Solutions for device manufacturers, service providers and enterprises
Executive brief

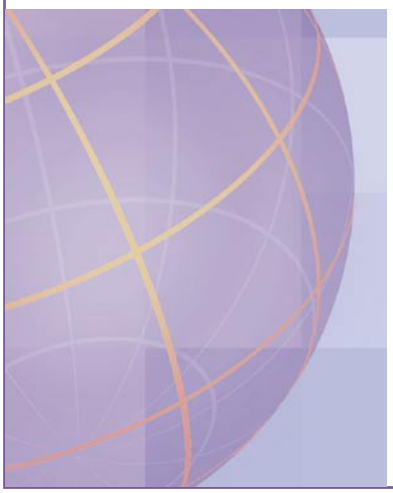
WebSphere® software

IBM WebSphere Everyplace Embedded software

IBM's vision for extending services to billions of pervasive devices.

October 2003

Contents



Overview

Information is the currency of the global economy. Today we expect small devices and appliances, embedded with intelligence, to access that information. Smart phones and handheld companions carried by mobile workers, in-vehicle information systems installed in cars, trucks, planes, digital TV set-top boxes in homes, mobile multimedia systems, Internet home automation controllers—these devices are the logical extension of the networked world we live in, and of e-business.

The universe of pervasive computing is expanding rapidly. Already there are a billion mobile connections in the world today. Growth in mobile devices and appliances that can communicate on the global information network is expected to rise at an annual rate of 28 percent per year through 2006[1].

The challenge, however, is to make the spectrum of devices, with their vastly different capabilities, work together seamlessly, accessing different types of applications, across multiple networks and geographic locations—ultimately connecting people, services and other devices in a way that is both invisible and convenient to the end user. It hasn't been easy. Proprietary technology and a lack of standardization among the current crop of embedded devices have hindered the technological evolution of a well-accepted pervasive computing model—and hence, the business opportunity.

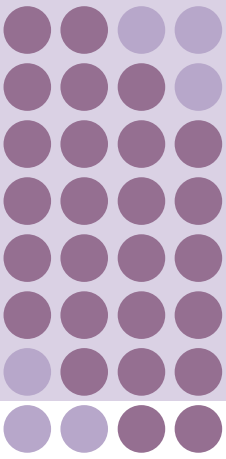
Now IBM has stepped forward with a new approach, a new strategy, a new vision to drive this evolution and help device manufacturers, service providers, carriers and enterprises realize the enormous potential of pervasive computing. We have created a comprehensive software platform for the embedded environment that extends Internet-enabled transactions to a wide range of devices, which can enable end-to-end solutions across multiple market segments. Using the WebSphere Everyplace Embedded software family of products, IBM has developed a pervasive model on a single platform, based on open standards, and accommodating and enhancing multivendor, multiplatform offerings as well as a broad range of IBM products.

IBM's vision opens a vast new market opportunity for extending the enterprise—and delivering services—to millions of devices. Already we're seeing it unfold, as providers and enterprises are fostering fresh ways of communicating, of living in our homes, of taking care of our cars, of enjoying life itself.

According to IDC, enterprises want to be able to deploy applications to multiple devices from a single platform, and the resulting ease of deployment will…dramatically increase the adoption of mobile devices and applications for business purposes.

– allNetDevices. April 3, 2002[2]

Only IBM has created an open standards-based architecture to span multiple device environments — enabling the extension of many new Web services to billions of devices.



But that's just the beginning. In recent years, the world has become less predictable, more volatile. To survive and thrive in uncertain times, businesses and institutions must respond to the ever-changing marketplace and needs of customers and constituents in real time. This is the era of 'e-business on demand.' It represents a fundamental shift in the way people do business — and how they interact with partners, customers and employees. Streamline operations. Lower costs. Improve the quality of service. And gain competitive advantage, while driving revenue.

IBM's vision for an open standards-based pervasive computing platform — powered by software embedded in the ubiquitous networks ever present in our lives today — is designed to support this new era of e-business on demand. Regardless of the economic climate, it can deliver the information and services employees require, customers want and trading partners need through the devices we are using today and the devices yet to come.

A rich market opportunity

With a billion mobile connections and handset sales on the rise, the next generation of data and content services is clearly at hand and the enterprise will be a primary driver of this market. According to Gartner, mobile operators expect to generate $47 billion in revenues from data-based services by the end of 2005[3]. But that figure may prove to be a mere fraction of the total business value as more and more people are connected globally, in real time.

Enterprises

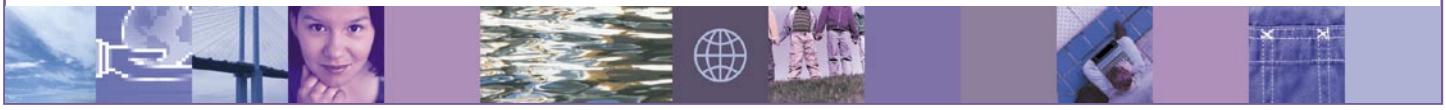
For enterprises, the complexity of business today is enough to keep CIOs and CEOs awake at night. And that's just the complexity of conventional systems. How do you transform your business to function with the ubiquitous integration of business processes, systems and millions of devices without ripping and replacing costly legacy systems? Fortunately, IBM's open standards-based model builds on what you have, increases the value of prior e-business investments, extends your reach to customers anytime anywhere, and improves the productivity of growing mobile workforces. It also reduces costs — of connectivity, of application development, of deployment and management. Not surprisingly, return on investment (ROI) can be rapid. Today's enterprise is looking to scale to a global market to drive revenues and e-business presence. IBM's open pervasive model enables unparalleled connectivity while reducing complexity, so you can immediately realize the strategic and financial benefits of e-business on demand. At the same time, you'll provide a consistent experience for users who depend on their wireless and wireline devices to access applications and services.

Device manufacturers

For device manufacturers, the lack of standards in devices has limited device usefulness across many mobile networks, in turn, limiting sales. Bogged down by so many specific requirements to write code for embedded software, developers often waste time and expense writing applications more than once for a broad range of devices. It also inhibits lifecycle management (i.e., transparent software updates). IBM's vision simplifies the work of development, extends the life of pervasive devices, and helps you bring device applications to market quickly. An open platform also allows service providers and enterprises to pick and choose the functionality they need, when they need it. This functionality can be pre-integrated 'into' the device and/or easily downloaded 'onto' the device—on demand. In either case, this flexibility drives sales for device manufacturers. Additionally, all IBM solutions are pre-tested and integrated, reducing costs and time to market. It should be noted that without enabling devices for the enterprise, in the field or on the network, device manufacturers will not reap the rewards of being part of this emerging new Web services delivery environment.

Service providers and carriers

For service providers and carriers, laboring under high costs has been the cost of doing business. Not any longer. By being able to develop and quickly deploy new services, you can reduce the cost of the network and squeeze more revenue and profit out of existing legacy infrastructure. Connecting to the growing spectrum of devices extends your reach within global markets. With an open platform to launch new services, Web content and Web services can be easily delivered to users at a fraction of the cost, in multiple languages and in real time, driving increased average revenue per user (ARPU). By enabling a faster time to market of new services—billing, customer relationship management (CRM), support processing, applications, and so forth—IBM's open pervasive platform can be a key differentiator for your services. This platform has been designed to allow multiple applications and services to be deployed across multiple device types—again, optimizing your opportunity to generate revenues.



Advances in physical and logical connectivity and in smart, embedded chips will transform key business functions in the next decade.

– *Gartner*, 2003[3]

Java is emerging as the preferred platform for mobile data and Internet access…. Look for Java to start appearing in more traditional embedded applications where real time behavior is required.

– *Electronic Design*, January 2003[6]

Of course, extending e-business to millions of devices does not happen in a vacuum. It takes integrated servers, middleware, embedded device software, education and support. Today IBM is the first to develop an open, end-to-end solution that promises to help manufacturers and service providers capture a share of today's emerging multi-billion-dollar opportunity.

WebSphere Everyplace Embedded software family: Foundation for a new era of extended e-services

At the center of the IBM's vision is the IBM WebSphere Everyplace Embedded software family of products, designed to extend e-services from enterprise systems to intelligent devices. This innovative platform combines the power of WebSphere, the OSGi™ Service Platform, and other open standards with the portability of Java™ technology to provide device manufacturers—and, in turn, service providers and enterprises—with more functionality than ever before. The platform offers the added ability to easily customize services and to scale to the enormous number and variety of network-connected devices emerging in the marketplace.

IBM specifically designed WebSphere Everyplace Embedded software for device developers and manufacturers, to offer a powerful solution that saves on development time and manufacturing costs—while freeing you to be as innovative as you can at the application level. It offers an easily integrated suite of run-time software products that you can use with its development tools and support services to quickly design new intelligent devices.

Providing a world-class implementation of an open standards-based architecture, WebSphere Everyplace Embedded software integrates the software components you require to solve your device software development needs. You no longer need to exclusively choose one supplier's proprietary technology. You simply choose the standards-based building blocks you need. Whether you're developing applications for your device or designing a device to run as many applications as possible, this building block approach saves time and resources.

The vision for WebSphere Everyplace Embedded software is to enable and simplify the extension of applications and services to pervasive devices.

In the delivery of mobile data, Mobile Decision Support services (any service that provides instant access to information in support of real time and personal activities) will generate the greatest amount of non-voice revenue for mobile carriers and usage for subscribers over the next three to five years.

– Alexander Resources, 2002[7]

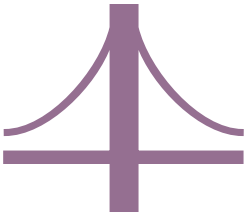
Pervasive computing — The natural extension for e-business on demand to the entire world around you

In this emerging era of pervasive computing, leaders of every industry and sector of global business are searching for ways to make their organizations more nimble, responsive, resilient and focused. They want the ability to respond quickly to whatever the world throws at them—changes in demand, pricing, supply, consumer preferences. That's because their customers increasingly want products and services on their own terms, specific to their needs—when, where and how they choose.

This next generation of embedded devices and appliances, built on open standards, has already begun to meet these goals and embrace the next phase of e-business—to transform the enterprise into an on demand business. Today's latest devices, evolving into platforms themselves, will further enable this on demand transformation. From this base, only now is the real potential of the networked world coming into view.

A world where enterprises use telematics and voice on devices so that sales reps can access e-mail from the office, have it read to them in the car, as they drive to their next appointments. A world where enterprise road warriors can now truly work on the move, without being confined to a laptop and a wired network connection. A world where people can use small devices to tap into computer power served up in a utility-like manner. A world where data mining and decision support systems will supply instant analysis to a cell phone, helping a physician or CEO extract insight and make decisions on the fly.

This on demand capability, powered by the connectedness of countless devices, is capable of unlocking untold business value, as companies seek to reduce risk and drive performance at higher levels of productivity, cost control, capital efficiency and financial predictability.



IBM supports the OSGi Alliance, an open standards group committed to over-the-air and over-the-wire provisioning and maintenance of software. The IBM Service Management Framework (SMF) is our OSGi Service Platform offering and one of the building blocks of the IBM WebSphere Everyplace Embedded software portfolio.

An open road ahead

Clearly, open communications standards and protocols are essential for the future of the pervasive computing industry. Only open standards give you the flexibility to change your technology strategies as your business needs grow. To better integrate your existing disparate or legacy systems and devices. And to free you from being tied to any single vendor platform that may—or may not—be compatible with your future. That's why IBM has consistently championed an open standards-based approach (OMA, OSGi Alliance, W3C, Open Platform, Global Platform, WSDL, ELC), designing our WebSphere Everyplace Embedded software family to let you make choices now that will still pay off down the road.

IBM brings the vision to life

IBM's ongoing commitment is to help customers extend computing to embedded devices using an infrastructure built on a foundation of open, integrated and scalable technologies.

Most important, IBM is the only company that combines device software with enterprise middleware, infrastructure technologies and leading business and consulting services that make all of your systems and devices work together. From backend to end user, we offer a competitive advantage for our customers.

Over the last several years, IBM has provided the foundation that gives people the flexibility to access and interact with information when they want it, where they want it and how they want it. We've helped enterprises extend capabilities to their mobile workforce. We've assisted service providers in finding new ways to decrease costs and increase revenue streams. We've enabled device manufacturers to provide intelligent access to the enterprise.

In IBM and the WebSphere Everyplace Embedded software family, you have an extensive portfolio of technology, hardware, software and services that spans the pervasive computing ecosystem—and a leading software platform for e-business on demand.

For more information

To learn more about how your business can benefit from the next evolution in e-business, contact your IBM representative or visit: **ibm.com**/pervasive.

IBM Corporation
8051 Congress Avenue
Boca Raton, FL 33487
U.S.A.

Printed in the United States of America
09-03

[1] Forecast and Analysis of the Worldwide Internet Access Device Market: 2001-2006." In-Stat/MDR.

[2] allNetDevices. April 3, 2002.

[3] "The Mobile Opportunity is Still Alive." November 2001.

[4] "Key Technology Advances from 2003 to 2012." Gartner, Inc.

[5] "Attack of the Phones: Worldwide Handset Forecast and Analysis, 2002-2006." IDC. 2002.

[6] Electronic Design. "2003 Top Ten Technology Forecast." January 2003.

[7] "2.5 and 3G Success Assured by New Mobile Decision Support Applications and Services." Alexander Resources. 2002.

All statements regarding IBM future direction or intent are subject to change or withdrawal without notice and represent goals and objectives only.

Printed in the United States on recycled paper containing 10% recovered post-consumer fiber.

e business software

G210-1613-00