

CIS Transformation: Unlocking the Value of Utilities' Customer Information Systems

To remain competitive amid continuing economic uncertainty and regulatory change, utilities must accelerate the replacement of inflexible customer information systems and add new capabilities that enhance customer service and enable consistent, successful up-sell and cross-sell capabilities.

Executive Summary

The customer information system (CIS) is a vital component of the meter-to-cash (M2C) value chain for electric utilities and other industries that provide metered delivery of commodities such as water and natural gas. It is the glue that binds the consumption and metering process to payments, collections and other downstream processes that affect a company's top line. Yet CIS transformations carried out in the 1990s are quickly proving inadequate for handling the influx of changes brought about by regulation and innovations such as the smart grid, electric vehicles, mobile technologies and self-serve portals.

At the same time, the recent economic downturn and sluggish recovery has placed even more pressure on utilities to achieve greater cost savings, heighten process efficiencies and demonstrate faster meter-to-cash conversion. Consumers – both residential and commercial/industrial (C&I) – have become increasingly cost-conscious, and more intolerant of system inefficiencies and inflexibilities. Not surprisingly, customer satisfaction has become a pressing

issue in an industry marked by high churn – the result of little product and service differentiation.

Nonetheless, the complex nature of CIS initiatives has resulted in many failed or underperforming CIS implementation projects. Given this backdrop, utilities will have to regroup and devise an approach that mitigates the risk and challenges of CIS transformation initiatives, and delivers a superior customer experience. Pike Research, a unit of U.S.-based Navigant's Energy Practice, projects that transformational initiatives will fuel growth in the electric utility billing and CIS software and services market, with expenditures rising from US\$2.3 billion in 2011 to US\$4.0 billion by 2017.¹

In this white paper, we will explore the challenges utilities face in modernizing their CIS environments, and how these companies can effect business transformation through a more configurable, efficient and easier-to-deploy CIS. We will also offer a path for assessing next steps and future needs, as well as recommendations for achieving intended business results.

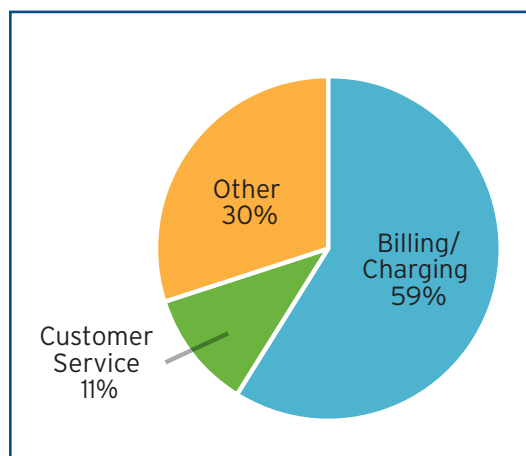


CIS Shortcomings: The Case for Reformation

The challenges utilities face in developing CIS strategies can be boiled down to the following:

- **Legacy systems:** Given the extremely central and critical position that legacy systems occupy in the meter-to-cash process, utilities are wary of overhauling their billing systems – fearing that any changes to their CIS could disrupt the billing and revenue-collection processes. This concern has led to the propagation of antiquated CIS systems that are tightly integrated with others, with hard-coded business rules that aren't reconfigurable. These systems receive little or no support from vendors, and require an army of development and support engineers to maintain. This can cause a huge drain on finances, and negatively impact business continuity and competitiveness. Moreover, IT infrastructures that support CIS/billing batch runs have in many cases reached or are close to reaching their limits regarding scalability. A typical large electric utility with seven million customers will have a batch run size upwards of 500,000 bill calculations. If stretched too thin, this can easily bring down the entire batch run.
- **Glacial time to market:** Product managers frequently complain that the products and services they develop in response to the competition take too long to launch. The problem can often be traced to supporting IT systems that require costly customization and development work.

The Most Serious Cause of Utility Customer Complaints



Source: UK Energy Ombudsman
Figure 1

- **Smart grid innovations:** Today's CIS systems were designed to handle flat tariffs or volume-based tariffs, and monthly, bi-monthly or quarterly usage data. Many are not equipped to handle the complexities that accompany the smart grid, such as dynamic or time-of-use tariffs, or the deluge of usage data gathered in half-hourly or hourly intervals by today's smart meters.
- **Resource-intensive:** Inefficient CIS systems consume a lot of system and infrastructure resources. Likewise, inefficient billing systems can sap IT systems, with the potential to introduce multiple points of failure.
- **A compartmentalized approach to customer facing functions:** Utility companies, often as a result of acquisitions, use different billing and charging systems for various business units and services; thus, they transmit different bills, with different payment channels and options. What is ideal from a customer experience and scalability perspective is a single billing system that aggregates all charges and presents a single bill to the customer.
- **Batch as opposed to real-time processing and information availability:** Older CIS systems take a batch approach to billing processes; they do not provide customers and department managers with real-time access to bill and usage information.

The case for transforming utility CIS systems typically comes down to the following:

- **The cost to serve:** A utility's customer service processes carry substantial potential to reduce expenses. According to figures from the UK's Energy Ombudsman, billing-related issues were the most serious cause of complaints among residential customers in 2011.² (See Figure 1).

An efficiently designed and built CIS backed by able business processes can reduce manual intervention – significantly lowering the cost to serve customers. Companies that have implemented such a system have reported a 35% reduction in the cost to serve customers from replacing the utility's legacy CIS with a packaged solution.³ By introducing efficient self-serve capabilities and incentivizing customers to adopt low-cost customer engagement channels like the Web, mobile, text and interactive voice response (IVR), utilities can implement electronic bill presentment and payment. As a result, precious dollars can be diverted from routine and predict-

able operations, and used to improve market analysis, devise better products and enhance marketing strategies.

- **The cash flow:** Analyses of customer behavior have shown that an easy-to-follow utility bill raises the probability that customers will pay the bill on time and in full. A simplified bill can also reduce inbound customer complaint calls and increase the adoption of Web self-service.⁴ A bill that is tailored to the specific needs, formats and financial resources of a customer or demographic can encourage prompt payments and lower defaults and delinquencies.
- **The principal vehicle of customer satisfaction and engagement:** A utility's CIS and its processes have a profound effect on the customer experience. For instance, customers form opinions about their utility based on the accuracy and clarity of their utility bill. Processes built around billing and payment – bill inquiries, resolution and customer grievance policies, for example – greatly shape customers' perceptions and satisfaction ratings. Customized products and services that are efficiently placed on the bill with an easy-to-follow Web link or toll-free sales number have the potential to boost sign-up rates.
- **Integration raises complexity:** Utilities in the U.S. are increasingly partnering with third-party suppliers of utility services, energy efficiency programs, home-repair services and waste-collection services. On-bill financing (OBF)⁵ is another vehicle that is becoming a preferred method for billing small businesses for loan repayments on capital-intensive energy efficiency programs.^{6,7,8} Alternatively termed as PAYS (pay as you save), this financing model has been one of the more successful in convincing commercial and small-business customers to embrace capital-heavy energy efficiency programs.⁹ For the utility, this creates more avenues for providing integrated services to customers, thereby aiding retention, reducing peak demand and postponing capacity expansion. However, this can also introduce challenges in the collection and allocation of revenues between the utility and its partners. Furthermore, legacy CIS systems are not equipped to handle these complexities without substantial development efforts.

- **Mergers and acquisitions:** Merger and acquisition activity presents utilities with the opportunity to reduce redundancies and achieve economies of scale by either modernizing or consolidating redundant CIS systems.
- **Policy and regulation:** For utilities in regulated markets, regulations sway processes related to account delinquency, service termination, bill presentment and payment, as well as associated recordkeeping and audits. In these cases, bill calculation and account management modules should be configured to take into account the various nuances of regulation.
- **Reporting and analytics:** The CIS holds valuable trend information on billing and payment history, as well as payment patterns. Harvesting this information can uncover actionable information on usage and payment habits, and enable the utility to promote tailored, own-brand and affiliate products and services on the bill.

Assessing the State of CIS Systems

To understand the state of the CIS and chart a course of action, an assessment of the existing CIS system, process and infrastructure is typically needed. This type of assessment should be performed along the following dimensions.

- **People:** It is important that people within the company are knowledgeable about the CIS system and processes, and are capable and empowered to carry out their responsibilities. The questions pertinent to this assessment include:
 - Is there a clear delineation of roles and responsibilities of the various individuals in the billing and customer care departments?
 - Are people trained and informed enough about their roles to deliver their duties efficiently?
 - Do multiple people perform the same activity within the same or different departments?
 - Is there a concerted effort to disseminate and decentralize information regarding processes and systems?
 - Are people adequately empowered to make decisions, or do they look outside their role for approvals before they take action?
 - Is it extremely expensive to find support and maintenance resources for the existing system?

- **Processes:** Business processes lend distinctiveness to an organization, and are an important component of a utility's competitive advantage. Department leaders might want to build custom business processes to ensure that the organization maintains a leadership position in the industry. At the same time, it is essential that the processes are well understood, documented, monitored for inefficiencies, and commonly understood among users. Processes should also be easy to incorporate into the CIS system. Among the pertinent questions that should be asked before implementing new processes:

- Is there accountability in each step of the process and segregation of duties in each business unit?
- Is there an audit trail for recreating every step of the process if required by auditors or regulators?
- Are necessary checks and balances in place to prevent and alert in cases of attempted fraud or exception conditions – such as an unprecedented bill amount generated for a customer – *before* it is communicated to the customer?
- Are business processes so rigid that they completely prevent manual override – even in situations where this is desirable?

- **Technology:** Often, a CIS system is rich in capabilities, but the underlying technology and infrastructure presents a bottleneck. Legacy mainframe-based billing and customer service systems often have scalability and processing muscle, but are not intuitive to use due to the absence of a well-designed and user-friendly

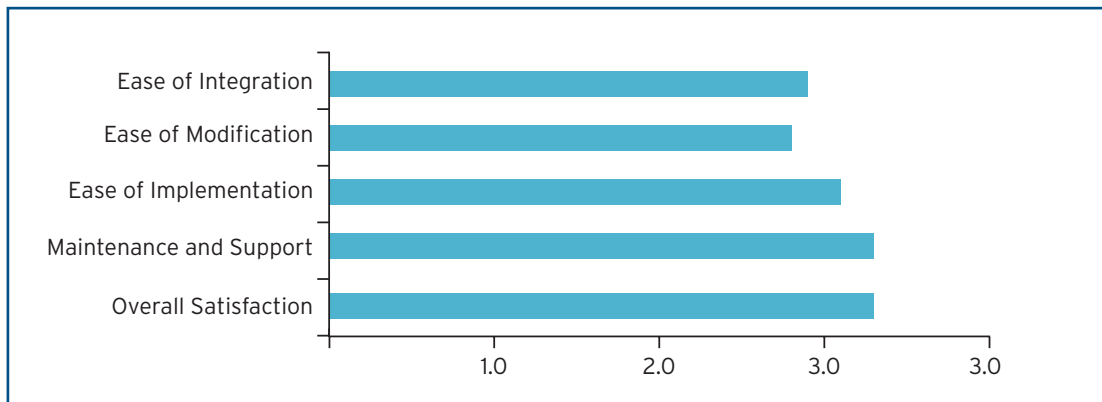
interface. This means that business users will have limited use of the system, and will have to fall back on application support staff and development teams to perform system configurations and day-to-day operations. This adversely affects the responsiveness of the function as a whole, increases the cost to serve, and delays time to market. Figure 2 shows how CIS systems stack up when it comes to technology and ease of use.

Pertinent questions for assessing the effectiveness of CIS technology include:

- Is the network, database or code base proving to be a bottleneck for the CIS system?
- Is it extremely difficult to find support and maintenance resources for the system?
- Does the integration architecture allow for loosely coupled components and plug-and-play modules and services – both inside and outside the organization?
- Are the systems interoperable, and do they adhere to the latest standards for technology and security?
- Are the latest innovations in Web, voice, mobile and text technologies harnessed to deliver the best possible customer experience?

- **Capability:** Does the company's existing system support the most critical functions that have a bearing on the cost to serve and satisfy customers? Smart grid innovations, such as EV charging and net-metering arising from distributed generation, time-of-use tariffs and the deluge of meter data are inevitable – the result of competitive pressures spawned by deregulation. They must be supported either

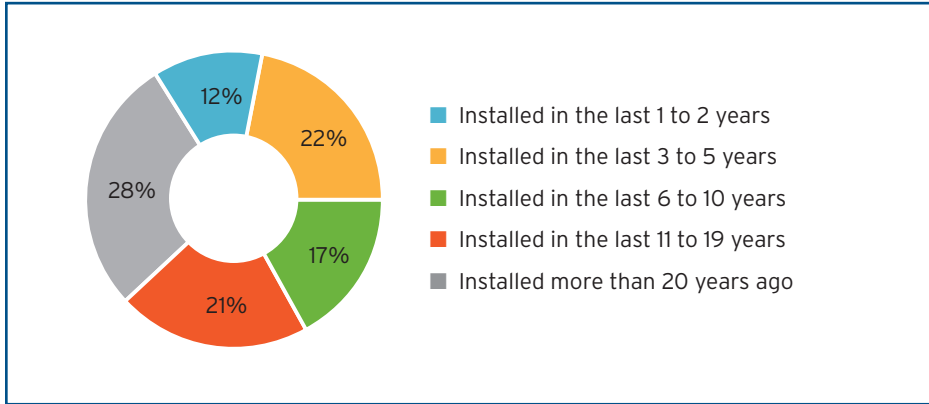
Utilities' Satisfaction With their CIS Systems



Source: Five Point Partners¹⁰

Figure 2

An Aging CIS



Source: Five Point Partners¹⁴
Figure 3

“out-of-the-box” by the system, or by simple integration with supported partner solutions.

Figure 3 shows that 40% of CIS systems currently in place lack the capability to bring about the innovation necessitated by the Energy Policy Act, 2005¹¹ and the Energy Independence and Security Act, 2007.^{12, 13}

A Suggested Plan of Action

A step-by-step plan is essential to ensure that the entire CIS transformation initiative is effectively managed, governed and delivered. Figure 4 depicts an indicative roadmap – from business case preparation to post-implementation support handover.

CIS Transformation Roadmap

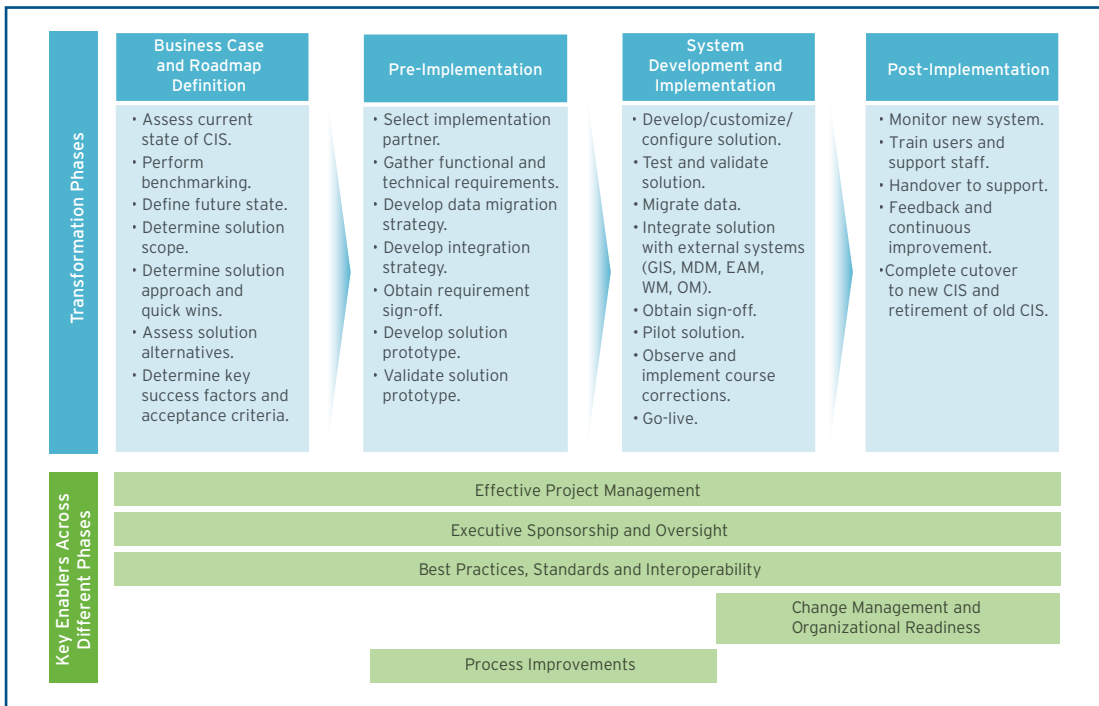


Figure 4

Implementation Options

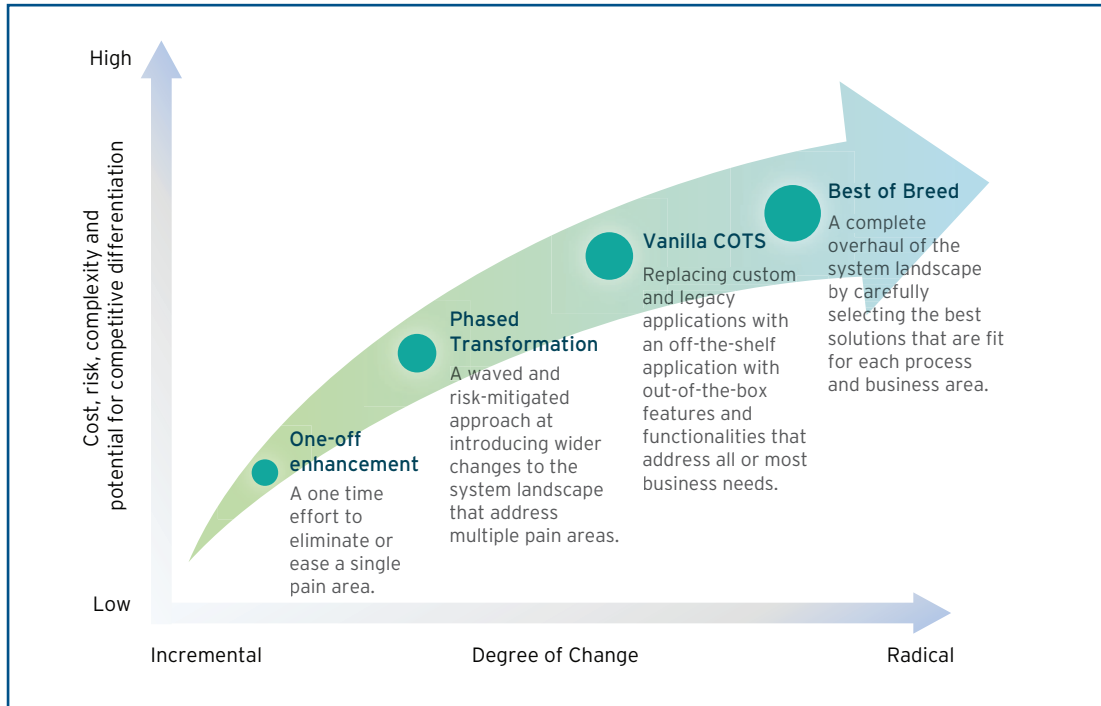


Figure 5

Figure 5 depicts the various options for a transformation regarding the degree of change that a utility requires.

Utilities have several choices when selecting an implementation partner:

- **Package implementers** bring best-practice experiences in implementing best-of-breed package solutions and reducing risk; however, they can be costly, and lack the ability to provide high levels of customization.
- **System integrators/consultants** offer diverse experience in implementing disparate systems, as well as integration expertise vis-à-vis other internal and external systems. They are also a favorable option for custom development efforts.
- **In-house implementation teams** have the best knowledge of custom business processes. Nonetheless, with limited availability and possible little exposure to best practices, in-house resources also bring the risk of disrupting transformation activities.
- **Managed solution providers** can significantly lower the cost of end-to-end processes and the cost to serve, but lack differentiation and cus-

tomization. The utility also loses a measure of control over data and the code. Typically suited for municipal utilities.

Given the available approaches and options, selecting one kind of partner over another will depend on a utility's budget, business goals, past experiences in transformation initiatives and the availability of the partner of choice. Yet more often than not, the best results are realized through a hybrid approach. For instance, a large utility serving a million-plus customers might choose a CIS package solution implemented in full or in part, with necessary customizations provided by the solutions developer or by a systems integrator. The utility can then employ its in-house team to build a critical component that provides differentiation and marketplace advantage (such as bundle management). The system integrator can incorporate the CIS with other applications, and build necessary overlays and user interfaces that drive meaningful business advantages.

Activating the Plan: Key CIS Capabilities

A modern and progressive CIS must have certain high-level features in order to enable true business transformation (see next page).

Configuration Rather than Customization	Business users should be able to perform their daily activities, such as time of use tariff setting, product configuration and campaign management (configuring and marketing new energy efficiency programs sliced per customer usage data, bill layout, design and presentation) with the least dependence on cost-intensive IT support and development staff.
Convergence	The system makes it possible to provide billing for disparate market segments such as residential, C&I and various services through a single system. This can deliver maximum benefits from economies of scale, and reduce support and maintenance overhead. The CIS should also be able to support multiple "own brand" and partner services and products on the same bill, thereby delivering a consistent and satisfying customer experience, apart from the benefit of providing value-added services to customers via service partners.
Product Support	The system must be able to support the latest smart grid innovations, distributed generation, net metering, time-of-use tariffs and the resulting complex billing calculations.
Support for Payment Channels	The system must provide support for the most popular payment methods (ACH, credit card, check and also diverse channels of payment, such as the Web, mobile apps, text, IVR and kiosks) apart from more conventional methods such as mail-in payments. This will help ensure that customers have different avenues of payment and customer service center agents can offer payment alternatives when dealing with past-due customers.
Cross-Sell and Up-Sell	It is important to have the ability to up-sell and cross-sell own-brand and partner products and services to the customer on the utility bill. This can be done by providing easy access to the offer's Web link or to a toll-free sales number.
Aid in Customer Acquisition Goals	The billing system should be flexible enough to accommodate differential tariffs, contracts and easy-to-configure campaigns to ensure that there is a high uptake rate for campaigns that are tailored to different customer segments.
Aid in Customer Retention Goals	The utility might lose customers not because the customer is not satisfied with the service provided by the utility, but because the utility does not offer functionalities that aid in retention, such as hassle-free and continuous payment options, integrated and automated outbound dialing features for payment failures, past due payments and credit card expiration.
Regulatory and Compliance Requirements	The billing system must absolutely have support for regulatory and compliance requirements, such as those related to the content, format and rendering of the bill and account delinquency (some can be found here)
Real-time Account Information	There should be instantaneous updates to account, bill and payment information to provide customers and customer service agents with up-to-date, real-time information on bill and usage data, account status, payment details, etc. Batching introduces considerable lags in the presentment of information, and has the potential to significantly hamper the customer experience.
Easy Integration	The system should easily integrate with other internal systems (such as outbound dialer applications, A/R systems and the general ledger), as well as external systems (such as credit monitoring and reporting agencies, sales tax directories) using B2B integration technologies (Web services, APIs, XML interfaces).
System and Process Support	It is highly desirable to have an efficient support and grievance redress mechanism to investigate and resolve billing queries and empower customer service agents to resolve customer queries without escalation, and with the greatest degree of customer satisfaction. A well designed and customizable workflow and escalation procedure aids in the quick and effective resolution and override of errors while minimizing the potential for fraud.
Self-Serve	The system should offer customer self-service for the most used processes - thus diverting costly operational resources from the most common customer billing processes and requests. These processes might include changes to billing cycles and frequency, bill re-mailing, bill estimates and analytics, bill dates, bill format and bill delivery method.

CIS Transformation Pitfalls

The results of CIS transformation efforts over the past decade have been mixed. The pace of transformation has significantly abated in the last decade, thanks in large part to the uncertain economic climate, risk aversion and the slowing of de-regulation. Looking ahead, utilities should be careful to learn from the experiences of their peers, and avoid the pitfalls commonly associated with a large-scale CIS transformation. Some utilities have been involved in acrimonious legal battles with CIS implementers due to misunderstood and poorly documented expectations and requirements – resulting in the loss of revenues, customers and reputation.¹⁵

Effective program management must take into consideration risk, communication, scope and stakeholders – critical for the success of any CIS initiative. Common obstacles (from a business point of view) include:

- **Business disruption:** The critical nature of the CIS, especially the billing function, raises fear of business disruption, loss of revenue and customer backlash. This can cause utilities to be heavy-footed when it comes to implementing a new CIS system.
 - **Recommendation:** Effective data migration, integration and testing strategies should significantly lower the risk of business disruption, although a minimum level of disruption should be expected. The system must be piloted before going live. One approach could be to pilot with employees who are also customers, or with favorably disposed “anchor” C&I customers before rolling out to a larger populace. A “waved” transformation approach that defers mission-critical functions like billing management (see Figure 6) can also be applied. In any event, postponing the complete rollout of the new system for fear of disruption will only delay the inevitable, with adverse impacts on customer service and other functions. The cutover strategy should also consider how long the old and new systems should function in parallel to ensure business continuity and outcome comparison.
- **Benefit realization:** With CIS replacement initiatives frequently taking up to three years to complete, frustration and impatience can hound stakeholders, whether or not real benefits are being delivered. For the entire implementation period, and until the complete

retirement of the legacy system, the utility will have to deal with two CIS systems. This has significant cost implications, and can raise doubts regarding the efficacy of the entire initiative.

➤ **Recommendation:** A good alternative approach is to adopt a phased, or waved, implementation, whereby benefits come about periodically – giving stakeholders the opportunity to stay engaged with the quick wins and provide feedback. Figure 6 offers an example of a wave approach. Executive championship and the belief that CIS transformation is a business initiative rather than a pure IT initiative can also help ensure greater participation by functional units.

- **Project funding:** Balancing capital vs. operating spend: The cost of an all-out CIS replacement exercise can be extremely prohibitive – scaling anywhere from US\$50 million to US\$100 million for a large electric utility serving over a million customers. In times of economic uncertainty, and considering the difficulty in obtaining funding, executives will be hard pressed to delay large-scale capital expenditures, especially if the operational savings are uncertain or are not expected until three to four years after the program begins.
 - **Recommendation:** The business case should consider the solution approach and the

Waved Approach to CIS Transformation

Wave 1
<ul style="list-style-type: none">• Credit and collection management.• Move management.• Service order management.
Wave 2
<ul style="list-style-type: none">• Bundle management.• Premise management.• Customer master data management.
Wave 3
<ul style="list-style-type: none">• Tariff management.• Billing management.• Financial management.• Customer care.

Figure 6

methodology (“phased” vs. “big bang”) so that the benefits and savings are realized in increments, rather than deferred to an unspecified time in the future.

- **Technology obsolescence:** The pace of technology evolution renders current technology obsolete in about three years – the time it could take to implement a full replacement.
 - **Recommendation:** A “componentized” approach could help; however, true benefits can be more fully realized if all or most critical applications/components are replatformed – reducing the possibility of heterogeneous components down the road.
- **Changing requirements:** This issue can come from any quarter; for instance, new regulations can cause a key requirement to change, as can competitive and environmental factors,
 - **Recommendation:** By giving adequate thought to the solution architecture, such as a service-oriented, loosely coupled framework, utilities can mitigate the impact of changing requirements and avoid extensive rework. A thorough change control mechanism should be in place. Involvement of key stakeholders, such as the regulator, functional departments and system integrators, can unearth potential requirement changes that may be needed at a future point in time.
- **Migrating custom processes, rules and data from the legacy CIS:** Rules around usage estimation, program eligibilities, deposit calculation and integration with other legacy applications – the contact center application, work and asset management applications, for example – can be a Herculean effort, and scuttle the transformation process. Also, utilities with custom business processes (especially in deregulated markets) fear loss of competitive advantage when considering the migration to a packaged solution.
 - **Recommendation:** The expertise of subject matter experts, consultants and system integrators should be leveraged to estimate the effort involved in integrating with other legacy systems and migrating legacy rules. The commitment of these parties should be confirmed during the requirements definition and testing phases. Also, the cost-benefit analysis of adopting standardized business processes via a packaged solution vs. heavy customization should be carried out in the business-case phase.
- **Lack of adequate benefit measurement:** This can result if the stakeholders cannot articulate the benefits of the modernization effort.
 - **Recommendation:** Key metrics to measure the success of the program should be laid out at the business-case stage and tracked post-implementation. System implementers/integrators should be engaged in a reward/benefit-sharing incentive model to help achieve this goal. Objectives can include:
 - » A 25% increase in on-time bill payments.
 - » A 70% reduction in billing errors.
 - » A 70% reduction in complaints to the utility commission.
 - » A 20% increase in customer satisfaction scores.
 - » Re-deployment of 30% of customer service agents.
 - » Reduction in time-to-market for new products and services by 70%.
 - » Reduction of IT support costs for the CIS by 50% in one year.
- **Change management:** Any initiative to transform the CIS system or the process will necessitate appropriate change management, whereby end users, business partners and internal customers are brought up to speed with the new system. The champion’s role is to gain acceptance of the new system and processes by key players in the user base.
 - **Recommendation:** As with any transformation process, it is considered perfectly normal to experience a brief period of lower productivity and performance (which might include erroneous bills, longer call handle times, user frustration and customer dissatisfaction) immediately after go-live and before improvements kick in.
- **Customer education:** The utility must educate and inform its customers about upcoming changes to their utility bill. In some cases, customers can expect changes in the bill layout and billing amounts resulting from changes in the bill cycles, for example. It is not uncommon for utilities to see a spike in inbound service calls and queries about customers’ bills following a system transformation or migration.
 - **Recommendation:** The utility should anticipate this, and ensure that the necessary support is in place for the period subsequent to going live. The utility should also carry out

a customer awareness drive to educate customers on the many new features and self-serve capabilities they can avail themselves of so they – and the utility – can derive maximum benefits from the transformation initiative.

Looking Forward: A Recharged Utility

It is clear that utilities must make calculated moves to maximize the return on their CIS investments. They can also look at the playbooks of other industries such as telecommunications, which have followed a similar path for introducing convergent, demand-based tariffs, dynamic pricing and billing system transformations, with varying degrees of success.

IT solution providers, system integrators and product vendors can also play a vital role in educating utilities as to a suitable implementation

approach and roadmap that best suit the organization's business goals and transformation strategy. In our experience, we have seen utilities achieve their business objectives, overcome growth constraints and mitigate risk with minimal disruption to business-as-usual operations – all by adopting a phased approach to CIS transformation, and by focusing on defined and well understood objectives and KPIs. Ensuring executive involvement, effective communication and change management procedures is key.

In short, all stakeholders – the utility, its customers, the regulator, the government, the implementer and the solution vendor – will need to work together to ensure that the customer experience is enhanced and the utility remains competitive and profitable while pursuing CIS transformational initiatives.

Footnotes

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