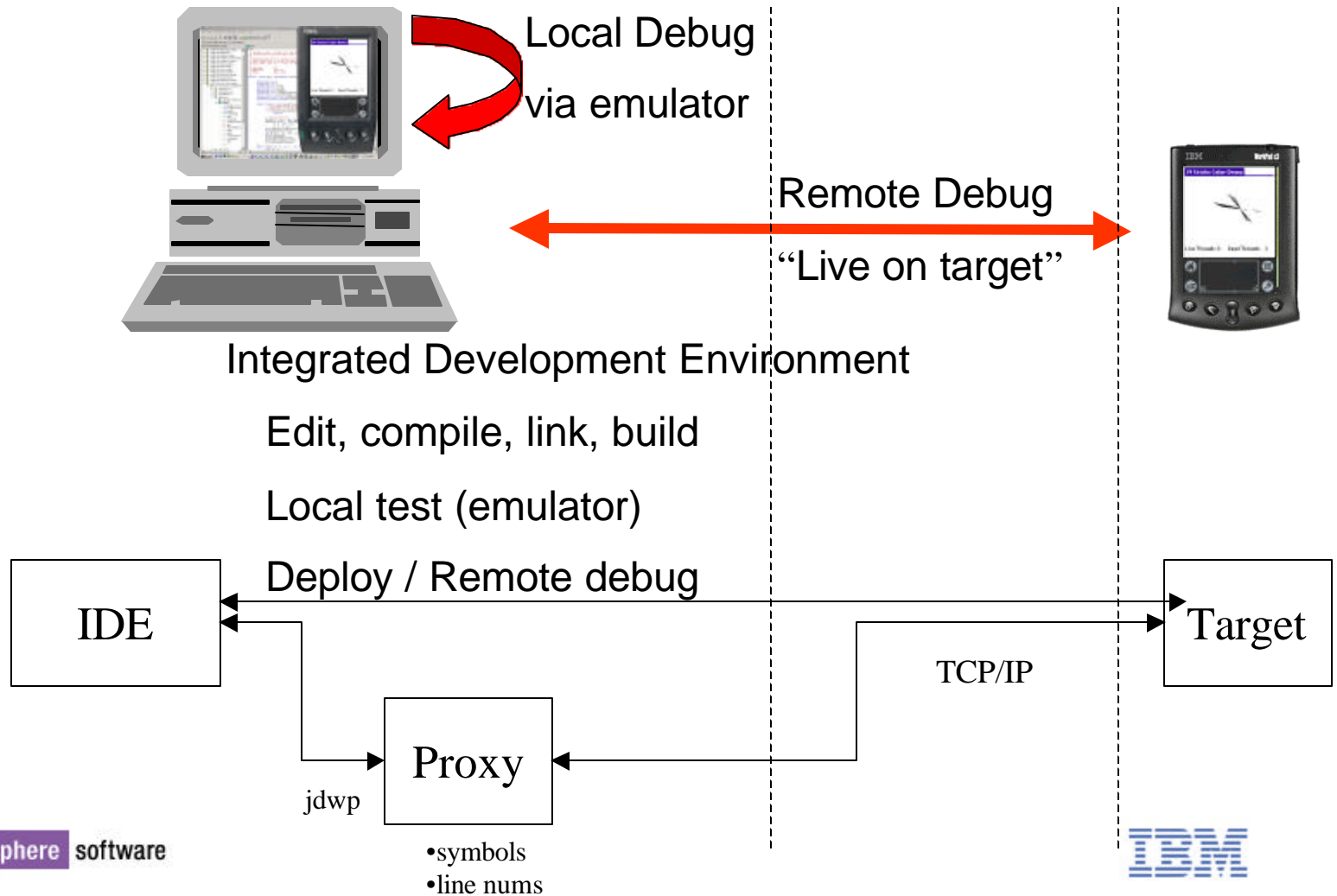


WebSphere Studio Device Developer

- Award-winning tools for embedded Java development
- Smartlinker - Class reduction, XIP, optimization - Size
 - Proxy based debugging - minimal overhead - test "live on target"
- MicroAnalyzer - Profiles execution for performance - Speed
- Uses IBM WebSphere Workbench Technology

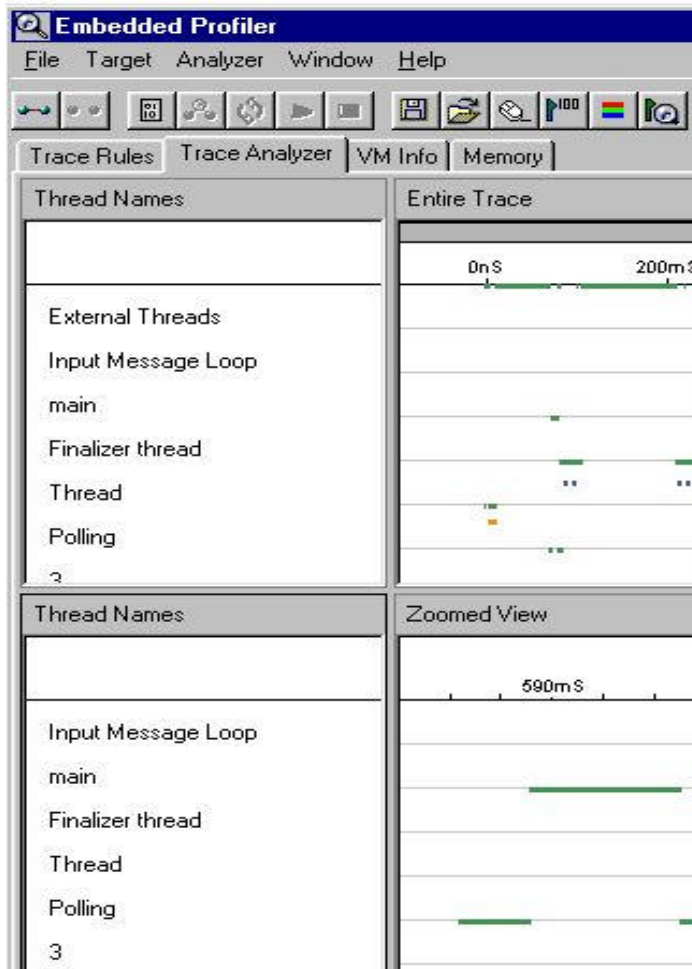


Remote Debug tests as application runs "live"



"On target" MicroAnalyzer

Identifies performance bottlenecks

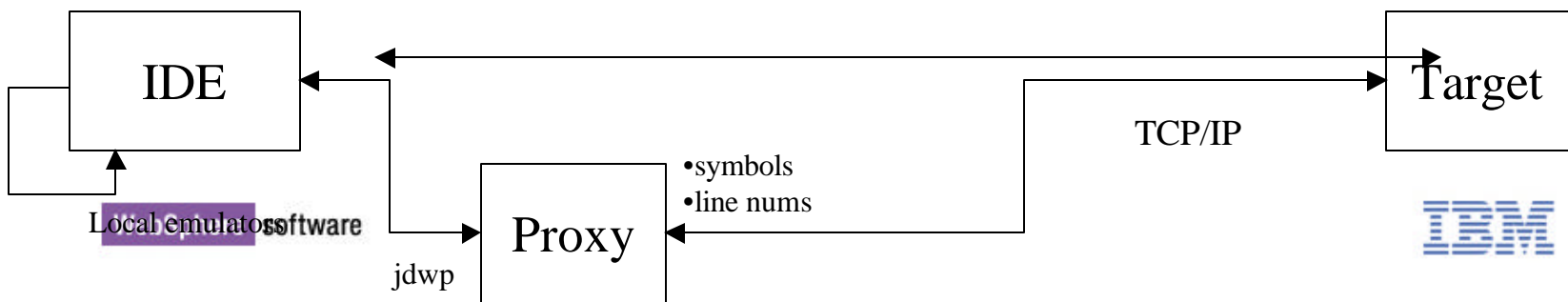
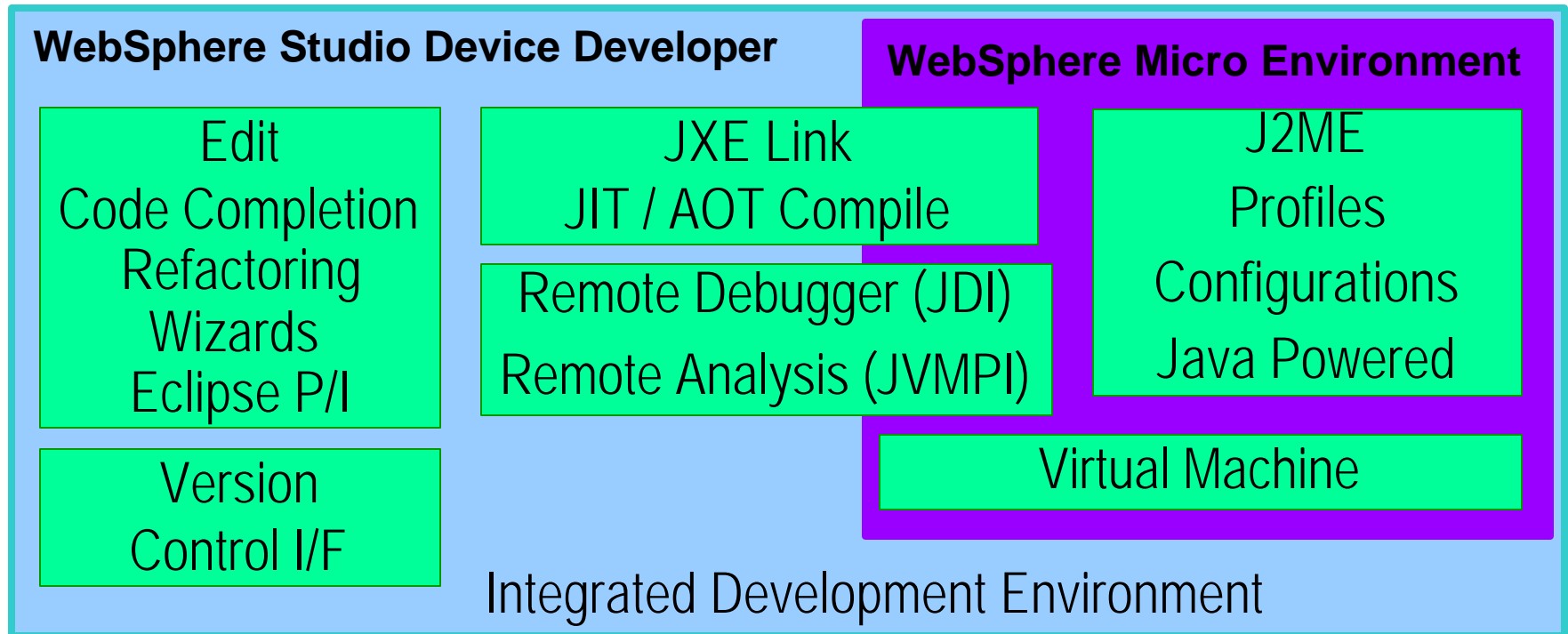


- Monitors runtime execution:
 - Display memory status
 - Display thread status
 - Trace capture of thread status
 - Thread state changes
 - JNI calls
 - user events
- Low overhead on target
 - as low as 5%, depending on capture options and target
 - displays comm O/H as well
- Feedback Loop
 - Identifies optimization candidates

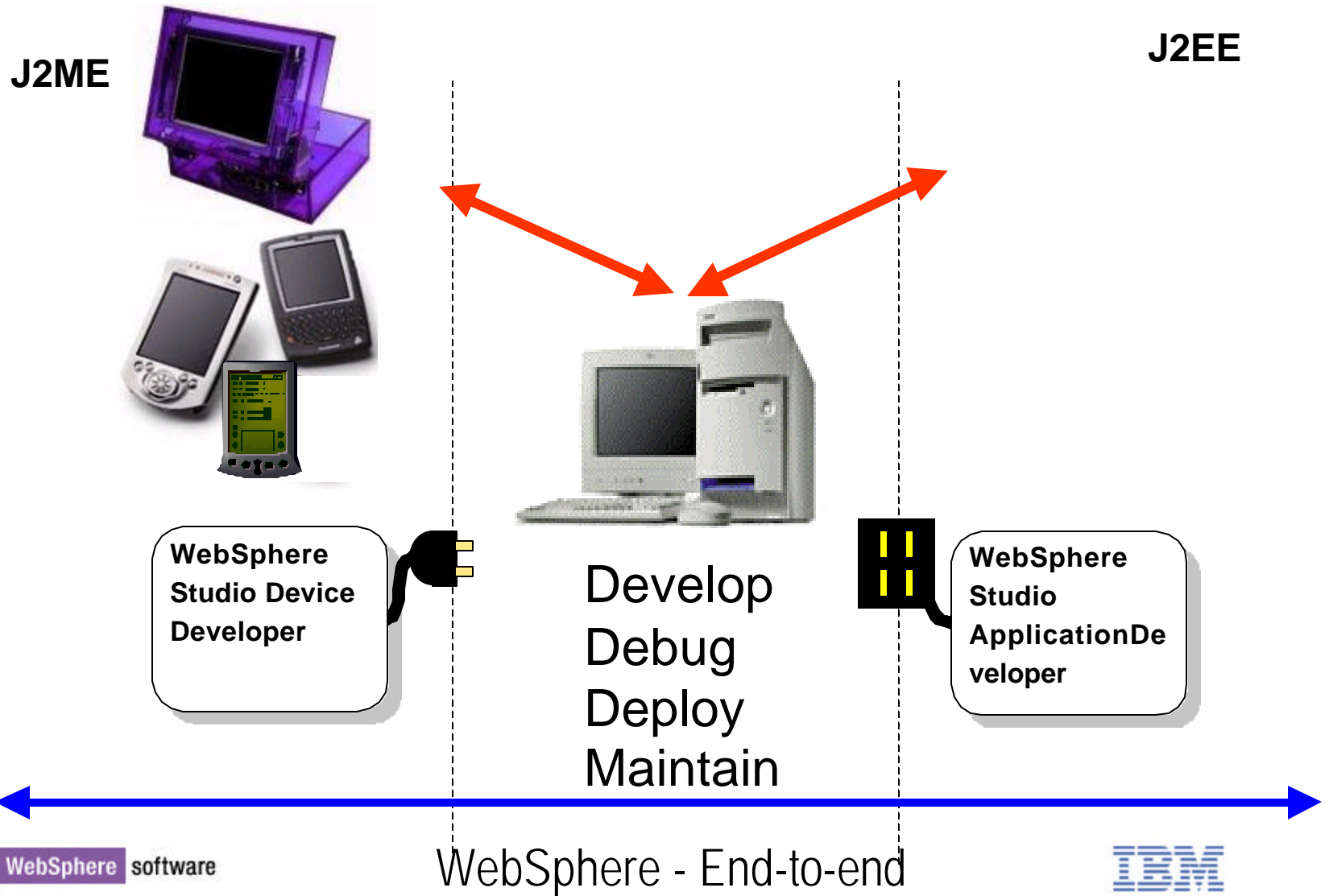


Productivity through Integration - Tools / Runtime

Integrated tools speed time-to-market for devices and applications



WebSphere Studio Tools - Device to Services





The Right Platform / The Right Tools...

- **WebSphere Micro Environment - e-business on a device**
 - Using open standards, delivers the e-business infrastructure for small devices by delivering a compact, reliable, and high performance platform for the deployment and management of dynamic e-business applications.
 - Provides a complete J2ME "Java Powered" runtime environment (J9VM), tuned for each device.

- **WebSphere Studio Device Developer**
 - Join the growing development community of over 600,000 developers and 1000s ISV's extending existing e-business applications to millions of devices.
 - The newest member of the WebSphere Studio family of application development products, connecting J2ME "Java Powered" devices to the enterprise
 - An end-to-end solution for creating dynamic e-business applications



Customer Solutions - Audi

- Business Problem
 - Innovative ergonomics approach
 - Security of the automobile as it accesses services
 - Updating in-vehicle software components
- Solution
 - Multi-Media Interface (MMI)
 - IBM WebSphere everyplace Suite
 - Access via GSM, HSCSD and GPRS
 - In-vehicle VPN for security
 - J9 virtual machine for reliability / maintainability (OSGi)
 - Device to device communications via MOST
- Why Audi Chose IBM?
 - The in-car communication unit incorporates other innovative features. A firewall and the IBM J9 virtual machine also contribute to maximum in-car security. The risk of data misuse or system-wide software-crash failures is reduced from the word "go."
 - Integration work by IBM Global Services



WebSphere software



Customer Solutions - Applied Reasoning

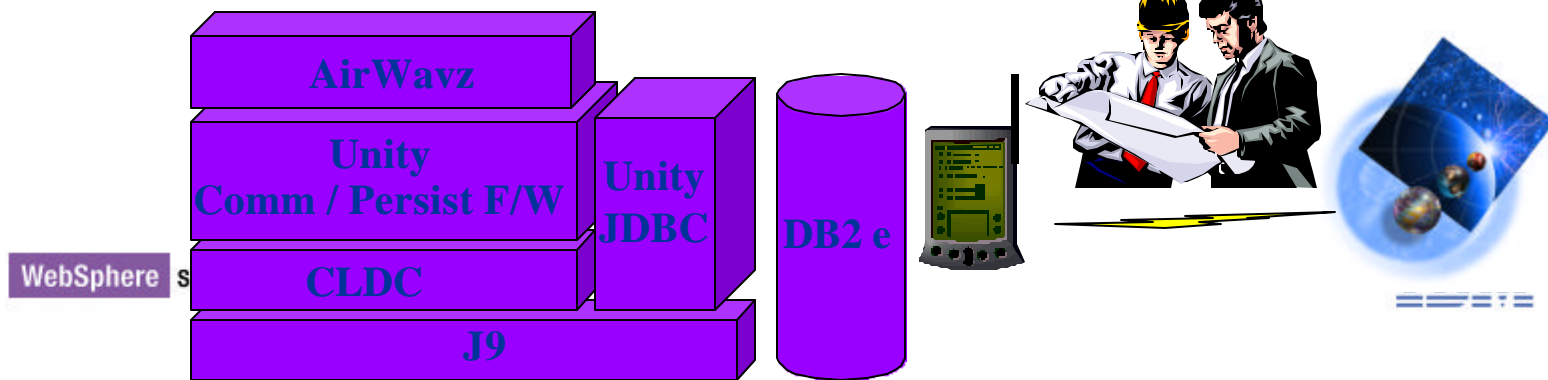
- Business Problem
 - Instant access to IT assets
 - Overcome bandwidth issues
- Solution - Mobile Classic Blend
 - Smart Client with J9 virtual machine
 - Kyocera SmartPhone (PalmOS)
 - Middleware minimizes client / server interaction
 - Only vital data / messages sent
 - Instant response / instant access to messages / IT assets
- Why IBM
 - "IBM's **J9** was chosen because of its **high performance, small footprint and integration with the Palm operating system**," said William Burdick, Applied Reasoning's executive vice president and chief scientist. "**VisualAge Micro Edition provides superior tool support which was critical to our aggressive development cycle.**"



Customer Solutions - AirToolz



- Business Problem - Residential Construction Schedules
 - One change affects many parties
 - Superintendents, contractors and home office
- Solution - Central Schedule on WebSphere / J9 Client
 - Superintendent updates using Wireless Palm
 - Subcontractors affected immediately notified
 - Managers instantly see delays via browser
- Bottom Line
 - Real-time communications streamlines the building process
 - **Integration by Unity Software www.unity-software.com**



Customer Scenario - Qualcomm



BREW

- App developers have a standard
- Handsets are now Platforms
- Carriers get more choices of apps and devices to run them on
- Secure provisioning
- cDMSS CDMA solutions
- Future cross platform support



WebSphere Micro Environment

- J2ME certified CLDC/MIDP
- e-business B/E connectivity
- Adds more choice of applications
- Best tools experience
- Java Dev Community
- Backed by IBM

WebSphere software



BREW / WME Value Proposition

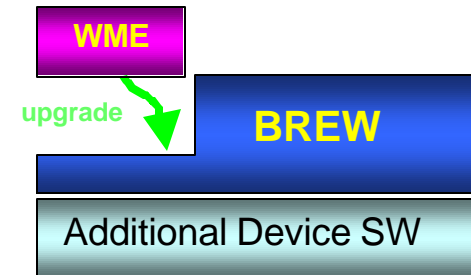


- Predictable J2ME implementation
- Scalable/Upgradeable
- Choice native/Java
- Consumer & Enterprise



Dynamically upgrade/replace VM as:

- Market determines needed capabilities
- VM software efficiency is optimized
- HW accelerators are added



Why Qualcomm chose IBM..

"WebSphere is the perfect answer for carriers who want to provide e-business solutions to their subscribers," said Gina Lombardi, senior vice president of marketing and product management for QUALCOMM Internet Services. "Our development efforts will provide carriers a complete environment for the hosting of C/C++, Java and e-business applications. This brings the power of e-business into the worldwide applications market that the BREW platform is enabling."

"IBM is a significant force in the enterprise. As such, its selection of the BREW platform as a standard part of its WebSphere platform adds a powerful tool for developers to create wireless enterprise applications," said Jane Zweig, CEO of The Shostek Group, an international telecommunications consultancy based in Wheaton, Maryland, USA.

Java Partnerships

Components

IAD

Wireless HH

Auto

Integration

IBM

....Solutions for things that link and think