



# Technology Trends Bringing Customer Information Technology to the Masses

By Bobby Abraham CIO, Innoprise Software, Inc.

Customer self-service, online bill presentation and payment, automated workflows, complex rating and billing..... It's a brave new world out there. The Internet revolution has set new customers expectations concerning the speed at which answers should be provided to their utility service questions. Along with escalated customer demands for better, faster service, utilities are also faced with continual changes in energy legislation, complex rate structures and the need to offer customers the expanded set of product and service offerings required to remain competitive.

It's a very real fact that business success today is highly dependent on the effectiveness of the customer information systems (CIS) being used for processes like billing, customer relationship management and service order management –

processes that are at the heart of the utility's ability to meet today's business requirements by getting the right information to the right people at the right time.

Unfortunately, the ever-present regulatory and customer care realities facing utility management today were never factored into the design of CIS technology developed many years ago at a time when utility business models were inwardly focused on internal operational processes as opposed to meeting changing customer and legislative demands. Because many utilities have invested millions of dollars in this technology and have built large, complex databases around these legacy CIS solutions, many are still trying to stretch the limitations of obsolete technology to meet the needs of a market for which they were never designed.

At a time when utilities are looking for ways to reduce operating costs while improving customer service levels, legacy CIS systems often require significant and costly technical support just to meet day-to-day operational needs. The interfaces that have been developed in recent years to keep the systems functioning are convoluted and complex, and upgrades and customization are time-consuming, thus draining both resources and profits. Furthermore, gone are the days when system maintenance expenses could simply be passed on to the customer.

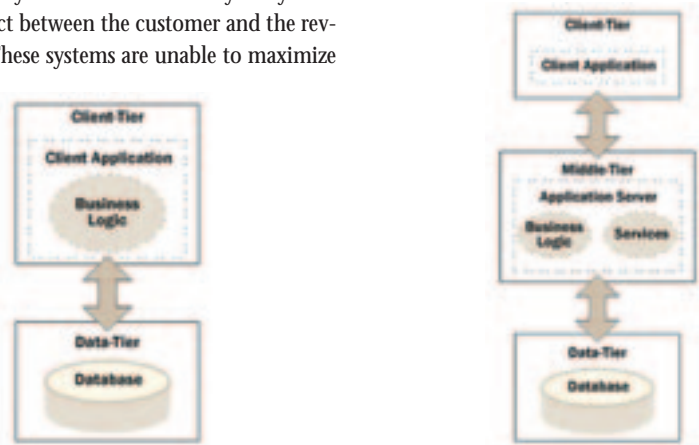
One of the most significant problems resulting from the monolithic approaches to CIS that characterized system architectures of yesteryear is the disconnect between the customer and the revenue flow. These systems are unable to maximize

billing accuracy and service reliability while minimizing customer service costs and accelerating cash flows. In an industry characterized by performance-based rates and constantly scrutinized for service efficiency, this is simply unacceptable.

## Patch or Replace – the CIS Paradox

These issues have left many utilities in a quandary. Efforts to enhance efficiency and improve customer care have focused, until now, on patching legacy systems. In recent years, however, it's become readily apparent that no matter how much effort is put into creating band-aids for these systems, they are no longer capable of providing the functionality needed in today's evolving market. When a simple request for a new FERC report requires hours of IT programming support and the need to accommodate new tariff and billing structures simply can't be met, continuing to customize and repair these aging legacy systems is becoming less and less viable, particularly as the ROI of this approach continues to decrease.

Fortunately, counterbalancing this scenario is the fact that modern technologies are dramatically changing the CIS software picture. As might be expected, the Internet has had one of the biggest impacts. An excellent solution for the integration challenges that have faced utilities seeking to bring together the data sets from the many systems underpinning customer care,



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modern Internet architectures also offer scalable, multi-channel, flexible and agile development options, thus dramatically reducing development costs and timelines. This, in turn, has brought the costs of new CIS technology down from an average cost of \$50 per meter just a few years ago to a much more reasonable \$10 - \$15 per meter today.

Internet integration architectures embracing XML, service-oriented architectures (SOA), web services, web applications servers and advances in wireless technology are taking CIS to the next level of flexibility, functionality, ease-of-use and affordability. For utilities facing challenges integrating their CIS to other applications within the utility enterprise -- for example, work management, outage management, asset management, and back-end financials -- newer technologies and applications frameworks are enabling better integration across the utility enterprise.

## From Client/Server to Web Applications Server

One of the key technology trends is the replacement of the client/server model of previous years with web-based applications servers standardized around Microsoft.NET and Java' 2 Enterprise Edition (J2EE) development platforms. The rigid architecture of the client/server model, with its accompanying rigid processes, is rapidly giving way to the flexible architectures and processes of web application servers, which, as a result, have become the platform of choice for CIS and other enterprise applications.

These platforms enable developers to connect data, people, systems and devices much more easily and in a much more straight-forward manner than ever before through the use of web services. Small, discrete building block applications that connect to each other as well as to other, larger applications over the Internet, web services allow programs written in different programming languages and on different platforms to communicate and share data through standard Internet protocols such as XML (extensible markup language) and SOAP (Simple Object Access Protocol). As a result, the primary benefit of web services comes through greater interoperability and flexibility in application development. Because they provide a more flexible, loosely coupled way of linking software applications, they allow applications to share information without being directly integrated because any application can be integrated with any other application so long as the two are web services capable.

As application servers like J2EE and .NET have become the preferred platforms for enterprise applications, the concept of a service-oriented architecture driven by web services, has become increasing pervasive. In fact, according to Gartner, "The single, most-important theme in modern application development is the service-oriented architecture." Gartner estimates that by 2008, more than 60 percent of enterprises will use SOA as a "guiding principle" when creating mission-critical applications and processes. In fact, Gartner says, "Enterprises that deploy service-oriented business applications through 2008 will realize average process productivity gains of more than 20 percent and cost savings of more than 15 percent by fusing dissimilar applications and breaking down structured and nonstructured information silos."





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In sharp contrast to legacy approaches to CIS, an SOA makes it much easier to access customer information using a blended service-delivery model encompassing telephone, Internet, self-service kiosks, as well as mobile and wireless devices.

Rick Nicholson, vice president and director of energy information strategies for leading utility analyst META Group comments, "In my mind, web services and service-oriented architectures represent the next level of software componentization and application integration." Nicholson theorizes that, "You could implement a CIS in pieces more easily using this type of an architecture. For instance," he says, "if you had a legacy CIS and needed to replace the credit collection or accounts receivable modules, this type of architecture would make it easier and less expensive to do that without wholesale replacement of the entire system."

The bottom line is that SOAs leveraging J2EE or .NET, combined with web services, enable customer management processes to obtain a single, consistent view of all customer information, whether from a local database or remote system anywhere in the enterprise. Such an architectural backbone offers powerful cross-functional capabilities that enable a wide variety of applications across the full spectrum of customer interaction to access the same data set using numerous available touch points.

Customer management, billing, work management, marketing and other customer-oriented business processes are therefore unified, customer intelligence is dramatically enhanced and integration with other applications is simplified.

This makes it much easier and faster to add new services, products and rate structures as business needs and regulatory demands change. It also provides built-in functionality for advanced features such as customer self-service, online bill presentation and payment, and complex rating and billing. It enables utilities to more easily bill customers for unlimited products, such as cable, Internet, home security and any other product or service that the utility may diversify into. Furthermore, it provides the flexibility to quickly and seamlessly accommodate each utility's evolving and unique business rules.

## Business Process Management

The standardization of application servers and web services has given rise to a set of standards related to business process management or BPM. These standards, when combined with service-oriented architectures, can create a dynamic synergism that extends the capabilities of both technologies. "Business process management is an

outgrowth of the of the enterprise application integration software trend, but with the addition of business process modeling and automated work flows," comments META Group's Nicholson. "For utilities wanting to model and manage an end-to-end business process like service order management," he explains, "business process modeling makes achieving this goal much more efficient, from the time a customer first contacts the call center, through scheduling the appointment, securing the necessary resources, dispatching the work crews, completing the job

and updating the account record."

"If utilities can overcome the cultural boundaries needed to agree to cross departmental borders and thus leverage the benefits of BPM, the ROI is potentially quite high," Nicholson notes.

## Adding Customer Analytics

Combining an SOA and new business process management standards with customer analytics and real-time intelligence is another trend that more fully enables utilities seeking a strategic advantage. "While we see more activity in this





arena in Europe because of the higher level of competition there," says Nicholson, "customer analytics and business intelligence are important technology trends among utilities seeking to better understand their customers, their behavior and how this impacts their desire for products and services."

In today's business environment, utilities need more intelligent information to stay competitive as well as to comply with regulatory directives and legislation. They also need a single view of the customer across various dimensions.

While a legacy CIS houses all data pertaining to end customers, these systems were architected as transactional systems and are not well-suited for analyzing the data they contain. While interaction with the end customer is handled through the CIS, a single view of the customer does not exist in the CIS, which in most cases is data rich but information poor. This makes it difficult to gain insights into customer behavior as users are

unable to query the data in an ad hoc manner as a means to identify patterns and analyze root causes for key issues like slow payment, overdue bills, collection potential and cross selling. In addition, today's legislation mandates that utilities today more stringently monitor their data and business practices and develop performance benchmarks.

The trend, therefore, is toward an approach to analytics based on a robust data warehousing framework that enables flexible user-defined analysis using a single view of the customer. This view combines customer information, customer account management, service account management, installed service, site meter reading, billing, payment, collection and other customer parameters.

The next step would be to create digital dashboards and reports appropriate to the needs of individual stakeholders. Such a solution allows for cross-subject area analysis, leading to a better understanding of the customer, improved customer service and the ability to create more targeted products and service offerings. It also provides the analysis tools and data required for regulatory reporting and compliance with legislation such as Sarbanes Oxley.

### Utilities are Going Mobile

Improvements in wireless networks, device technology and device-based services that have occurred during the last few years have made mobile approaches to customer care and work order management

possible, resulting in an explosion in the usage of mobile technology. Wireless solutions allow both individuals and organizations to connect to the Internet at any time, from almost any place, via wireless devices, including cell phones, personal digital assistants (PDAs), pagers and laptops. In fact, Yankee Group anticipates that the number of people using the wireless Web will reach over 200 million by 2005, and the number of people using mobile data services is expected by ARC Group to grow to 1.187 billion by 2005. Mobile solutions for customer information management are essential to allow utilities to improve field productivity and mobile workforce management, provide better customer service and respond more readily to outage situations, while keeping operating costs at a minimum.

### Summary

As the hub for customer-facing and revenue cycle processing activity within the utility, the CIS is a mission-critical enterprise application that often represents up to 30 percent of an energy company's application budget. Fortunately, the state of the art in customer information software is changing, the functional capabilities of CIS are increasing and the costs are going down, bringing CIS technology within the reach of any size utility. Innovative software, based on new standards – particularly web platforms, architectures and services – is fostering new, more efficient solutions that enable utilities to respond more nimbly to industry changes and overcome the integration challenges that have long been obstacles to achieving optimal customer service. Today's utility is seeking flexible systems that help streamline business processes and reduce total costs of ownership. The new technologies that are rapidly becoming de facto standards in design of new CIS solutions are making these goals an achievable reality. ■

### About the author

Bobby Abraham provides strategic and tactical planning for Innoprise's Next Generation product suite. Mr. Abraham is responsible for Innoprise software development and works to ensure that the myriad of software requirements of utility and municipality customers are incorporated into new versions of the various Innoprise products. Mr. Abraham also evaluates the relevance of new technologies, development methodologies and processes and how they can be best utilized by Innoprise Software. When parted from his notebook computer he can often be found rock climbing.

