Building
Tomorrow's Enterprise

White Paper

Infosys®

Enhancing the Agility of Customer Information Systems in Utilities

Ananth Chandramouli, Clifton Muhammed, Shamik Mitra and Vivek

Bringing Predictability to CIS Projects

Executive Summary

Over the years, Customer Information Systems (CIS) projects in the utilities industry have developed a reputation for being disruptive to business, very expensive and behind schedule. While there have been several successes, the large number of failures and issues have created a strong case for an alternative to large CIS projects. Utilities are looking for ways to take smaller, cost-effective steps at appropriate points in time instead of an expensive, high-risk project.

Also, there are several lurking external business drivers that can strengthen the case for a CIS project, and internal drivers that are often difficult to gauge. The million-dollar question is — when is the time right to work on the limitations of an ageing CIS? When do the drivers become important enough to warrant action?

Given that CIS is the mission-critical "cash register" for utilities, the current complex situation merits a closer examination. This paper provides perspectives on a strategic CIS Assessment Framework and a structured solution to improving the agility of CIS without making huge investments. It attempts to answer some of the complex and pertinent challenges facing today's Customer Information Systems.

May 2005

Overview of CIS initiatives and drivers

Over the last several decades, the utilities sector has witnessed a large number of "horror stories" about CIS projects. There is sometimes a negative connotation associated with "the CIS project" in the minds of the countless project team members, especially the project managers.

Many utility CIS were installed during the late 1990s to address the Y2K limitations of older systems. With priorities set on back office processes, little attention was given to user interfaces for call and billing centers. Older business processes were often duplicated from a legacy of regulation, lower wages and low worker turnover.

In today's environment of ageing workforces, utility restructuring, relatively low technology costs and higher cost pressures, opportunities exist to extract significant additional value from legacy CIS systems. With the higher cost of skills, current user interfaces are often cumbersome and time consuming to navigate. Training costs are high and users are forced to possess broader system knowledge for most business functions. System modifications are time consuming and costly, which limits flexibility for business changes and process improvements.

For most utilities, replacing a CIS is a decision fraught with huge complexities and enormous cost ramifications. The complexities come from many directions but typically the biggest ones stem from the need for organizational transformation. The clear imperative is to look at it from a strategy angle, and then address the operational nitty-gritty. In terms of cost, the thumb rule for end-to-end CIS replacement is often quoted in industry circles at about US $35-40 per customer. Extraneous functionality and project management issues can push the cost even higher. Invariably, the projects are closely monitored by stakeholders at the highest levels.

A CIS project is usually associated with some amount of business disruption in revenue and customer service. It is often considered perfectly normal to have a few months of lowered performance after implementation. Erroneous or delayed bills, longer call handling times and uncollected revenues are some of the most common post-implementation issues.

Typically, major CIS implementations or replacements take two to four years. Some take even longer. The long duration of the project makes them susceptible to the vagaries of time — changing business requirements and preferences, emerging and dying technologies, changing players and expectations, market reforms and competitive landscape, and so on. It is no surprise that there have been few large CIS replacements in the last few years.

Technology Drivers

There are several technology issues that utilities face with regard to their CIS.

Service Level Adherence — Some CIS systems have been enhanced in an ad hoc manner over a period of time, resulting in an inflexible and brittle system with increased system downtime. Also, data integrity issues arising from independent changes to modules have resulted in frustrated end-users.

Application Enhancement & Maintenance – Often there have been differing standards applied to clearly demarcating presentation logic, business logic and data logic. This has resulted in increased time-to-market, and higher cost for executing business change requests. Some of these issues are due to:

- Increased time for impact assessment and testing
- Redundant changes across modules

Diminishing Vendor Support – Some CIS systems are based on older client/server and legacy technologies that may have no support from product vendors. This scenario results in:

- High business risk in continuing with such unsupported technologies
- Hesitation to enhance systems due to lack of proper support personnel
- High cost of specialist resources

Leveraging New Technologies – Many CIS applications have become increasingly rigid and are not amenable to integration with newer technologies. This has resulted in:

- Inability to provide more user-friendly features and functionality, some directly to the end customers
- Inability to realize value from newer IT systems, as they are not fully integrated with CIS

Business Drivers

External business drivers which impact the performance of a CIS are generally beyond the control of internal management. These drivers relate to regulatory and public expectations which are impacted by the political environment and the actions of other entities.

One of the most important external business drivers is the government regulation that significantly impacts all operations of a utility. Utilities must deal with the requirement of providing "service of last resort". Utiities also must deal with the limitations of serviceable markets and territories which drive system capacity requirements. Deregulation of these obligations have impacted system capacity requirements even further. Regulatory changes relating to customer processes also change the performance expectations of a CIS.

Other companies drive future customer expectations for all competing or substitute businesses. Competing services for a utility include energy or communication services within the same territory and energy or communication services in other places. A customer can choose from electricity, gas, coal and oil providers for heat. The same customer can also choose between global locations to receive any of those services. That customer's performance expectations depend on the performance experience with all other companies in these areas. So, the current experiences of other companies and other places can impact future expectations for a utility.

A number of internal business drivers also include maintenance costs, flexibility and system performance costs for operations, and system support. All of these issues must be taken into account while planning for a CIS project.

Case for enhancing the agility of CIS

Identifying the optimal future system for a utility's particular situation requires an assessment framework. The objective of a CIS assessment is to select and demonstrate the value of a future system. That future system can be identical to the existing system, completely replace the existing system or vary in multiple combinations between the two extremes. The enhancement migration path depends on the selected performance metrics and the available technology. The complexity and magnitude of enhancement options demands a disciplined assessment for optimal results.

The challenge for the CIS owner is to select the enhancement scope, which provides the best return for system stakeholders. While the users of many CIS installations have significant needs for improvement, those needs often fail to justify a complete system replacement. Piecemeal enhancements may be more easily justified while sacrificing the larger benefits of a comprehensive solution.

The scope of a CIS enhancement can include several system architectural and business process components. Major system components include a backend, a presentation services layer and (in some cases) a business services layer. Typically, most (even 90%) of existing system investment resides with the backend. Significant business benefits can result from changes in the presentation and business services layers (where often only 10% of existing system investment resides).

The performance measures that matter relate to the overall performance of the utility. Because the CIS directly impacts a utility's customer, the strategy and values of the organization must determine the type and significance of each CIS performance metric. Performance metrics can relate to two categories, the first is value delivered to the customer and the second is the cost for delivering that value.

Customer value will vary by situation but will relate to the utility customer's cost for services provided. The customer's total cost includes customer's time and effort, beyond the monetary payments for a given quality of service. Customer value measures can include call handle time, first contact resolutions rate, percentage of calls answered within a time period, call volume and other measures that indicate the customer's perceived cost.

The cost of delivering customer value can be quantified and separated into measurable components. These measures include direct labor, service charges, overhead, net write-offs, credit cost per customer and other measures which total the amount spent for customer service.

CIS Assessment Framework

The objectives for the CIS assessment are to match resources, improve efficiency and demonstrate the value of a future system. Matched resources align customer service demands with the resources needed to serve those demands. Efficiency is improved by increasing the amount of customer service for each resource investment and the value of these changes are illustrated with a business case. The assessment framework guides development of the knowledge needed to determine the need for transformation and the outcome of a "go" or "no-go" decision.

Infosys adopts a three stage approach to achieve the transformation of a CIS. The stages are: assess, align and alter. The assess stage identifies opportunities with the current CIS. The align stage designs the transformed CIS. The alter stage executes transformation.

Structure of the assessment study

The assessment steps are:

- Establish key performance metrics for CIS processes
- Profile the As-Is (current) cost and performance
- Optimize the To-Be Service Channel and Technology Mix for optimized cost and performance
- Develop a Business Case to quantify tangible results

For key performance metrics, the ideal measures are observable, correlate to the financial performance of the organization, and can be measured at low cost. These measures can be grouped into two categories of Cost of Service provided and Level of Service Provided (which represents customer value).

Simple measures for Cost of Service Provided can include: call volume, average call handling time, billing cost per customer and new employee training time — as examples. Examples for Level of Service Provided measures include: first contact resolution rate, percentage of calls answered within 20 seconds and percentage billing error.

The relative importance of each metric is assessed through the aggregation of a single cost per customer metric and value per customer metric from the individual cost and value components. Examples of these include cost per call and billing cost per customer.

Profile As-Is performance with the established metrics. The As-Is performance can be measured at low cost through a randomly selected representative sample of customer contacts.

Optimize To-Be service channel and technology mix with a comparison of baseline measures with industry benchmarks and an analysis of call and billing processes. Large differences between baseline measures and benchmarks highlight areas of investigation for business process improvements. For each viable To-Be scenario the total cost and total benefit must be assessed.

The optimal To-Be system is selected with a cost/benefit comparison of each alternative system scenario. Each system scenario must include all business implications and associated costs and benefits. General alternatives can include groups of system rewrites, system replacements and/or "do nothing".

The final step of the assessment is to quantify tangible results for the selected alternative through a business case.

Deliverables of the assessment

The outcome the CIS assessment is a business case. The CIS enhancement (or "do nothing") business case shows total long-term benefits, investment requirements, net present enhancement value and investment risks for the selected alternative.

Such a business case allows for a comparison of CIS system enhancements and other business investment opportunities.

Achieving CIS Agility

Achieving CIS Agility may appear extremely difficult and even impossible at times, but it is possible and absolutely essential for a successful and cost-effective solution. It requires a holistic approach that encompasses the business process view, the user-system interaction (or user experience) view and technical architecture view of the project. These three divergent views of the CIS world have to come together to paint a complete view of the needs and requirements from diverse stakeholders

and to ensure development of synergy across these tracks of the CIS project. A better understanding of the three core views of the project helps in achieving this synergy when combined with sound project and program management tenets.

Business Process

The business process view of the project is the view that concerns the Customer Service (CS) business unit. This is a large and complex unit that has significant front-office (customer contact) and back-office operations including billing and field services. CS provides for all or most of the revenue of the utility and has many of the critical business processes. The CS unit is focused on ensuring the best-of-the-breed business process and policies.

This view of the world is often the hardest to depict and improve upon. It is also the most important view to act upon if the project is to positively impact the business in a significant matter. This requires a sound methodology of business process modeling and business process analysis (such as InFlux™) combined with deep subject matter expertise of the utility customer service.

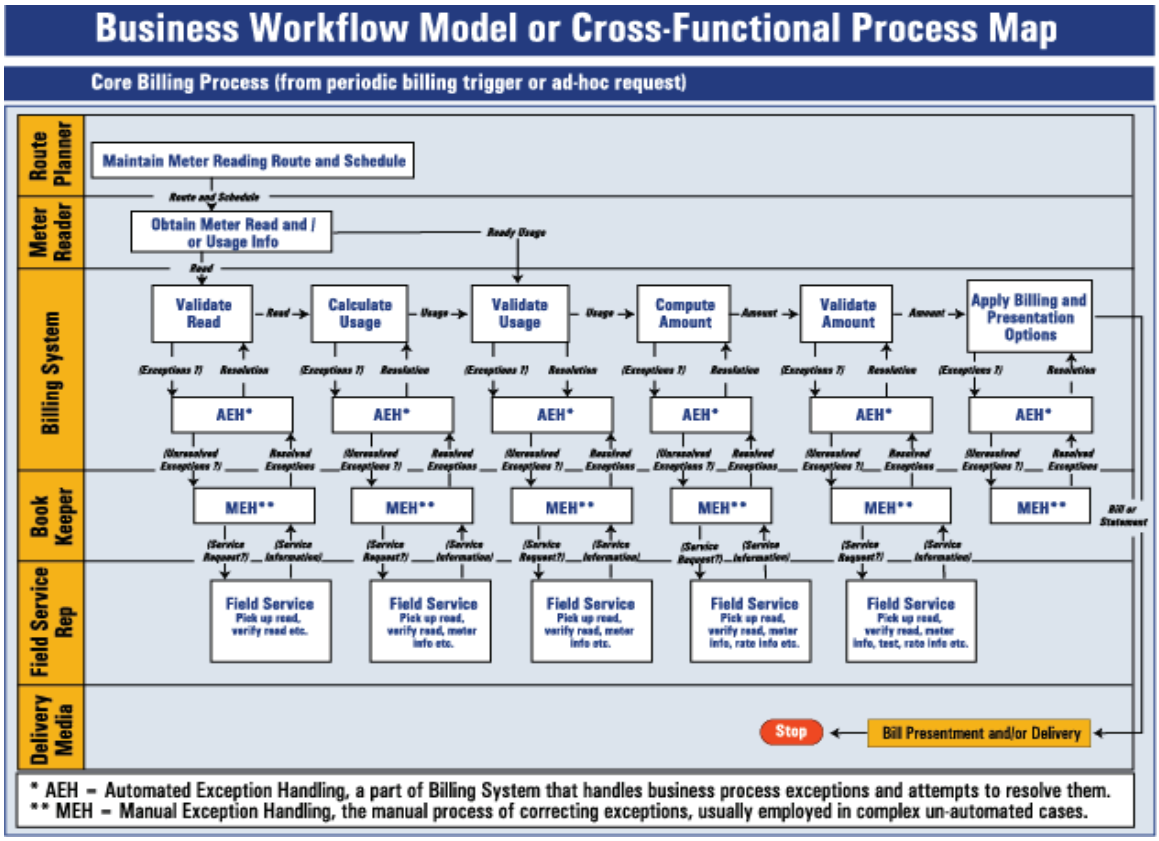

Figure-1 - Core Billing Process Workflow

The activities in this track can be summarized in these three steps:

1. As-is process modeling
2. Process Analysis
3. To-be process modeling

The as-is process modeling develops a common view of the current customer service operations – the processes, their triggers, the activities for each of the processes and so on. The process analysis step analyses the as-is processes to explore the potential for process improvement through process re-engineering leading to creation of an improved to-be process. This involves application of diverse means such as:

1. Application of technology, including process automation, computer-telephony integration, use of voice / speech technologies in call handling, adoption of wireless technologies for mobile workers, etc.
2. Adoption of alternative process practices from other organizations or industries
3. Organizational restructuring, often essential for higher agility, and to drive changes in a more effective manner

Let's take the example of core billing process. Figure-1 demonstrates a typical billing process workflow. It presents several possibilities for improvement:

a. Can some or all of the meter reading be obtained through automated meter reading (AMR)? What specific meter reads should be automated using what AMR technology?

b. Is meter reading route and schedule better managed through an automated algorithm for optimal use of resources?

c. What are the possibilities of automation of manual handled exceptions? Can a rules-engine be designed to continually reduce the exceptions as exception patterns are analyzed and automated?

d. What exceptions are raised due to gaps in process between groups of people, departments and systems, such as call center's request for a move-in without a check for adequate metering device at the premise?

Many such possibilities can be analyzed in a systematic manner using the InFlux process analysis framework, and lead to the creation of a refined and improved business process. The process helps define a new, more efficient and better way of accomplishing the same process.

Call Workflow Optimization and User Experience Design

Many CIS systems of today utilize user-interface designs limited by the legacy technology from when they were first implemented. There are numerous cases where a user has to navigate through a large number of screens to complete one business transaction. These multiple screens are complicated to use and thus harder to train the users on. Today's technology allows for the adoption of a structured method based on workflows, resulting in an improved user interface (UI) design. The benefits include

- Reduced Average call handling time
- Reduced training costs through a more 'intuitive' user interface
- Improved first call resolve by giving the user more information about the caller and the reason for the call
- Increased customer satisfaction through reduced call time and improved communication with the caller

There are several proven strategies to achieve the benefits of optimized call workflow.

Better structure of the screen: Workflow-based design allows the user to view the "core" information regarding the customer at all times in a banner at the top of the screen. Most of the commonly used detailed information about the customer can then be viewed on logical tabs below the banner. This results in easy access to most of the customer's data and makes the system more intuitive to use.

Design screens for major call types: The 80-20 rule suggests that 80% of the calls are for 20% of the call types. The screens can be designed to optimize the functionality required for the 20% of the call types. This allows the user to navigate to as few screens as possible, thus reducing the number of 'clicks'.

Provide more information about the caller and the call: The system should automatically store information about the reason for the call. Every time the user sees the details of a customer, the system shows a list of reasons, along with times the customer had called. This leads to the user making a much better informed decision while responding to the customer's queries.

Service Oriented Architecture

Service Oriented Architecture (SOA) is a design style for creating shared, reusable, distributed services. The principal benefits of SOA includes:

- Reuse of common "business services" across applications leading to increased consistency of the user experience and data presentation
- Standardized and easier deployment, maintenance and enhancement of services
- Flexible IT infrastructure environment to cater to changing business needs

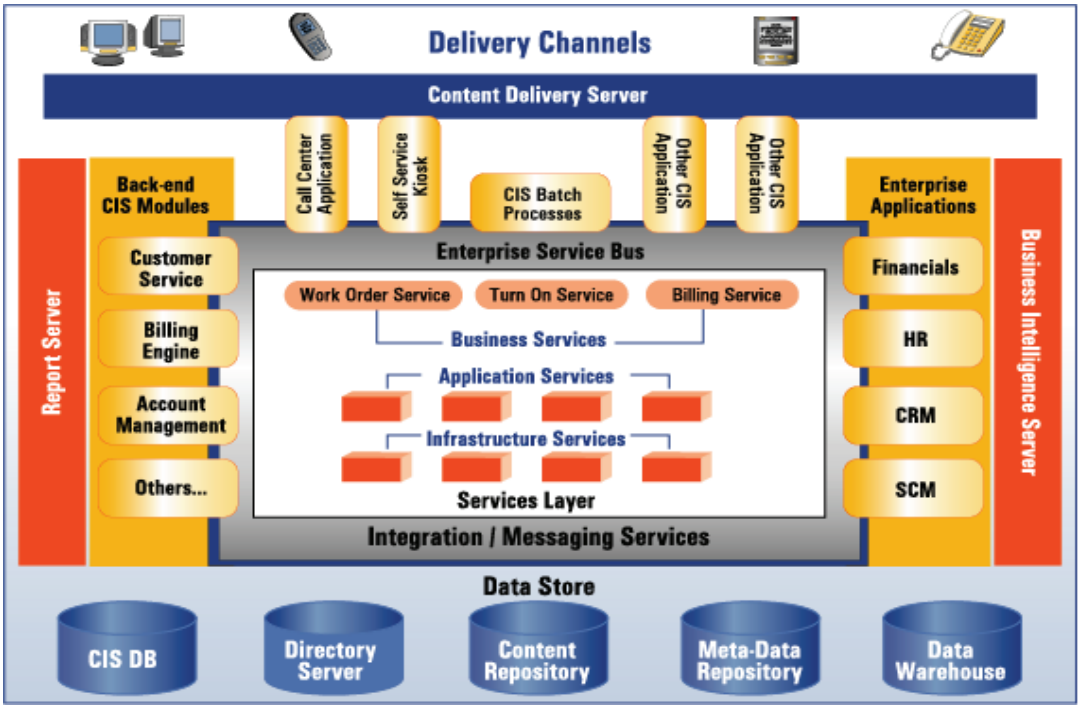

Figure-2 - Service Oriented Architecture for CIS

The overall flexibility of CIS can be improved by implementing an SOA which leverages the existing legacy/home grown system.

The logical view of the SOA implementation is shown in Figure-2.

The SOA utilizes an enterprise service bus which acts as the backbone for integration and messaging services. This architecture helps in communication across multiple applications on heterogeneous platforms. The infrastructure services provide the common technical services. The application and business services reside on top of this layer.

The business services are modeled based on business processes and thus enable a business centric approach to IT implementations. Also, only the business service interfaces are exposed to the consumers while the service implementations could be deployed in any application, both custom-built or commercial off-the-shelf, and on any technology platform. From a CIS perspective, SOA offers the following benefits: -

- SOA leverages the current investments in legacy back-end systems
- SOA allows multiple applications to utilize the same business service interfaces, thus providing consistent data to all applications
- SOA allows batch process applications to make use of the same business services, also maintaining consistent data and improving data maintenance
- SOA reduces the enhancement and maintenance costs of CIS applications

Conclusion

Our experience with CIS projects, and other similar projects, has provided us with deep insights into what goes into making the project a success or a failure. There is a clear need to thoroughly assess the current situation specific to one's portfolio of customer service processes and systems before embarking upon any CIS initiative. It is strongly recommended to establish and document a clear Customer Service Strategy and then apply it to drive the CIS Strategy. This strategic level direction from business and IT should then be applied to assess the as-is processes, systems and architectural capabilities. A list of alternative future paths can then be evaluated to discover the best way forward.

It is important to divide the problem into smaller parts and to prioritize them without losing sight of the bigger picture. In many cases a smaller, more specific and focused CS/CIS initiative is a better course of action than a large CIS replacement.

Finding the best path and drawing a clear roadmap is only the first step at the start of a long journey, albeit a very important first step. The challenges in going down that path to the right destination are numerous and would require significant project and program management capabilities from the CIS project team.

References

1. InFlux – An Infosys proprietary methodology and tool for IT solution blueprinting

About the Authors

Ananth Chandramouli (CAnanth@Infosys.com) is a Solution Manager with Infosys. He has several years of experience in technology consulting and developing IT solutions for critical business problems in various industries.

Clifton Muhammad (Clifton_Muhammad@Infosys.com) is a Case Leader with Infosys Consulting. He offers over 17 years of management and consulting experience in the Energy & Utilities industries.

Shamik Mitra (Shamik_Mitra@Infosys.com) is a Project Manager with Infosys. He has more than seven years of experience working on CIS projects for utilities in North America

Vivek (Vivek@Infosys.com) is a Principal Consultant with Infosys. He has a decade of experience in shaping CIS systems at utilities