Modernizing Utility Billing for the Digital Transformation

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Summary

Catalyst

The meter-to-cash process is at the heart of the utility industry. Billing systems are large, mission-critical, and expensive to maintain. Their replacement can also be a risky and costly affair, which explains why many utilities, particularly those with a million customers or fewer, still soldier on with 20- or 30-year-old legacy systems. This report details the forces driving rapid and disruptive change in an industry that has changed little in decades.

Ovum view

The utility industry has already changed dramatically. The most advanced utilities are well into their digital transformation projects; however, the majority of the industry is on the cusp of entering this new world. Smart metering, smart grid technology, smart home services, and myriad other new revenue streams create more complex relationships with their customers and require more complex, flexible infrastructures to support new business models.

The industry has already entered the most disruptive decade it has ever experienced. We believe that utilities have to change now to prepare themselves for 21st century utility services. For too long, utilities have adopted an "if it ain't broke, don't fix it" mind-set to their billing and CRM systems. However, a utility's customers, regulators, shareholders, and competition will not wait. Markets are changing faster and more dramatically than ever. This transformation will be primarily digital; utilities need the right technological infrastructure to develop the new products and services that will underpin new business models.

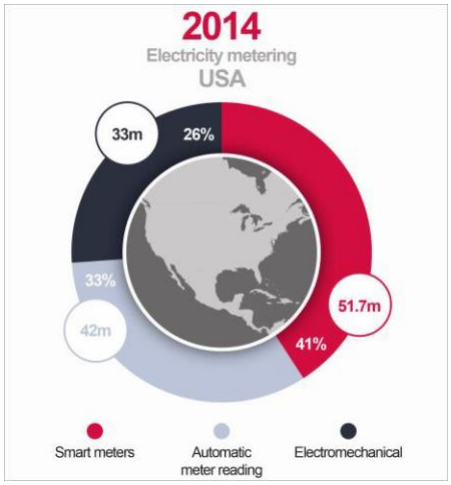
However, too many utilities see these new services as threats rather than opportunities. And too many are waiting for regulatory changes before they act to improve customer service. The biggest risk to utilities is that they procrastinate too long and let more agile competitors and new entrants capture these new markets. If this happens, they will be mere bystanders in the digital transformation and become a footnote in history books.

Recommendations

Recommendations for enterprises

There is little argument that utilities will deliver better customer service with better billing systems. Errors will be minimized, while the flexibility a new system brings enables the billing process to keep pace with sales and product development. Commercial and industrial (C&I) customers that are currently processed manually will benefit immediately from the automation of these processes, although we advise cautious pragmatism when adding the most complex C&I customers.

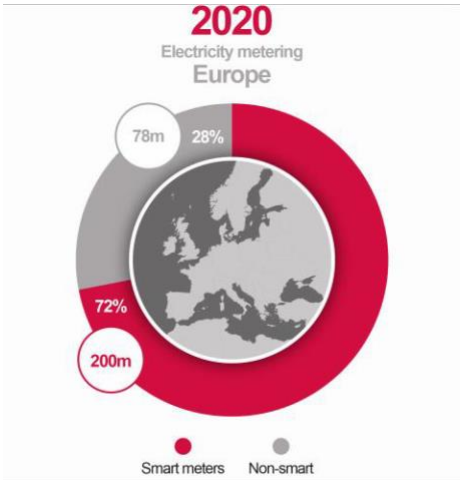
Utilities will have to cope with an increasingly complex residential market. Smart metering will be a fact of life for the majority of utilities by 2020; the five years that follow will see utilities and other enterprises bring to market innovative new services built on, or complementary to, the smart meter platform. The European Union estimates that by 2020 there will be close to 200 million smart electricity and 45 million smart gas meters, equating to more than 70% of all electricity customers. At the end of 2014 there were 51.7 million residential smart electricity meters installed in the US, and a



further 42 million meters with automated reading functionality using one-way communications; 33 million customers use older, electromechanical meters with no communication technology. Time-of-use and critical peak pricing tariffs bring some of the complexity of C&I billing into the mass market.

However, smart metering is not the only disruptive influence. Utility billing systems will have to cope with many new services, which legacy systems were not designed to handle: prepay billing, smart home services, prosumers, electric vehicles, residential power storage, and non-utility services such as broadband or pay TV.

Utilities in different markets will adopt these new services at different times. Not all will take everything. However, all utilities will have to do something; no company can bury its head in the sand and deny that the industry is changing. Utilities must plan for the long-term future, paint a picture of what their business will look like in 10 years' time, and develop roadmaps that plan the journey. They must also create the right infrastructure to support their future business. Figure 1 details some of the key reasons why utilities should think about upgrading their billing systems sooner rather than later.



The telecoms industry is some way ahead of utilities in terms of billing transformations. Early movers have reaped the benefits of competitive differentiation through the use of modern business support systems (BSS). Their competitors are now accelerating their own BSS upgrades to close this functional gap. In a similar vein, we believe modern billing systems create a competitive advantage between utilities that have them and those that do not.

Automating meter-to-cash processes improves the customer experience and increases operational efficiency

C&I billing requires flexibility to keep up with the pace of product development

Throughout their existence, utilities have struggled to manage relationships with their most valuable customers. While residential customers have relatively simple requirements and pay just one tariff, C&I customers are far more complex. The largest energy users will have many different properties, located in different areas, with different needs for power and different distribution and transmission charges.

The situation is further complicated by competition. Many countries have introduced competition to the C&I market, while limiting the ability or incentives to switch in residential markets. Competition for the

largest energy users is cutthroat in many markets, and these potential customers understand their own worth.

The North American market historically lagged the liberalization of European markets, but around 30% of US states have now introduced competition. The Annual Baseline Assessment of Choice in Canada and the United States (ABACCUS) gives a detailed account of what this means for power customers. There is no incentive for monopoly utilities to provide much flexibility or innovation in their C&I-focused products. However, where competition has been introduced, C&I customers are able to negotiate customized energy contracts to suit the power requirements of their business and meet the varying levels of sophistication of different power buyers. C&I customers can adopt tariffs that are pegged to the quarter-hourly movements in the wholesale market, or choose a simpler tariff that reduces exposure to market volatility.

Figure 1: Drivers for utility billing transformation

Source: Ovum

Most large companies will employ either an internal energy manager or an external energy broker to negotiate contracts with power suppliers for an entire property estate. Energy managers/brokers are far more knowledgeable than residential customers about the power markets, and are not afraid to change providers if a better deal is offered. As a result, C&I switching rates are higher than residential in competitive markets.

C&I customers will negotiate complex tariffs: it is now common for C&I retail tariffs to be pegged to wholesale market prices. And different properties will likely be on different tariffs. For example, steel

or water companies are prime candidates for demand response programs, where they are paid to stop using power during peak consumption periods. Historically, only their furnaces and water pumps are turned off; office buildings, due to their relatively low power consumption, were of less use to network balancing. This complexity is only going to increase with demand response programs targeting commercial and heavy industrial power users. Relationships become yet more intricate when C&I customers install solar and export power as well as consume it.

The sophistication of the C&I market and competition for the largest customers combine to create a great deal of complexity in C&I contracts and the billing process. Each C&I customer has specific requirements, which necessitates personalization in the quotation process and close integration with billing systems. Unfortunately, legacy tariff management and billing systems were not designed to cope with this level of complexity. IT systems cannot keep up with the speed with which sales, marketing, and product development teams must move to remain competitive. As a result, C&I billing is supported by many manual processes, and where manual processes are introduced, inaccuracies typically follow.

Residential markets are undergoing a period of unprecedented disruption

The residential billing process is experiencing a similar increase in complexity. Historically, utilities may have offered just one or two tariffs, and billed on meter readings that were collected just once a month, quarter, or year. In the technological transformation of the 1980s and 1990s, utilities of all sizes deployed billing systems – often developed in-house – to meet these simple requirements. While most larger utilities have replaced these aging systems with new billing applications, many smaller organizations still rely on 30-year-old, heavily modified legacy systems. Billing replacements are never done for fun: they are expensive and high-risk. Smaller utilities' tighter budgets and small IT teams magnify the risk, leading to a greater reluctance to upgrade billing systems. However, the market is starting to move.

Legacy billing systems become a risk to the business

The aging workforce has a direct impact on business efficiency: the only IT staff with working knowledge of legacy billing systems are nearing retirement. The software is typically poorly documented, creating a black-box system that few staff, if any, fully understand. Many organizations believe the risk of running a billing system without these people is too great to bear. Others may opt to train a new generation of staff on the legacy system; however, we believe this investment is better made in a new billing system with more intuitive and configurable user interfaces.

Power markets are changing dramatically, and utilities have to adapt to far more complex customer relationships. Rising charges and environmental concerns have increased consumers' attention to their utility providers. Customers now expect a level of service they get in other areas of life, and regulators are responding by forcing utilities to improve the customer experience.

Smart metering requires smart billing

Smart metering promises to increase this complexity significantly, because it enables much more flexibility: time-of-use tariffs and critical peak pricing are designed to deter customers from using power at specific times of the day, and rely on the ability to bill a customer at different rates. Some utilities are investigating residential tariffs that are directly pegged to wholesale markets. Others are working with third parties to create energy markets in which residential customers can buy power from

renewable generators in realtime. Smart meters can also be used to automatically switch a customer to a prepay contract; few countries use analogue prepay meters, and their billing systems reflect this with a lack of prepay functionality.

Legacy billing does not support new product development

While smart meters create enough disruption in the meter-to-cash process to necessitate the replacement of legacy billing, it is not the only factor. Historically, utilities' shareholders could always rely on GDP growth to drive increasing demand for power, because the two were inextricably linked. However, in the past few years there has been a decoupling of power demand (which has remained flat) from growing GDP. Utilities have to grow shareholder value in different ways: through efficiency savings and new revenue streams.

Competition in many markets has caused a flood of innovation in tariffs, offering a range of deals that include discounted two- or three-year lock-in periods or stepped tariffs that charge customers higher rates the more power they consume. The ABACCUS report mentioned in the previous section details how, during a five-year transition period to domestic competition, the number of residential products in the Texas market grew from 11 in 2002 to 90 by 2006. The figure has since more than trebled to 322 as retailers create new products to attract customers from competitors.

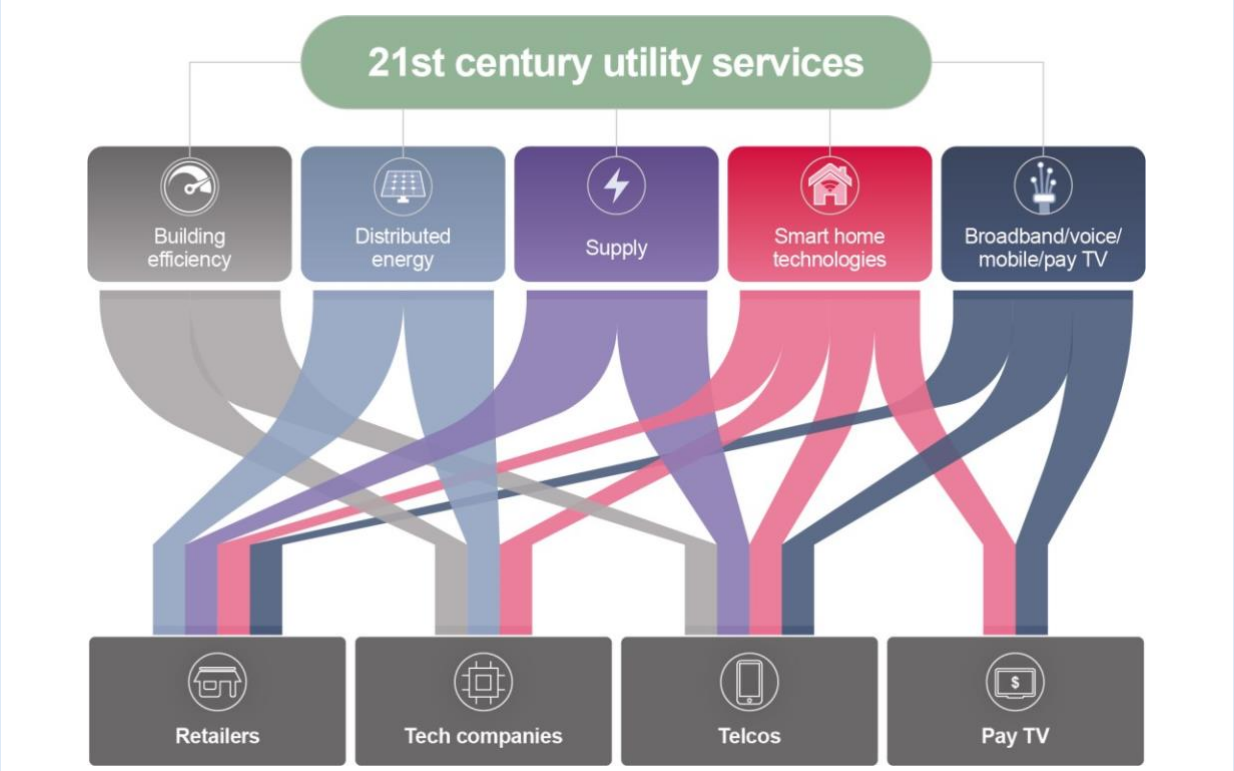
Over the next decade, residential power consumption will change significantly. Residential customers with rooftop solar will become producers as well as consumers of power. Households with electric vehicles and heat pumps will consume much more power than those without. Electric vehicles can also be recharged away from the home and may be billed in a similar way to mobile roaming charges. Residential power storage, although in its infancy, could radically change how much and when a customer draws power from the grid.

Services are becoming as important as supply. Utilities have already started selling energy services to customers, such as smart home technologies – thermostats, appliances, lighting, and plugs – which are sold as a subscription or one-off payment rather than billed by consumption. Others now offer services outside of the traditional utility business model. Power, gas, and water services are being augmented with broadband, fixed-line, and mobile communications.

The threat from new entrants is being felt for the first time

Utilities are not the only companies investigating opportunities in the connected home; we believe that the greatest competitive threats to utilities currently lie outside of the industry. Figure 2 shows a number of different industries that already offer the same services utilities currently target. The telco industry experiences much greater competition for customers and growth is driven by bundling different services. These bundles currently focus on telecommunications and pay TV services, but some organizations are investigating the option of adding energy supply. The fact that some utilities now offer some of these telco services could well accelerate telcos' entry into smart home services and energy supply. Given that a handful of utilities now sell telco services, it is reasonable to expect a response from telcos. A handful already offers utility services, and we expect this number to increase.

Figure 2: New services mean new competition



Source: Ovum

Digitization enables innovative new business models

The increasing complexity of the energy market and the growing threat of competition are forcing the industry to change much more quickly than it is used to. The next decade will be the most disruptive in the history of the utilities industry, and not all will survive. There is a lot happening throughout the value chain, but there is one common factor that underpins all of the new services and technologies: data. In no other industry is the term digital transformation more relevant. One of the primary objectives for utilities' future success is how to unleash the power of new data created across the value chain, from distributed renewables generation and smart grids to smart homes.

Smart technology lays the foundation for new services, but these services will rely on the use of existing and new data in innovative ways. For example, data from smart meters will give insights into how and when a customer uses power. These customers can be offered tariffs to meet their particular lifestyles, or relevant smart home services such as smart thermostats or security.

Automation of processes improves CX and business efficiency

Product development will become a race between competitors to use data in new ways to create products and services that are relevant to their customers. Not every idea will be converted into a product, and not every product will become a commercial success. Failure is intrinsic to innovation; unfortunately, neither failure nor innovation is intrinsic to the utilities industry. Utilities have to learn how to fail: they have to expect failure, they have to fail fast, and they have to learn from past mistakes. And they need the right infrastructure to support innovation: business change requests have to be delivered quickly and efficiently so that product development teams can move from one project to another with little trouble. Of course, flexibility and adaptability are not just requirements for

established utilities. These recommendations are as relevant to new entrants as they are for 100-year-old companies.

We have already discussed how utilities have historically struggled with complex billing in C&I; this complexity is starting to creep into residential billing. Utilities have to strip out friction in their business processes, particularly across the meter-to-cash process. A flexible infrastructure will not only enable utilities to bring new products to market faster than their competitors, but also to better manage customer communications during this period of dramatic change and prepare for future possibilities.

For example, mobile payments have revolutionized some industries, although the payments process in the utilities industry has yet to fully embrace these new technologies. However, it is a logical progression for utilities to offer customers different payment options. This progression is made more likely by recent changes in utility services, which bring additional complexity to the customer relationship and the billing process. New payments technologies can remove much of the friction in the meter-to-cash process, but the majority of utility companies do not have the necessary infrastructure to support flexible payment options.

Legacy CIS is a huge barrier to CX improvements

Utilities must unshackle themselves from legacy billing

Legacy billing systems are the biggest barrier to a utility's digital transformation. Yet legacy still pervades the industry, particularly in the mid- and lower-tier. We have seen how legacy systems were not designed to accommodate these new business models, incorporate complex charging structures, or charge for new products and services that are not billed based on consumption. With legacy infrastructure in place, utilities cannot fail fast or cheaply, and cannot keep up with more agile companies.

Utilities with fewer than a million customers cannot afford a rewrite of their billing systems each time a new product is developed; replacement with an enterprise alternative can be expensive, and there is a strong risk that specific, existing business processes will be lost during the migration. It can take up to two years to back-fill this functionality gap through post-implementation customization and configuration.

The current challenge for utilities is to unshackle themselves from their legacy systems, without losing existing functionality, to allow much more flexibility for future requirements.

Telcos are already undergoing transformation in billing

In an industry as historically conservative as utilities, it should come as no surprise that other industries are more advanced in their digital transformation and billing upgrades. The telco industry is one of these industries, and its business models are similar to those of utilities. The critical difference is that telco billing systems (known in the industry as business support systems or BSS) currently have much of the functionality that telcos, and, critically, utilities require for future innovation.

Telcos are rapidly diversifying their products and services by offering multi-play and digital services and personalized pricing for customers. However, legacy BSS requires complete transformation in order to support these new services. Like the utilities of the near future, telcos must be able to quickly launch or tear down services to respond to market demands in near realtime. They must also be able

to charge for multiple services on a single bill, be creative with pricing for services, and manage a growing number of third-party partnerships. Legacy BSS infrastructure is too rigid and complex to support the requirements of these and similar services. Many telcos are currently unable to charge for multiple services on the same bill, and they experience revenue leakage stemming from legacy partner settlement systems. BSS systems are incapable of charging for multiple service and subscriber types in realtime. These systems are not only expensive to run; they also inhibit innovation, because they require a significant amount of time to get new products and services to market.

Restructuring tariff systems is a top revenue management priority for telcos over the next year to manage regulatory changes to roaming charges. They are investigating the ability to offer app-based pricing, day passes, and convergent and realtime charging capabilities.

Telcos have recently moved away from a "best of breed" strategy that selects the best products from multiple vendors. Instead, they now minimize the number of vendor contracts by selecting an end-to-end BSS vendor at a cost-efficient price.

Flexible delivery models drive enterprises to the cloud

Telcos are also showing interest in cloud delivery models for their BSS systems (or at least elements of the stack). While utilities display more reticence than enthusiasm for cloud, there is definitely an uptick in the use of cloud by the industry. While privacy, security, and financing issues are still significant barriers to cloud adoption for utilities, a growing number of them see the benefits of cloud outweighing the negatives.

We usually see companies migrate to cloud during transformational projects. Old data center hardware is retired along with the software it previously hosted, and new applications are deployed in a private or hybrid cloud environment, freeing the organization from the capital cost of new hardware and its long-term maintenance.

However, not all cloud-based billing systems are the same. Early adopters of cloud-based billing have been smaller utilities that subscribe to an out-of-the-box billing system. The vendor offers its utility customers a competitively-priced SaaS-based billing solution; the fee charged covers all necessary maintenance and upgrades. However, these vendors will typically restrict the amount of customization that can be done, because customization increases application maintenance costs. Utilities seeking a cloud-based billing system should avoid these "vanilla" SaaS deployments that limit functionality. Instead, they should identify systems that can be configured to meet specific business requirements now and in the future.

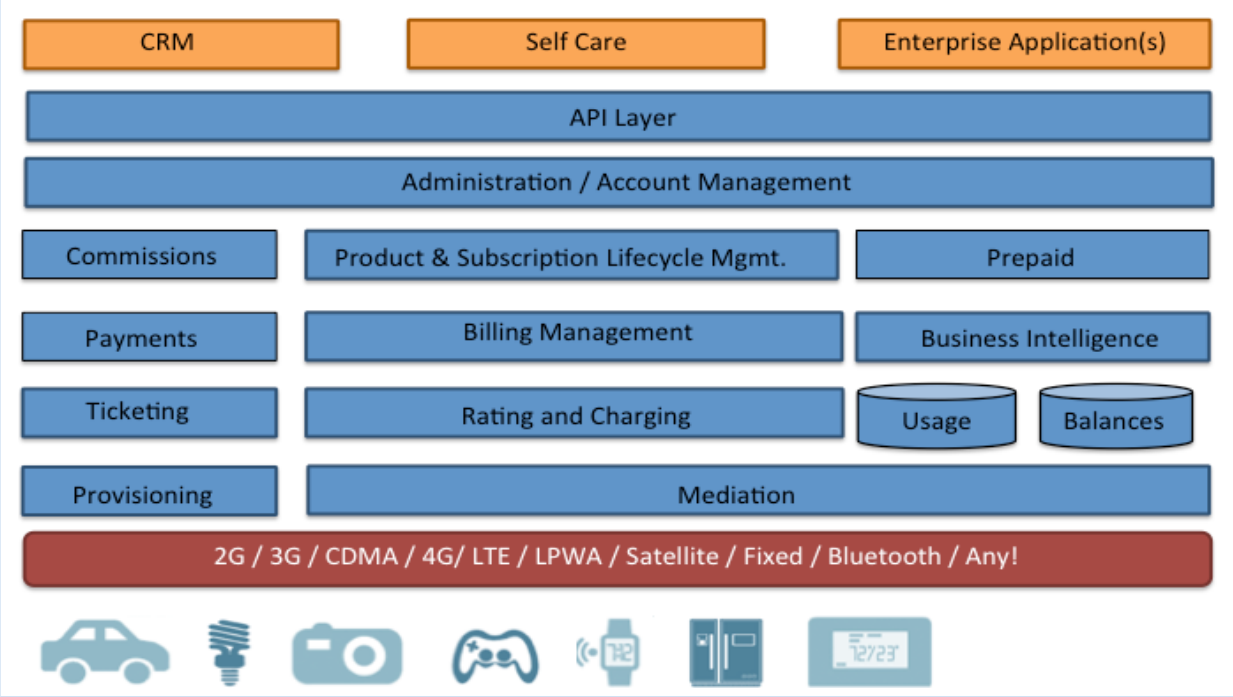
LogiSense Corporation – Powering the Usage Economy

In today's digital world, flat-rate or subscription billing systems can leave customers feeling cheated and frustrated – either because they have paid for more than they need, or because they want better or more specialized services than what a simple flat rate system can provide. Many companies are leaving money on the table by not having the agility in their back-office systems necessary to maximize their business.

LogiSense believes we have entered the Usage Economy, a dynamic convergence of subscription and usage-based billing models in which service providers that can monetize in realtime any triggered event in the connected world will gain significant advantages.

Through its flagship platform, LogiSense enables service providers, whether connecting users, devices, systems, or machines, to realize competitive market advantages and maximize efficiency with today's more flexible realtime usage rating and billing platform.

Figure 3: LogiSense billing solution platform



Source: LogiSense

Product highlights:

- Supporting complex B2B, B2B, and B2B2X subscription and usage-based models
- Accurate, clear invoices for a multi-service, multi-rate offering.
- Minimized human touch through automation and lifecycle management.
- Flexible integration with common ERP and CRM systems.
- Accelerated revenue growth through rapid integration of new services.
- Tokenized payments that provide strict security controls over subscriber data.
- Cloud deployments – focus your internal resources on value-add over maintaining infrastructure.

Appendix

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Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum's consulting team may be able to help you. For more information about Ovum's consulting capabilities, please contact us directly at consulting@ovum.com.

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