

Replacing a Legacy System

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Introduction

Utility companies are supported by computer systems in almost every aspect of their operations today - from customer care to network management. Many of these systems began as an in-house developed solution to address a local need and have grown as business demands increased. Others are commercially available systems and were acquired to support complex activities such as mobile computing or distribution system operations. Utilities run and support a combination of these applications to operate their business on a daily basis. Many of these are mission-critical systems that require 24x7 support. Over time, the numbers have increased and these systems have been integrated to form a complex network that is the backbone of daily activities. These are often referred to as *Legacy Systems*, although there does not appear to be a standard industry definition. As technologies and customer demands change, the original legacy systems are often stretched beyond their functional limits.

IT and Business Unit Managers must make some critical, often difficult decisions on the future of these systems in an effort to support their internal and external customers. These decisions will impact their organizations both financially and operationally. There are a number of methods for evaluating systems for retirement, identifying a replacement system, and look at some implementation strategies. The challenge is to determine the best strategy for your organization.

Drivers of Change

There are many factors that cause utilities to make changes to their existing systems, but the majority of decisions will be driven by one of two areas: the business operations group or the IT organization. Each area has a unique perspective on the reasons for changing or replacing a system. Traditionally, the operations group is the primary driver, often in response to changing market conditions or regulatory mandates. Some of the most common *Business Drivers* for replacing a legacy system include the following:

- PSC/ PUC mandates that require new system capabilities
- Better business intelligence and reporting capabilities
- Advances in technology that support best practices
- Changes in accounting practices and policies
- Capabilities not available in a legacy system – i.e., web services
- Financial drivers, such as the need to improve productivity or automate routine activities to improve operational efficiencies

For an IT organization, the reasons for change are often more easily recognizable and are usually technologically based. Their area of focus includes software, data, systems integration as well as hardware and middleware. Some of the most common *IT Drivers* for replacing a legacy system include the following:

- System not compatible with newer technologies
- Cost of upgrading is too high
- Technology that is no longer supported or a sun-setting technology
- A corporate mandate to support only specific application types such as Oracle-based applications
- Financial drivers, such as applications that require a large or uniquely qualified staff to support operations (often the case with highly customized home-grown systems)
- Mergers and acquisitions that create the need to consolidate systems and move all users to a common platform

Knowing when to Change – A Look at Opportunity Costs

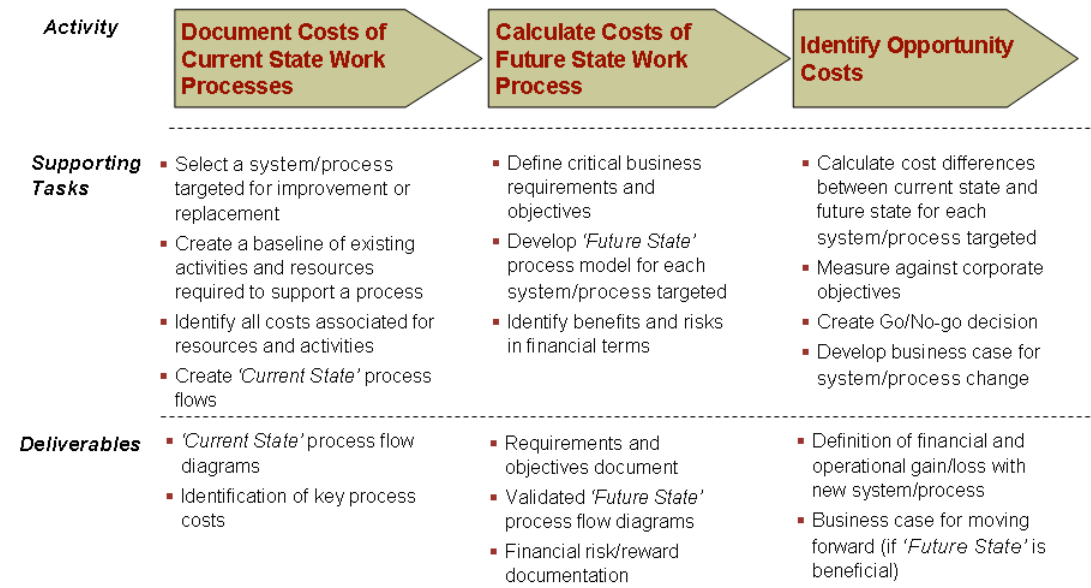
IT Organizations are often supporting hundreds of applications with relatively small staffs. They alone cannot be responsible for identifying the need to replace a specific system and must rely upon key business users for input. There are many instances where mandates, new business needs and/or existing deficiencies make the need for change readily apparent. There are other instances in which industry trends are pointing to operational changes that will be beyond the capabilities of a legacy system. In these situations the need for a system change may not be readily apparent. In making the case for change, it may be useful to consider the '*Opportunity Cost*' of remaining with an existing system.

Opportunity Costs are defined as the added cost of using resources for one activity over another. They are also referred to as economic costs, and measured in terms of an opportunity forgone. Assessing opportunity costs is fundamental to assessing the *true cost* of any course of action. Understanding the costs associated with remaining with an existing system or process can be difficult. It first requires a thorough knowledge of the costs associated with the current state business processes. The future state must be defined and modeled to identify the benefits and costs associated with it. The benefits associated with the new system represent the opportunity costs of remaining status quo.

In order to make the benefits tangible and bring clarity to the decision process, it is important to represent costs in financial terms. For example, if an IT organization is planning to replace a legacy system because an obsolete technology is resulting in poor processing speed, it is important to document the financial impact of this situation. The same model must be followed for all

proposed solutions. Similarly for an Operations group, the deficiency may be lost productivity due to poor dispatching and routing. The opportunity costs of remaining with the current system need to be quantified in financial terms by measuring the productivity gains associated with a new system. The direct and indirect support costs for the replacement system should also be identified. Our suggested approach to addressing these issues is outlined below.

Our Suggested Approach



Technology planning is a critical ingredient to successful business operations management. In order to understand the impact of opportunity costs, each business unit must have a thorough understanding of their current metrics, areas for improvement, and a strategy for achieving them. The development and management of five year business plans is a fundamental strategy in successful utility organizations. This is a proactive practice that will prevent systems or processes from becoming obsolete, as well as recognizing emerging technologies such as AMI. Five year plans should be jointly managed by the IT and Operations groups, with the business strategy driving the IT solutions. This approach will allow a utility to weigh all of the factors - current state, desired metrics, and available technology options, when determining if a systems needs to be replaced.

Selecting a Replacement System

Once an organization has determined a legacy system no longer addresses their business needs, the following steps should be taken to begin the system replacement process:

1. **Identify the problem.** Define the deficiencies or limitations within the current system. This should include all of the metrics needed to create a benchmark for the current state work process. Determine if the limitation is with the hardware, middleware, or the application itself. We recommend documenting all of the process rules that support the current technology to ensure the deficiency is with the legacy system and not the business processes.

2. **Develop system specifications.** Define the business benefit or the goal of a replacement system and create a software requirements document. This document should include a set of objectives and requirements for the system. It may include a "wish list" of desirable characteristics, along with more feasible solutions that are in line with the business objectives. Benefits should be calculated in terms of improvements in key metrics. It works best when key business users and the IT organization collaborate in developing this document. Each has an important contribution to make, and the best result will be obtained when both parties are fully invested in the replacement decision. A measure of their success is that the resulting requirements document clearly defines the functionality and benefits of the new system, and thereby narrows the field of potential solutions.

Define Benefits

Benefits Should be Calculated in Terms of Improvements in Key Metrics

Solution Functionality	Project Objectives			
	Increase Field-Force Productivity	Reduce Administrative Costs	Reduce Errors and Re-work	Reduce Hand-offs & Cycle-Time
Auto-Generation of Work Orders	X	X		X
Standardized Processes / Procedures	X			X
Auto-Assignment / Auto-Routing	X	X		
Efficient User Interface	X		X	
Field Information Access / Data Entry	X	X	X	
Automated Workflow		X		X
<i>Sample Metric</i>	<i>Ave. No. of Work-Orders / Day</i>	<i>Total Monthly Admin Exp</i>	<i>First-Call Resolution %</i>	<i>Ave. Work-Order Cycle Time</i>

3. Find the solution. With the system specifications completed, the utility must decide whether to “Build or Buy” the required solution. Legacy systems are typically substantial applications that impact an entire organization. As a rule, it is a better practice to consider buying a solution for the following reasons:

- Utility requirements are fairly standard, resulting in the existence of mature products in the market to solve particular business problems
- Vendors have the benefit of working with multiple utilities which allows their products to more naturally gravitate to the industry best practices
- Vendors are in business to continue to sell their product so they are likely to continue to invest in enhancing and improving their product
- Vendor user groups provide an outstanding forum to get input from your peers on how to best make use of the application
- The “best and brightest” in an organization will likely move to the next project after this one. The vendors will continue to have qualified personal supporting the application

Identify vendors and systems that can potentially meet all of the business requirements. Ensure that they offer the functionality required, have a proven track record, and can provide ongoing support. Utility companies traditionally use a variety of methods and sources to find options for system replacement. Some of the most successful approaches include the following:

- Attending industry-specific trade shows such as Distributech or GITA
- Searching industry trade publications for systems and reviews
- Consulting other utility companies of similar size to determine how they addressed the need
- Utilizing a consulting company to conduct the necessary research and create a short-list of options
- Conducting internet searches and viewing web demonstrations

A committee comprised of representatives from the Operations group and IT should be formed and responsible for the development and issuance of a request for information (RFI). The RFI would be sent to all qualifying vendors. The same committee should be responsible to review all of the responses and narrow the selection. We recommend creating a short-list of three or four to work with in the detailed selection phase.

The next step is to schedule a series of product demonstrations. The best practice is to conduct on-site demonstrations with a representative sample of all

groups impacted by the system rating the applications. This evaluation should be directed by the *utility* and closely follow the requirements document. It is also recommended that the product demonstrations include a hands-on session that mirrors the future state environment as much as possible. This exercise will provide the detail to further refine the functional requirements document and reduce the short-list of vendors/systems to two or three. Benchmarking top performers is an important measure once the proper metrics are identified. At this point a request for proposal (RFP) should be created and sent to the remaining vendors. The RFP responses, along with follow-up discussions and reference checks should determine the system selected.

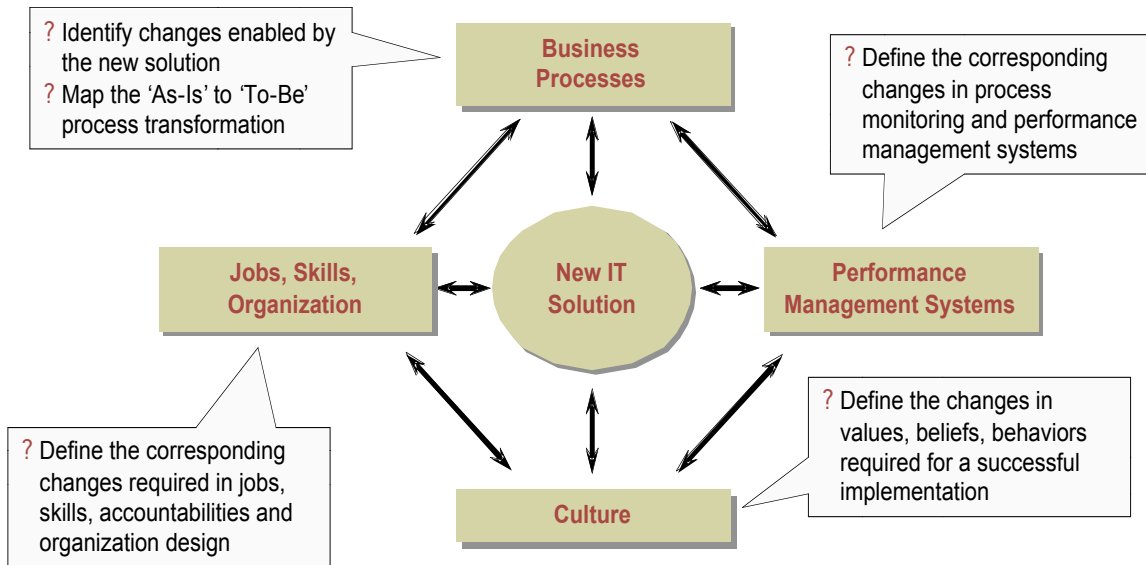
Defining the Implementation Strategy

Once the decision on the new system has been made, the actual implementation method must be decided. This must be a joint effort between IT and Operations group, and have executive sponsorship. When replacing a legacy system, the most common method is a structured migration rather than a 'flash cutover'. Although more labor intensive, there is much less risk with this approach. This requires a great deal of planning and coordination as well as supporting two or more systems during the transition period. A long-term commitment of resources will be needed to support the process. Executive leadership and governance is critical to the success of the implementation.

Performing a gap analysis will identify the discrepancies between the systems, and require the development of gap mitigation strategy for each one identified. Gaps should be ranked by priority and degree of difficulty to resolve. Process changes are also play a significant role in the success of the system implementation. This is an excellent opportunity to establish a standardized set of business practices throughout the organization. It is important to bring the users of the new system on board early to elicit feedback and gain their support. We recommend that process analysis workshops be conducted to perform end-to-end process reviews. Representatives from each functional area should participate in these workshops.

Managing the Change

The impact of the process changes should have long-term benefits, but will likely produce significant change management issues. A comprehensive change program must therefore accompany the solution implementation, to ensure the new system capabilities are captured and utilized. The key dimensions of such a change program are shown below:



Migrating the Data

A major component of replacing a legacy system is the migration of data to the new system. There will likely be existing data that is 'orphaned' or useless in its current state and must be reconciled before moving to the new system. Other data records may be outdated and need to be deleted. The most important point is not to lose any data that can impact the customers or company revenues. The following steps will protect all parties and ensure the most effective transfer of data:

- 1. Scrub the backlog.** The adage 'garbage in, garbage out' is appropriate for this step in the process. Review every data record in the legacy system, discarding meaningless data without any financial impact associated. The more difficult step can be gathering the information necessary to complete work records that have a financial impact.
- 2. Set up rules with Accounting.** It is important to involve the Accounting organization in all aspects of the migration. Jointly agree on what type or work or records must be moved from the legacy system. There must also be a threshold for writing off debt associated with lost revenue from incomplete or bad data.
- 3. Develop a conversion program.** This is traditionally an IT function, done to prevent the need to manually enter data from the legacy system. Depending on the database size, a conversion program could transfer the scrubbed data to the new system in hours as opposed to days.

Going-Live

The term 'go-live' has a different implication with a legacy system replacement because there are generally two production systems in operation. At a specified point in time, all new work is channeled through the new system, while pending work is completed in the legacy system. Due to the support costs of maintaining two applications, the 'end-of-life' date established for the legacy system should be set as soon as possible. A declaration from the senior leadership team is our suggested method for establishing the date and commitment of the organization.

Note: We recommend that the legacy system remain available with 'read only' access for some period after 'end-of-life'. There are minimal costs associated with this type of access and it may be helpful to resolve any discrepancies.

Measuring Success

The final step in the process, and the one most often overlooked, is the performance of a Post Implementation Review. The review process can be useful in evaluating progress towards original project objectives and developing appropriate corrective actions. This will ensure the capture of the technology investment value.

There are several key questions that need to be answered:

- Were the business objectives met?
- Is the new functionality working and are the users using it?
- Are the targeted benefits being delivered?
- Can the new solution be improved?

We suggest a three-step approach to answering the key questions:

1. Review the Baseline

- What was the original intent of the project?
- What strategic objectives were to be met?
- Who were the intended benefactors from the solution?

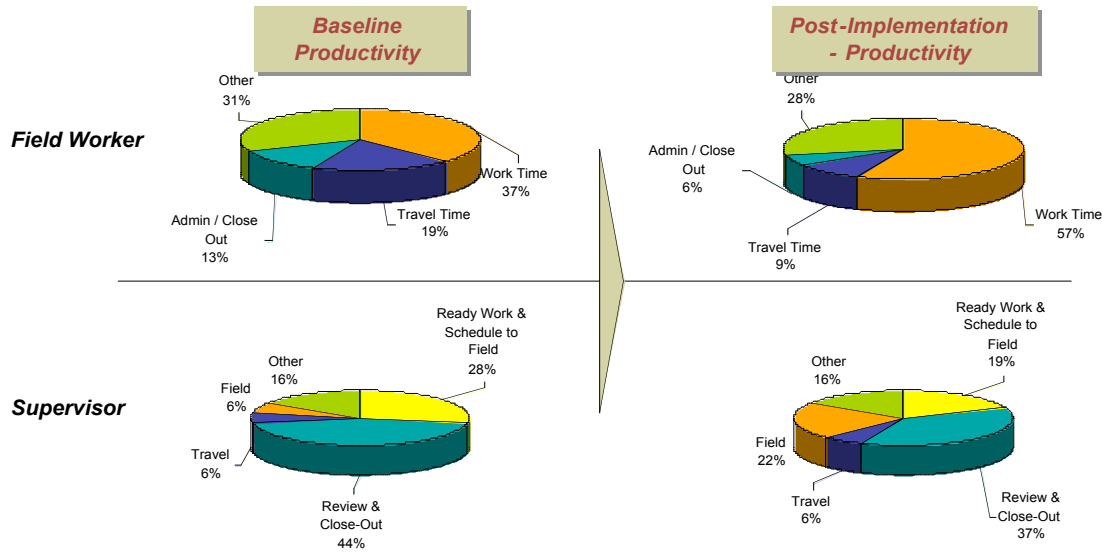
2. Collect and Analyze User Feedback

- Is the new system delivering the required capabilities to meet the strategic objectives?
- Are the users fully leveraging the system capabilities?
- Are the users adequately trained and supported?

3. Create a Game Plan

- a. What changes are required to deliver the targeted results?
- b. What is the plan and schedule for implementing those changes?
- c. What commitments are required?

Typical Changes in Operational Metrics



Summary

Replacing a legacy system will have a major impact on an organization, but also represents an opportunity to correct or redefine essential business processes. Opportunity costs must be considered when making a decision to replace a system. The antiquated architecture of a legacy system can limit the ability to improve system capabilities, the associated business processes, and customer communications. Replacement is often necessary to strengthen operational capabilities and meet increasing regulatory and customer expectations.

The selection of a replacement system requires an understanding of the deficiencies within the current system and solutions available in the marketplace. Utilities should examine existing business process and technology issues jointly to carefully define requirements and narrow the field of potential solutions. Business benefits should be calculated in terms of improvements in key metrics. The implementation plan must ensure system utilization and maximize the return on investment.

The most important factor in the overall process is leadership commitment. Legacy system replacement is a significant effort that will require executive leadership and governance, a long-term commitment of resources, and ongoing change management support.