

Breaking trends in information technology

Issues and Developments in Customer Information Management

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Investor owned utilities, municipal utilities and rural electric cooperatives all have one basic business imperative in common – they are faced with finding newer, better, more efficient ways to serve their customers. Government regulations mandate it. Customers demand it. Internal business drivers dictate it as a means to improve key performance indicators, and the ever-looming threat of open market access makes it an important precursor to moving from an asset-focused mind set to one focused on competitive market strategies.

There's no question that technology plays an important role in customer care. Customer information management, account management, billing, customer relationship management, work order management, asset management – the technologies that enable these processes to flow smoothly are at the heart of every utility's ability to operate efficiently and profitably.

Will the Legacy Never End?

CIS, ERP, CRM....regardless of the acronym used to describe the functionality these customer-centric systems provide, the technologies that underlie effective customer care have been a cornerstone of most utilities for more than two decades.

The good news is that utilities fully embrace the concept of leveraging IT solutions to improve customer management. The bad news is that most are still using complex and expensive legacy solutions developed many years – sometimes decades -- ago. These are large, monolithic systems built around years of incremental modifications to millions of lines of obsolete programming code like RPG and COBOL that is difficult to update and to integrate with newer technologies and applications that have entered the market in the last few years.

Because older programming languages have been long-superceded by several generations of more flexible and elegant approaches to software design, it's also becoming progressively more difficult to find programmers willing to maintain these systems, thus making them increasingly more costly to upgrade and support. In fact, a recent AMR study indicated that software maintenance costs have increased by 15 percent to 25 percent in the past five years alone.

While it's true that most of the legacy systems still in use today have added middleware and graphical user interfaces that simulate the appearance of more modern technology, it's also true that the old source code is still cranking away in the background – code that consists of numerous individual and non-integrated components that communicate only through convoluted interfaces built over the course of 5 to 20 years. A small modification like adding a new billing component or instructions to generate a new type of report can literally require many days or even weeks to program.

For more and more utilities, continuing to upgrade and optimize these aging legacy systems is becoming less and less viable, particularly as the ROI of this approach continues to decrease.

Challenges of the Evolving Energy Market

The bottom line is that the legacy solutions that utilities have used for the past two decades to manage customer information are simply unable to meet the challenges created by the evolving energy market. They can't analyze emerging business needs, offer variations in payment or financing alternatives, interface with mobile work force management systems, analyze customer information across multiple data sets or enable the various services that are needed to help today's web-savvy customers with their on-demand requests.

With factors like performance-based rates and penalties for poor service raising the stakes higher and higher each day, the need for immediate access to the data and for modern business analytics functionality is becoming increasingly critical. This is becoming increasingly important in today's regulatory environment, where the impact on energy companies of the post-Enron regulatory emphasis on reform is nothing short of monumental. Massive reforms under the SEC's Sarbanes-Oxley Act of 2002, for example, impose significant requirements affecting corporate governance, financial disclosure and the practice of public accounting.

Counterbalancing this scenario, however, is the fact that modern technologies are dramatically changing the enterprise software picture.

Technology to the Rescue

There are several technology trends that are positively reshaping the world of customer information management, perhaps the most important of which is modern Internet-based platforms and architectures, and for several reasons. For one, the Internet is an excellent solution for the integration challenges that have faced utilities for many years as they've sought ways to bring together the data sets underlying the many systems that make up the customer care equation. For another, the scalable, multi-channel, flexible and agile nature of Internet architectures have dramatically reduced development costs and timelines, the need for extensive consulting and systems integration services, and software training requirements. They've also provided the wherewithal to extend the utility enterprise and its services into the homes and offices of customers, partners and vendors.

The concept of integration lies at the very heart of customer information management, but until the advent of web-based collaborative computing, utilities frequently underestimated the time and money needed to integrate the databases, software, business processes, code sets and interfaces required to link essential corporate information. The merger and acquisition activities of the recent pass has made the challenge even more difficult, as merged companies look for ways to effectively utilize the different enterprise solutions being used by the utilities that have been consolidated. Dick Kuiper, a vice president with Meta Group, says that a large enterprise typically operates five or more enterprise resource planning (ERP) systems, and some companies are known to have more than 20.

The Internet Approach Drives the Benefits Achieved

Vendors are leveraging the integration capabilities of the Internet in many ways. Some are simply adding browser-based interfaces in place of native clients so that users can access the system from any computer linked to the Internet. It's important to note, however, Meta Group's Kuiper says, that there are differences in how completely vendors have embraced Internet functionality, as many browser-based adaptations to the Internet are relatively superficial when compared to those technologies that have made a fundamental, underlying shift to Internet integration architectures embracing XML, web services, web servers, applications servers and other Internet standards. As always, when purchasing new technology, the catchphrase is caveat emptor – beware – or be aware – of what you're buying and the platforms, architecture and code that are at its foundation.

How About a Little Java?

As the enterprise software industry has evolved, the platforms on which applications are built have evolved with them. Just as relational databases made proprietary single-tier applications obsolete, standards-based application servers are now the accepted best practice for new applications development. The client-server model that characterized the previous generation of systems is rapidly being replaced with applications servers standardized around Microsoft.NET and Java™ 2 Enterprise Edition (J2EE).

Both provide a component-based approach to the on-line design, development, assembly and deployment of enterprise applications, enabling utilities to reuse components created for one application in many additional, quite different applications.

Utilities seeking to extend their reach, reduce costs, and lower customer response times are typically faced with the need to combine existing enterprise systems with new business functions that deliver services to a broad range of users.

For several reasons, these services are typically architected as distributed, multi-tier applications, including clients on one end, data resources on the other, and one or more middle tiers between them where most application development is done. It's middle tier that implements the new services which integrate existing systems with the business functions and data of the new services, shielding the client tier from the complexity of the IT network and taking advantage of rapidly maturing Internet technologies to minimize user administration and training.

J2EE and .NET reduce the cost and complexity of developing these multi-tier services, resulting in applications that can be rapidly deployed and easily enhanced as the enterprise responds to competitive pressures. This simplifies the ability 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, plus much more robust customer analytics, trend analysis and forecasting capabilities.

Please Pass the Soap

As the platforms evolve, this presents a challenge for developers of customer management software because it means that the applications themselves require significant change or complete revision. Many vendors who built their software on client-server platforms have developed integration or co-existence strategies and in a few cases have announced an intention to rebuild on new platforms. In addition, there are a handful of software developers who have already built totally new systems from the ground up using these standards as their basis.

As application servers like J2EE and .NET have become the preferred platform for enterprise applications, the concept of a service-oriented architecture (SOA), driven by the advent of web services, has become increasingly pervasive. In fact, according to Gartner, "The single, most-important theme in modern application development is the service-oriented architecture," estimating that by 2008, more than 60 percent of enterprises will use SOA as a "guiding principle" when creating mission-critical applications and processes.

While the concepts underlying an SOA are not new, the ability to fulfill its many promises has been unlocked with the advent of web services, which are new. Encompassed by platforms like J2EE and .NET, web services are built on top of recognized, respected, platform-independent protocols like HTTP, XML, UDDI, WSDL and SOAP, the combination of which makes a service-oriented architecture both realistic and highly attractive.

In general, SOA represents an evolution from traditional tightly coupled application connections—including common object request broker architecture, or CORBA—to loosely coupled ones made possible by web services. Tight coupling makes it hard for applications to adapt to changing business requirements, as modifications to one application force developers to make changes in all the applications connected to it.

Loose coupling means that applications don't have to "know" the technical details of another application in order to talk to it; by using standard interfaces and focusing on services – or groups of software components that carry out business processes - SOA makes the underlying technical complexity of the IT environment transparent to the end user. Think of it as translating a scientific explanation of the human circulatory system to a child; you can explain that the heart pumps blood throughout the body without getting into detailed explanations of anatomy, blood flow and oxygenation.

SOAs can help solve the application integration problem, reduce the associated costs, enable better support and more rapid customization, address issues surrounding reliability, and bring the concept of multi-channel communication with customers, vendors and partners to life.

The bottom line is that SOAs leveraging J2EE or .NET, combined with web services, J2EE, 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. The benefits for the customer include improved customer response times, faster customization, simplified and less expensive maintenance and lower integration costs. Other benefits include both operating system and hardware independence, increased scalability, greater flexibility and the ability to continually modify and add applications easily and inexpensively.

Customer Responsiveness in the Field

One other related trend in customer information management is the extension of applications into the field via wireless networks and handheld devices, which are making it possible to connect users such as field-sales reps, field-service agents, and traveling executives. New technologies use wireless peer-to-peer communications to enable real-time data exchange not only between the corporate customer information system and personnel in the field, but also among any connected devices on the network, ranging from cell phones and wireless PDAs to PCs and servers.

The more advanced of these solutions are communication network independent, allowing customers to use their preferred wireless carrier, and operate over a virtual network that enables mobile workers to travel freely within a service territory, directly accessing and interacting with critical customer and asset data, as well as with other field devices and business systems transparently while maintaining data security.

Applications supported by mobile devices operate and communicate in real-time when connections are available, and automatically switch to a synchronization or queuing mode if disconnected without disrupting the end-user or requiring special action. In this manner, work productivity is enhanced by enabling field workers to download service orders from the enterprise system, schedule the work day relative to the workload, update the enterprise system real-time with service order status information, query it additional information, and wirelessly transmit service order completion information back to the main office.

Summary

Industry analyst UtiliPoint notes that since 2002 the number of utilities that are in the market for a new CIS has grown dramatically. This year 15.9 percent of its market survey respondents indicated that they are in the market for a new CIS, and what they're looking for is increased flexibility, ease of use and increased functionality. In addition to the standard functionality included in a traditional customer information system, utilities are looking for technology that enables them to provide customer self-service, online bill presentation and payment capabilities, automated workflow tools and complex rating and billing capabilities.

Luckily, the state of the art in customer information software is changing. Innovative software, based on new standards – particularly web platforms, architectures and services – is fostering new, more agile and 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.