Mobility: Its Impact, Opportunities, and Challenges
Gaining a Business Perspective on Mobility
Mobility is transforming how companies are run today. Game-changing mobility technology promises to revolutionize business in the future. By answering the following questions, this SAP Executive Insight can help companies understand the impact, opportunities, and challenges of the mobile revolution:

• How has mobility evolved, and what lies ahead for its technology?
• How will mobility impact businesses and their consumers?
• What are the key challenges that CIOs must consider when adopting mobile technology?
A TECHNOLOGY ON THE MOVE

With the extraordinary growth in the use of devices such as smartphones and computer tablets, mobile workforces and consumers alike have unprecedented access to information.

The statistics are startling. Today, it is widely estimated that more than one billion individuals worldwide use mobile devices to connect to the Internet. And industry analysts predict continued and explosive growth in the future. The adoption rates of mobile technology among the world’s businesses are also high. For businesses that want to take full advantage of this global phenomenon, it can be helpful to understand how mobility has evolved and where the future of the technology is likely headed.

THE BUSINESS IMPACT OF MOBILITY

The growth of mobility is indisputable, and company CIOs cannot afford to underestimate its impact on their businesses. At SAP, we firmly believe that:

• Mobility adoption will be worldwide. In fact, Brazil, Russia, India, and China (the “BRIC” countries) will lead in both mobility adoption and innovation.
• Consumer-led technologies will drive development and flatten channels between retailers and buyers.

• The application of mobility will be widespread, affecting industries from healthcare to retail and transforming interactions from social networking to machine-to-machine communication.
• Advanced security and device management will be needed to adequately protect company information.

Organizations that can leverage these evolving technologies – by both retooling their internal workforces and redefining their business-to-consumer models – will be in a powerful position to improve employee efficiency and influence consumer behavior.

THE CHALLENGES MOBILITY POSES

Challenges exist. While company executives rush ahead to equip their workforces with mobile devices, CIOs must maintain a watchful eye on concerns such as security, data latency, and device proliferation. Gartner notes that by 2013, a typical Fortune 1000 company that deploys business-to-employee or business-to-consumer mobile applications will use at least six different combinations of mobile platform, architecture, and development tools.

Gartner also observes that, even by 2014, 60% of Fortune 1000 companies will have failed to put a comprehensive mobile strategy in place – leading to considerable overspending.

Companies need to develop an end-to-end strategy – one that unifies their enterprises for today and establishes a solid foundation for the future of mobility. Mobility can be effectively managed with the right tools and applications. SAP has developed a comprehensive strategy for enterprises that addresses what we call the four “Cs” of mobility: create, connect, control, and consume.

The IT focus includes:
• **Create** – Empowers you to build compelling mobile applications using standard, integrated development environments (Eclipse and Visual Studio)
• **Control** – Allows businesses to manage and secure mobile devices with full confidence

The business focus includes:
• **Connect** – Enables your users to communicate and interface with any SAP® or non-SAP data source and applications
• **Consume** – Allows your users to use the mobile applications from the device of their choice
THE EVOLUTION OF MOBILITY: ITS PAST AND FUTURE

Recognizing a Technology on the Move

Evolving from Pagers to Smartphones

State-of-the-art mobile technology has evolved from the simple pagers and bulky mobile phones of yesterday to today’s multifunctional smartphones and computer tablets. This modern mobile landscape is supported by digital networks that are available around the globe. Such advancements have fueled a rapid and worldwide adoption of mobile technology. In fact, some industry analysts predict the value of the overall mobility market will top US$1 trillion by 2014, while others expect the global mobile workforce to exceed 1.2 billion as early as 2013.

Mapping a Revolution

At SAP, we see the evolution of mobility as having four distinct phases (see Figure 1). Each phase has been characterized by enhanced capabilities that have revolutionized the use of mobile devices:

- **Mobility 1.0 – basic connectivity.** Early mobile devices were used primarily to make phone calls. During this period, the devices were typically large handsets with limited functionality and uncertain reliability.

- **Mobility 2.0 – expanded connectivity.** By the early 1990s, advancements such as improved batteries and energy-efficient electronics powered the transition from brick-size phones to smaller, easier-to-carry handheld devices. Digital networks (called 2G) enabled a popular new capability: text messaging via the short message service (SMS). The use of SMS has grown substantially around the world since its inception.

- **Mobility 3.0 – the unwired enterprise.** In the late 1990s, significant demand emerged for data services such as Internet access and for more sophisticated devices that could incorporate personal digital assistant (PDA) features. This growing demand was addressed by improved 3G network technology. Then, with the launch of the BlackBerry from Research in Motion (RIM) in 2002 and Apple Inc.’s iPhone in 2007, smartphones that combine mobile communications with handheld computing capabilities captured the public’s imagination. These technologies also unwired the enterprise – enabling a mobile workforce to access critical business data and applications anytime, anywhere, and on any device.

- **Mobility 4.0 – automated interactions.** In the future, we will begin to see machines and automated devices use mobile technology to communicate with each other without human interaction. Companies will conduct business in efficient new ways. Consider, for example, a replenishment order placed automatically from a retailer’s scanner that triggers a transaction without any direct employee involvement.

The evolution of mobile technology is unlikely to end here. With advanced 4G networks and today’s next-generation devices such as the Apple iPad and RIM BlackBerry PlayBook, the stage is already set for a new wave of innovation.

Figure 1: Mobility Evolution
Assessing the Business Impact of Mobility

With the explosive growth of mobile applications comes an obvious question: How will this technology affect global businesses? Undoubtedly, it will impact both internal operations and traditional business-to-consumer relationships.

MOBILIZING EMPLOYEES

It is easy to identify the benefits of a mobile workforce. Both worker efficiency and effectiveness improve as employees are able to quickly execute basic tasks such as filing time reports and travel expenses from their phones. And “data on the go” can empower employees in the field with fast access to information from real-time shipping status to the latest sales figures.

CREATING NEW CONSUMER CHANNELS

Brick-and-mortar stores – and, more recently, retail Web sites – have established a consistent brand experience for consumers. But the retail paradigm is transforming as customers can now purchase products directly from their mobile devices as well. SAP sees a number of developing trends that will redefine the consumer experience, such as:

• Greater use of location-based services and augmented reality – Imagine a business owner using mobile technology to push targeted messages to shoppers passing by the store. It’s quite possible with location-based services that use the global positioning system (GPS) and wireless-network technology to send location-relevant information to mobile devices. Augmented reality applications overlay displays of real-world objects with digital information. Point the camera on your mobile phone at a street corner and see information about nearby restaurants, banks, or stores. Yelp’s Monocle app provides this type of functionality to users of the Apple iPhone.

• Increased price transparency – In the past, businesses could rely on strong brand recognition or an enticing promotion to attract customers. Once shoppers were inside the door, retailers could leverage a flair for merchandising or superior customer service to close sales and drive up-selling. Because getting the customer physically in front of the product is no longer enough to ensure a sale, price transparency threatens to erode these traditional competitive advantages. Mobile applications such as RedLaser, ShopSavvy, and TheFind enable customers to research prices from any location. A smartphone-equipped shopper can examine the product at one location, use the phone to compare prices from multiple vendors, and then purchase the product at another retailer’s Web site or mobile application. With increased price transparency comes the potential for dynamic competitive pricing. More than ever, retailers will need to focus on operational efficiency to protect their bottom line.

• Using mobile devices like cash – Mobile devices could replace the wallet altogether as near field communication (NFC) standards make contactless payment technology interoperable with smartphones. NFC is an evolution of the radio-frequency identification (RFID) smart tags seen in the last decade on transit fare cards and contactless payment systems such as Mastercard PayPass and Visa payWave. Used in Japan since 2006, NFC-enabled mobile phones are becoming the default payment method in that country for transactions such as paying for parking fees, train fares, and vending machine items. Google has added NFC support to the Android operating system, and Samsung debuted NFC-enabled hardware with the recently unveiled Wave 578 smartphone.

• Marketing with mobile coupons – Recently, 70% of retailers surveyed said that within the next two years they plan to offer scannable coupons that consumers can access from their mobile devices. In-store redemption, however, will require optical scanning devices that currently have only a 2% penetration rate. To help ensure customer retention, retailers must carefully consider the interaction between mobile communications and their in-store technology.

Increasingly, mobile devices must be viewed as viable alternatives to the current Internet and brick-and-mortar channels. The retailer of the near future will have to monitor customer preferences from multiple data sources to deliver highly targeted offerings at the right price. Transactions made from mobile devices will increase the consumer’s digital footprint and drive greater multichannel communication between businesses and their customers.
Overcoming the Challenges of Deploying Mobile Technology

ADDRESSING TECHNICAL CONCERNS

Undeniably, the advent of the unwired enterprise presents its challenges. Technical concerns such as security, data latency, and device management are particularly prevalent (see Figure 2). In fact, in a recent IDC survey, more than 50% of respondents reported security or compliance issues in their mobile deployments. Security concerns exist at the following levels:

- **Network** – Activities as innocuous as wireless e-mail can pose a threat as users conduct business over mobile virtual private networks (VPNs) based on an intrusion prevention system (IPS) or secure sockets layer (SSL). A virus from an unsecured personal device behind the enterprise firewall can infect the network and both the wired and wireless end points.
- **Device** – Enterprise data on personal devices is vulnerable to theft or other loss. Security concerns include data loss prevention, file and disk encryption, mobile device lockdown, mobile antimalware, and security policy and compliance management.
- **Identity** – Personally identifiable information exposed during network access and mobile application use must be protected from snooping. Like the PC environment of the late 1990s, viruses are likely to multiply as mobile-based commerce, banking, and social activities continue to expand. CIOs must rely on the latest authentication and authorization capabilities provided by advanced mobile identity and access management.

Data latency is another – and often overlooked – issue. Workforces accessing data from back-end systems and consumers looking up dynamic pricing require near-real-time performance. Traditional database interactions can be time intensive when dealing with large quantities of data, so a more efficient protocol is needed by users that are accessing ever greater amounts of data from mobile devices.

DEVELOPING THE RIGHT ROAD MAP

The mobility ecosystem is undergoing significant change, and current providers seem unsure as to how they can best serve the enterprise market. Today’s CIOs are managing no less than six major mobile operating platforms, two of which were not even on the radar just three years ago. The proliferation of enterprise app stores from device, application, and even connectivity providers only adds to the landscape’s complexity. And with the consumerization of mobility, business users want convergence between their personal and professional mobile devices.

As companies look to align mobile technology with long-term business goals, CIOs need the right expertise to ensure successful deployments. In this time of economic recovery, however, many IT departments are focusing narrowly on near-term efficiency – enabling growth without additional headcount. As a result, current IT resources might need to “skill up” to effectively develop and deploy new productivity initiatives such as enterprise mobility. The IDC survey indicates a skills gap. More than 40% of responding companies had experienced issues when linking mobile platforms to existing databases; almost 20% found mobility too complicated to install, manage, and support.

Challenges are bound to continue as the pace of the mobile evolution accelerates over the next five years. But CIOs must address all these issues if mobility is to become a primary tool for running their businesses better.

Figure 2: Mobile Technology Deployment Issues
Which of the following mobile deployment issues has your organization experienced?

- Security and compliance issues
- Issues in linking mobile platforms to existing databases
- Cost overruns and budget issues
- Took longer to deploy than anticipated
- Project scope extended or changed leading up to or during deployment
- Too complicated to install, manage, and support
COMBINING THE POWER OF TWO

Mobility represents a significant opportunity for those organizations that can fully leverage the technology. Yet CIOs need to take an end-to-end approach to ensure success.

For decades, SAP has set the standard in business software and has extensive knowledge of business processes across a broad range of industries. Sybase, now an SAP company, is a recognized leader in delivering mobile software. Working as one, SAP and Sybase offer a comprehensive suite of mobility solutions that enable companies to support, manage, and optimize the capabilities of mobile technology. This suite contains powerful tools that help enterprises manage the proliferation of mobile devices while addressing challenges such as data security and network latency.

SAP mobility software – designed to unwire the enterprise – includes solutions that enable you to address the four Cs of mobility as follows:

- **Create and connect with Sybase® Unwired Platform.** The platform provides a complete application development environment for enterprises and third-party software providers.
- **Control with the Afaria® mobile device management solution.** Afaria helps you securely manage data across all major mobile platforms and throughout the mobile device lifecycle.
- **Consume with the Sybase Mobile Sales application for SAP CRM.** This application mobilizes key areas of customer management: activity management, lead and opportunity management, account and contact management, and analytics and reporting.
- **Consume with the Sybase Mobile Workflow application for SAP Business Suite.** Sybase Mobile Workflow provides a lightweight form host that lets you create and modify mobile business objects on different device platforms without custom development.

Sybase Unwired Platform – which provides a single, consistent development platform – is at the heart of the SAP strategy. This flexible, open infrastructure allows you to respond to evolving device-type and data-source requirements that are due to acquisitions, system refreshes, or mobile device technology changes. CIOs can develop mobile solutions for today’s business needs with greater confidence, knowing they can adapt quickly and strategically to the complex and changing world around them.

ANSWERING NEW DEMANDS WITH INNOVATIVE TECHNOLOGY

Network latency remains a significant challenge for many organizations. SAP In-Memory Appliance software (SAP HANA™) can help companies process massive quantities of real-time data in main memory – eliminating the time-intensive read-write cycles that occur with traditional databases. Used in conjunction with mobile technology, SAP HANA can facilitate real-time look-up and let you perform faster data analysis. SAP HANA can deliver speed improvements up to 30 times greater than those promised by other solutions.

RUNNING SMARTER WITH MOBILE TECHNOLOGY FROM SAP

As the premier global provider of business software, SAP continues to lead the way in helping businesses capitalize on the latest technology. Mobility is transforming how enterprises are run. SAP is once again in position to be the partner of choice for businesses that want to run better.

FOOTNOTES

2. Ibid.
7. Ibid.