



GUIDE TO WIRELESS AND MOBILE APPLICATIONS

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WIRELESS AND MOBILE TECHNOLOGY

Wireless applications and services offer the concept of ubiquitous computing, access to data and information “any time and anywhere”. This guide discusses business opportunities for wireless and mobile technology. This guide also identifies industry drivers of growth and offers keys to successful design, implementation, and execution of wireless application within your business strategy.

Business Opportunity

With an estimated 23.4 million mobile US workers and 180.5 million Americans with cell phones the market for wireless applications and services are significant. The technology offers potential for cost savings, competitive advantage, and productivity gains. Opportunities exist in both consumer and business segments.

The consumer segment includes: instant messaging, location based services, mobile commerce, games, and personal information management.

The business segment includes: email, instant messaging, enterprise applications, data retrieval and submission, as well as administrative management.

Investments in wireless applications have the potential to improve employee productivity and customer loyalty. Companies that upgrade production technology have an ever-increasing cost advantage over slower companies that use old technology and can't benefit from productivity gains. Most significantly, businesses that implement effective wireless applications can benefit from first-to-market advantage.

At the center, wireless opportunity involves the distribution of information and mission critical data to internet-enabled devices such as; “smartphones”, Personal Digital Assistants (PDAs), and laptops. A wireless device is best thought of as a satellite device, designed as an extension to a desktop system, not as a portable version.

Some areas where wireless applications can add value include;

- E-Mail and messaging systems. [Figure 1]
- Customer Resource Management (CRM)

- Personal Information Management
- Location Services [Figure 2]
- Supply Chain Management.
- Remote access to enterprise data.
- M-Commerce [Figure 3]



Figure 1—SMS



Market Drivers

As of 2004, the cell phone penetration rate for North America and Western Europe is 53% and 73.8% respectively. Worldwide unit growth is expected to continue including China, India and expanding markets.

In recent years several trends have emerged in the wireless/ mobile technology areas that are driving growth and innovation:

- High Speed 2.5G and 3G networks offer increased bandwidth.
- Prices for PDAs and cell phones continue to decline.
- The processing power of mobile devices continues to improve.
- The battery life of hardware is increasing.
- The creation of next generation wireless tools and applications.

Keys to Success

Along with the opportunities to better equip employees with productivity enhancing tools and improve customer experience, come several challenges. Wireless technologies are evolving constantly. The present day challenge is to provide value-added wireless services that offer real return on investment, as well as increase mobile work force productivity and customer loyalty.

The most significant key to a winning mobile initiative is the understanding of the mobile users needs in terms of situation and content.

The following are keys to success that should be considered when adoption of wireless technology in your business.



Figure 2—Location Services

Wireless Software Technologies:

Imode Developed by NTT DoCoMo as a system for accessing mobile internet. imode uses Compact HTML (cHTML), an extended subset of HTML, to view content.

Java 2 Micro Edition (J2ME) A programming platform used to create applications that run on small devices with limited processing power and memory such as cell phones and PDA.

Binary Runtime Environment for Wireless (BREW) A, programming platform, developed by QUALCOMM, to create applications for small mobile and wireless devices.

WAP (Wireless Application Protocol) A global standard developed to make Internet services available for mobile users. Commonly used to view Internet web pages on wireless and mobile devices.

Wireless Markup Language (WML) A presentation and formatting language optimized for wireless devices. A programming language designed to fit small, handheld devices used for wireless communication.



Usability / Functionality



The ability to collect data and view information is paramount. It opens the door to a world of productivity gains and enhances the customer experience. The challenge today is to identify wireless or mobile applications that are usable, and offer a real means with which to connect to the web or view information.

Related Challenges include:

- Small, monochromatic cell phones screens
- Limited keypad entry (phone pad)
- Understanding hand writing recognition technology to simplify data entry.

Wireless Technologies:

Bluetooth Communication standard that enables a (PAN) personal area network to identify and communicate wirelessly with devices that are within a few feet. Uses 2.4 GHz band at 720 kbps with a 30 feet range.

Wi Fi (Wireless Fidelity) A wireless data networking specification (802.11) used to connect PCs, laptops and PDAs to a network. The specification encompasses a host of standards:

802.11a - 5GHz frequency range, 54Mbps data transmission speed.

802.11b - 2.4GHz frequency range, 11Mbps data transmission speed.

802.11g - 2.4GHz frequency range, 54Mbps

Security



As with all businesses, security of your information is critical to you and your clients. Sending confidential information, such as credit-card numbers and proprietary corporate communications, raises security concerns utilizing technologies such as Wireless Transport Layer Security (WTLS), cryptography, security APIs, and SSL should be used to enhance security.

Authentication of the user, confirmation of the information's integrity, verification of privacy, and proof that the information was sent and received are also critical to a successful system.

Conductivity/ Synchronization



Current devices, from PDA's to cell phones, offer different means with which to link and share information. Today's technology offers three options; real time access, synchronization, or infrared. Real time access requires a reliable network connection to send and receive information. Synchronization offers the ability to store and synchronized data at a later time. PDAs, such as Palm and Pocket PC, can be attached to a computer with a cable/cradle and data can be compared and shared between devices. Infrared offers a medium to transport or beam information from a device to another device using low frequency light.



Figure 3—m-Commerce



Return on Investment (ROI)



Gauging the effectiveness of wireless or mobile applications requires an understanding of the needs and priorities of users. The solution is retained in the ability to know how a wireless applications or service will produce revenues or increase productivity. Could a system that costs X dollars allow for quicker order placement, tracking of deliveries, better office administrative management (emails, SMS), or more sales?

System Integration & Standardization



Device diversity or mix of equipment is another challenge. Businesses face an overwhelming task of trying to standardize hardware and software across enterprise systems. Qualcomm®

, Nokia®, Microsoft®, Sun Microsystems®, and Palm™ are all competing to provide products for this market including J2ME, Pocket PC, Symbian and Brew. Standardization affects the universal adoption of wireless communication. Cost, Support, administrative tools and data compatibility must be addressed to effectively add hardware.

Wireless Services:

Location Bases Services (LBS) – Mandated by the E911 Act of 1999 to address emergency calls from mobile phones, LBS technology offers a way to determine a user's location within just a few meters.

Short Messaging Services (SMS) – a protocol for sending and receiving short (up 160 characters) alphanumeric messages using wireless devices across networks.

Digital Telephone Systems:

GSM (Global System for Mobile Communications) - Digital cellular telephone system used worldwide. Frequency 900MHz, 1,800MHz, 1,900MHz.

CDMA (Code Division Multiple Access) – Digital telephone system used mostly in United States. Frequency 800MHz, 900MHz, 1,700MHz, 1,800MHz, 1,900MHz.

TDMA (Time Division Multiple Access) – Digital cellular telephone system. Frequency 800MHz, 1,900MHz.

3G – (CDMA2000, 3GSM) Third generation digital cellular networks. Allows for increased data speeds and larger network capacity.

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Inventure Systems, LLC is a dynamic and innovative company that focuses on the emerging area of wireless and mobile device technology. We are a provider of information, services and products for the wireless industry.

We specialize in the design and development of usable software for PDAs, cell phones, and converged devices "smart phones".

