Executive Overview

The CIO's Guide to Mobile Applications

Smartphones have become robust application platforms that companies can depend on to deploy high ROI mobile applications. Many companies are developing and deploying mobile Line-of-Business (LOB) applications to further improve employee productivity and decrease costs. Learn about some of the key enterprise LOB applications that most benefit from mobility and how applications can be deployed with a simple implementation guideline.

BlackBerry®

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BlackBerry®

Executive Summary

Over the last few years, the sale of smartphones has accelerated rapidly. This trend is predicted to continue, and by 2013, it is expected that one out of every three mobile devices sold will be a smartphone. Today's smartphones include large, high-resolution screens, always-on wireless broadband over Wi-Fi® and 3G networks, and exciting new hardware capabilities like touch screens, accelerometers and GPS. Smartphones have become robust application platforms that companies can depend on to deploy high-ROI mobile applications.

For most companies, the first mobile application to deploy was wireless email. This provided an easy win that helped pay for the company's mobility infrastructure and trained their mobile workers. After early successes with wireless email, many companies are developing and deploying mobile Line-of-Business (LOB) applications to further improve employee productivity and decrease costs. Strategic enterprise applications such as Customer Relationship Management (CRM), Sales Force Automation (SFA) and Enterprise Resource Planning (ERP) are the obvious choices. This document will introduce the reader to some of the key enterprise LOB applications that most benefit from mobility, and provide a few simple implementation guidelines and practical examples for mobile application deployment.

Introduction

Business mobility is growing at an accelerating rate and mobility solutions have become mainstream. To make business mobility work, companies are buying more and more smartphones. According to one market report, smartphone shipments will grow more than 30% per year for the next few years and smartphone sales will exceed the number of laptop computers sold during that period. As prices drop, significant inroads are also expected in the pro-sumer and consumer markets. This growth will reposition smartphones from 14% of the handheld market in 2008 to 31% of the market by 2013.

Today's smartphones are completely viable application platforms. Many possess comparable processing power and physical storage to laptop computers of just a few years ago - 1GHz CPU clock speed and 64 GB of storage. In addition, high-resolution displays, QWERTY keyboards and innovative haptic interfaces make mobile device interaction easy and efficient. However, the most important issue is that today's smartphones can access the mobile internet and/or connect to the corporate network from almost anywhere in the world. Nearly anywhere, anytime wireless connectivity to the corporate network empowers the smartphone to run valuable enterprise applications that in the past were only possible to use from a desktop PC or laptop.

Often the first application that the mobile worker demands is access to their enterprise email and calendar. Because of the high ROI of these 1st generation mobility applications, many companies had their initial investment paid back in less than a year. Now they are in the enviable position where their mobile application infrastructure is paid for and in steady use by an experienced, mobile workforce that is eager for the next generation of mobile applications.

1st Generation Mobile Applications

These applications are typically communications-based applications such as email, calendaring, messaging and PIM. They appeal to a broad corporate user-base and have been on the market for more than ten years. According to one analyst report, approximately 85% of North American and 70% of European companies have deployed wireless email.

2nd Generation Mobile Applications

These applications are more related to the core business and are often referred to as "Line-of-Business (LOB)" applications. Over the last few years companies have started to "mobilize" their business processes and related enterprise applications such as Customer Relationship Management (CRM), Sales Force Automation (SFA) and Enterprise Resource Planning (ERP). One 2008 survey reported that 70% of enterprises are currently deploying at least one mobile application and 25% are deploying multiple mobile applications.

3rd Generation Mobile Applications

These applications are the mobile "Killer Apps" - applications that will arise from the growing pervasiveness of wireless networks, the "critical mass" of mobile workers and the increased capabilities and convergence of mobile devices. New technology such as improved haptic interfaces, GPS and HD video cameras will be standard on tomorrow's mobile devices and will work together to enable completely new application categories.

In addition to high-profile applications such as SFA and CRM, there is a less known, but equally valuable, category of applications providing administration and management support for mobile solutions. These applications focus on increasing the control and reducing the costs associated with the rampant growth of mobile workers and devices within the enterprise. Applications such as Telecom Expense and Invoice Management (TEIM) and Mobile Device Management (MDM) are important, high-ROI solutions that help make it easier to manage growth and control the cost of business mobility. This document will introduce the reader to some of the key LOB applications that most benefit from mobility and provide a few simple implementation guidelines and practical examples to mobile application deployment.

Examples of Mobility Applications

Most companies in North America have already deployed 1st generation mobility applications such as mobile email, calendaring and messaging. Their next step is to mobilize existing LOB applications that are designed to deliver business benefits to specific groups within the organization. Some new categories of mobile applications include:

Mobile CRM (SFA)

The most popular LOB applications appear to be mobile Customer Relationship Management (CRM) and Sales Force Automation (SFA) solutions. Time and turnaround are precious in a sales cycle. Mobile CRM is designed to make it possible for mobile workers to do their work no matter where they are or what time it is. They can access the head-office database to update customer accounts and to input notes about their visits from almost anywhere. A real-time link to the corporate database ensures that everyone, both internal and external, has the most current data.

Mobile UC

Frost & Sullivan defines Unified Communications as "the merging of telephone, e-mail, conferencing, presence and instant messaging functionality into a single application that serves as the standard communications environment for the office worker." UC provides a single, consistent front-end to a fully merged communications and collaboration environment that adapts to a worker's needs based on the task at hand and the availability and capability (presence) of the recipient, co-worker, customer, supplier or partner. This can dramatically increase employee responsiveness and improve the speed of decision-making by connecting collaborators quickly, regardless of their location.

Location Based Services (LBS)

Over the last few years, cell phones have been required to support basic location awareness, in accordance with E911 mandates. However, onboard support for global positioning systems (GPS) is far more precise than the radiolocation techniques used by most cell phones. GPS makes it possible to pinpoint a device to within a few meters. According to one research company, approximately 15% of today's smartphones come equipped with support for the satellite-based GPS. This number is expected to grow quickly over the next few years, as GPS becomes a standard feature on phones, just as cameras did. Once the location of a mobile device can be determined quickly and accurately, all kinds of powerful LBS applications can be created.

Mobile Executive Dashboards (MED)

A Mobile Executive Dashboard (MED) summarizes and reports on Key Performance Indicators (KPIs) and then presents the data in easily understood charts, tables and graphs directly onto a smartphone anywhere in the world. The data displayed can be customized to the department or even individual user, allowing applicable graphs and charts to be viewed in real time to provide effective and efficient business monitoring on a departmental basis. MED users are given timely insight into meaningful information, allowing management to make better, more informed business decisions.

The Client Dilemma – Web-based vs. Native Applications

When a company decides to purchase or develop a new mobile application, one of the first decisions they face is whether to deploy a client-server solution that uses an installed software client or to use the browser on the device to access a web-based solution. This debate is echoed in the mainstream press with large companies coming down on either side of the issue.

It is doubtful that there can be a clear winner to this debate since both solutions have advantages and disadvantages. It is much more likely that both types of applications will always exist.

In fact, a third category, the hybrid application, which takes advantage of the strengths of both solutions, is also feasible in some situations. Some of the differences between web-based and native applications include:

Implementing Mobility Applications

The first step to the successful implementation of business mobility solutions is careful planning. Behind every successful mobile application is a clear enterprise mobility strategy. The mobility strategy will act as a road map to keep deployment decisions aligned with business objectives. It will help the enterprise maintain a long-term perspective for their investments in mobile IT. Beneficial mobility applications can be deployed in nearly any area of a business, but to maximize their ROI, it is advisable to align mobility strategy with top-level business objectives, i.e. increase productivity, decrease costs or improve service. At a minimum, any investment in mobile IT should be planned to ensure that the infrastructure created for one mobile application can be readily leveraged for other applications.

If an enterprise is determined to deploy a mobile application quickly, there are a few guidelines they can follow to increase the odds of success.

1. The first step to creating an effective wireless application is to analyze the current usage and needs of the mobile users within the company. How could a mobile application change the way the organization's mobile users conduct business? What tools do they need to do their job?
2. Do not attempt to mobilize an existing wired LOB application by duplicating its features or look and feel and hoping that this will work. It is important that new mobile applications take into consideration the advantages and limitations of mobile devices. Instead, look to automate the business process; using a mobile application to optimize remote operations and provide the mobile worker with the tools and data they need, when and where they need it.
3. Controlled or phased deployments are preferred. It is best to start with existing mobile users. They are more knowledgeable about mobility in general, and are often better at troubleshooting and separating network issues from application defects.
4. Training is very important for all mobile users. Prospective users must receive an education in basic wireless and be trained on the new mobile application. The more knowledgeable the user is, the more likely they are to use the application and work through any potential problems.
5. It is important to understand and define up front the key business metrics that will be used to evaluate the success of the wireless solution. Key components of the analysis should include return on investment (ROI) and total cost of ownership (TCO).
6. Regular usage tracking and analysis should be conducted. How, where and when is the mobile user accessing the mobile application? Do all users access the application equally or are some using more than others are?

Web-based Applications	Native Applications
Because of the simplicity of HTML, web-based applications are usually cheaper to develop.	Native mobile apps can work offline and they do not need an internet connection to operate.
Upgrades are easy since no upgrade needs to be pushed down to the user. All changes are made on a central web server.	Native apps can access smartphone HW features such as GPS, calendar and address book, delivering valuable functionality.
Certification is easier as the web-based application usually does not need to go through an application store approval process.	Native application performance is usually faster and requires less bandwidth since no web connection is required.
Cross-platform support is easier since there are fewer browsers on the market than devices and operating systems.	Native apps can deliver a great experience to the user, especially with the recent developments in haptic and accelerometer capabilities, providing richer gaming and multimedia experience.

The Benefits of Mobile Applications

When economic times are tough and IT budgets are shrinking, smart companies prioritize their IT investments into areas with the greatest impact on ROI in the short term and sustainable competitive advantage in the long run. It is well established that mobile applications can reduce costs at the same time as increasing productivity and improving service levels. Some of the specific benefits include:

Improved Timeliness and Correctness of Data - No matter what the focus of the business is, employees that use mobile applications on a smartphone are able to capture and enter data faster, regardless of location or time of day. Accurate, real-time data has a huge multiplying effect on the cycle time and efficiency of strategic business processes.

Reduced Lag Time and Human Latency - Even without a Mobile UC solution, a mobile device provides the worker with improved "reachability" and responsiveness and the ability to deal with queries and complaints from customers, suppliers and partners faster and more accurately. The mobile worker can have the information they need, exactly when they need it.

Reduce Employee Downtime - Mobile employees can experience productivity benefit from mobile devices with LOB applications. No matter where they are, or what time of day it is, they can often still do their job. Airport lounges, waiting rooms or the train ride home provide opportunities for productive work. Reducing downtime can result in significant double-digit productivity gains.

Improved Tracking of Fixed Assets - Mobile devices and innovative new LBS solutions employing RFID technology allow a company to track and control important fixed assets and inventory.

Simple ROI of Mobile Applications

For many companies that are considering investing in mobile applications, the first step is to understand their ROI. Probably the simplest, most defensible way to calculate ROI is to identify a few objective criteria and then estimate the impact of deploying mobile applications. A 2007 ROI study examined a company's typical return on investing in the BlackBerry solution. The study was conservatively focused on the ROI from BlackBerry email, organizer and voice. Their ROI model calculated the benefit of the BlackBerry solution on employee productivity, workflow and immediacy.

Attribute	Description	Study Findings
Productivity	The daily downtime recovered by mobile workers through wireless access to email using their BlackBerry smartphone.	On average, end-users recovered one hour per day because of their BlackBerry smartphone. Based on an average annual salary of $100,000, this can provide an annual benefit of $12,500 per user in productivity gains.
Workflow	The processes followed by employees to complete tasks and projects in regards to how they interact with colleagues and business systems. Workflow measures the benefits to others delivered by BlackBerry smartphone users who are able to remain fully functional members of their teams while they are mobile.	According to the study, the typical user experienced a workflow efficiency gain of 38%, because the mobile boss or employee is able to maintain their participation in team workflow when they are mobile. According to the National Competitiveness Council, the average annual productivity is $88,500. This can provide an annual benefit of $33,630 per user due to workflow efficiency gains.
Immediacy	The unique, often one-off gains that can be achieved because of the speed of BlackBerry voice and data awareness. BlackBerry smartphone immediacy benefits include client acquisition and retention through improved responsiveness and transaction gains.	The study found that, on average, mobile workers sent and received 24 emails per day and that approximately 37% of these were time-sensitive. Assigning a conservative value of $5 to each of these 9 time-sensitive emails per day can provide an annual benefit of $4,400 per user for immediacy.

According to the study, the total benefit for deploying the BlackBerry solution is over $50,000 per user per year. A 2009 study on BlackBerry smartphone deployments also found that the ROI increased as more and more applications were deployed. To view these studies, visit **www.blackberry.com/getthefacts**

Conclusion

The technical objective of any mobile application is to offer the worker real-time, location-independent access to strategic company information. The mobile worker needs the tools to do their job no matter where they are located or what time of day it is. The first step to the successful deployment of a mobile application is to create a comprehensive enterprise mobility strategy. It is equally important that specific technical objectives are aligned with the company's primary business objectives and fall within the mobility strategy. First Generation mobile applications such as wireless email are a safe, logical and cost-effective first step. They supply a proven mobility infrastructure that can be leveraged for new mobile applications.

When considering next generation mobile applications beyond wireless email, businesses should perform a feasibility assessment that identifies the challenges and opportunities, the expected returns and the associated costs. All three generations of mobile applications are driven by the same key business benefits:

Increased Revenue – Business mobility applications can increase worker productivity by providing the mobile worker with the tools they need to do their job wherever they are and at whatever time of day.

Decreased Costs – Business mobility applications can streamline antiquated business processes by automating workflows and reducing the number of errors.

Improved Service – Business mobility applications can make mobile workers more responsive to their customers, suppliers and partners by improving responsiveness and decreasing human latency.

The feasibility analysis should form the business case to define the project's scope and justify necessary investments. Regardless of the wireless solutions businesses choose, they should be flexible, highly secure and scalable beyond their users' immediate needs.

For More Information

RIM offers a number of different resources to learn more about wireless solutions in general and the BlackBerry solution in particular. The website **www.blackberry.com** is a good place to start. The site features a developer's forum at **www.blackberry.com/developers/forum** which is used by application developers around the world. RIM also offers BlackBerry solution reference documents on a variety of topics. To find other CIO Guides, including The CIO's Guide to Wireless, The CIO's Guide to Security, The CIO's Guide to Fixed Mobile Convergence and more, visit **www.blackberry.com/getthefacts**

Appendix 1 – BlackBerry Case Studies

Case Study #1 – IPC Information Systems

The Customer

IPC Information Systems is a provider of communications solutions to the world's financial trading community. Founded in 1973 and headquartered in Jersey City, NJ, IPC has approximately 900 employees operating in over 40 countries throughout the Americas, Europe and Asia-Pacific regions. IPC offers customers a suite of products and services built upon Voiceover Internet Protocol (VoIP) technology. Their customers purchase sophisticated telecommunications solutions so that traders on trading floors worldwide will have fast access to important trading partners/counterparts and conferencing.

The Challenge

A team of service technicians work on-call to keep the equipment in good running order and install new systems. IPC was manually dispatching their field technicians to service locations. A dispatcher would call with the trouble ticket details, and if technicians felt they needed more detail to do the job, they would have to come back to the office. There, they would pick up a hardcopy printout of the trouble ticket. Once the job was completed, they would call in with the closeout details so the dispatcher could update the information in their back-office system. The manual system for dispatching IPC service technicians was slow, inefficient for dispatchers, and technicians had difficulty assisting IPC with gathering information about how well it was meeting its Service Level Agreements.

The Solution

Since response to trouble tickets is key to customer service and meeting their Service Level Agreements, IPC knew they had to automate their approach to improve efficiency. BlackBerry smartphones were given to 250 technicians with a custom-built field management solution that would access their legacy back-office system. The solution took advantage of the BlackBerry® Enterprise Solution and gave 250 technicians BlackBerry smartphones so that electronic trouble tickets could be pushed to them, and so that they could update job status, time-stamp work orders and input timesheets. Trouble tickets were now pushed out from the central system without any need for phone calls from a dispatcher or visits back to the office to pick up hardcopies of the trouble tickets. The Dispatch Center no longer has to follow up to see if the technician had received the work order, since they now accept or reject jobs from their BlackBerry smartphones.

The Results

Moving from a manual to an automated field management solution has positively affected several aspects of IPC's business. Technicians and dispatchers work more efficiently, resulting in faster response times, less administrative effort and simplified reporting. The automated timesheet process eliminates the need for manual re-keying, resulting in significant savings. In addition, IPC management gained accurate metrics on how service delivery matches up to Service Level Agreements. Most importantly, IPC has gained a versatile business mobility platform that they can use to extend wireless access to other internal teams.

Quantifiable results include:

- A 15% faster customer response time by automating a manual dispatch system.
- A 27% time savings for dispatchers in resources required to dispatch and manage trouble tickets.
- Electronic timesheets resulted in significant savings by removing the need for manual re-keying.
- Time-stamped work orders help senior management assess delivery against Service Level Agreements to serve customers better.

Case Study #2 – SAP AG

The Customer

Headquartered in Walldorf, Germany, SAP is the world's largest business software company – with more than 48,500 employees at sales and development locations in more than 50 countries worldwide. Founded in 1972, SAP provides enterprise software applications and support to businesses of all sizes globally. The company's best known product is its SAP Enterprise Resource Planning (SAP ERP) software. SAP solution portfolios support the unique business processes of more than 25 industries, including high-tech, retail, financial services, healthcare and the public sector. SAP is listed on several exchanges, including the Frankfurt Stock Exchange and NYSE, under the symbol "SAP". The U.S. headquarters, SAP America, is based out of Pennsylvania and employs over 8,000 people.

The Challenge

SAP America had already deployed mobile email based on BlackBerry® Enterprise Server to a core set of mobile employees. Based on the success of this mobile email solution, SAP wanted to leverage their infrastructure investment to improve the CRM process for their mobile account executives. The existing mobile CRM solution was web-based and typically accessed from a laptop in the field or later from home, or office desktop PC. This process was error-prone and only provided a minimum of vital customer information. In addition, the offline nature of the existing CRM solution precluded development of valuable workflow and collaborative functions. SAP needed a new mobile CRM solution that would provide the ability to access more accurate information directly at the point of customer contact.

The Solution

SAP America was able to develop and deploy their new SAP xAPP Mobile Sales solution in six months with almost 100% adoption rate. A key component was the development of a CRM portal that could be accessed by account executives in the field using either a laptop or a BlackBerry smartphone. This portal made it easier for users to migrate from the old CRM system to the new mobile one.

The BlackBerry smartphone and SAP xApp Mobile Sales enable account and opportunity management processes, including:

Accounts/Business Partners – View, update, create organizations, persons and contact types of business partners. Other business-partner-related information includes activity and order history, promotions and fact sheets.

Activities – View, update and create activities with business partners. Built-in "My Calendar" shows activities by business partners in different and filterable views.

Sales Orders – View, update and create sales orders for business partners by selecting products from the current product catalog. Pricing is displayed with and without special business-partners discounts and rules.

The Results

Mobile CRM gives salespeople access to accurate customer information and lets them address and resolve customer needs the moment they arise. This helps them close deals faster, with fewer sales calls, and opens up more capacity for selling by saving time. SAP xAPP Mobile provided both qualitative and quantitative results.

Some of the qualitative benefits include:

- Status of accounts and opportunities are updated more quicklyand more frequently from the field.
- Management reports are more likely to contain the most up-to-date account and opportunity information, providing more actionable, error-free data.
- Leverages workflow capabilities to ensure follow-through on all account activity.
- Promotes faster handoff to sales through mobile lead acceptance.

Quantitative results are even more compelling, as SAP America experienced:

- 19.8% increase in account executive calls directly resulting in a sale.
- Reduction in support costs, as there were 36.6% fewer calls to administrators per month.
- The productivity of SAP account executives increased due to a 30.8% decrease in downtime.

The bottom-line financial impact of SAP America's deployment of SAP xApp Mobile Sales on BlackBerry smartphones can be summarized as follows: an ROI of 454%, and payback in 8.6 months.

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