

# Wireless Woes

The usability, interoperability, and business challenges involved with taking e-business applications to cell phones are more serious than most want to admit.

**CELL PHONE TECHNOLOGY** promises to take e-business applications well beyond the office walls. However, there are challenges to building and deploying mobile apps for e-business. What stands in the way? Usability issues, interoperability challenges, and business ROI.

The three main components of wireless e-business applications are mobile browser access, client applications on mobile devices, and wireless messaging. Here, I focus on mobile browser access to applications and data.

## Usability issues

The biggest challenge with mobilization is developing usable applications, particularly for mobile phones. Consider the concept of "transcoding," which in its simplest form takes Web pages (HTML) and converts them to a wireless markup language. This sounds like a great solution because companies can leverage existing Web-based e-business applications and content for mobile devices. However, most Web pages contain too much information to fit on a phone screen. So, a developer must manually choose what content will be available for browser access from mobile phones.

Transcoding is problematic, not only because it typically involves a tedious manual process, but also because Web pages frequently change. Transcoding works best for static Web content, rather than dynamic content or client-side logic using technologies such as JavaScript and ActiveX. As a result, transcoding is inherently fragile and costly to maintain.

Direct translation from an existing application to a mobile device preserves the application's navigation paradigm, but the navigation for an average Web

site is far too complex for mobile devices. For example, accessing a particular item of information may require Web users to navigate through several menus; but, most mobile device users won't bother to access information more than two or three levels away from the application's entry point. The solution is to create new navigation for the mobile user interface, which makes direct translation of existing e-business applications a weak approach to mobilization.

## Interoperability challenges

Telephone keypads are clumsy input mechanisms. However, creating new user interfaces for e-business applications optimized for phones requires software development. As a result, the promise of "plug-in mobile access" to Web-based applications isn't a reality.

There's no standard for mobile user interfaces, particularly on mobile phones. In fact, many phone manufacturers (e.g., Nokia, Ericsson, Siemens, Sanyo, etc.), as well as mobile browser makers (Openwave, Nokia, et al.), have developed their own user interface features and software extensions to standards like Wireless Application Protocol (WAP), partially in an attempt to solve usability problems. This makes the situation worse because applications optimized for one type of phone or that exploit features specific to a particular microbrowser don't work as well on other mobile phone models or with other types of microbrowsers.

WAP and WML are the leading technology standards in Europe and the U.S. They are just one set of technologies available to mobile app developers. For example, there are many markup languages, including: Handheld Device

Markup Language (HDML), Wireless Markup Language (WML), Compact HTML (c-HTML), and Extensible HTML (xHTML), to name a few. Mobile applications must therefore be interoperable across multiple markup languages.

## ROI

Businesses today require a clear and compelling ROI to deploy new e-business technology. To realize the potential benefits of mobile technology, such as acceleration of e-business transactions, several things must happen, including:

- Navigation and optimization for different devices must improve to the point where there are measurable productivity gains.
- Technology issues, such as handling multiple markup languages, must become transparent to applications and developers.
- The requirement for custom development must be predictable and financially feasible for businesses.
- Applications must be fully interoperable across multiple markup languages, without extra development work.

Until costs and risks decrease, mobile technology won't be widely adopted as an extension of existing e-business applications and infrastructure.

## Solutions

Transcoding isn't the ideal development solution. We should be looking for solutions that make it easy to create new UIs for existing applications through middleware and Web services, are completely independent of markup languages, and fully automate the process of optimizing the usability features of the UI for individual devices. **FORUM**