Enhancing CRM With Mobilized Software and E-Forms

Mobilized computing is a powerful environment for workers, especially when integrated with CRM applications. However, choosing the right mobile application architecture is critical to success.

by Krishna Srinivasan and K. Michael Cooper Sand Hill Systems

Organizations are embracing wireless solutions at a rapid pace to support a more mobile and productive workforce. According to a 2002 study by Access Markets International, a market intelligence company, there were approximately 39 million remote and mobile workers in the United States in 2001. The firm forecasts that by 2006, that will have increased to 67 million, more than half the nation’s workforce. Organizations have embraced mobility to such an extent that one of the biggest trends today is desktop replacement. As a result, more investment is being made in portable computer technology, which includes PDAs, tablet PCs, smart phones, and especially new and upgraded notebooks.

One area where mobility plays a vital role is CRM. The ability for employees to connect to a “home” enterprise network – or to networks of business partners – to access up-to-date information (catalogs, stock levels, customer profiles, etc.) in real time enables service technicians, sales personnel, and the like to be more productive and deliver a higher quality of customer service. In some instances customers themselves may also need and want to access this information wirelessly. In many industries these capabilities can result in a clear competitive advantage. However, on this road to mobile nirvana, there are still a number of technology speed bumps and potholes to navigate.

Many wireless solutions, while opening up a window to the corporate enterprise network or a CRM application, are not without their frustrations – as many mobile workers will attest. It is quite common for that “window” application to close abruptly due to an unstable network. This frequently causes lost connections and, in the worst-case scenario, lost data. Many wireless solutions cannot accommodate working offline, which creates latency and access issues – not to mention putting the brakes on user productivity. For chief information officers and senior management, perhaps the biggest issue is the associated costs of the applications themselves. While delivering many advantages, these mobile applications are typically device-specific point solutions that are expensive to develop, deploy, and maintain.

While many of these issues could be solved by an always-on high-speed connection, this is clearly not technologically feasible or realistic when hundreds or thousands of mobile workers are involved. Similarly, building a proprietary network to communicate with business partners is also cost-prohibitive. To maximize return on investment and unlock the full value that a mobile workforce can deliver, particularly in the area of CRM, a more practical, cost-effective solution is needed.

Working Online and Offline With Mobilized Software

The mobilized software environment, defined by Intel Corporation and others, solves many of the day-to-day challenges that plague mobile workers. Intel defines mobilized software as “applications that keep productively working, even when there is no network connection.” Here’s how it works.

Mobilized solutions store all changes, requests, and transactions as a user works offline. When a network connection is made – automatically, transparently, and intermittently – everything is completed and synchronized seamlessly. With a network connection established, any new or requested content is sent to the user’s mobile device for them to work with. Once this content has been received the device will most likely reconnect and the user will continue working in offline mode.

Here is just one sample scenario that illustrates how this model works in support of an enterprise CRM application. Over breakfast, a salesperson accesses the corporate network with a laptop from his home office and downloads a list of customer visits he is expected to make for the day. Once on the road, the salesperson accesses order history, status of current orders, and maps and directions offline. After each call, the salesperson updates information and enters new orders in offline mode. Throughout the day, his laptop wirelessly and intermittently connects to the corporate network whenever a wireless network or hot spot is detected. Information is synchronized with the enterprise CRM application so customer service representatives and business partners are always informed and data is up-to-date. Any alerts, last-minute changes, or special customer requests are sent to the laptop automatically when connected, enabling the salesperson to deliver the highest level of service.

The ability to work productively offline is a key advantage of mobilized solutions. In addition, mobilized solutions are secure,

Krishna Srinivasan, executive VP of sales and marketing, brings to Sand Hill more than 10 years of experience in Internet applications, enterprise systems architecture, design, development, and implementation, IT, and e-commerce management.

K. Michael Cooper, president and CEO, has more than 25 years of experience leading companies through challenging transitions.
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Emerging Mobility Architectures
According to Chris Thomas, Intel’s chief e-strategist, three main architectures have emerged to support the mobilized environment. Each one has quite different characteristics:

- **E-forms**: This document-based approach is perhaps the simplest and most intuitive to use on account of almost everyone’s familiarity with forms. In essence, forms are used as a default user interface into legacy or enterprise applications. Like the other architectures mentioned above, forms can be completed offline and submitted automatically whenever a connection to the corporate network is detected. An emerging technology is XML-based e-forms, known as XForms, which promises to further enhance this solution.

- **Offline Web portals**: Browser-based and content oriented, the main focus of offline portals is to make content available offline. Offline portal users can search and request documents as well as subscribe to individual documents or document categories, all while disconnected from the corporate network. In this architecture, data automatically synchronizes using fast, structured downloads. This architecture is best suited for “pushing” static content that cannot be changed by “consumers,” for example, a series of updated product brochures for the salesforce. In addition, as content grows, more Web pages are required. This can create navigation issues and added complexity, leading to increased overhead and training.

- **Custom applications/database synchronization**: This application-centric approach also enables mobile workers to be productive offline by placing “mini” databases on laptops and other mobile devices. In addition to remote data synchronization, this solution typically includes wireless browsing and in some cases technologies like SMS messaging. While automatic two-way synchronization is becoming common to reduce the associated learning curve, this emerging technology remains fairly complex to deploy, manage, and use. It is also expensive due to the many database licenses required to populate what could be thousands of desktops, laptops, and mobile devices.

Qualitative arguments can be made for the advantages and disadvantages of each of these architectures. However, when a quantitative approach is taken to determine total cost of ownership (TCO), the e-forms architecture is clearly superior.

Mobile Application Architectures

And Total Cost of Ownership

Analyst firm Gartner Group has issued a number of strategic analysis reports – “The Cost and Risk of Application Development Decisions” by J. Feiman and T. Berg, May 2002 and “Planning for the Bandwidth That Applications Will Need” by J. Delcroix and J. Green-Armytage, March 2002 – that provide valid rules of thumb for allocating costs for various categories (development, maintenance, operation, etc.) associated with developing and deploying an application.

Using this information, along with input from Intel, Sand Hill Systems has calculated TCO for the most popular mobile application architectures. As custom applications with database synchronization are by far the most expensive architecture to develop, deploy, and support, many organizations will remove it from their evaluation short list. Because of this fact and the difficulty in estimating costs for a custom application, the Sand Hill Systems’ TCO analysis compares Web-based/portal and e-forms mobile application architectures.

Here’s the bottom line. In a fairly typical user scenario – 10 core forms with 200 supporting forms – the TCO for a Web-based/portal architecture is approximately $12.7 million compared to a TCO for an e-forms architecture of approximately $4.8 million, which is less than half. For specific details on how the TCO was calculated and the user scenario that was used, please visit www.sandhillsystems.com/submitit/tco.

E-Forms Benefits

In addition to significantly lower TCO compared to other mobile application architectures, e-forms solutions offer attractive benefits to both the submitter and the form receiver.

For the form submitter, the ability to work offline, using a familiar form-filling tool such as Adobe PDF, Microsoft Word, or Excel is a major advantage. Because users are not required to work online, they can work at their own pace. In contrast, online systems impose a time constraint on the person interacting with the system in a real-time mode – not to mention the user’s requirement for consistent, reliable network connections. Superior e-forms solutions also provide the capability to collaborate or route forms for assistance if it is needed to complete the form, or for approval prior to submission.

Submission is simple, either by email or, if the user prefers, he or she can connect to a portal and directly upload the forms package. One of the biggest advantages of e-forms is its form factor – people are very familiar with forms, and they are typically easy and intuitive to use. This is especially important and beneficial when nontechnical staff such as delivery and warehouse personnel, sales rep-
representatives, and potential customers are the primary users. In addition to reducing training and implementation times, the ease-of-use of e-forms can help increase return on investment for enterprise applications such as CRM.

E-forms solutions also benefit the form receiver. The receiver’s interest is primarily data capture and populating the line-of-business (LOB) application. Because superior e-forms solutions provide immediate feedback to the submitter if there are any data-integrity issues, the receiver typically obtains complete and correct data. Better e-forms solutions also offer a wide variety of security options, including encryption.

Building an E-Forms Solution

Any e-forms-based mobilized solution needs to effectively address each phase of the forms lifecycle (see Figure 1).

These stages are described below:

- **Create and publish**: These steps prepare the forms for use by the form’s submitter. Typically this is the responsibility of the administrator for the entity that will be receiving the forms.

- **Find and apply**: Here, all the required forms are packaged into one downloadable unit. The burden of identifying all the necessary forms required for a business task is removed from the form’s submitter. The packages are loaded into a portal. With helpful navigation, the form’s submitter can easily and quickly identify the business task and download the package. Alternatively, the package could be emailed to the form’s submitter, thus eliminating the need to connect to a portal.

- **Capture**: Here the form’s package is received by online/offline submission or email. The documents are decoded and stored to ensure they are traceable.

- **Process**: This critical stage provides the ability for collaboration as well as integration with an LOB application – a CRM system for sales, for example – in the required technical manner. In many cases, data is extracted into XML. If there are any data integrity issues, the LOB application should immediately provide feedback to the form’s submitter.

There are many sophisticated, well-proven solutions available for creating and publishing forms, as well find and apply. However, solutions that address the capture, process, collaborate, and integrate phases are few and far between. This creates a significant challenge for organizations. For example, a large Fortune 500 company has 400,000 PDF files available for downloading from its own external Web site and partner Web sites. Even though it monitors 1 million downloads a month, it has no idea what action is being taken with these documents. The server-based approach of Sand Hill Systems’ SubmitIT Server™ provides a solution to this common challenge and the capture, process, collaborate, and integrate phases of the forms lifecycle.
**Sand Hill Systems’ SubmitIT Server**

Sand Hill Systems’ SubmitIT Server enables the electronic capture and transmission of a wide variety of forms in many formats and also streamlines collaboration between organizations or between organizations and individuals. This is enabled through incorporating business process workflow, logic, and rules into the routing and notifications of form data. Transactions are completed easily, economically, and without requiring any of the parties involved to change their business process or to incur incremental costs.

SubmitIT Server leverages the Microsoft .NET server environment, using the Microsoft BizTalk server as the means to convert the form’s data into XML and any other data format that is required. This facilitates seamless back-end integration with a wide variety of LOB applications. Sand Hill Systems’ technology supports both mobilized and context aware computing models being championed by Intel, MIT Media Lab, and other industry leaders as key to the future of an increasingly mobile computing environment.

The SubmitIT Server solution is highly scalable with the ability to process more than 200 forms per minute (Intel benchmark). Using forms buffering, there is virtually no limit to the number of forms that can be managed. The SubmitIT Server is also flexible as an extensive set of tools and APIs are provided. This assists in the creation of the data capture, processing rules and forms package.

**SubmitIT CRM Server**

This example describes an e-forms application for a publishing company and its portal, which offers feature articles, case studies, white papers, and the like for downloading. An end user downloads documents of interest and within each document is an embedded “action form.” The end user completes the action form online or offline. For example, the user may want more information on the author, his or her company, or perhaps to read similar articles. Once complete, this form/data is sent back to SubmitIT Server either online, offline, or via email. The SubmitIT Server engine transforms the data into XML before it is sent to the integration server. From here, the data could be sent to a lead generation database and/or to the companies/authors that provided the original content. Data could just as easily be sent to integrate with a CRM application (see Figure 2).

**Conclusion**

Industry analysts forecast that by the end of 2006, almost two-thirds of U.S. workers will be classified as “mobile.” Quite clearly, improvements need to be made to optimize the productivity of these workers as they battle lost connections, lost data, and lost productivity. Mobilized software, which is rapidly gaining momentum and acceptance, is the answer. While there are a number of potential mobile application architectures available, e-forms has many advantages for organizations and mobile workers alike. In addition to its lower TCO, an e-forms solution like Sand Hill Systems’ SubmitIT Server can track who is downloading what documents and what actions they take. Compared to other mobile application architectures that essentially only deliver or synchronize content, this is a significant valued-added capability, especially when integrated with a robust CRM application.