

Smart Grid Operational Services

Selecting the Right Mobile Solution

Steps and Considerations for Successful Deployment

Whether you manage field service operations within the utilities industry or some other large business operation, a mobile computing solution can strengthen your field service capabilities, lower your operating costs and improve customer service. With mobile devices in hand, field technicians, engineers and supervisors alike discover that information flow increases and costly data entry errors become issues from the past.

The mobile computing market abounds with “cool” devices, but embracing innovative technology alone can easily distract an organization from finding an intelligent mobile solution that will

ultimately meet the needs of its users. In other words, preparing for the technology is every bit as critical as selecting it.

With a wealth of expertise in helping organizations across the world deploy successful mobile solutions, Capgemini has gained considerable insight into what to look for when preparing and planning for a mobile solution. This paper describes the three stages recommended for deciding on, and ranking the importance of, available solution options, and how proper planning can improve the total cost of ownership (TCO) of the solution. It also reviews common obstacles that impede deployment and thwart a positive return on investment.



Three Stages to Deploying a Mobile Solution

The objective maintains the project focus and ultimately guides the design and technical options of the mobile solution.

Stage 1a: Create a Business Requirement Plan (BRP) A well-defined BRP explains clearly and definitively why an organization needs a mobile solution (the objective); what the mobile solution must do (the requirements), for whom it will do it (the end user), and when and where (the geography and environment).

Example: Hydro One provides electricity transmission and distribution services to over 1.2 million homes and businesses in Ontario, Canada. Over 150 field service staff members are responsible for installing - meters, replacing old ones, and connecting and disconnecting services. Cumbersome paper based processes led to constant problems with data accuracy and timely access to information. Meanwhile, the company faced increased competition because of recent deregulation.

Hydro One looked to a mobile solution to reduce costs and improve field service capabilities. It needed to do this to meet increased competition and better service its customers. The mobile architecture had to be focused on the needs of field workers, staff whose operating environment includes both the rural and urban areas of Ontario.

Stage 1b: Set the Objective

Why deploy a mobile solution? Setting the objective is probably the most important aspect of the entire deployment process. The objective must be clear and definable. A sample objective could be, "we want to reduce our field expenses by 10 percent and improve customer response time by 50 percent."

The objective maintains the project focus and ultimately guides the design and technical options of the mobile solution. The project team will review the objective throughout the planning period in order to test the relevance of both the business and technical requirements being requested.

Stage 1c: Determine the Business Requirements

In general, mobile solutions address business requirements by enabling one or more basic functions: communication, information access, data collection, updating, transacting, monitoring and locating/tracking. The business processes, functions that enable the organization to successfully deliver products and/or services, will be most affected by the addition of mobile technology.

For Hydro One, key business processes included tracking the meter type installed at its over 1.2 million customers; changing the meter when requested; scheduling the service delivery point maintenance; and monitoring the results of work assignments. These requirements, in turn, had implications for the basic functions of the final mobile solution, communications, and information.

The project team should be assembled to analyze the business processes that will benefit most from adding mobile technology. Once each process has been listed, ask which ones contribute to meeting the objective and why. The answers determine the business requirements.

Stage 1d: Consult Business Unit Experts

Because each business process is the responsibility of a specific business unit, members of these units are the best source for accurate, detailed and honest information about what works, what doesn't and why. This also is a great way to

build ownership in the project with stakeholders who will become users of the new mobile solution. Gather this information, using methods like interviews, surveys, questionnaires, and observation, and then arrange according to the following table. This will be invaluable when presenting the final business requirements and relating them to the basic mobile solution functions.

Business Process	How Does it Contribute to Information Flow?	Important Characteristics, Key elements	Areas to be Improved
Changing meters	Part of customer service response	Data collection, locating, updating, information access, communication	Currently takes 5 days, this frustrates customers

Stage 1e: Assess Input Against the Objective

The project team now assesses the benefits provided against cost and determines which processes need to be part of the BRP. With a broader perspective, they are able to identify which requirements will contribute directly to the objective and identify potential positive or negative chain effects on other areas of the business.

The BRP is easier to develop when there is a clear understanding of what technologies can deliver. To gain that understanding, now is the time to bring in a solution expert. This also reduces the time to research the plan.

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Stage 1f: Write the Business Requirement Plan

The list of business requirements now forms the basis of the “solution requirement” -- what should the solution accomplish? These solution requirements should be defined in non-technical language under the following categories. This completes the BRP.

- **What is the requirement?**

We need a solution that makes it easy for our delivery personnel to deliver products and update customer information into our back office systems wherever they are.

- **What does it need to address?**

It needs to happen in real time (in terms of communication); quickly (data transfer); access information from our legacy database (existing data interface); and keep connectivity in a rural, mountainous environment (geography and environment, user specifications).

- **Why is this important from a business process point of view?**

Our field staff needs portable information because they are constantly in and out of their vehicles and can make over 30 site visits each day.

- **Why is this important from an administrative point of view?**

We need to record arrival times, departure times, breaks, etc, in our work management system

Each solution silo is influenced by business requirements, as well as by specifications of companion silos.

Stage 2a: Define the Solution Requirement

Solution requirements translate the business requirements into detailed technical requirements. Because this exercise requires specialized knowledge of numerous technologies, their compatibilities, capabilities and limitations, many organizations bring in outside experts to define the solution requirements. Some business requirements translate directly, but others require a strong understanding of how these requirements influence solution specifications.

Stage 2b: Consider Key Mobile Solution Elements

A typical mobile solution involves four silos, plus service, support and training, which occur in all silos. Each needs to be considered when defining technical requirements:

- Applications & Back End Infrastructure
- Client Devices
- Hardware
- Connectivity

When defining technical requirements, it is important to review the business requirements listed in the BRP. Align business requirements to corresponding considerations that will influence what technical requirements are needed. Each solution silo is influenced by business requirements, as well as by specifications of companion silos. Many business requirements are also influenced by considerations from more than one element.

Service, support and training require individual consideration as each influences the total cost of ownership (TCO).

Hydro One knew it needed to be able to easily find locations to save travel and installation time. The technical requirements of its mobile solution covered all silos. The device was easy to carry, with a fast processor that could quickly download maps and applications that provided instant access to customer addresses and daily work orders. The screen resolution selected for the device provided quality images so that staff could easily spot street names and arrows pointing to the next work site.

Business Requirement	Considerations that Influence Technical Requirements
Easily find locations to save travel and installation time	Need a screen that displays fine detail
Field staff work on-site all day or in trucks	Needs connectivity even in areas where there are no WWAN or WLAN networks
Make the operators' jobs easier	Build in business logic with drop-down menus instead of a keyboard

Applications and back-end Infrastructure: Mobile solution requirements should begin with application considerations. In particular, consider what elements of the legacy back end systems need to be integrated and extended to the mobile users and how this can be accomplished. The chart below details important considerations

when making decisions in the application and back end infrastructure silos. Although separate silos, applications and back end infrastructure should be considered together.

A key consideration for virtually all organizations is whether to configure an “off the shelf” application, customize one or develop an entirely new application.

Key Elements	Considerations
Functional Requirements	Operability, Reliability, Information Latency, Data Sources, Data Volume, Data Format, Syncing, Integration, Security, User Experience
Application Source	Extend Existing, Custom Development, Off-the-Shelf
Application Residence	Thin-Client or Thick-Client model
Cost	TCO

Application choices present an array of benefits, drawbacks, trade-offs and sacrifices. A key consideration for virtually all organizations is whether to configure an “off the shelf” application, customize one or develop an entirely new application. Because these choices require a thorough understanding of technologies and long term business goals, many organizations will seek the expertise of a solution provider to help them decide on their final architecture.

Client Device and Hardware: Client device and hardware make functions accessible to mobile users and proper selection is critical. The hardware also protects the applications and ensures that they are accessible on demand. Consider the following elements in relation to the BRP and the peripherals that will be required.

Key Elements	Considerations
Ruggedness	Ingress Protection (IP) Rating, Drop Rating
Ergonomics	Portability, Display, Input Method, Available Peripherals, Ease of Use
Performance	Processing Power, Memory, Battery Life, Convergence (Data & Voice)
Integration	Operating System (O/S), Software (3rd Party or Inclusive), Standard Based & Flexible Expansion, Development Tools, Internet and Email Access
Cost	TCO

Identify the important points of influence in relation to the business requirements. Next, narrow the choice to two or three and then test and pilot the finalists before making a decision.

The word “connectivity” is used in place of “wireless network” because not all mobile solutions are wirelessly connected, nor do they need to be.

Connectivity: All mobile users desire robust and effective connectivity architecture. Because numerous options are available, one should look for connectivity architecture that meets business requirements in the most efficient and cost effective manner.

The word “connectivity” is used in place of “wireless network” because not all mobile solutions are wirelessly connected, nor do they need to be. Many solutions meet the business requirements without employing a Wireless Wide Area Network (WWAN) or Wireless Local Area Network (WLAN). Solutions may also be hybrids that combine network types and connections.

The project team will be able to align connectivity considerations to business requirements but look to the solution providers and carriers to align them with defined technical requirements. Such experts will advise when features such as interoperability between components are too costly or impossible to include.

Key Elements	Considerations
Communication Requirements	Type, Volume, Bandwidth, Latency, Flexibility, Security, Interoperability
Performance	Availability, Reliability, Geography, Service Level Agreement
Cost	TCO

Service, Support and Training: Although not typically viewed as a separate silo, these elements are required to manage, maintain and operate the solution over its lifetime. They also can greatly influence the success and the TCO and should not be overlooked. For large implementations, service, support and training can be an independent silo for which third party management software and services are available.

Stage 3: Select the Best Solution

It is now time to apply the solution requirement specification to narrow the available options and decide which grouping best meets the objective. Agree on a method to assess the options available. The decision matrix might include questions such as:

- Which solution requirements meet the specifications and are interoperable with one another?
- What implications and prerequisites eliminate options right away?
- Are there option conflicts between silos?

Calculating Total Cost of Ownership (TCO)

Finally, examine each solution requirement for its contribution to overall TCO, defined as all of the possible costs incurred during the lifespan of a solution and the components involved. TCO analysis adds value to the planning process by providing perspective of how near term options and decisions affect the organization over the lifespan of the solution.

If the addition of specific features dramatically increases the TCO of a solution, the features should be re-examined to assess their true value to the total solution. TCO is also an extremely relevant exercise when examining individual components. For example, on the feature level, client devices of different price points and functions can look similar, even comparable. However, price is not the only factor to consider. By examining how features and functions perform over the lifespan of the device and comparing those results and associated costs, purchase price looks very different. Taking a long term view of the solution today can yield substantial savings and add to the overall ROI performance in the future.

Conclusion

Many successful individuals and businesses around the globe share a common characteristic. It is the ability to focus on key strengths while identifying and leveraging the insights of others experienced in areas outside of their core expertise. This wisdom can be applied when implementing a mobile solution. A business may be expert at delivering a given product or service, but in most instances, require solution providers when looking for fully integrated mobile computing solutions.

Deploying “best of breed” solutions help customers become more profitable and competitive by empowering their workforce to be more effective and productive. But in preparing for such deployment, it is important to seek advice from mobile specialists and similar companies that have deployed multiple solutions.

With years of experience and unmatched execution expertise serving over 750 customers, Capgemini helps organizations with mobile workforce who must streamline workflow and improve productivity. Capgemini delivers quick ROI by offering rapidly deployable mobile solutions built on 100-percent configurable mobile architectures.

Capgemini provides the fastest path to mobilize enterprise systems. Unlike other mobile solution providers, Capgemini simplifies enterprise wide deployments with a leading strategic architecture for one or more mobile applications while you concentrate on business processes. Capgemini also sets the standard for adapting to rapid change.

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