

5 Key Considerations for Your Mobile Strategy

Right Here, Right Now

Mobile technology has charged into the corporate arena over the past year at an unprecedented pace. Both personal and corporate apps for smartphones and tablets have exploded in number and functionality. Many companies now offer a mobile application on the iPhone, Android and/or BlackBerry. According to a recent survey of IT managers, nearly 60% of Fortune 500 companies are either testing and/or deploying iPads.

Because anywhere, anytime ability to work increases efficiency and improves bottom line results, mobile applications and devices are rapidly becoming keys to driving competitive advantage.

So, how do you capitalize on this shift toward mobile computing? In this article, we discuss five key considerations in determining what to “mobilize” and how to go about making mobile information capture and delivery a reality.

1. Identify Information to Mobilize

Your firm may have significant amounts of data; however, it won't make sense to mobilize everything in most cases. Determining what is best to mobilize is easier if you can sort your information by the following characteristics.

- The information is **time-sensitive**. New information is needed within hours or minutes by your customers to conduct their business or by your employees to execute their jobs.
- The information is **timing-dependent**. Timing-dependent differs from time-sensitive in that timing-dependent information may be old information that is needed at a specific place/time.
- The information can only be accurately **captured in the field** or at a **specific place and time**.
- The information is needed by or captured by employees or customers who are in the **field** or often **traveling**. For these people, mobile devices improve efficiency of work as well as supply or capture time-sensitive or time-dependent information.

Here are some questions to guide you through the process of determining information that is ripe for mobilization:

- Who needs access to information in the field or on the road? What information do they rely on?
- What information is most time-sensitive to you or your organization? Information that must be consumed within hours or minutes no matter where the employee is should probably be delivered via mobile device.
- What information is most time-sensitive to your customers? Information that your customer desires as soon as it becomes available is a strong candidate for mobilization. After all, your customer may not be sitting at his or her desk when you publish the data to your website.

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- What information is time-dependent – information that has relevancy only at the time and place it is needed? Having it later or at a different place misses the boat. Sales executives, field reps, and training personnel often need quotes, demos and specifications on the spot. Likewise, a customer at a point of need requires key information to solve their problem “right here, right now.” Any other time and place will not do.
- What information is time-sensitive, time-dependent and changes frequently?

2. Build or Buy?

To build or buy is a top-line decision with all IT systems and mobile computing is no different. Your choice may be made easier – or more difficult – because of concerns about compatibility with your ERP (enterprise resource planning) system. In addition to mobile products from the major ERP providers like SAP and Oracle, there are a plethora of mobile application products available for many industries and functional areas.

Getting the needed features in your software is critical to the success of the project and the availability of features is often a key factor in whether to build or buy. Let’s take a look at some methods for evaluating features in both cases.

Buying Mobile Software

In a perfect mobile world, you’ll find software that has the exact feature set that your organization needs. Of course, this will never be the case – buying off-the-shelf software is always a compromise. The question is, “Is the compromise in the software’s feature set acceptable given the project goals?” Having clear, focused, specific and readily communicated project objectives and cost guidelines is critical. Without such objectives, it’s hard to make the right decision.

It may be relatively easy to find a software package that meets many of your organization’s needs, yet the package will likely include many features that will never be useful. This is because software vendors must build large feature sets into their applications to be able to meet the needs of a large and diverse population of users.

In addition to evaluating the availability of feature sets, you should also evaluate the ease-of-use of features. Features that are present but difficult to use will simply go unused and in turn, have no value to you.

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For planning purposes, you need to be aware of the expenses usually involved in buying software.

- **Software licensing** – Licenses are purchased on a per user, per CPU or enterprise basis that allows large numbers of users for a flat fee.
- **Maintenance or upgrade** – No software application is ever 100% complete. Most companies charge a fee for maintenance releases or upgraded versions.
- **Support** – Many companies provide online support via websites free of charge. However, you may incur an annual or per incident fee if your users need to call for assistance.
- **Training** – These are most likely to occur for complex enterprise applications.
- **Customization** – The lines between custom and pre-built software are often blurred in today's market. What you thought was a pre-built, ready-to-use software package may be a custom application that was developed for another vendor in your industry. As such, it may require significant customization for your company.

Building Mobile Software

The most important reason to build software is to get the exact feature set your organization needs and to dictate the way in which the features are accessible. If your needs point to a customized solution, it is still critical to have a clear set of objectives so that costs do not spiral out of control.

When building mobile applications, a number of costs are typically incurred.

- **Design and build** – Arriving at a good estimate means conducting in-depth analysis of desired features and functions.
- **Deployment** – Mobile deployment can be more cumbersome, especially if the application must be installed on user devices. A mobile device management application (MDM) is strongly recommended.
- **Maintenance and upgrade** – For custom software, these fees will fall under the category of “ongoing development.” It is important to understand that your custom software is likely to become a “work-in-progress” as your organization requests new features.
- **Support and training** – With custom development it is more common to include these fees in the initial cost of building the software, at least for the first year. However, you will still need to consider support costs going forward.

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3. Mobile Browser or Device Application?

If you've decided to build a mobile application or migrate an existing application to a mobile device, one of the first decisions you'll need to make is whether to deploy a browser-based application or an application that will run directly on the mobile device.

Browser Application

Using the web and your mobile browser's capabilities is probably the most cost-effective way to deliver information to and capture information from your mobile device. Mobile browsers work the same as browsers on your work or home computer and can display standard markup languages (HTML, XML, etc.). In fact, if it weren't for screen size, some existing web applications would function well on your mobile device and for larger devices, such as tablet computers, they will.

However, existing web applications designed for relatively large computer screens will be unusable on small smartphones due to screen dimensions. In addition, existing applications that have been designed to run on specific versions of desktop browsers may not execute properly on your mobile device due to functional differences in some mobile browsers, especially devices that are more than two years old.

If migrating a web application, don't assume that redesigning your application screens to fit on a mobile device is the only task at hand. Web applications designed for higher-bandwidth connections that are available in most corporate or home offices will not always function well on mobile devices that have less bandwidth, memory and disk storage. The computing power required and limited bandwidth may render web applications unusable even with redesigned screens. Performance may lag unacceptably.

Migrating your web application to a mobile platform requires that the application be reviewed and possibly redesigned to minimize the amount of data delivered to the browser in any one function. This will ensure that the application will function within acceptable performance guidelines:

- 0-3 seconds per operation is ideal
- <7 seconds per operation is required unless the operation is a report or other function that does not require user observation

Controls, JavaScript, style sheets and applets in existing web applications may further complicate your mobile web migration. Third-party controls may not run correctly in mobile browsers, style sheets may render your page differently, while JavaScript and applets may not run at all on your mobile device. In such cases, the problem elements must be removed and alternatives put in place that will function on your target mobile devices.

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Pros of Mobile Web Applications

- Generally less expensive to develop than native device apps
- Effective for applications that transact small amounts of data
- No device deployment required
- Security is more readily handled since data is not stored directly on user device

Cons of Mobile Web Applications

- Migration is often a large re-design project
- Performance issues especially when operating on 3G or 4G connections
- No function without an Internet connection
- Cannot access native OS (operating system) features

Native Device Application

Building an application that runs directly on the mobile device is not as daunting a project as it may seem. Native device applications are very popular because they excel in features, responsiveness and usability. They respond instantly to your input and use advanced interface features. However, security, deployment and synchronization considerations add levels of complexity to this type of project.

Let's start with the positive aspects of device applications.

- They perform much better than web applications.
- They make use of all the features of the device operating system and can be easy to use.
- They can be easily downloaded and updated via application stores, whether public or enterprise.
- They provide communication over the web just like a web browser but can also store data on the local device.
- They can operate with or without an active Internet connection.

Let's consider some of the challenges in building, deploying and synchronizing native device applications.

Building

Building native device applications requires having resources that are knowledgeable in the device's operating system, development language and SDK (software development kit). Most competent, experienced programmers can learn the details within a few months, but it may take a few application deployments before your team becomes fully comfortable with the new environment.

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Deployment

The deployment process for native device applications is a new experience when compared to deployment of traditional desktop and web applications. If using one of the AppStores, there is now a central body, which reviews and approves (or rejects) your application according to many criteria, most of which are common sense. You are dependent on these non-company resources to get your application onto each of your user's devices.

For enterprise applications that will be deployed to more than five users, a mobile device management (MDM) application is highly recommended. An MDM application will greatly increase the efficiency of application deployment, remote data wiping and remote application settings.

Mobile device applications can be deployed without using an MDM or an AppStore. For example, Apple has created an Enterprise deployment process that allows users to download and install applications from a corporate website.

Ad-hoc deployment is also possible but is quite tedious and only workable for groups of five users or less.

Synchronization

Handling data synchronization and implementing fault-tolerant transactions will require a significant portion of your development effort if the application sends or receives data over the Internet.

Since your user's device may go offline or shut down at any time during use, each data transaction must be designed so that incomplete data transfers do not cause issues. Asynchronous transactions are beneficial and reduce the probability of issues during data transfer.

Synchronizing large datasets between your mobile device and your server requires incremental update algorithms so that your device connection is not overwhelmed, especially when you have a large dataset such as a price file that changes frequently.

Finally, web services are a secure and platform-agnostic method to facilitate data transactions; however, you will need to decide whether to use restful web services or SOAP (simple object access protocol) web services.

In summary, data transfer and synchronization will be major considerations in building your native device applications.

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4. Mobile Security

Mobile devices, especially those running native business applications, pose new security challenges. How is data on the device secured? What if the device is lost or stolen?

Web applications running on mobile devices have the same security issues as any other web application. If the data being viewed is sensitive, consider encryption of the data transmissions as well as secure authentication. Additionally, consider shorter session timeouts to prevent others from viewing data on a device left on a desk unattended.

Native device applications can open larger holes in your network especially if sensitive data is stored locally on the device. To secure native applications, you will need to address the following:

Secure authentication – An application username and password are a good start, but requiring email confirmation of account settings and a policy that calls for regular password changes is recommended. Other options include device specific authentication and LDAP (lightweight directory access protocol) resources like active directory. For web service authentication, use username and password as well as device id to prevent users from accessing web services from dummy applications.

Data encryption – Consider encrypting your locally stored data especially if the data is sensitive. A determined hacker can access data on your device without authenticating through your application. If using web services, use encryption in your data transmissions to prevent decoding of intercepted packets.

Device wiping – Mobile devices are at a much greater risk of loss or theft, leaving your corporate data in the hands of an unknown user. To reduce risk of security breaches in such cases, implement a data wiping function or purchase an MDM with remote wiping capability. Data can be remotely wiped by sending a command to the device or the wiping process can be triggered by a user event such as a login attempt to a canceled account.

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5. Deployment

One of the biggest enablers of the success of mobile devices is the concept of the “AppStore”. Generally, application stores have been used by the public but more corporate IT departments are looking at these application hosting providers as a way to deploy corporate mobile applications.

Application stores provide public access to your application, which is convenient, and dangerous, for corporate applications. Anyone can download and use your application when it is hosted in an AppStore. Tight application security can help. However, only deploy applications to a public app store that do not provide access to proprietary, sensitive information.

Enterprise AppStores are a better fit for corporate applications. With enterprise deployment, you can provide secure access within your network and limit access to a desired set of employees, if needed.

For large deployments and handling of multiple deployments, mobile device management applications (MDMs) are a convenient way to collectively manage the registration, deployment and security of mobile applications within the enterprise. It is important to choose the right MDM that fits your technology and the size of your corporation.

Ad hoc deployment (manually installing on individual devices) is fine for a small pilot or test group of users but will become far too tedious for large deployments and maintenance updates.

Conclusion

Mobile devices like smartphones and tablet PCs have changed the face of business permanently. The speed, portability and access to information that smart phones and tablet computers offer has become a compelling reason to adopt these devices as part of an overall IT strategy. Companies that embrace a well-devised mobile strategy now will position themselves to take advantage of this new and exciting technology.

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