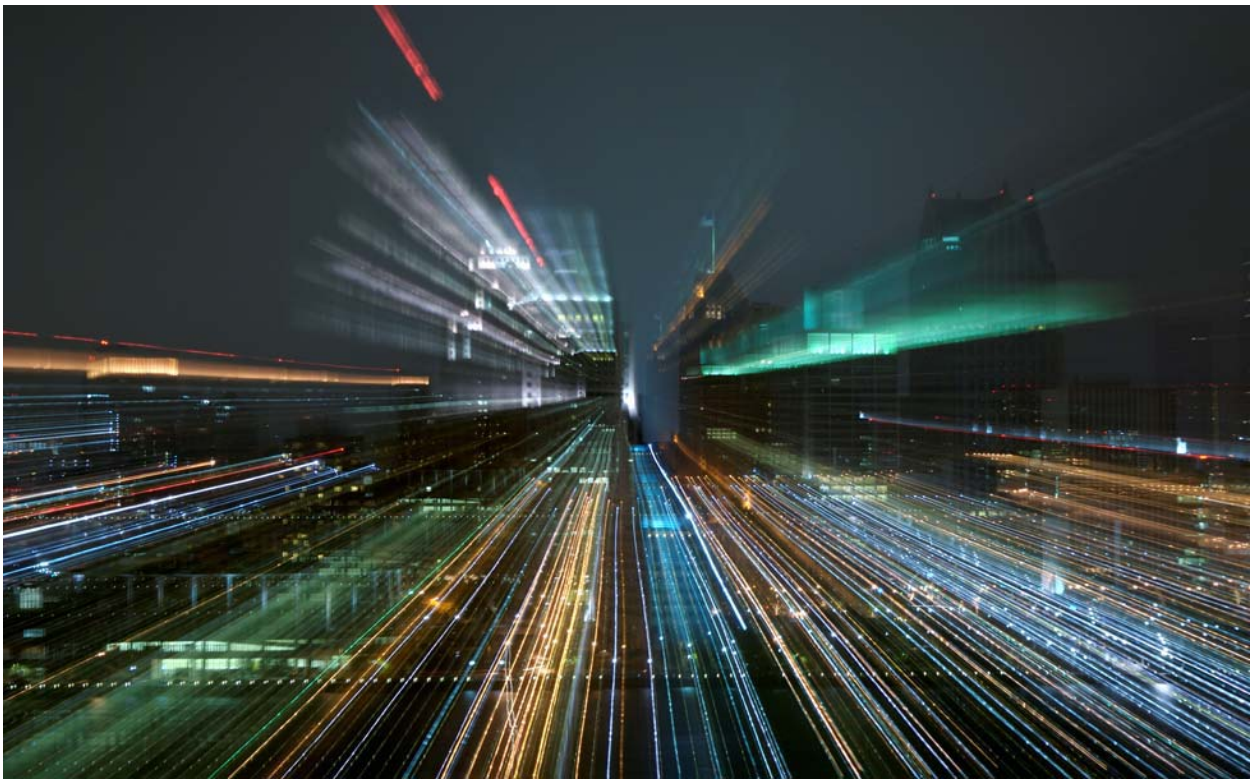
Dynamic Infrastructure

Client Success Stories



February 2009

Volume One

A Dynamic Infrastructure

Delivering Superior Business and IT Services with Agility and Speed

- Recently, IBM unveiled our Smarter Planet initiative. Simply put, IBM understands that as the planet becomes smarter – more interconnected, instrumented, and intelligent – businesses, governments and institutions have the potential to link all the resources together with unprecedented freedom.

- What this means is that, for the first time in history, the digital and physical infrastructures of the world are converging. Computational power is being put into things we wouldn't recognize as computers. Indeed, almost anything can now become digitally aware and networked.

- When we launched the New Enterprise Data Center strategy a year ago, we talked about virtualization and consolidation, energy efficiency, business resiliency, information infrastructure and service management. As part of that conversation, we talked about how companies move along a spectrum of transformation toward becoming dynamic.

- As we see the true potential of a smarter planet, we see that the IT infrastructure moves beyond the data center to include much more. We're a part of a world in which real-time intelligence requires something more dynamic from the infrastructure. And the infrastructure goes beyond the data center into every aspect of the way people, businesses, and governments work – across industries -- and how they interact with technology in that process. IBM continues to focus on transforming infrastructure to be more dynamic – to help deliver superior business and IT services with agility and speed.

- Only IBM offers the solutions, tools, expertise and broad network of skilled partners to retool the world's business and IT infrastructure and help you move rapidly to a more dynamic infrastructure that provides a cost effective, high performance, secure and resilient model for delivering superior business and IT services with agility and speed.

A Dynamic Infrastructure –

Benefits:

- **Improve service**
  In an effective business-driven service delivery model, all assets—and the people who support them—are integrated, optimized and managed holistically to respond with agility and speed to changing business needs. For organizations seeking to deliver differentiated service, it is possible to see, control and automate the contributions of individual assets toward simplifying complex environments, increasing operational efficiencies, and accelerating delivery of innovative services.

- **Reduce cost**
  Reduce cost not only to drive down costs, but to use dollars better. Technologies such as virtualization and consolidation with optimized systems and networks, energy efficient technologies, integrated service and systems management, readily available information, standardized software and operational policies can all help create a cost-effective dynamic infrastructure that is highly optimized to get more out of existing assets and be highly responsive to ongoing demands of the business and the marketplace.

- **Manage risk**
  In today's fast-paced world, an integrated end-to-end infrastructure resiliency and security capability is needed to instill trust with users who require real-time access to confidential, critical data. By enhancing security and resiliency, the business and IT underpinnings become more responsive and better prepared to provide information and data protection, and a plan for meeting and responding to regulatory requirements for security and business resiliency.

Dynamic Infrastructure Initiatives

7 Ways to Accelerate Development of a Dynamic Infrastructure

Implementing a dynamic infrastructure is comprised of seven key initiatives that address specific client pain points. The initiatives are not sequential steps for building a dynamic infrastructure; rather, each initiative can help start a dynamic infrastructure conversation with clients, facilitate their understanding of a dynamic infrastructure, and accelerate their migration to it. Together, the initiatives represent IBM's holistic approach toward enabling clients with an infrastructure that is intelligent, secure, cost-effective, and just as dynamic as today's business climate.

Each of the initiatives is defined below.

Service Management

IBM Service Management delivers a consolidated set of solutions which address the needs of seven critical buyer segments. Each segment delivers best of breed solutions for the target audience, and the segments integrate together to deliver the most powerful integrated management solution available. Whether a customer wants to manage infrastructure, applications, services, software, hardware, networks, physical assets, service levels, storage, security, business compliance or anything else, ISM is the solution. At the highest level, ISM is about delivering visibility, control, and automation.

Asset Management

IBM Tivoli's Asset Management solutions provide customers with visibility, control and automation of all aspects of managing both IT and non-IT assets. These solutions help manage the IT and non-IT asset lifecycle to lower cost, mitigate license and regulatory compliance risk, and better align assets with business goals.

Virtualization

IBM Virtualization technologies and solutions can help consolidate IT to reduce overall IT costs and increase the utilization of existing IT resources. Virtualization enables you to see and manage computing resources in ways that offer more flexibility. With virtualization, you have a logical rather than a physical view of data, computing power, storage capacity, and other resources.

Energy Efficiency

The IBM Energy Efficiency Initiative encompasses a comprehensive set of capabilities ranging from best practices in energy efficiency, to innovative power and cooling technologies, to eco-friendly asset disposal services. IBM's Energy Efficiency solutions, skills, and services can help transform your customer's data center and help them get the maximum compute power from the least power consumed---all without impact to performance.

Business Resilience
IBM is committed to investing in - and bringing to market - solutions designed to keep our clients' IT environments resilient with the increasing demand for 24x365 availability. IBM leadership in delivering world-class application availability and overall business resilience has been over 40 years in the making. With integrated availability features in servers and storage as well as availability management tools and services, no one is better able to bring availability technologies to your clients's IT infrastructure.

Security
IBM Security solutions deliver the full breadth and depth of capabilities that enable organizations to take a business-driven, holistic approach to security, compliance and risk management in alignment with an IT governance framework, supporting the secure delivery of services with speed and agility in the dynamic infrastructure.

IBM can empower organizations to dynamically monitor and quantify security risks, to better understand threats and vulnerabilities in terms of business impact, to better respond to security events with security controls that optimize business results, and to better quantify and prioritize their security investments.

Information Infrastructure
Organizations can maximize the benefits of the information explosion by developing and implementing an information infrastructure strategy that aligns with business goals. A comprehensive strategy not only addresses governance, risk and compliance concerns, but also helps streamline operations to deliver new levels of economics for increased efficiency and improved capacity. IBM Information infrastructure solutions are designed to help you manage the information explosion and address challenges around information compliance, availability, retention, and security. This will lead your company toward improved productivity, service delivery and reduced risk while streamlining costs.

Table of Contents

Allied Irish Banks strengthens its position in Europe through core bank transformation

Overview

- ***Business Challenge***
  With competition and regulation increasing, Allied Irish Banks—Ireland's largest bank—needed to become more agile and cost-effective in serving its retail customers to remain a major player in the European banking market. Its aging and rigid core banking systems posed a significant barrier.
- ***Solution***
  AIB embarked on a complete transformation of its retail banking platform, with impacts extending from the heart of the bank's core processes out to hundreds of branches. The new system provides a quantum improvement in speed to market and fundamentally changes the bank's cost model.
- ***Key Benefits***
  - *Faster time to market with new banking products and services*
  - *Major reduction in time required and cost of regulatory compliance*
  - *Improved ability to offer targeted services through a portfolio view of the customer (not account-centric)*
  - *Improved cost/income ratio through lower computing and IT support costs*
  - *Improved ability to support rapid organic and acquisition-driven growth with a scalable, low-cost core banking infrastructure*
  - *Faster and lower-cost integration of acquired banks*

Headquartered in Dublin, Allied Irish Banks (AIB) offers a wide range of personal banking services, including loans, credit cards and mortgages; insurance products, such as home, travel and health insurance; life assurance and pension plans; and corporate banking services. With operations in Ireland, Poland, UK and the United States, AIB employs more than 25,000 people worldwide in more than 750 offices.

Over the past several years, the European banking market has been in various stages of flux, driven by changing economic, political and regulatory structures, as well as the forces of competition. The result has been a gradual yet steady change in the market's structure, with consolidation and cross-border expansion becoming the rule. Today, however, European banks stand on the threshold of a new phase of this evolution, with the pace of change accelerating. The catalysts are many. One is an increasing tide of regulation within the European Union, exemplified by Basel II, which addresses

Business Benefits

- Faster time to market with new banking products and services
- Major reduction in time required and cost of regulatory compliance
- Improved ability to offer targeted services through a portfolio view of the customer (not account-centric)
- Improved cost/income ratio through lower computing and IT support costs
- Improved ability to support rapid organic and acquisition-driven growth with a scalable, low-cost core banking infrastructure
- Faster and lower-cost integration of acquired banks

> *"We expect 80 percent of the project's payback to come from faster speed-to-market and the ability to respond rapidly to regulatory changes. The remaining 20 percent will come from reductions in cost, increased efficiency and enhancements to straight-through processing."*
>
> – *Steve Meadows, COO and Director of Operations and Technology, Allied Irish Banks*

banks' risk management practices, and SEPA (Single Euro Payments Area), which creates a common, borderless zone in the EU for electronic payments. Another is the broad trend toward banking market liberalization, which is changing the nature of competition in Europe by encouraging banks to expand outside their borders while at the same time strengthening their home market operations. The opening of markets is also spurring the ongoing consolidation of the European banking sector, with a good deal more consolidation—especially through cross-border mergers—expected in the future.

As with any market in transition, Europe's evolution will produce winners and losers, with the main discriminating factor being the ability to adapt rapidly to this changing landscape. This means having the agility to keep up with not only the challenges of changing regulatory requirements, but also the opportunities created by changes in the marketplace—with the turnaround interval measured in days, not months. Ultimately, survival and success in the evolving European banking market will depend on the ability to sustain profitable growth, a theme reflected in the edict "grow or die." Moreover, since acquisitions will play an important part in this growth, the ability to rapidly integrate by acquiring banks—therefore speeding the realization of operational efficiencies—will also be increasingly important.

The flexibility deficit

For the larger global and regional banks most affected by these changes, however, few have achieved anything close to the level of business and technological flexibility they will need to thrive. The reality is that nearly all major banks are hobbled with old, inflexible and increasingly costly core banking systems, which control nearly every aspect of banking operations. In the years—and sometimes decades—they've been in service, core banking systems tend to become highly customized and "brittle," making it difficult, time-consuming and costly to implement changes across them. Such was the challenge facing Allied Irish Banks (www.aibgroup.ie), Ireland's largest bank. Having expanded from its base in Ireland to Poland, the United Kingdom and the United States through acquisition, Dublin-based AIB in many ways epitomizes the increasing importance of cross-border growth for European banks. What makes AIB stand out from other banks is its willingness to take bold action to enable profitable growth in the future.

A longtime user of the IBM System z9® for its core banking systems, AIB reaffirmed its commitment to the platform when, with the help of IBM, it put a consolidated, yet even more scalable infrastructure in place to handle the substantial

growth in the number of retail accounts managed by 2009. However, AIB realized that while gaining scalability was necessary, it was not sufficient. To achieve the level of business agility it needed to compete in the long term, AIB knew it needed to fundamentally transform its core retail banking systems. One of the most important elements of the transformation strategy it laid out was to completely replace its existing core bank system with the FLEXCUBE retail banking package. While a number of other European banks had taken incremental steps to address their core banking systems, AIB has the distinction of being the first to target its entire banking platform in its core market. AIB realized that adopting such a comprehensive approach to transformation positioned it to make a major leap in competitive strength.

A commitment to success

But AIB was also fully aware of the risks and was committed to doing everything it would take to succeed. This included making sure that it had the right underlying infrastructure in place to get the most out of the new core banking solution, as measured by performance, scalability, reliability and total cost of ownership. A detailed examination confirmed what the bank already suspected, that implementing the new solution on the IBM System z™ platform running z/OS®—and employing IBM DB2® as the solution's core database—would produce far and away better results for the bank.

Demonstrating its commitment to putting the strongest possible solution in place, AIB engaged IBM Global Services to accelerate the porting of FLEXCUBE onto the IBM mainframe platform and to provide comprehensive implementation support. To maximize the performance of FLEXCUBE on the platform, IBM brought together specialists from a range of product areas—including IBM WebSphere® Application Server (on which the FLEXCUBE solution runs) and DB2—to assist In code optimization and otherwise tune the system. IBM technology also plays a critical role in enabling full channel integration and the realignment of the bank's processes around the customer experience. Key enabling products include the IBM WebSphere Enterprise Service Bus appliances, which are used to integrate the bank's applications and processes, and IBM WebSphere MQ, which is used to transport data between the bank's applications. Within the new solution, AIB also employs a full range of IBM Tivoli® systems management products and utilities to manage the new retail solution as well as the wider infrastructure.

Broadly speaking, the biggest benefit of AIB's new retail platform is that it will give the bank the flexibility, scalability and efficiency it needs to compete in the dynamic European marketplace. On the revenue front, the out-of-the-box functionality of

Key Components

Software

- IBM WebSphere Application Server
- IBM DB2
- IBM Tivoli product suite
- IBM WebSphere MQ
- IBM z/OS

Hardware

- IBM System z9
- IBM WebSphere Data Power Enterprise Service Bus appliances

Services

- IBM Global Services

Business Partner(s)

- FLEXCUBE by Oracle Financial Services

Why it matters

By becoming the first large European bank to replace its entire retail core bank platform with an off-the-shelf package in its home market, AIB is positioning itself to thrive in the competitive and regulatory dynamism of the European banking market. By leveraging the scalability and lower cost of its mainframe environment, the new core bank system gives AIB a means to significantly improve its cost income ratio as the bank grows.

FLEXCUBE—combined with the flexible and easy to manage infrastructure provided by IBM—gives AIB a huge boost in business agility, enabling it to seize opportunities fast, through all of its channels.

This same flexibility also gives AIB the capacity to respond far more quickly and cost-effectively to changing regulations than its competitors, effectively providing AIB with the means to turn a challenge into an opportunity. The underlying change that makes this flexibility possible is the reorientation of AIB's systems from a more limited "account-centric" view of the customer to a more holistic "portfolio" view—a profound shift because it also enables AIB to transform the way it interacts with customers through personalization and targeted cross selling.

Zipping down costs

AIB was also motivated by the knowledge that future competitiveness depended not only on top-line growth, but also on fundamentally changing the cost equation—and that's what the new platform does. Running the new solution on the System z delivers not only unmatched scalability and reliability, but also a significantly lower cost per transaction by virtue of the ability to offload transaction processing workloads to specialty processors known as zIIPs (z9 Integrated Information Processors) and zAAPs (System z Application Assist Processors). In addition to optimizing resource utilization, zIIP and zAAP also optimize software costs. The bank's most fundamental architectural decision—to centralize application serving on the Systems z—has also produced some of the most fundamental benefits, most notably the ability to make one change and roll it out across all of the bank's branches and channels at very low cost. AIB has already achieved another industry milestone by being among the first banks to remove all the servers in its branch network and deploy Linux® desktops served by applications on the System z, in the process reducing branch support costs by millions of euro.

With a scalable and low-cost infrastructure in place and retail transformation well under way, Steve Meadows, Chief Operations Officer and sponsor of the project, believes that AIB is well positioned to thrive in the challenging environment that is European banking. "Our embrace of a bold transformation strategy is a measure of both the challenges we face and our commitment to success," says Meadows. "By working with IBM, we're gaining the agility and efficiency that are becoming essential for success—and we're doing it today."

For more information

Contact your IBM sales representative or IBM Business Partner.

Visit us at: **ibm.com**/innovation

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Produced in the United States of America
July 2008

ODC03079-USEN-01

Bank of Montreal enables rapid recovery with high availability technology from IBM

"Bank of Montreal Photo by Matthew Plexman"

Overview

- ***Challenge***
  To increase the Bank's operational resiliency by extending the distance between data center sites
- ***Solution***
  Implementing a high availability solution that includes IBM Geographically Dispersed Parallel Sysplex™ (GDPS®) and Server Time Protocol (STP)
- ***Key Benefits***
  Enables disaster recovery in less than two hours, enables a recovery point objective of zero over a distance of 100 km, and helps the Bank meet regulatory requirements

One of the five largest banks in Canada, Bank of Montreal (BMO) is a highly diversified financial services organization with assets that totaled over US$366 billion in 2007. BMO utilizes a wide array of technologies to support the processing of financial data, including a significant investment in IBM systems and software. Bank of Montreal serves the U.S. market through Chicago-based Harris N.A., which has the third largest number of branches in the Chicago area and over $42 billion in assets.

For financial institutions like BMO, the ability to recover from major system failures is critical. When the events of September 11, 2001, highlighted significant deficiencies in the disaster preparedness of many companies, the U.S. government issued a series of new regulations and industry-specific guidelines designed to address this problem. The "Interagency White Paper on Sound Practices to Strengthen the Resilience of the U.S. Financial System" and other guidelines provide numerous recommendations for improving the recovery capabilities of financial institutions, including locating the disaster recovery center beyond the immediate region of a primary facility, and delivering zero percent data loss up to the point of disaster.

"That white paper definitely had a strong influence on our plans," explains Malcolm Sanderson, a senior technical architect at BMO. BMO responded to the challenge by implementing an ambitious program of improvements to its disaster recovery strategy, beginning with the development of a new data center location.

BMO's Operational Resiliency Program

The original backup and disaster recovery (DR) site was located less than 10 km from the primary data center, an inadequate distance to be considered "out-of-region." To solve this problem, BMO set up a new site—one that was

100 km away. This effort, part of BMO's Operational Resiliency Program (ORP), had several important goals: to increase the distance between the primary and backup sites, to achieve a recovery point objective of zero, to establish two control points for operations, and to enable system and workload restoration within a two-hour timeframe.

IBM helped supply BMO with the technologies necessary to achieve these resiliency goals and supported the project throughout the implementation. Says Sanderson, "We have a very strong IBM team locally that's been involved in the project. We've had them engaged all the way through."

Early adopters of STP

Critical to the success of the new data center was the ability to synchronize transactions between the Bank's primary and backup servers—10 IBM System z™ mainframes in all. Peer-to-peer remote copy (PPRC) was used to achieve data mirroring between sites, effectively synchronizing transactional data between the servers. Geographically Dispersed Parallel Sysplex (GDPS), a multi-site end-to-end application availability solution, was used to automate the recovery process and manage the PPRC environment.

But the primary challenge of the BMO implementation was the increased distance between the two sites. GDPS has typically relied on Sysplex Timer® technology, which could only support distances of up to 40 km without intermediate sites. The Bank's two sites are linked through nearly 100 km of fiber optic cable, a length that far exceeds that limit. To meet this challenge, BMO became an early adopter of a newly developed IBM timing technology known as Server Time Protocol (STP).

STP, which keeps multiple processor clocks at different locations in sync with each other, was designed to enhance the capabilities of GDPS/PPRC. STP supports a multi-site Coordinated Timing Network (CTN) that allows clock synchronization between System z mainframe servers up to 100 km apart. BMO was the first IBM customer to implement GDPS/PPRC via STP at this distance.

In order to implement the solution, BMO had to expand capacity of their storage subsystem, which consists of an IBM System Storage™ DS8300 at the primary data center and an IBM Enterprise Storage Server® 2105 at the backup site. They also had to upgrade their IBM z/OS® version on an accelerated timeline.

As an early adopter through the IBM Implementation Assistance Program (IAP), BMO gained advance access to cutting-edge STP technology, and they had the opportunity to give specific feedback about their needs early in the development process, ensuring a more timely and personalized response.

Measurable successes

The IBM solution has fulfilled BMO's requirement for longer-distance recovery, and it has enabled a recovery point objective of zero. "Prior to this implementation, if we had a disaster we would lose an entire day's transactions for some applications," says Sanderson. "We wanted to get to the point where we could recover all transactions up to the point of disaster."

Reaching that goal was a team effort, and one that required aggressive testing before, during and after the implementation. "We did an enormous amount of testing on all of this technology prior to implementation," says Sanderson, "And IBM was at the table throughout this process." Even before testing began at the new site, a variety of tests were conducted in a lab environment, including tests on a 100-km spool of fiber cabling so GDPS and STP could be tested thoroughly at the full distance.

> *"IBM was at the table throughout this process."*
>
> – *Malcolm Sanderson, Bank of Montreal*

Now that the solution is in production, BMO continues to conduct recovery tests several times a year, a process that also measures how long the recovery process takes. "Our goal is to recover services within two hours from the time we initiate the recovery process," says Sanderson. A recent BMO test showed a recovery time of just one hour and 54 minutes, surpassing the goal by six minutes.

"What GDPS brings to the table is the automation necessary to allow us to recover within a two-hour timeframe," Sanderson explains. "It automates a lot of manual processes, and with automation you get speed. It also detects conditions that might cause the recovery to fail. With our new GDPS system, once we make the decision to do a site takeover, we simply tell the system, and the system completes the recovery automatically."

Reducing operational risk

BMO and Harris N.A. have benefited from this implementation in other ways as well. By bringing their disaster recovery strategy into compliance with federal guidance, they have significantly reduced their risk of data loss when recovering from a system failure. And although this improvement in operational resiliency is largely invisible to the Bank's customers, it helps to ensure that institutional trust will be maintained in the event of a catastrophe. As Sanderson says, "The real benefit to the business is a reduction in risk. We have a better insurance policy now than we had before."

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> – *Malcolm Sanderson, Bank of Montreal*

"Data protection and reputational risk are our critical success factors," says Lee Dunn, vice president of BMO's Operational Resiliency Program. "Businesses have evolved from paper-based transactions to electronic transactions through a number of channels and are heavily reliant on technology. The implementation of PPRC, GDPS and STP technologies has enabled BMO to provide the right level of resiliency to our internal lines of business."

"Part of the team"

Sanderson says that the IBM GDPS High Availability Team provided excellent service and support to the BMO staff throughout the project. "IBM has been an integral part of the team," reports Sanderson. "They've been living side-by-side with our system programmers—attending meetings, helping with planning, coming in at midnight when we're testing."

"They've also done a lot of the integration prep work," he continues. "For example, IBM has a partnership with Nortel, so they were able to test the GDPS solution with Nortel to make sure everything was going to work properly."

Extending the solution

With the BMO implementation, GDPS has been proven to operate at greater distances than previously possible, helping BMO achieve its disaster recovery objectives for Harris N.A. The Bank's Operational Resiliency Program has since moved into its next phase, which includes applying these same technologies to applications for Bank of Montreal.

For more information

Contact your IBM sales representative or IBM Business Partner. Visit us at: **ibm.com**/systems/z

For more information about Bank of Montreal and Harris N.A. of Chicago, visit: www.bmo.com

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Produced in the United States of America
April 2008

OIC03005-USEN-00

Bank of Russia saves US$400 million per year by consolidating to IBM System z9

Overview

- ***Challenge***
  With a variety of local payment processing systems running on more than 200 distributed servers in 74 data centers across 11 time zones, Bank of Russia faced significant challenges in terms of operational efficiency, technical support, and security.
- ***Solution***
  Working with IBM and EC-Leasing, the Bank simplified and consolidated its entire infrastructure to just four IBM System z9® Enterprise Class mainframes in two data centers. IBM Global Mirror and Metro Mirror enable mutual failover between the data centers, which are separated by a distance of 1,000 kilometers for disaster-protection and business resilience.
- ***Key Benefits***
  Payment processing costs have been reduced by 95 percent, saving US$400 million per year. Server and data center consolidation creates further savings on hardware and software licensing, maintenance and electricity, and increases security. Workload for technical staff has been reduced by 85 percent.

As the central bank for the Russian Federation, the Bank of Russia serves the interests of the state, the Russian people, and private businesses. Its main responsibilities include supporting the Russian currency, managing the national payment system, overseeing money and loans policies, and supervising the country's financial sector. With 78 regional offices, 800 local branches and 70,000 employees, the Bank provides services for around 1,000 commercial banks and 20,000 state budget institutions across the Federation.

The Bank of Russia was set up in the early 1990s, inheriting the structure of the Gosbank, the state bank of the USSR. Its first main objective was to modernize its operational processes, which were then reliant on paper-based processing of payments. With the liberalization of the Russian economy, the rapid growth of commercial banking and the increasing influence of international finance put a heavy strain on these payment processing systems.

The Bank set up a network of 74 electronic payment processing centers, each with its own data center, servers and software. With numerous processing applications, six hardware platforms, three different database

platforms, more than 200 servers, and around 1,500 full-time technicians, transaction costs were high—at around 11 rubles per transaction. Additionally, it was difficult to ensure the right level of security across this widely-distributed infrastructure, both physically and in terms of protecting against increasingly sophisticated cyber attacks.

Tackling the challenge

Aiming to simplify its IT landscape to enable greater efficiency and innovation, the Bank of Russia decided to consolidate its 74 payment processing centers. The initial plan was to move to five regional facilities, but ultimately the Bank realized that it would be possible to reintegrate its entire distributed infrastructure in just two centers.

"The Russian Federation is huge—we have branch offices spread across eleven different time zones", says Mikhail Senatorov, Deputy Chairman, Bank of Russia. "There was initially some opposition to the idea of moving everything to two data centers in the European part of Russia, because people thought there would be communications problems. However, by using a combination of land and satellite telecommunications, we knew we could handle the traffic reliably".

The Bank's IT department began to look for a technology platform for the consolidated infrastructure, considering both the IBM System platform z and HP Superdome servers.

"We quickly realized that IBM System z™ offered us more options than competing platforms", explains Mikhail Senatorov. "For example, payment volumes are increasing year-on-year, so it was important to buy servers that could scale to meet the demand. With IBM System z, instead of buying an oversized server and growing into it over the years, we only need to pay for what we use. As volumes increase, we can ask IBM to activate more processors within the mainframe to deal with the demand".

> *"With IBM System z, instead of buying an oversized server and growing into it over the years, we only need to pay for what we use. As volumes increase, we can ask IBM to activate more processors within the mainframe to deal with the demand".*
>
> – *Mr. Mikhail Senatorov, Deputy Chairman, Bank of Russia*

"Another unique selling point for IBM was its expertise with long-distance data replication for high availability, business resilience and disaster recovery. The two sites we chose for the new data centers are 1,000 kilometers apart, and we needed to be able to mirror data between them so that we could fail over from one to the other in case of disaster. IBM Global Mirror and Metro Mirror are the only technologies on the market that we trusted to do this job reliably".

Taking the first steps

Working closely with IBM and EC-Leasing, the Bank set up an IBM System z9 Enterprise Class (EC) as a test system and performed a number of migrations from its existing platforms into a new software landscape based on Oracle databases running under IBM z/OS® and applications running in virtualized Linux® servers under z/VM®. IBM WebSphere® MQ provides messaging services, and IBM Tivoli® OMEGAMON® is used for monitoring.

The success of the test phase encouraged the Bank to consolidate three of its 74 processing centers to the new platform as a proof of concept. It quickly became apparent that the new

system could not only handle the traffic reliably, but was also delivering considerably improved performance.

Mikhail Senatorov comments: “The final test was to prove that we could provide a good service for the more remote areas in the Eastern part of Russia, so we moved Chukotka, Kamchatka, Sakhalin, Vladivostock and Khabarovsk onto the platform. This was the turning point—when we put it all together and showed that it worked, the decision was taken to switch the entire country over to the consolidated platform”.

The remaining migrations were planned and executed, and the entire project was completed within three years. The new shared architecture is split between two data centers, each containing two z9 EC mainframes. A storage area network, based on IBM System Storage hardware, provides a reliable, high-performance architecture for data storage. The Bank’s new infrastructure is an excellent example of what IBM terms the “new enterprise data center”: an efficient, simplified, virtualized, highly resilient set of shared resources capable of responding dynamically to business demands.

“Using virtualization to consolidate more than 200 distributed servers on just four IBM System z9 mainframes is a great advantage in terms of hardware licensing and energy costs, and decommissioning the 74 existing data centers was another major saving”, says Mikhail Senatorov. “In addition, we only need 200 full-time staff to run the new environment, compared to 1,500 for the old systems—and with a single software and hardware platform, we don’t need to maintain such a broad technical skillset”.

Massive cost savings

As a result of the improvements in operational and energy efficiency, the cost per transaction has been reduced from 11 rubles to just 50 kopeks—a 95 percent reduction, saving around US$400 million per year. As transaction volumes are predicted to more than double by 2013, the savings will continue to increase in the coming years.

“We are planning to consolidate further, to just four System z mainframes by 2010, so we will continue to increase efficiencies and reduce costs”, says Mikhail Senatorov. “IBM deserves credit not only for the reliability and performance of the hardware, but also for dedicating a team of experts to Bank of Russia, who help us make the best decisions about the future of the environment. IBM is also very flexible about allowing us to run test environments and try out new products”.

The IBM solution plays a vital part in the Russian economy—50 percent of all payments and 60 percent of the country’s money now pass through it. By 2013, it will handle 17 – 18 million payments per day; yet even this huge volume will be within the capabilities of the IBM System z9 EC.

“We will simply switch on more processors as and when we need them”, explains Mikhail Senatorov. “We are currently using 17, and we calculate that we will need 42 by 2013; but since each machine can use as many as 54, we have plenty of room for growth”.

With the payments system reintegrated, virtualized and standardized, the next project for the Bank of Russia is to develop an analytics system to monitor trends and evaluate the activities of different banks.

Mikhail Senatorov concludes: “Payments processing is really only the first step. Now that we have the data in a single central repository, there is almost no limit to what we can achieve in terms of analytics—which will help us monitor the financial sector more closely and react dynamically to changing economic conditions. IBM has been a vital partner for us throughout the modernization of payment processing, and we look forward to the IBM team’s help and advice as we move forward with these new projects”.

Solution Components

Hardware

- IBM System z9 Enterprise Class

Software

- IBM z/OS
- IBM z/VM
- IBM Global Mirror
- IBM Metro Mirror
- IBM Tivoli OMEGAMON
- IBM WebSphere MQ

For more information

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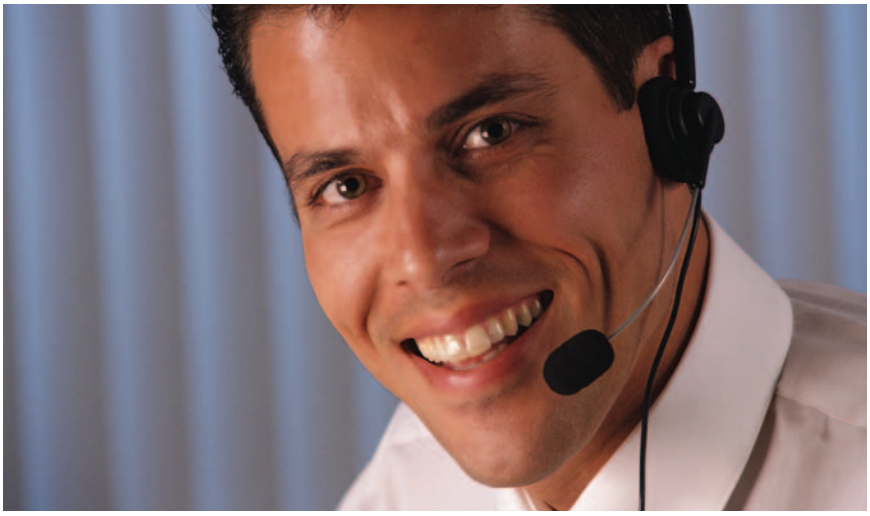
Produced in the United States of America
October 2008

ZSC03037-USEN-00

Bharti Airtel grows at a stunning pace by keeping its focus on the customer.

Overview

- ***Business Challenge***
  Bharti Airtel needed to maximize its future flexibility and growth potential by adopting a business-driven framework for integration, allowing it to implement and deliver new services rapidly. With competition intensifying in the Indian telecom services market, Bharti Airtel needed to find a way to focus on developing new services that could set it apart from the competition and strengthen its customer relationships.
- ***Solution***
  Bharti Airtel entered into a comprehensive 10-year agreement with IBM to transform its processes and take on the management of its IT infrastructure. Its new platform provides a standardized framework for Bharti Airtel to integrate its channels and customer-facing processes – enabling a more seamless customer experience, higher customer satisfaction and more profitable growth.
- ***Key Benefits***
- *Ability to process 1.5 million new customers per month*
- *Outsourcing of technology enables Bharti Airtel to focus resources on growing the business*



Based in New Delhi, Bharti Airtel is India's largest private sector telecom operator, with a strong presence in mobile communications, fixed line services, and domestic and international long distance services. Bharti Airtel is India's sixth-largest company by market capitalization, with more than 57 million customers (as of 12/31/07) and US$4.2 billion in annual revenues (as of 3/31/07).

In the global telecommunications market, it's hard to imagine a more fertile environment for explosive growth than India. With a large, young and tech-savvy population, an economy whose growth rate is second only to China and telephone penetration of just seven percent, India stands as a textbook example of how demand for communications services can be explosive if the conditions are right. A few years ago, when forecasters predicted a fourfold increase in subscribers in three years – to 200 million – it seemed impossible. Since then, however, market growth has outstripped the unlikely forecast, and no operator has been better poised to capitalize on this opportunity than Bharti Airtel (www.airtel.in).

> *"By working along with us to transform our go-to-market strategies and reinvent our internal processes, IBM has been a partner for the innovation that we see as essential in our ability to sustain our rapid growth."*
>
> – Jai Menon, Group CIO, Bharti Enterprises and Director (IT & Innovation), Bharti Airtel

Business Benefits

- Ability to process 1.5 million new customers per month
- Improved cross-selling and targeting and a more seamless, efficient total customer experience through end-to-end integration of customer-facing processes
- Optimization of business processes and infrastructure through flexible, standardized integration framework
- Outsourcing of technology enables Bharti Airtel to focus resources on growing the business
- Flexible pricing model enables Bharti Airtel to avoid major increases in capital expenditures

Based in New Delhi, Bharti Airtel is India's largest private sector telecom operator and India's sixth-largest company by market capitalization. Bharti Airtel is also the only operator to offer its services (mobile, fixed line and Internet access) in each of India's 23 "circles," or operating areas. While this wide service footprint made Bharti Airtel especially well-positioned to capitalize on India's telecom boom, it also presented the company with significant challenges and risks in addressing this demand. In order to keep up, while also maintaining high levels of customer service, all the processes required to run its business – from order management and service activation to those processes involved in the operation of its core network – needed to run smoothly and in sync with each other. With the company approaching a new phase in its growth as a business, and with the need for a compelling user experience of utmost strategic importance, Bharti Airtel knew it needed to take a fundamentally new look at the way it created and managed its customer-facing processes.

The risks of growth

Bharti Airtel's other big challenge was the need to make the major investments in IT infrastructure required to service its rapidly growing base of subscribers. As a capital expenditure, these investments are typically offset by the future service revenues that they enable. However, in addition to the inherent risks of a large fixed investment, Bharti Airtel faced an added financial risk from a steady decline in India's average revenue per user (ARPU) for mobile telecom services, the result of government-mandated pricing changes that created – at roughly eight dollars a month – one of the lowest ARPUs of the region. Thus, while Bharti Airtel realized that it was absolutely essential to invest in its future growth, factors unique to the Indian market substantially increased the risks of making these capital investments.

To address these unique opportunities and challenges, Bharti Airtel established a far-reaching outsourcing relationship with IBM that substantially mitigates its IT investment risks by giving IBM full control and ownership of Bharti Airtel's IT infrastructure and associated processes. By substituting predictable operating expenses for risky, upfront capital investments, this strategy fundamentally transforms the financial underpinnings of its business model. An equally important aim of this strategy is to enable Bharti Airtel to focus its energies on growing, serving and retaining its customer base – and thus fully capitalize on India's astounding growth surge.

"Our new strategy is all about delivering a truly differentiated experience, and having the flexibility to continually improve the customer experience."

– Jai Menon

Growth through flexibility

Bharti Airtel knew that the key to capitalizing on its growth opportunities was to establish deeper and more personalized relationships with its customers, as well as to provide a consistent, high-quality customer experience. It further realized that, from an IT perspective, the ability to integrate its diverse systems and processes was essential. Bharti Airtel saw the flexibility of IBM's integration approach – and recognized the application of IBM's extensive portfolio of middleware products and expertise in service-oriented architecture (SOA) – as an ideal match for its integration requirements. Dr. Jai Menon, Group CIO, Bharti Enterprises and Director (IT & Innovation), Bharti Airtel, was a key architect of the plan. "Our new strategy is all about delivering a truly differentiated experience, and having the flexibility to continually improve the customer experience," says Menon. "We knew that having a flexible framework for integrating our systems and customer-facing processes was essential to enabling this – and that IBM's strength in this area would prove to be a great fit."

Incorporating the proven IBM Service Provider Delivery Environment (SPDE, or "speedy") Integration Hub solution, IBM Global Business Services designed and implemented an Enterprise Application Integration platform that integrates a wide range of customer-facing and back office processes. Its flexibility is evident in the range of integration options it provides Bharti Airtel. In the case of customer self service, for example, each of the three main channels – Web, interactive voice response and short message service – employ different integration technologies (such as publish/subscribe via IBM WebSphere® MQ and asynchronous messaging via IBM WebSphere Business Integration Server) depending on the channel's technical needs.

In line with its vision, Bharti Airtel's advanced integration capabilities have enabled the company to transform key aspects of the customer experience; account activation is just one example. With Bharti Airtel signing up an average of 1.5 million customers per month, the ability to activate new accounts with maximum efficiency is essential. By integrating the account activation process with such key backend systems as billing, provisioning and order management, Bharti Airtel was able to cut the time required to activate new mobile accounts by 90 percent. Bharti Airtel's integration framework has also led to stronger business intelligence capabilities, which have in turn enabled the company to maximize the value of its customer relationships through cross selling and market segmentation. Menon sees these improvements as part of a broader pattern that came out of Bharti Airtel's partnership with IBM.

Key Components

Software

- IBM Service Provider Delivery Environment
- IBM WebSphere Business Integration Server
- IBM WebSphere MQ
- IBM DB2®

Servers

- IBM System p™
- IBM System x™
- IBM TotalStorage® Enterprise Storage Server®

Services

- IBM Global Business Services
- IBM Global Technology Services
- IBM Strategic Outsourcing

Why it matters

As part of its first-of-a-kind IT outsourcing agreement, IBM helped Bharti Airtel create a highly flexible platform for integrating its customer-facing processes across all lines of business. The dramatic process streamlining this system has enabled is a key reason Bharti Airtel has been able to add an astounding 1.5 million new customers per month without a hitch.

"IBM has played a pivotal role as a strategic partner in contributing to Airtel's vision and roadmap for innovation," explains Menon. "By working along with us to transform our go-to-market strategies and reinvent our internal processes, IBM has been a partner for the innovation that we see as essential in our ability to sustain our rapid growth."

A key driver of Bharti Airtel's decision to outsource its IT activities to IBM was the desire to channel its internal energies and resources into capitalizing on a spectacular market opportunity rather than on the enabling platforms needed to do so. The scorching growth of Bharti Airtel's customer base, and the ability of its business processes to keep up with this growth, illustrates the success of this strategy. But it was also driven by the desire to maximize the efficiency of its operations by entrusting IBM with the ownership and management of its IT resources, and, in the process, making its IT costs more predictable and manageable. IBM has held up its end of the agreement by continually investing in the optimization and consolidation of Bharti Airtel's infrastructure – key components of which include IBM System p and System x servers as well as IBM TotalStorage Enterprise Storage Servers. IBM Global Technology Services performs ongoing software maintenance and development, while IBM Strategic Outsourcing provides installation services, help desk services and the ongoing management of Bharti Airtel's IT environment.

Two years into the agreement, Bharti Airtel's innovation efforts have resulted in many external recognitions, a highlight of which was receiving the 2006 NASSCOM IT & Innovation Award from the Hon'ble Prime Minister of India, Dr. Manmohan Singh. Bharti Airtel's bold strategy has also produced outstanding results at the bottom line. Even in the face of declining average revenue per customer in India, Bharti Airtel has been able to post an operating cash flow margin of 40 percent, a full five percentage points higher than the rest of the industry. Menon sees process efficiency and scalability as a big factor in its performance. "It's our ability to bring activation from four days to two hours, and our billing cycles from 15 days to two hours," says Menon. "It's our ability to handle more and more customers."

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ODC03064-USEN-00

BP: Validating the safety benefits of real-time personnel location monitoring

Overview

- ***Business Challenge***
  Instead of simply complying with more stringent regulations on emergency, BP sought a quantum improvement in the way it accounted for and protected its employees.
- ***Solution***
  BP engaged IBM to develop a first-of-a-kind emergency mustering solution that translates real-time RFID data into actionable, visual information that serves as the cornerstone of new safety procedures. Flexible design enables BP to extend the solution to other key parts of its operations.
- ***Key Benefits***
  - *Major improvement in emergency evacuation preparedness and employee safety*
  - *Improved ability to support compliance with future Homeland Security directives*
  - *Expected reduction in lost or stolen assets*
  - *Reduction in production downtime caused by the delivery of the wrong spare parts*
  - *Increased accuracy in spare parts inventory reporting*

BP is the second-largest petroleum refiner in North America.

Refineries, whose job is to transform crude oil into such final products as gasoline, lubricants and jet fuel, are the last, and arguably most important, stage in the production of petroleum related products. A dense network of pipelines, valves, gauges, storage tanks and production equipment, petroleum refineries can process as much as a quarter million barrels of oil a day over a single square mile of production facilities. This complexity – combined with the inherent volatility of petroleum products at all stages of the refining process – makes refineries one of the riskiest occupational sites.

> *"Our goal was to use technology to raise the bar on how we protected our employees and the public. With IBM's help, we've developed a solution that is true to our commitment to safety."*
>
> – Curt Smith, applications director for the Chief Technology Office, Information Technology & Services, BP

Business Benefits

- Major improvement in emergency evacuation preparedness and employee safety
- Compliance with state occupational safety guidelines
- Ability to support compliance with future Homeland Security directives
- Expected reduction in lost or stolen assets
- Reduction in production downtime caused by the delivery of the wrong spare parts
- Increased accuracy in spare parts inventory reporting

As such, safety is always a critical issue for petroleum refinery operators, and no one is more concerned about safety than BP (www.bp.com). There is ample evidence of how deeply ingrained safety is within BP's culture. It's seen in the small things, like the way BP company meetings always start with a "safety moment," and in the ubiquitous signage promoting safe practices down to the most routine actions. More importantly, though, it's seen in the lengths to which BP routinely goes to protect its employees and the public.

Accounting for all

One of the most important safety issues for petroleum refineries is the safe evacuation of employees in the event of a disaster, such as a fire or explosion. A key element of disaster planning is the process by which employees are located and accounted for. The accuracy of the emergency mustering process, as it is known, has a direct bearing on the actions of emergency personnel, who may put themselves at great risk in their efforts to rescue missing employees. One of the initial proposals called for the use of kiosks placed around a refinery, which would enable employees to account for themselves electronically by swiping a magnetic card. The glaring problem of this approach, however, was that it provided no certainty as to the whereabouts of a missing person, leaving open the possibility of emergency personnel launching a hazardous search operation for an employee who may have left the facility hours before.

"When it comes to employee and public safety, we're not trying to simply meet minimum requirements. BP is going to do whatever is necessary to make people safe."

– Curt Smith

As part of the search for a provider to develop a solution, IBM staff met with BP to propose a design that would bridge what had been technical obstacles to building a positive accounting system. The gist of the plan involved employees wearing RFID tags that would send location information at frequent intervals, with the data uploaded to a control center. Where IBM's plan – and capabilities – stood out, however, was in the all-important handling of the vast quantities of data generated by the RFID system. In essence, BP's system needed to not only track employee locations, but also use that data to trigger events within specific business processes. Business rules would provide this linkage. To achieve this, the solution required an advanced middleware layer with a highly flexible means of changing the underlying business rules to suit different situations and requirements. Equally important to BP's safety managers was an advanced visualization capability to display this data. IBM integrated all these capabilities into a solution known as the Location Awareness and Safety Solution.

Passing muster in a challenging environment

For IBM, the breadth of the Location Awareness and Safety Solution ensured that its development would be a team effort. The core of the solution is IBM WebSphere® RFID Premises Server, a middleware product that provides a platform to integrate data from sensory devices (i.e., RFID tags) into business applications. For the RFID devices themselves, IBM employed the Sapphire DART Precision Asset Location System from RFID leader and IBM Business Partner Multispectral Solutions, Inc. (MSSI). One key factor in MSSI's selection was its strength in ultra-wideband RFID solutions, which provided a high degree of accuracy in highly metallic, interference-prone environments such as refineries. Another was the quality of its active ID tags, which are unique in their ability to support the high "blink rate" necessary to have a real-time view of employee location, without the rapid loss of battery power. The final major component, custom developed by IBM Research, is a real-time visualization engine that provides a rich graphical view of employee locations and associated metrics. IBM Software Group was responsible for assembling these components into a discrete solution, while IBM Global Business Services provided guidance on how the solution should integrate with BP's business processes. The system runs on a pair of IBM System x™ servers.

In the event of an emergency or disaster, the Location Awareness and Safety Solution presents a real-time, three-dimensional view of the location of employees in and around the refinery. Having this view drastically reduces the need for rescuers to conduct sweeps of a particular area in search of unaccounted for employees. The Location Awareness and Safety Solution platform itself is poised to address a far wider range of safety and security issues – due in large measure to the flexibility of the software framework. For instance, through the solution's easy-to-use interface, staff can configure the solution any number of ways to create new or temporary security zones along with conditional business rules that apply to the zones. By integrating the solution with security clearance data within its HR systems, the system can identify unauthorized personnel within a zone and automatically notify safety personnel, who can take fast corrective action to ensure the safety of the employees. BP is testing a variation of this approach to reduce accidents associated with the movement of overhead cranes, which represent one of the biggest causes of injury in the oil business. By integrating RFID position information, the crane safety initiative is designed to provide a collision avoidance warning to alert crane operators.

Key Components

Software

- IBM WebSphere RFID Premises Server
- IBM WebSphere Application Server
- IBM mySpace visualization software

Servers

- IBM System x

Services

- IBM Software Group
- IBM Global Business Services
- IBM Research

IBM Business Partner

- Multispectral Solutions, Inc.

Timeframe

- Development of Location Awareness and Safety Solution prototype: 1 month
- General rollout: 6 months

Why it matters

By integrating active RFID technology with its business processes, a refinery gains a graphical, real-time view of all employees – wherever they are. Flexible business rules enable a refinery to extend the benefits of real-time RFID into such key operational areas as asset management and workplace safety.

Extending a real-time view

The other major use envisioned for the Location Awareness and Safety Solution is real-time asset tracking and management. The two biggest factors driving this are the high degree of wear and tear that oil production equipment experiences – which necessitates the extensive stockpiling of spare parts such as wellheads – and the high cost of these parts, routinely exceeding $100,000 per item. By applying the solution to a spare parts management operation, BP would be able to track the location of each part in real time, saving potentially millions by drastically reducing the incidence of lost or stolen parts. RFID-based inventory tracking also has the potential to reduce the cost and time required to manually check inventory within BP's parts storage facilities, saving hundreds of thousands of dollars annually and ensuring that parts-in-stock records are continually up-to-date and accurate.

Curt Smith, applications director for the Chief Technology Office, Information Technology & Services, and a key driver of the project, sees the largest potential benefit of real-time parts tracking as improved accuracy and efficiency in the way BP supports its oil production operations in the Gulf of Mexico. The return on investment is driven by the cost in lost production of sending out the wrong parts to fix a problem. With high production costs and volumes, the solution's benefits build up fast. "We view the solution's real-time tracking potential as an important tool to improve our performance and substantially reduce the down-time associated with parts delivery errors," he explains.

While Smith expects the solution's benefits to extend deeply into BP's operations, he points to improved safety as the ultimate benchmark of success. "Our goal was to use technology to raise the bar on how we protected our employees and the public," says Smith. "With IBM's help, we've developed a solution that is true to our commitment to safety."

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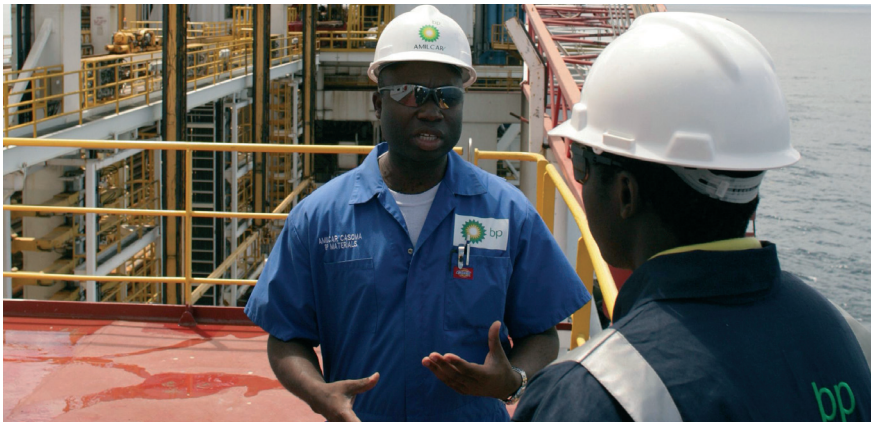
ODC03070-USEN-00

BP prepares for tomorrow's production needs on a foundation of efficient, integrated processes

Overview

- ***Business Challenge***
  With exploration of one of its newest and most promising developments completed and full production on the horizon, BP needed to ensure that the pieces were in place to keep production levels high and downtime low. This also meant adapting to a number of local operational challenges.
- ***Solution***
  Working with IBM, BP deployed an integrated asset management solution that leveraged best practices in work management, stock management and procurement—from within and outside BP—and adapted them to bring world-class efficiency to a new and important development.
- ***Key Benefits***
  - *Greater production efficiency through high uptime*
  - *Lower overall asset management costs through efficient procurement and proactive maintenance*
  - *Improved employee and environmental safety.*



BP is the world's third-largest global energy company, with headquarters in London. BP's involvement with Angola goes back to the mid 1970s. During the 1990s, BP made very substantial investments in Angola's offshore oil and it is now an important part of the company's upstream portfolio.

The world's third-largest independent oil company, BP (www.bp.com) has exploration and production operations in just about every oil-producing region. In Angola—a country on the southwest coast of Africa whose 1.7m barrels of daily oil output make it a world-class producer—BP is an established player, having operated in various capacities for nearly 40 years. The last decade, however, witnessed a stepping up of BP's activities in Angola, whose strategic importance to BP continues to grow. The company's efforts to develop a promising offshore field known as Greater Plutonio provides a glimpse of what it takes to make such a venture successful.

Beginning in the late 1990s, BP used deepwater drillships to sink a series of exploratory wells in areas that its geologists had deemed promising.

> *"Our Angolan operation is going to be a key part of our global production in the next 20 to 30 years. By helping to develop our processes around work management, stock logistics and procurement, IBM has helped position BP for maximum efficiency and safety going forward."*
>
> – *Mike Mihalco, Project Manager, BP Angola*

Business Benefits

- Greater production efficiency through high uptime
- Lower overall asset management costs through efficient procurement and proactive maintenance
- Ability to repurpose asset management solution to other offshore production areas by virtue of "build once, deploy many" methodology
- Improved employee and environmental safety
- Shorter time to investment recovery

The successful strikes encountered in the initial drilling marked the culmination of a decade-long exploration phase. But for its bets to truly pay off, BP needed to make a successful transition to the operational phase, when it would begin extracting substantial quantities of oil and natural gas from the five wells that constitute the Greater Plutonio development. The fact that these wells lay beneath nearly one mile of ocean—and below that, complex geological formations—presented major engineering challenges that would ultimately require large capital expenditures to overcome. Achieving the potential of the Greater Plutonio fields also required BP to bridge another distance—the roughly 100 miles that separated its offshore facilities from its "in-country" base of operations in Luanda, the coastal capital. Even greater was the challenge of establishing a supply chain from its Luanda base back to suppliers, whose hundreds of thousands of tons of equipment and materials would serve as the lifeblood of its offshore operations in the truest sense of the word. Constricting that flow could deny BP of millions of dollars of oil and gas production per day and hinder the company's ability to recoup its huge investment.

Ramping up

To meet this challenge, BP conducted an operational readiness phase that involved staff located in the UK and Angola. In addition to addressing the unique engineering requirements of Greater Plutonio, the efforts were also aimed at putting in place the robust systems and processes needed to ensure maximum production uptime as well as employee safety. Like anyone in the business, BP knew that a ruptured pipe or broken pump can bring production to a standstill, costing millions in lost revenue. It also knew from experience that as production levels rose, the interconnected tasks of managing parts inventories, ordering parts and performing proactive maintenance also rose in complexity. The fact that IBM Maximo® Asset Management performs each of these functions in a single off-the-shelf package was one of the key reasons BP selected it to run other offshore operations, including those in Azerbaijan and the North Sea.

> *"IBM is one of the few companies that have the global presence and experience necessary to meet the project's unique set of challenges."*
>
> – *Mike Mihalco*

Eager to replicate its success, BP was intent on using Maximo to take on the asset management functions of the Greater Plutonio operation, and chose IBM Global Business Services to help it get there. Speedy deployment was an implicit part of the plan, underscoring the need for BP to get the operations up and running—a point known as reaching "first oil"—as soon as possible. BP's other guideline was that IBM deploy Maximo in a way that employed as much out-of-the-box functionality as possible so that it could be expanded out to new fields around the world as they came online. Addressing both needs simultaneously, BP and IBM used the Caspian Maximo implementation—due to the operational similarities of Angola and Azerbaijan—as a template or starting point for the solution. A similar approach was taken in the area of business processes, with IBM using best practices as the basis

for defining such critical asset management processes as procurement, job scheduling and inventory management, as well as the governance structures necessary to keep them running smoothly. One of the inherent challenges in optimizing the design of asset management processes is in integrating them into a series of trackable, connected workflows that maximize the efficiency of BP's resources while minimizing downtime due to unavailable parts or missed maintenance jobs. To meet this challenge, IBM designed a solution that leveraged Maximo's built-in process integration and workflow strengths, as well as its powerful out-of-the-box capability to integrate with SAP, on which BP runs its core financials.

A seamless process flow

The solution that came out of this effort is a tour de force of process integration. While the solution is comprised of three functional components—work management, parts inventory management and procurement—the tightness of integration between them effectively creates a single, seamless process. This is best illustrated by what happens when a problem with equipment—in this example, an essential pump—is found by BP personnel out on the platform. Accessing Maximo, that employee would raise a work requisition, identifying that specific pump and its location. Using that information, Maximo automatically creates a work order and places it in the work queue in accordance with its high priority. The next step is for planners to determine (again, based on information within Maximo) which parts and labor resources will be needed, and from that to create a work plan. Approval of the plan within Maximo triggers a review of the facility's parts inventories—a larger one located onshore in a BP warehouse and a smaller one on the platform.

Parts found to be in stock are reserved by the Maximo system. For those out of stock, Maximo automatically raises a purchase requisition and sends it to the procurement organization, which then issues one or more purchase orders to the appropriate supplier(s). In the case of critical parts, lead time is the primary criteria that Maximo applies in selecting suppliers. Once the parts are received from the suppliers at the warehouse, the planner then uses Maximo to check on the next availability of the necessary technical labor resources and then assigns and schedules the job accordingly. Upon completion, the planner records the actual hours and parts used in the work order, and then closes it. SAP comes into the picture when the parts and associated invoices are received by suppliers. After matching invoices with their corresponding purchase orders, SAP closes out the POs and issues payments to suppliers. In addition to "reactive" break-fix situations, the Maximo solution also enables proactive maintenance by automatically alerting personnel of the need to perform scheduled inspections or replacements. In such cases, the solution follows the same closed-loop process flow around inventory management, procurement and financials.

Solution Components

Software

- IBM Maximo Asset Management

Services

- IBM Global Business Services

Why it matters

By employing a "design once—build many" approach to its new Angolan offshore production facility, BP will be able to bring new fields in the region into production at a fraction of the time and cost. By designing its processes to be in sync with its emerging global standard, the initiative helps BP move toward becoming a globally integrated enterprise.

The use of the existing Caspian Maximo implementation as a starting point—in terms of both system configuration and process design—was a key factor in the successful delivery of the solution within an extremely tight time frame. That said, however, the effort also needed to take into account unique challenges specific to Angola—including a long supply chain, a less mature logistical infrastructure and complex customs arrangements—in defining processes and configuring the system. Moreover, while IBM was the lead on process design, BP was bound by local regulations to have final process accountability. To accommodate this, the IBM team worked closely with BP's local process owners—often in Portuguese, Angola's primary language—to ensure seamless knowledge transfer and a successful handoff. Notes Mike Mihalco, Project Manager of Angolan Operations: "IBM is one of the few companies that have the global presence and experience necessary to meet the project's unique set of challenges."

Production on schedule

Having robust asset management processes in place will help maximize the uptime of the Greater Plutonio operation, thereby minimizing lost revenue and speeding payback of its capital investments—all the while maximizing the safety and minimizing the impact on the environment. Moreover, as production volume ramps up and the demand for replacement parts increases, Maximo will enable BP to optimize its inventory levels and thus minimize costs. That's why the project is an important part of BP's long-term strategy. "Our Angolan operation is going to be a key part of our global production in the next 20 to 30 years," says Mihalco. "By helping to develop our business processes around work management, stock logistics and procurement, IBM has helped position BP for maximum efficiency and safety going forward."

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September 2008

ODC03089-USEN-00

Centrinet launches UK's first operational zero carbon data centre with help from IBM

Overview

■ ***Customer challenge***

To help companies reduce the carbon footprint of their business-critical IT systems.

■ ***Solution***

- *Centrinet launched an innovative business service – Smartbunker – based on renewable energy and energy-efficient technology*
- *UK's first managed data centre service committed to zero carbon energy*
- *Powered by renewable energy from Ecotricity*
- *Based on energy-efficient IBM BladeCenter servers and Cisco networking hardware*
- *Secure and scalable.*

■ ***Customer benefits***

- *Drastically reduces environmental impact – power consumption cut by around 60%*
- *Unique proposition, offering high-performance data centre services powered by renewable energy*
- *Highly-scalable IT infrastructure provides business flexibility.*

With the current legislative, economic and social backdrop, many companies are reviewing their energy use and looking at ways to cut power consumption. CIOs, meanwhile, are trying to balance the increasing desire to be more environmentally friendly with the need for extra computing power to drive business transformation initiatives.

Centrinet, a Lincoln-based organisation that provides IT management services, recognised that most UK data centres were designed with business needs in mind, rather than the environment. It also recognised that reversing the emphasis was neither straightforward nor inexpensive and set out to devise a new solution.

Its unique idea was to build a data centre, designed to run efficiently on entirely renewable energy, and to offer this as a hosting service to clients. Named Smartbunker, the facility was built in a remote nuclear bunker that had undergone a £15m Home Office refit in the early 90s, and then stood empty for a decade before being bought by Centrinet.

Centrinet's business strategy was to power their 30,000sq ft purpose-built data centre entirely from renewable energy. They brought in Ecotricity, the wind turbine specialist that offers clients a zero carbon tariff.

Ecotricity has operated since 1996 and is the only independent green electricity company that builds its own renewable energy sources. It supplies many large organisations and its customer numbers have doubled each year for the past three years. Ecotricity builds and operates wind turbines on partner sites, and these partners then receive a dedicated supply of green power at reduced rates. The company has ambitious plans to change the way electricity is generated in the UK.

Having established the power supply, Centrinet, which supports more than 24,000 end-user organisations in 65 countries, looked for an IT platform to offer a green alternative to clients.

"Right from our first dealings with IBM, we were very impressed," says Kelly Smith, Managing Director at Smartbunker. "We were not an IBM customer prior to this, but we were aware of its green credentials, and that undoubtedly helped.

"The products put forward by the other companies could not match IBM's in terms of performance, energy efficiency or reliability. The solution we chose will also enable us to expand the business very quickly, without any concerns about overloading our IT infrastructure."

IBM has been committed to reducing waste and minimising its impact on the environment for decades, and its green heritage adds credibility to its client offerings – from hardware to consultancy. The solution proposed for Centrinet was based on the IBM Blade system. This takes up much less space and uses less energy for the same computing tasks, which is important given the physical size and environmental aims of Smartbunker's operational base.

"We now have an innovative proposal to take to our target market, which can be any size of company from a web-design agency to a Blue Chip enterprise," says Kelly Smith. "Our unique offering is based on three key aspects. First, we're environmentally efficient through both our power supply and the fact that the IBM computers are helping us to cut our energy usage by about 60%. Second, our base is underground within three-metre thick walls in the depths of Lincolnshire, so our physical security levels are exceptionally high.

And third, we provide high-performance, highly-resilient managed hosting services with year round, 24x7 support."

Over the next 18 months, Smartbunker intends to expand rapidly and IBM's flexible infrastructure will enable the company to scale up its operations. "We were impressed right from the very first call we put into IBM, in terms of both the product and the levels of service," concludes Kelly. "It was a competitive bid, and IBM was head and shoulders above the competition."

For more information

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CIC03003-GBEN-01

Cheshire County Council brings its social service agencies together to deliver person-centric care

Overview

- ***Business Challenge***
  Driven by growing resource constraints and a government mandate, Cheshire County Council sought to coordinate the way its various agencies served its growing senior population. Manual, unconnected processes within its agencies stood in the way.
- ***Solution***
  Cheshire County Council built a new needs assessment solution that enabled its agencies to function as a single, "virtual" community of providers—and served as the nucleus of a process automation effort that has drastically improved the efficiency and quality of senior care.
- ***Key Benefits***
  - *20 percent reduction in time and cost required to perform in-home senior visits*
  - *Improved ability to proactively manage the course of health and social care for senior citizens*
  - *Reduced administrative costs through improved coordination between healthcare providers and social agencies*

Cheshire County Council, in the UK, was one of the first local authorities to address the government's requirement of a uniform, standardized way to assess the healthcare and social services needs of its senior citizens, known as the Single Assessment Process. The solution it created now has a thousand users and is expected to add thousands more in the coming months.

Within any given community, the social service agencies that serve it have two very important things in common—first, that they promote citizens' best interests through their services, and second, that they rely on public funds to achieve it. But by and large, that's where the commonality ends. Like the needs of the citizens they serve, public agencies—whether it's home health services or the fire department, to name a few—are a highly diverse and specialised lot. It is seen in the unique mission that drives each of them, down to the mix of resources, expertise and practices they bring to bear in their day-to-day activities. Not surprisingly, the notion of specialisation has become deeply embedded in both the culture of

> *"We're not only helping Cheshire to be at the leading edge in the way it provides services to its older citizens. With IBM's help and insight, we've also developed a whole new model of how local government can provide services to citizens in an innovative and joined-up way."*
>
> – *Alan Allman, Senior Manager for Business Strategy, Planning and Performance, Cheshire County Council*

Business Benefits

- 20 percent reduction in time and cost required to perform in-home senior visits
- Improved quality and continuity of care by gaining a single seamless view of a citizen's case history
- Improved ability to proactively manage the course of health and social care for senior citizens
- Lessened burden for senior citizens to fill gaps in provider or agency records
- Improved utilisation of health and social care resources
- Reduced administrative costs through improved coordination between healthcare providers and social agencies

social service agencies and in what citizens have come to expect in dealing with them. Put simply, the requirement that local social services be delivered and received through a series of parallel—but unconnected—channels has long been seen as a fact of life.

However, important changes in the social services landscape are causing governments to reassess the need to change their practices. One of the most basic drivers is resource availability, with demand for social services growing as a result of demographic changes and government funding struggling to keep up. In the realm of health and human services, an equally important factor is a growing awareness of the need for continuity to maximise the quality of care that aged, infirm or vulnerable citizens receive. When agencies deliver services to a given citizen independently of one another, there's no way to get a comprehensive picture of that citizen's care history. This at best deprives caregivers of the information they need to provide a seamless, coordinated course of care going forward, and at worst makes elderly patients vulnerable to not receiving the follow-up care they need.

Leading the way

Calling for a better way to handle case management for senior citizens, national government laid the groundwork by providing a general framework for local authorities to streamline the way they collect, manage and communicate case information between agencies—a set of activities known collectively as Single Assessment Process. Cheshire (www.cheshire.gov.uk), a county of just under a million residents located in North West England, has emerged as an early leader implementing the Single Assessment Process. Working with IBM and IBM Business Partner Esprit Ltd., Cheshire County Council developed and implemented a collaborative case management platform and an accompanying set of process improvements that have proven to be highly successful. The following is an example of how achieving this success required fresh thinking along a number of dimensions, not least of which was the practical challenge of making a solution flexible enough to accommodate the needs of multiple agencies.

> *"We needed a provider that could offer us access to broad and deep resources and expertise. IBM's edge was that it had this while at the same time giving us the focus, flexibility and attention you would normally only get from a smaller provider."*
>
> – *Alan Allman*

Cheshire County Council's "before" state typified the shortcomings of disconnected social service delivery channels. Each time an agency worker visited a senior citizen at his or her home, the worker was required to fill out his agency's paper-based assessment form in full—from demographic information to that citizen's specific health or mobility needs. That paper form was then stored in a file folder within the agency. If, for any reason, another agency working in Cheshire visited the home—say the fire brigade or emergency medical services—the same process would unfold. In pinpointing the disadvantages of this process, wasted time and effort for both the citizen and the agency employees were only the most obvious. More insidious and costly were the lost opportunities to use existing information to deliver

services more intelligently and effectively. Achieving such an ideal state would require all of the County Council's departments and collaborating agencies to function as a single virtual entity, capable of viewing all aspects of a particular citizen's requirements in its totality, and responding to the citizen in a coordinated, integrated fashion.

Enabling process change

Cheshire County Council realised that as long as senior citizen case assessment information remained compartmentalised within each agency, its vision of coordinated service delivery would be impossible to achieve. It also realised that while having the technological capacity for sharing this data was essential, changes at the business process level—enabled by technology—would play a bigger role in making the council's vision a reality. The solution designed by IBM and Esprit directly embodied this view. Its foundation is Esprit's ShareCare for e-Enabled Single Assessment Process platform, which combines tight security, flexible device access and advanced forms technology to enable agency workers to create, access and change assessments remotely. The solution runs on IBM WebSphere® Application Server and employs IBM Tivoli® Access Manager for end user authentication.

Leveraging the system's powerful workflow capabilities, Cheshire County Council worked closely with IBM and Esprit to design a whole new set of standardised assessment processes that are employed by all agencies using the system. Automation is a strong point—not only for efficiency's sake—but because it facilitates the kind of seamless, cross-agency coverage that prevents individuals from "falling through the cracks" because of undetected needs. When agency employees make their initial visit, they populate a standardised electronic form, which (if the citizen gives approval to share the data) becomes the core of that citizen's profile. On each subsequent visit, from any agency, employees can retrieve and modify that profile as necessary, instead of having to rebuild it from scratch. The automation comes in on the backend. Based on changes in the profile—such as a recent medical procedure or change in mobility status—the solution automatically flags a citizen as potentially needing one or more additional social services and sends a notification to the appropriate agency for follow-up. Built-in confirmation tools ensure that all agencies and providers fulfill their respective roles.

Among the biggest barriers to small government projects even getting off the ground are the issues of funding and accountability; Cheshire County Council's single assessment process initiative was no exception. IBM was instrumental in resolving this issue by proposing that the solution be deployed as a shared service, hosted and managed by IBM e-business Hosting Services and paid for based on usage levels. The advantages are many. First and foremost, hosting the service

Solution Components

Software

- IBM WebSphere Application Server
- IBM Tivoli Access Manager
- Esprit ShareCare for e-Enabled Single Assessment Process

Servers

- IBM System x™

Services

- IBM Global Technology Services e-business Hosting™ Services

Business Partner(s)

- Esprit Ltd.

Timeframe

- Deployment: 8 Months
- End-User Training: Ongoing

Transformation at a glance

To better coordinate the activities of its social service agencies, Cheshire County Council created a single shared service delivery platform that enabled its agencies to form a virtual community of providers. This, in turn, enabled the council to create a series of standardized and automated processes that not only lowered costs but also tightened the social safety net for the council's senior citizens.

means that each of the council's agencies can focus on its mission instead of worrying about the technology. Moreover, since it is based on usage, hosting also provides an inherently flexible framework for resolving and managing budget issues across different agencies.

Built for growth

Then there's scalability. As new agencies are brought on board, the solution's modular architecture (built on IBM System x servers running in IBM's Warwick data center) enables low-cost, incremental capacity growth as needed. With the solution having grown to a thousand users in the year plus since it went live—and thousands of new users expected to come on board in the next several months—the benefits of scalable growth have already become apparent. So, indeed, has the inherent flexibility of the shared services model. Based on the success of the Cheshire County Council solution, the counties of Devon and Cornwall—located in South West England—are deploying their own solutions using the same scalable IBM infrastructure.

Cheshire County Council expects the solution to ultimately save an estimated 20 percent in the time and cost of delivering in-home social services to seniors. The planned introduction of a self-service solution—which will enable service users to create and maintain their own assessment profiles online—will enable the county to stretch its social service resources even further. With its population of seniors growing, Cheshire, and any other county using the system, is able to provide the most efficient and high quality care to them. Perhaps the strongest vote of confidence in the solution came from England's National Health Service (NHS), which selected it and three others from a large pool of applicants to connect to the NHS Spine, a key part of the NHS's nationwide Care Records Service initiative. Alan Allman, Senior Manager for Business Strategy, Planning and Performance, expects the solution to add momentum and provide direction to similar efforts nationwide. "We're not only helping Cheshire to be at the leading edge in the way it provides services to older citizens," says Allman. "With IBM's help and insight, we've also developed a whole new model of how local government can provide services to citizens in an innovative and joined-up way."

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Produced in the United States of America
August 2008

ODC03085-USEN-00

City of Syracuse: Police and schools collaborating for the benefit of the community

Overview

- ***Business Challenge***
  The City of Syracuse Police Department (SPD) wanted to give its officers wireless connectivity across the city so that they could access the IT network at police headquarters from the field to file reports, obtain data, such as mug shots and building floor plans, and exchange e-mail. Budgetary constraints, however, posed a challenge.
- ***Solution***
  By teaming with IBM, the SPD was able to leverage IT investments already made by the Syracuse School District. A secure link was established between the school district's high-speed fiber optic network and that of the SPD, so that police could access the network wirelessly, through hotspots at school buildings.
- ***Key Benefits***
  - *Leverages human and infrastructure IT resources*
  - *Fosters collaboration and sharing of resources*
  - *Gives SPD officers wireless access to their own network from the field*
  - *Provides school district with guaranteed police presence near schools*

Making the most of scarce resources

The public sector has always had to work under tight budgets. There is never enough money available to do all that officials wish to accomplish. But on occasion, two very different organizations align in such a way that they can leverage investments and resources to achieve something that neither could on its own.

That's what has happened in the City of Syracuse. The Syracuse Police Department (SPD) and the City of Syracuse School District have collaborated on an IT connectivity project that is a winning proposition for all concerned: the police, the schools, and most importantly, the public.

> *"This benefits the schools, the police department, the whole city government…and the community itself.*
>
> – Anita Murphy, Deputy Superintendent, Syracuse School District

Business Benefits

- Leverages human and infrastructure IT resources belonging to both the Syracuse School District and the SPD so that limited budgets are optimized
- Enhances collaboration and sharing of resources between the SPD and Syracuse School District, avoiding wasteful bureaucratic procedures
- Increases police presence near schools, enhancing security and public safety
- Enhances police officers' capabilities by giving them wireless access to the police department's own network from the field, direct access to surveillance video feeds from anywhere in the school system and dynamically managed physical access to school buildings

The project got its start when the SPD identified a need to give its officers wireless connectivity to its network from their patrol cars. The primary driving force was the need for the officers to download and send completed electronic police reports without having to come back to police headquarters. Once the link was established officers would also be able to take advantage of resources that were normally available only from the wired network. These included booking mug shot photos, access to state and federal law enforcement databases, law enforcement records management information, school emergency plans and floor plans, e-mail, New York State inmate corrections data and the department's policy management system, among others.

The SPD had been talking with IBM about the requirement, and had also been meeting with the school district and other city organizations to implement the idea of installing wireless hotspots at various public buildings around the city. The primary challenge to moving forward was a lack of available resources – mostly monetary – to make the entire vision a reality.

As it happened, the Syracuse School District had recently installed its own highly robust fiber optic network. Aware of the budgetary constraints, IBM suggested that the police department leverage the school district's investments by linking the existing school network to that of the police department. All that would be needed to provide WiFi access was to install the hotspot hardware itself.

This would help fulfill the police department's requirements while avoiding the installation of redundant infrastructure and the need to use a commercial network provider. That initial concept rapidly grew into the larger idea of more extensive resource sharing, in which not just networks, but IT personnel are shared by both departments.

> *"We share common needs, and we're able to work together to get our jobs done very effectively."*
>
> – Richard Trudell, lieutenant, Syracuse Police Department

A simple idea that enhances capabilities

Linking the school and police networks and enabling officer access to the school network through WiFi was the key idea that opened up a whole range of other capabilities. The school district had already been working on pilot projects for digital video surveillance and electronic access systems (door locks). The link to the police department has taken those projects and enhanced their capabilities dramatically, in ways that would not otherwise have been possible.

For example, police can now pull up to a school and, from inside the car, watch a video feed from any security camera located at that school. Police can also use the system to enable access to the school's electronic door locks and gain entry, as well as also manage those entry privileges should it prove necessary.

Serendipity: one department helping another

While the enhanced technical capabilities that the synergistic relationship gives to the school district and police department are highly significant, collaboration has a much more practical benefit: the optimal use of scarce resources.

By leveraging each other's human and IT resources, both departments are able to do more with less. "The thought of resource sharing was very exciting to us," says Lieutenant Richard Trudell of the SPD. "The police department's budget to get this kind of thing done is significantly smaller than that of the school district. Since we've started working together, we've been able to accomplish things we never would have been able to do on our own, and it goes beyond just our day-to-day projects. If I have an IT issue at the SPD, I'm able to call on the school district's IT department for help, and vice versa."

This kind of relationship between governmental organizations is highly unusual, notes Trudell. "Police departments are, by their nature, insular. It's really rare for us to work this closely with other agencies." He says that what put the resource sharing initiative over the top was the strong collaborative relationship that evolved during the solution's pilot at Fowler High School. "We had been talking to all of the city IT departments about these projects, but the police department and the school district developed this very close relationship that worked really well. The environment and the personalities all meshed."

School district Deputy Superintendent, Anita Murphy, concurs. "The school district has a lot more IT people than the police department does," she says. "It just makes sense for us to share that resource. It makes sense for the leaders of all the city's organizations to agree that we shouldn't have redundant resources."

A winning proposition for all concerned

"This has been of tremendous benefit for all parties," adds Murphy. "On a very basic level, the police get their hotspot connectivity without having to go and install a whole new infrastructure, while the school district, in turn, gets guaranteed police presence near the schools, which enhances public safety. But it's about much more than that. Because of the link that we have, we've been able to move forward with all of our other projects, such as digital video surveillance at all of our schools."

Key Components

Services

- IBM Global Business Services

Why it matters

By leveraging existing investments in IT infrastructure made by the City of Syracuse School District, the Syracuse Police Department has been able to gain wireless access to its own network from the field without having to install a costly, redundant infrastructure. Moreover, the police and school IT departments share human and IT resources, further extending their budgets and enhancing their capabilities. This collaboration helps to improve public safety by keeping officers out in the community and also gives the police new capabilities, such as direct access to school surveillance video and electronic door locking systems.

A significant driver of the resource sharing initiative was the availability of a substantial amount of money for school security. “This was a really strong motivator,” Murphy says. “We had to do this security project anyway and we wanted to do it right. We knew that the police department was doing things over on their side as well. So working together was an obvious step to take.”

IBM, facilitating innovation

IBM Global Business Services provided solution and architecture design, planning out the infrastructure for the various projects and helping to implement them. But, according to Trudell, a critical IBM contribution didn’t come in the form of formal service contracts. “IBM had the foresight to introduce us to one another and suggest that we work together in the first place. That’s something that doesn’t really fit with the culture of these two kinds of organizations. But, surprisingly enough, it works really well. We have a relationship that doesn’t involve a lot of turf conflicts or bureaucracy. We share common needs, and we’re able to work together to get our jobs done very effectively.”

While resource sharing has allowed the two organizations to stretch their budgets, Murphy notes that collaborating is more important than just saving money. “We’re all resource-scarce. Collaborating, and having the two organizations working as one, lets us make the most of what we’ve got IT-wise,” she says. “But the bottom line is that we’re all working for the public here. At the end of the day we can go to our bosses and say, ‘This benefits the schools, the police department, the whole city government…and the community itself.’”

For more information

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Produced in the United States of America
1-08

ODC03063-USEN-00

CLS transforms worldwide foreign exchange trading with IBM

Overview

■ ***Business challenge***

- *To eliminate the risk of default on foreign exchange dealings caused by time zone differences between global banks*
- *Leading financial institutions needed to transform foreign exchange settlement processes to enable simultaneous and real-time settlement of payment instructions associated with foreign exchange transactions, while accommodating growth and service expansion.*

■ ***Solution***

- *Leading global banks set up CLS Bank to design a unique, innovative real-time process for the settlement of payment instructions associated with foreign exchange transactions*
- *CLS partnered with IBM to design, develop and manage the IT applications and infrastructure needed to support the uniquely secure new process*
- *The solution is delivered by IBM Global Technology Services Worldwide Strategic Outsourcing.*

■ ***Key benefits***

- *Provides a streamlined, resilient, innovative service, processing more than 50% of global foreign exchange transactions, peaking at $5.4 trillion a day and growing*
- *Eliminates the foreign exchange settlement risk caused by time-zone differences*
- *A real-time uniquely secure global system able to flex to meet the demands of a growing market.*

CLS Group has worked closely with leading international banks to eradicate settlement risk in foreign exchange trades due to time zone delays. The company has created a unique end-to-end process that integrates with the operations of the global banking community and provides the world's only system for the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

The global foreign exchange market trades several trillion US dollars each day in multiple currencies, involving central banks such as the Federal Reserve, the European Central Bank, the Bank of England and almost all of the world's leading commercial banks.

Foreign exchange (FX) transactions used to be settled directly between banks often in different time zones. Due to the temporal nature of cross border settlement, the exchange of payments related to FX transactions was not simultaneous, setting up the possibility of counterparty default (also known as settlement risk). The challenge was to eliminate this risk or face being charged for providing some form of security for the risk.

Radical rethink

This was the trigger that led 60 of the world's leading financial institutions to create CLS Group (CLS) - a new business incorporating a single-purpose FX bank, CLS Bank International (CLS Bank). CLS had the mission to radically rethink the way FX markets work and eliminate settlement risk.

CLS analysed the operations of the FX market and designed an innovative straight-through process called 'continuous linked settlement'. CLS Bank links the local central bank Real Time Gross Settlement (RTGS) systems during a five-hour window of overlapping business hours and facilitates the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

> *"It would have been difficult to have established and extended this resilient settlement system for one of the world's major financial markets without the commitment, skills and capabilities of IBM,"*
>
> *– Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank.*

Business benefits

- Provides a streamlined, resilient, innovative service, processing more than 50% of global foreign exchange transactions, peaking at $5.4 trillion a day and growing
- Eliminates the foreign exchange settlement risk caused by time-zone differences
- A real-time uniquely secure global system able to flex to meet the demands of a growing market
- Multilateral netting process improves liquidity and frees funds for further investment
- A standard legal framework for finality
- Conforms to the regulatory requirements of the Federal Reserve Bank of New York
- Mirrored environments in multiple data centres to deliver the highest levels of resilience and business continuity
- Reduced reconciliation costs and increased efficiency of foreign exchange operations
- Reduced complexity based on a single supplier for a full-scope IT solution: design, build and run.

Continuous linked settlement is enormously complex to deliver. Nothing of this scale had previously been tackled and a sophisticated technology environment was needed to facilitate the unique same-day settlement process.

A global partner for innovative systems design

After evaluating a number of candidates, CLS chose IBM as strategic partner for business application consultancy and to provide and manage CLS's entire IT infrastructure.

IBM Global Business Services worked closely with CLS experts to translate the requirements of the continuous linked settlement processes into a secure, high availability IT and communications infrastructure. The relationship between CLS and IBM has continued and developed beyond the launch to cope with a significant expansion in FX business and to handle the forthcoming launch of new products.

The original application development undertaken by IBM required the development of 200 main and 6000 individual programmes incorporating approximately 2 million lines of code. A secure messaging system was constructed to provide total reliability in communicating high volume daily online transactions to and from the SWIFT network.

Expanding the technical infrastructure to match business growth

The CLS service went live in 2002, and has proved immensely successful since that date. The system was designed to handle a maximum daily average of 240,000 trades, but growth has significantly exceeded expectations and IBM has recently implemented enhancements to allow a daily average of 350,000 trades with plans in place to take this to 500,000 during 2007.

To accommodate this unexpected business expansion, it was critical that the systems infrastructure developed by IBM could evolve to keep pace.

"Our relationship with IBM has developed into a strong, co-operative partnership. IBM has been quick to extend and enhance our technical infrastructure, and it has reacted very positively and flexibly in supporting our response to the huge increase in demand."

– Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank

"Since the launch of CLS, we have moved into a period of growth as we take on more settlement members, increase trading volumes and add more currencies," commented Rob Close, Chief Executive Officer of CLS Group and President and CEO of CLS Bank. "Our relationship with IBM has developed into a strong, co-operative partnership. IBM has been quick to extend and enhance our technical infrastructure, and it has reacted very positively and flexibly in supporting our response to the huge increase in demand."

A broad set of skills to address complex challenges

The systems that underpin CLS's operations are complex and involve a wide range of technologies. Extending this infrastructure to accommodate the rapid growth in transaction volumes, presented some serious technical challenges.

The original rationale for choosing IBM as the strategic partner to design and build the IT infrastructure has really come into play since the launch of the CLS service. IBM has a global presence, skills in the complete range of computer and network technologies, and a good understanding of the workings of global financial markets. Its integration skills have proved important in linking CLS with banks around the world through global communication networks. Banks communicate with CLS Bank via the secure messaging services provided by the Society for Worldwide Interbank Financial Telecommunication (SWIFT).

"It has been extremely valuable to be able to draw on the resources of the world's largest services and technology company to support our business growth," Close added.

High availability infrastructure

Performance, resilience and security are all of paramount importance. IBM's strategic outsourcing services provide a fully resilient computer and communications infrastructure, with full network and systems management services. The infrastructure comprises ultra-reliable, ultra-high performance IBM System p servers hosted in two IBM data centres, providing assured business continuity with data mirroring of transactions for rapid switchover. The hosted service gives CLS total flexibility to scale operations as the number of participating banks and the volume of FX transactions grows.

The entire CLS global foreign exchange settlement system is audited and the IBM hosted service routinely satisfies the rigorous security, availability and reliability standards imposed by the Federal Bank of New York (the Fed) which regulates CLS's operations.

Following events such as 9/11, the Fed has imposed additional requirements on CLS to provide increased resilience in its FX settlement systems. In response, IBM has constructed a second command centre in the USA to mirror processes 24*7 from the principal UK facility, and is in the process of constructing a third data centre in continental Europe.

The speed, volume and complexity of FX trades mean that complete regional resilience is essential. Continuity measures specified by CLS and implemented by IBM will ensure that FX markets continue to function uninterrupted, should a major disruption occur in any one country.

"It would have been difficult to have established and extended this resilient settlement system for one of the world's major financial markets without the commitment, skills and capabilities of IBM," Close added.

Key components

Software

- IBM DB2
- IBM AIX
- IBM Tivoli Systems Management
- HotScan OFAC filter from Logica CMG
- FED gateway using the Fundtech PayPlus$package
- CTS

Servers

- IBM System p
- IBM System x
- IBM ESS (Shark) storage

Services

- IBM Global Technology Services – Worldwide Strategic Outsourcing
- IBM Global Business Services – Application Management Services
- IBM Global Financing

Why it matters

The irrevocable settlement of FX trades in 15 currencies via the resultant transfer of multilaterally netted central bank funds.
Global banks needed a safe and secure means of settling foreign exchange trades to eradicate settlement risk due to time zone differences. CLS designed an innovative straight-through process called 'continuous linked settlement' and partnered with IBM to translate the business requirements into a secure, high performance technical infrastructure. CLS now handles volumes which peak at over 500,000 transactions a day involving currency trades valued at up to $5.4 trillion, and is now the preferred way of settling global FX payments. CLS in partnership with IBM has created the world's only system for the simultaneous and irrevocable settlement of payment instructions associated with FX trades.

Successful FX settlement process

Since the launch of CLS, from anywhere in the world, banks are able to settle foreign exchange trades simultaneously and irrevocably through CLS Bank International via the IBM hosted service. The service has proved flexible and resilient in coping with the growing volume of business, which peaked at 502,000 transactions in one day.

To have achieved such rapid, wide-scale acceptance of a completely new on-line settlement process in one of the world's most critical financial markets is impressive. CLS Bank International has rapidly become the preferred way to settle currency transactions.

Banks have greater liquidity and are able to make their foreign exchange funds work harder. Same day settlements mean that there is less need for intraday credit, and a higher volume of trading can be conducted without increasing credit limits.

Foreign exchange settlements through CLS

Daily value of instructions	US $2.7 trillion – Peak day $5.4 trillion
Average daily instructions	250,000 (1 for each side of a trade) – Peak day 502,000
Currencies settled	15 (increased from an original 7 currencies)
Settlement Members (shareholders in CLS)	55
Participants trading daily through CLS	750 banks, corporates, non-bank financial institutions and investment funds
% of global currency traded through CLS	Over 50%

Errors are minimised and resources devoted to transaction matching and reconciliations vastly reduced. This has generated significant cost savings for CLS Bank's Settlement Members.

Rob Close concluded: "Volumes continue to grow ahead of expectations. The coming year will see CLS Bank extend its product portfolio for non-deliverable forwards (NDFs) and FX option premiums, encouraging greater participation and volume growth. IBM continues to work closely with us and will play an important role in increasing regional resilience and supporting our extended product range."

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ACEE3525-00

Rational. software

IBM

DTCC leverages IBM Rational AppScan software to help protect its financial transactions.

Overview

- ***Challenge***
  To create security-rich applications that could handle the clearance and settlement of more than US$1 quadrillion in securities transactions per year, DTCC needed to implement rigorous security practices as part of its application development process.
- ***Solution***
  DTCC educated its application developers on building security into the Web application development lifecycle, and the company leverages IBM Rational® AppScan® software to identify, analyze and remediate security issues from early development through live deployment.
- ***Key Benefits***
  DTCC is able to perform automated security, compliance and integration testing on its Web-based applications, while adding 225 new applications per year, improving its developer productivity and speeding time to market for new applications.

The Depository Trust & Clearing Corporation (DTCC) provides custody and asset servicing for more than 2.5 million securities issued from the United States and 100 other countries and territories. In addition, DTCC is a leading processor of mutual funds and insurance transactions, linking funds and carriers with their distribution networks. The company employs approximately 450 application developers to create products for its customers, who include brokers, dealers, institutional investors, banks, trust companies, mutual fund companies, insurance carriers, hedge funds and other financial intermediaries.

To create security-rich applications capable of handling the clearance and settlement of more than US$1 quadrillion in securities transactions per year, DTCC needed to implement rigorous security practices as part of its application development process. Attacks against organizations storing confidential personal and financial information are on the rise—plus, they are becoming increasingly sophisticated. Because DTCC creates and modifies so many Web applications each year, it quickly became critical that the company implement comprehensive Web application security vulnerability testing practices—particularly for projects determined to have a high security risk.

DTCC sought to deploy an information security program across its entire organization. The company's corporate information security (CIS) department recognized that sound security practices required not only the right technology, but also an education program to help developers and users better understand how to protect and secure company assets.

DTCC leverages IBM Rational AppScan software to help protect its financial transactions.

Key Components

Software

- *IBM Rational AppScan*

Turning to IBM

The CIS group began by recruiting security team leaders for each development team across the company's different development platforms; then the group provided those leaders with six weeks of training on security-rich application development. Once the training was complete, the team leaders rejoined their teams as security experts, passing on best practices, coaching and support.

To identify application security issues and report them to the development team for remediation, the CIS group needed to deploy a vulnerability management tool. Jim Routh, chief information security officer (CISO) at DTCC, found that AppScan software provided the functionality the company needed. "We did very thorough, extensive and competitive analysis of secure application development and vulnerability assessment tools, and use them as the cornerstone of our information security practice," he explains. "AppScan was chosen because it really met all our requirements nicely, and we'd also gotten good results from using it in the past."

AppScan software helps address the security and compliance of Web applications throughout the software development lifecycle. DTCC uses AppScan to scan its Web applications, test for security issues and develop actionable reports and fix recommendations. The application also helps the company maintain confidence in its production environments by providing continuous auditing for known vulnerabilities and by reporting on compliance-related issues. The scanning capabilities of AppScan, combined with its advanced remediation recommendations and a comprehensive reporting system, help simplify ease of use. As a result, DTCC has been able to enhance developer and security team productivity, facilitate security compliance management and protect its Web application infrastructure.

"We turned to AppScan as our tool of choice for end-to-end security vulnerability assessment of the applications and code for high-risk applications," says Routh. "That assessment was conducted by a dedicated team of integration testers addressing high-risk and complex applications. AppScan is so comprehensive in its ability to identify and help remediate vulnerabilities that it serves as an industrial-strength assessment tool for our corporate information security team to oversee the secure application development process."

"AppScan is so comprehensive in its ability to identify and help remediate vulnerabilities that it serves as an industrial-strength assessment tool for our corporate information security team to oversee the secure application development process."

—Jim Routh, CISO, DTCC

Facilitating better integration testing

DTCC also leverages AppScan vulnerability assessment capabilities to automate advanced integration testing. Some of the company's Web-based applications pull files off a database server, either the company's mainframe or another server, and leverage those files to complete the workflow of the application. Such integrations are critical to the company's operations, yet are often difficult to scan for vulnerabilities. AppScan enables DTCC to perform Web application vulnerability security scanning by performing real-world usage tests, checking for vulnerabilities where application code is used by multiple products, and monitoring Web-based service interactions.

"The security and reliability of our product is what DTCC's business and reputation are dependent upon, so our focus was first upon how to make our application developers smarter and more skilled in information security as it applies to application development," comments Routh. "When first implementing vulnerability management, if it's done properly you'll actually find more vulnerabilities over time. The numbers don't decrease, because that's part of the maturity curve. Eventually the vulnerabilities do go down, as they have now for us. But the real key is that we have the education in place and now implement security early in the application development lifecycle, so we have less overall vulnerabilities to manage."

> *"The real key is that we have the education in place and now implement security early in the application development lifecycle, so we have less overall vulnerabilities to manage."*
>
> *—Jim Routh, CISO, DTCC*

Tailoring education to each employee

So far, Routh finds that the company's efforts are paying off. "My perspective is that one of the most strategic tools a CISO has is education and awareness," Routh states. "We implemented employee education and awareness to teach them that any network access, Web use or device connecting to the DTCC network can have security risks or vulnerabilities—or be compromised. The more knowledge people have on best practices and the implications for information security, the better their decision-making ability, and the easier my job becomes."

> *"The more knowledge people have on best practices and the implications for information security, the better their decision-making ability, and the easier my job becomes."*
>
> *—Jim Routh, CISO, DTCC*

Every person in the company required different levels of and approaches to training, depending on their job and day-to-day business functions. In the process of educating key stakeholder groups within DTCC, the CIS team recognized that application developers had the greatest need for education. Like many organizations, DTCC had devoted a lot of time to addressing its perimeter security, but it had done less to address potential application vulnerabilities.

"My charter mandate for the application development security program, and the foundation of our entire information security program, was not just to better secure our code, but to better educate all 450 application development professionals on best practices for creating secure applications, and apply information security controls throughout the entire application development lifecycle," says Routh.

With the developers better educated and now building increasingly more security-rich code, DTCC is realizing impressive value from its AppScan software investment. And the application provides even more value for DTCC's systems integration group, which uses AppScan to perform security testing across platforms in a specialized way, creating a kind of derailment tool the group can use to test DTCC's most critical applications and live Web deployments.

Building more secure applications from the ground up

Today, DTCC application developers are trained and certified on security-rich application development lifecycle and security best practices. Dedicated experts regularly perform vulnerability assessments with AppScan, the company's tool of choice for highly complex applications. Security is designed and built into more than 225 new applications per year, right from development throughout the lifecycle of the application. DTCC feels that the AppScan solution has stabilized its processes and practices, providing industrial-strength vulnerability assessment and remediation for its high-risk and complex applications.

For more information

To learn more about IBM Rational AppScan software, contact your IBM representative or visit:

ibm.com/software/rational/offerings/testing/webapplicationsecurity

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Produced in the United States of America
12-07

RAC14015-USEN-00

DTE Energy unlocks synergy and gains flexibility with common, integrated business processes

Overview

- ***Business Challenge***
  With the utility business becoming more competitive by the day, Midwestern energy giant DTE Energy needed to position itself for the future. Disparate systems and process fragmentation across nearly 200 different business units prevented the company from realizing all of the underlying synergies from acquisitions.
- ***Solution***
  With the help of IBM, DTE Energy undertook a massive consolidation of its business systems, which made possible the complete redesign and standardization of its business processes across all business units. DTE Energy chose IBM's Maximo Asset Management integrated with SAP, Advantex, ESRI, and Primavera. DTE Energy can now drive optimization efforts as an enterprise—not a collection of business units.

DTE Energy is a 150-year-old company with $9B in revenues and manages $23B in assets. These include Detroit Edison with 2.2 million electric customers, nine fossil units, and the Fermi 2 nuclear power station, generating 11,000 megawatts, as well as MichCon, serving 1.3 million gas customers in Michigan. DTE Energy operates non-regulated businesses in 38 states.

- ***Key Benefits***
  - *Projected $75 million in annual operating cost savings*
  - *Improved decision-making through increased transparency across business units*
  - *Unified access to inventory availability across all businesses*
  - *Improved ability to share and implement best practices across the enterprise*

Over the years, much has been said about the pros and cons of diversification and vertical integration. In today's increasingly globalized economy, the prevailing view of the "right" business model stresses the importance of maintaining a single strategic focus and remaining flexible to adapt to a dynamic marketplace. Utilities, however, stand as a notable exception to this maxim. Indeed, some of the most effective utility business models combine distinctly different lines of business—whether it's

Business Benefits

- Projected $75 million in annual operating cost savings
- Improved decision-making through increased transparency across business units
- Unified access to inventory availability across all businesses
- Elimination of mainframe
- Reduction of interfaces
- Improved ability to share and implement best practices across the enterprise
- Consistent integration of acquired companies, enabling faster realization of operational synergies

> *"Our goal was to establish a platform for DTE Energy to thrive in a dynamic and challenging environment. We achieved our key objectives of integration and modernized our technology. We think IBM products and their integration were keys to our project's success."*
>
> – *Ron May, Senior Vice President, Major Enterprise Projects, DTE Energy*

natural gas and electric power, generation and distribution, or nuclear and non-utility businesses. That's because despite obvious differences, these lines of business have much in common below the surface in such competency areas as effective work planning, common processes based on best practices, and inventory optimization.

Orchestrating optimization

Unlocking the potential efficiencies embedded in utility business models requires a level of operational orchestration across the entire business, whether it's common processes, common resources or supply-chain integration. In the wake of industry consolidation, many utilities have assembled a business portfolio that looks synergistic on paper, but still faces tremendous challenges in aligning with their acquired or merged businesses. DTE Energy, comprising Detroit Edison and Michigan Consolidated (MichCon) Gas, is one company that has risen to the challenge. Complementing its regulated electric and gas utility businesses are a highly diverse array of non-regulated businesses, ranging from coal transportation to energy trading.

Like most utilities that have grown through acquisition, DTE Energy's efforts to consolidate the business were constrained by a proliferation of systems, which—by keeping information confined to pockets within business units—made it difficult to gain insight required to make critical business decisions. Though the problem was not new, it reached a new level of intensity in the immediate aftermath of the MichCon merger. Disparate systems across the organization provided difficulties with a number of activities, from financial reporting to spare parts inventories. Such were the challenges that led DTE Energy, a company with 2007 revenue of $9 billion, to rebuild the foundation of its business from the ground up, and to choose IBM as a partner to help it get there. DTE Energy wanted to improve the management of all business units and functions, link them together and make them best-in-class.

New and improved

The focus of DTE Energy's transformation efforts is an innovative project named "DTE2," which delivered an ERP called "Enterprise Business Systems (EBS)." As the name connotes, its aim is to position DTE Energy to meet a new set of challenges by fundamentally changing nearly all of its core business processes. Part and parcel of this effort was the need to establish a common, standardized set of business applications that could be employed across the company's business units, a task whose complexity—based on a wide variety of business models and processes at work within the company—cannot be overstated. To address the company's more general finance, human resources and supply chain requirements,

DTE Energy selected SAP. The other major application area—more specialized and in some ways more operation-critical—was asset management and work management. DTE Energy wanted to be able to manage "all types of assets" on one common system, including fossil, nuclear, gas and electric distribution, facilities, vehicle fleets, and, even—in the future—rail cars used to transport coal across the Midwest.

Among its many uses, asset management is critical for utilities seeking to proactively service and maintain their $23 billion base of plant and equipment in order to minimize downtime and thus deliver the highest quality service to customers. With the utility workforce aging, asset management systems have become an increasingly important way for utilities to do more with less. Work management systems work hand in glove with asset management by helping utilities control the resources—human and material—required to get these critical jobs done. DTE Energy selected the IBM Maximo® Asset Management as its assets and work management platform and selected IBM Global Business Services to not only design and deploy the overall EBS solution, but to help integrate it deeply into the fabric of the business.

It's not every day that a utility with operations in 38 states has the opportunity to build a clean slate IT infrastructure for the future, and DTE Energy was determined to make the most of it. While the best-of-breed applications it selected provided solid building blocks, the company realized that integration was the essential ingredient needed to achieve the flexibility, efficiency and transparency it sought. IBM helped advance this vision by designing the EBS architecture to employ service oriented architecture (SOA) components—most notably IBM WebSphere® Enterprise Service Bus—to link processes and applications across all of DTE Energy's business units. IBM System p™ servers provide the hardware platform for EBS, while IBM DB2® provides a common data repository for all applications. With this as a foundation, the IBM team then supported DTE Energy to optimize business processes in a way that took maximum advantage of its SOA-based integration capabilities.

By running all of its business processes on a consolidated platform, DTE Energy now has a way to unleash the potential synergies and operational efficiencies that were difficult to achieve due to the fragmentation of systems and information. The DTE2 project eliminated more than 400 legacy systems and interfaces. Consider, for example, the highly specialized spare parts required to fix and maintain power generation equipment, whose importance to plant operations is the ability to view all parts inventory levels. Because the new system enables employees to view parts inventory levels across all plants—not just their own—they have the ability to find a part within another DTE Energy facility.

Key Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM DB2
- IBM Maximo

Servers

- IBM System p

Services

- IBM Global Business Services

Timeframe

• Selected IBM	3Q 2003
• Phase 1 – Go live Fossil Generation	3Q 2005
• Phase 2 – Go live Enterprise	2Q 2007
• Expanded Deployment	Ongoing

Why it matters

In an industry where diversity reigns, Midwestern energy giant DTE Energy is more diversified than most, with operations that range from coal transportation to appliance repair services and nuclear power. Using SOA technology, DTE Energy was able to consolidate all of its highly diverse businesses under one core business platform—enabling the realization of operational synergies that would have otherwise been difficult to achieve.

In terms of what's important to any utility, nothing comes before safety and reliability—and no application has any greater impact on these outcomes than asset management. A key part of asset management is the ability to perform preventative maintenance (PM) on key assets, not just because it catches problems before they happen, but because it enables utilities to plan and execute PM in a way that optimizes the use of their human and financial resources. Because EBS provides a single window onto all PM requirements, DTE Energy can now manage PM holistically instead of on a plant-by-plant basis. DTE Energy also stands to gain more flexibility in prioritizing plant maintenance work. The centralization of asset management reporting means that DTE Energy can conform more rapidly to any new financial reporting requirements.

Sharing the best

The broad theme of the DTE Energy story is how flexibility and integration enable even the most complex companies to think, act and optimize as a single company. It's seen in the way process standardization and flexible, SOA-based integration enables DTE Energy's business units to share and adopt best practices for the benefit of all, and how these same attributes enable DTE Energy to rapidly and fully integrate future acquisitions. Ron May, Senior Vice President, Major Enterprise Projects, expects EBS to elevate the company to a whole new level of operational efficiency.

For more information

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Produced in the United States of America
July 2008

ODC03081-USEN-00

École Polytechnique Fédérale de Lausanne builds the first biologically accurate, functional model of the human brain.

Overview

École Polytechnique Fédérale de Lausanne (EPFL)
Lausanne, Switzerland
www.epfl.ch

Industry
- Education and life sciences

Products and services
- IBM Blue Gene

"A few seconds of computer simulation could replace days, even weeks, of wet lab research."

—Henry Markram, project head and founder, Brain and Mind Institute, EPFL

One of two higher-learning polytechnic schools in Switzerland, the EPFL has three missions: education, research and technology transfer at the highest international level. The 10,000-person campus, which is situated in an idyllic location on the shores of Lake Geneva, stimulates collaboration between students, professors, researchers and entrepreneurs.

Challenge

Scientists are advancing each year in their understanding of how the brain works, and many of their discoveries are the result of high-resolution computer modeling. Modeling the brain at the cellular level is a massive undertaking because of the hundreds of thousands of parameters that need to be taken into account. Launched in 2005, EPFL's Blue Brain project is working to develop the first biologically accurate, functional model of the human brain, with molecular-level models of neurons and cellular-level models of brain circuitry. And the school plans to do this by 2015.

Solution

An IBM Blue Gene® supercomputer running simulations of the brain down to the molecular level is helping EPFL researchers gain new insights into internal processes such as thought, perception and memory. The Blue Brain model can be thought of as a three-dimensional database receiving data about various brain regions from networked researchers around the world. Much of the pretesting and planning normally required for a major experiment can now be done "in silico" rather than in the laboratory, greatly speeding the research on brain function.

Benefits

As a result of these high-level supercomputing sessions, EPFL scientists will have the tools they need to understand brain function and advance research into neurological and psychiatric disorders. They expect to advance brain research rapidly by running simulations of the brain in close to real time.

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Produced in the United States of America
November 2008

ODC03117-USEN-00

GILFAM saves time and costs with an electronic land registry application.

Overview

GILFAM
Colmar, France
www.gilfam.fr

Industry
- Government

Services
- IBM Global Business Services

"Security was as important as convenience in designing the electronic land registry system. IBM addressed our concerns by creating a secure biometric identification system for authenticating judges' signatures."

—Jean-Luc Vallens, President, GILFAM

GILFAM is a government organization established for the purpose of computerizing and automating the land registry systems for Livre Foncier d'Alsace Moselle, the land registrar in eastern France.

Challenge

In the Alsace and Moselle jurisdictions of eastern France, land ownership records had been stored locally in 46 courthouses offices for years. The handwritten records—kept in 40,000 paper volumes—are available to the public and to business professionals. The system had worked for a century, but the paperwork had become unwieldy and unsuitable for modern needs. French Ministry of Justice and the local authorities of Alsace & Moselle formed GILFAM with the expressed purpose of replacing paper documents with an automated system of electronic records. The organization's primary concerns were with ensuring security and proper authentication.

Solution

GILFAM engaged IBM Global Business Services On Demand Innovation Services (ODIS) to create a security-rich, online land registry system. IBM consultants designed and built an innovative information system to serve as the legal reference and clearinghouse for the owner of each piece of land. To help prevent unauthorized access to documents, IBM built a biometric authentication framework into the land registry application, requiring fingerprint verification for judges validating records.

Benefits

- Improves convenience for citizens and businesses while reducing costs in the long term – 2.5 million registrations are now online
- Notaries will no longer have to travel to local courthouses to get copies and to register the 750,000 registration transactions processed per year

For more information

To learn more, contact your IBM representative or visit:

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Produced in the United States of America
05-08

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GBC03012-USEN-00

Fetranspor accelerates Rio transportation with IBM System z

Overview

- ***Challenge***
  Replace costly and slow paper-based ticketing with a smartcard-based e-ticketing solution, with Web purchasing; reduce fraud and cut costs
- ***Solution***
  Working with Montreal Informática and IBM Business Partner Ingram Micro, Fetranspor implemented an IBM eServer™ zSeries® model z890 server, IBM WebSphere® Application Server for z/OS®, IBM DB2® Version 8 for z/OS and a suite of DB2 Tools for z/OS
- ***Key Benefits***
  Reduction in fraudulent travel, lower ticketing administration costs, new information-gathering capabilities to assist business management, reduced time spent in line for customers, better total traveler experience

Fetranspor (Federação das Empresas de Transportes de Passageiros do Estado do Rio de Janeiro, www.fetranspor.com.br) is the public transport authority in the state of Rio de Janeiro, Brazil, dedicated to "better transport, better quality of life." The organization co-ordinates the activities of ten groups of unions, which combined are responsible for more than 80 percent of public transportation in Rio de Janeiro state.

The bus network is very large: some 19,000 vehicles travel on more than two thousand lines and inter-city routes, completing more than 10 million passenger trips daily, of which more than 4 million are free journeys for pensioners, students and the disabled.

Issuing, checking and validating tickets for such a vast number of travelers were expensive and complicated—and frustrating for customers standing in line. Fetranspor wanted to streamline its ticketing operations, reduce fraud and cut costs, and at the same time improve the customer experience.

System z is just the ticket

Fetranspor engaged IT service provider Montreal Informática to design, build and run a complete electronic ticketing system based on a re-usable, re-chargeable smartcard called "RioCard"—nothing short of a revolution for Rio travelers.

Needing to handle very high transactional volumes, Montreal Informática selected an IBM System z™ solution, choosing an IBM eServer zSeries z890 server as the cornerstone for the new solution, with IBM DB2 Version 8 for z/OS, DB2 Tools and IBM WebSphere Application Server for z/OS software. Montreal Informática additionally selected System z Application Assist Processor (zAAP) technology to drive down the costs associated with managing millions of online ticket purchases per month.

Arthur Soares, Director of Technology at Fetranspor, says, "System z, WebSphere and DB2 are at the heart of our modernization of public transport ticketing in Brazil. The ticketing applications handle more than 1.5 million card swipes a day, and the validation points on buses, subway and in train stations read over 2 million swipes daily. With IBM and Montreal Informática, Fetranspor has built a modern, highly reliable ticketing system that has cut our ticketing costs by around 1.5 percent, representing around US $500,000 in cost-savings per month. The solution also makes it easier for ticket buyers and speeds the journeys of the traveling public."

He adds, "The new system has reduced ticket purchase time with a growing proportion of ticket sales being made online. Boarding busy buses and trains is now faster, using the RioCard swipe, while lost or stolen cards can be immediately blocked, reducing fraud and loss of revenues."

The System z, WebSphere and DB2 solution enables fare revenues to be distributed to each of the 239 companies that comprise Fetranspor within just 24 hours—compared to three or four days previously. In addition to improving cash flow, this has also improved the accuracy of payments.

"With IBM and Montreal Informática, Fetranspor has built a modern, highly reliable ticketing system that has cut our ticketing costs by around 1.5 percent, representing around US $500,000 in cost-savings per month. The solution also makes it easier for ticket buyers and speeds the journeys of the traveling public."

– *Arthur Soares, Director of Technology, Fetranspor*

Zapping through transactions

Underlying the smooth customer experience is the scalable power of the System z server running a suite of IBM software: IBM DB2 Universal Database™ and associated tools for information management, and

IBM WebSphere Application Server for z/OS powering the consumer Web applications. DB2 delivers excellent performance and the power to tackle exceptionally large workloads—making it the ideal database platform for Fetranspor's needs. Similarly, WebSphere for z/OS offers the necessary robustness and high performance required to serve commuters quickly and reliably by enabling businesses to run Java™ Web applications next to mission-critical data for tightly integrated, highly secure and extremely efficient application and database serving.

The exceptionally high workload from online purchases is managed by the zAAP engine, a specialized processing unit that provides a powerful z/OS Java execution environment offload for the System z platform. zAAPs enable enterprises to process Java work on a one time charge engine, freeing up their general processes to address other workloads.

Soares says, "The zAAP engines give us excellent price-performance for our Java applications and enable them to benefit from the core qualities of the mainframe: high availability and security."

End-to-end IBM solution

Montreal Informática worked with IBM Business Partner Ingram Micro to specify and deploy the System z solution. Montreal Informática provides the solution as a service to Fetranspor, hosting and maintaining the server and software to agreed service levels.

To develop the solution, Montreal Informática first engaged IBM to perform a comprehensive study evaluating the capacity needed to support the new system, which led to the choice of the z890 server as the cornerstone of the infrastructure. Montreal Informática also selected IBM DB2 Version 8 for z/OS and a suite of DB2 tools including DB2 Administration Tool, DB2 Performance Expert, DB2 Utilities and DB2 SQL Analyzer. IBM WebSphere Application Server for z/OS, with its inherent capability to co-locate with DB2 for z/OS for high volume, critical workloads, is the logical choice to manage the customer-facing Web services. The products work together to ensure optimal system performance and handle routing tasks automatically, thus increasing the productivity of the support team.

Smarter ticketing

As travelers swipe their RioCards during transit, Fetranspor collects usage data, stored in DB2, to learn more about traffic flows, inter-system usage and traveler preferences too—not a possibility with paper-based ticketing. This allows Fetranspor to customize its pricing plans for season tickets and off-peak travel more accurately, to help manage the transportation system as an integrated network.

"The IBM System z, DB2 with related tools and WebSphere solution has helped us to deliver lower ticketing costs and better management information, meeting all our goals for the RioCard program. DB2 and WebSphere on the System z platform offer us excellent stability and performance, at low total cost of ownership," says Soares.

For more information

Contact your IBM sales representative or IBM Business Partner. Visit us at:

- **ibm.com**/solutions
- **ibm.com**/systems/z

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Somers, NY 10589
U.S.A.

Produced in the United States
February 2007

ZSC03015-USEN-00

First National Bank of Omaha puts the spotlight on service innovation in its "branch of the future."

Overview

- ***Business Challenge***
  First National Bank of Omaha wanted to create a new kind of branch that would raise the bar on customer engagement and satisfaction—and maintain its 150-year track record as a service innovator.
- ***Solution***
  First National worked with IBM to design and implement a "branch of the future" that orchestrates a range of new technologies to create a seamless self-service experience that strengthens the bank's brand while enhancing customer satisfaction.
- ***Key Benefits***
  - *Improved customer satisfaction and stronger customer relationships through a more engaging banking experience*
  - *Customer growth at 30 percent over target*
  - *Improved ability to provide the latest information on new products and services, thus improving cross-selling opportunities*
  - *Expected deeper penetration among younger, technologically savvy banking customers*

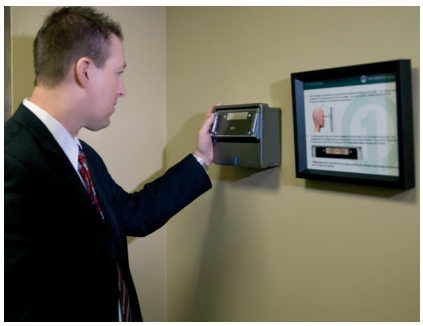
First National Bank is a subsidiary of First National of Nebraska, Inc., the largest private banking company in the United States with $20 billion in managed assets and over 7,500 employee associates located in 35 states. First National recently launched a "branch of the future" at its Shadow Lake branch, in Omaha, Nebraska.

In the realm of retail banking, the branch—once under the threat of becoming marginalized by ATMs and online banking—is undergoing a renaissance of sorts. There's been an evolution in the way banks think about the role of branches within their overall strategy. Underpinning this evolution, and in some ways driving it, is a richer and more nuanced understanding among banks of what their customers are looking for in an overall banking experience. Along the way, retail banks have also come to realize that all of their channels play specific, yet equally important roles in delivering this experience. The importance of a balanced

> *"Working with IBM has enabled us to enhance human interaction to create the ultimate customer experience. Essentially, we've merged the convenience of a full-service, community bank with the latest technology to redefine what the branch experience can be."*
>
> – *Rolland Johannsen, SVP of Retail, First National Bank of Omaha*

Business Benefits

- Improved customer satisfaction and stronger customer relationships through a more engaging banking experience
- Customer growth at 30 percent over target
- Strengthened brand through digital in-branch signage
- Improved ability to provide the latest information on new products and services, thus improving cross-selling opportunities
- Stronger appeal to younger, technologically savvy banking customers
- Reinforces the bank's image as a service innovator



First National's "branch of the future" enables customers to access their safe deposit boxes using the latest in iris scan technology.

and complementary channel strategy is behind the growing importance of multi-channel banking—whose goal is to align these channels to deliver a consistent, engaging and satisfying experience—as a source of competitive differentiation.

Elevating the retail banking experience

The retail bank branch is a critical part of this mix. For one, it's almost always the channel through which a bank first establishes a relationship with its customer and—over the life of the relationship—it represents the main point of physical contact the customer has with the bank. For this reason, a customer's experience using the branch can have a strong and indelible impact on the customer's perception of the bank. Under the "experience" umbrella, the range and quality of available services is a key element of the mix, as is courteous, informed and personalized service from branch staff. Just as important, however, is the physical backdrop against which the customer experience unfolds. Whether it's lighting and openness, unique applications of technology, or ancillary non-bank services, the physical dimension of the branch environment sends a powerful signal of the bank's commitment to providing a standout customer experience.

First National Bank of Omaha (www.firstnational.com), which recently celebrated its 150th anniversary, was determined to send just such a message to its customers. A subsidiary of First National of Nebraska, Inc., (the largest privately-owned banking company in the U.S.), First National Bank of Omaha planned to use its newest branch, in Shadow Lake Towne Center, to showcase its vision of the branch of the future. While convenient amenities and interior design were part of this vision, its dominant theme was to use innovative technology to pervasively transform the experience of customers using its branches, with Shadow Lake serving as a prototype of the model.

With the specifics yet to be defined, the First National team examined a number of options around in-branch self-service technology. What had proved most compelling was a first-of-a-kind display technology—called IBM Everywhere Branch Optimization—that the team had been shown at the IBM Industry Solutions Labs in Hawthorne, New York. Recently developed by IBM Research, Everywhere Branch Optimization uses a projector, advanced optics and "actionable" camera to project the image of a display on any two-dimensional surface that, when touched, can be used to trigger actions without the wiring typically associated with traditional terminal-based touch screen displays.

Intrigued by the possibilities of using Everywhere Branch Optimization to provide access to in-branch services, First National engaged IBM Global Business Services to lay out the possibilities and to help the bank further define how the technology would fit in with its branch of the future vision. With that foundation established, IBM refocused its mission on defining the overall architecture of the solution

and—most importantly—how it would all fit together to create a seamless, innovative experience for First National's customers. In addition to securing the appropriate internal resources, including staff from IBM's National Kiosk Practice, IBM also needed to coordinate with the third-party vendors that would be providing other elements of the solution, from kiosk software to the digital content that would be displayed alongside the solution. The team recognized that in every aspect of the project—from industrial design to technical implementation, and all points in between—the need for harmonization was paramount. To ensure this outcome, IBM Global Business Services took ownership of the project, coordinating with the other vendors involved in the branch of the future initiative to make all parts of the solution work together holistically.

A new level of customer engagement

The best way to describe how this was achieved is to take a virtual walk through the branch solution that came out of the project. When customers walk in First National's Shadow Lake branch, it isn't just the extraordinary openness of the space that first strikes them. It's also the prominently displayed trio of plasma welcome screens that present First National's latest products, services and marketing messages, which in the process reinforce the bank's brand identity. Among the other dynamic content shown on the screens is personal information on the key bank staff positioned in front of them, which helps to build a personalized relationship between the bank and its customers.

But what truly stands out from the Shadow Lake branch experience—and represents the most innovative application of technology—is the first-of-a-kind self-service solution that defines a whole new level of customer engagement. Designed with IBM Everywhere Branch Optimization at its core, the branch's "virtual koi pond" presents customers with a compelling, interactive gateway to information and self-directed branch services. At the literal center of the service is a menu of options projected as buttons onto the floor from above in the form of a circular koi pond (fish and all). Around it are four interchangeable kiosks. To choose an option, a customer steps on a button within the koi pond, such as "products and services" or "open an account." Using a specially developed pan/tilt video camera, Everywhere Branch Optimization then remotely detects which projected button the customer stands on, and based on that, sends a command to the software underlying the system. This triggers the system to direct the customer to one of the four kiosks by following a school of virtual fish within the koi pond. On the kiosk itself, the menu presented on the screen is automatically customized based on the customer's previous selection.

One of the kiosks' most advanced features is the ability to walk the customer through the entire account creation process, including the production of an ATM/debit card that customers get on the spot—without the usual wait. Branch

Solution Components

Solution

- IBM Everywhere Branch Optimization

Services

- IBM Industry Solutions Labs (Hawthorne, New York)
- IBM Research
- IBM Global Business Services

Timeframe

- Preliminary discussion of concept: 2 months
- Development of Solution: 3 months

Smarter Banking

Using new sensing technology developed by IBM Research, First National Bank of Omaha built a first-of-a-kind customer self-service solution that sets a new standard for providing an engaging retail banking experience. It represents the centerpiece of the bank's "branch of the future" vision.

customers wishing to access their safe deposit box can use another technology-enabled self-service feature that departs from the usual. In contrast to the traditional practice of escorting customers into and inside a secure viewing area with two keys, First National's branch of the future employs state-of-the-art iris scan technology to perform instantaneous, touchless authentication, which is not only secure, but also liberating. The fact that 80 percent of customers have signed up for this feature speaks to its appeal.

Bringing resources to bear

What made the project a success—and what led First National Bank to select IBM—was not only the quality of research it generated in its labs, but also having the depth of resources needed to bring these ideas into the real world and make them work. This included the ability to work with technology partners in a traditional integrator role. But it also meant marshaling the expertise needed to overcome more esoteric issues, from choosing the appropriate way of printing out cards at the kiosks to choosing the flooring material that would provide the best contrast for the projected "koi pond" display. To address some of these issues, IBM Global Business Services looked to other, comparable deployments for the appropriate solution; in other cases, the deep base of technical know-how within IBM's research facilities provided the necessary input.

In the coming months, First National's branch of the future will increasingly become a branch of the present when it begins to broaden the deployment of its new solutions to new and existing branches. By using design and technology to redefine the customer experience, Rolland Johannsen, SVP of Retail, expects First National to not only further strengthen its customer relationships, but also appeal to the younger banking customers with whom the future branch system is most likely to resonate. "Working with IBM has enabled us to enhance human interaction to create the ultimate customer experience," says Johannsen. "Essentially, we've merged the convenience of a full-service, community bank with the latest technology to redefine what the branch experience can be."

For more information

To learn more about how IBM can help you transform your business, please contact your IBM sales representative or IBM Business Partner.

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U.S.A.

Produced in the United States of America
November 2008

ODC03109-USEN-00

Geisinger Health System consolidates clinical, procedural and research data in a massive storehouse to aid best practices and improve care.

Overview

Geisinger Health System
Danville, Pennsylvania, USA
www.geisinger.org

Industry
- Healthcare

Products
- Clinical Decision Intelligence System (CDIS) solution
- IBM InfoSphere Warehouse 9 platform

Services
- IBM Global Business Services

IBM Business Partner
- Business Objects

GEISINGER

"Building upon our electronic health record experience, our work with IBM now sets the stage for Geisinger to expand its role as a national model for patient engagement, research, and education, as well as leading to business and growth opportunities."

—Glenn Steele Jr., MD, PhD, president and chief executive officer, Geisinger Health System

Founded in 1915, Geisinger Health System serves more than two million residents in central and northeastern Pennsylvania with three major regional medical centers, a 650-member group practice, a not-for-profit health insurance company and the Henry Hood Center for Health Research.

Challenge

Geisinger Health System sought to improve its electronic health record systems to organize information and integrate real-time clinical data with medical history. An integrated solution providing increased clinical insight would help identify clinical trends and best practices, ultimately improving patient care. However, Geisinger lacked the resources and expertise to develop the solution internally.

Solution

IBM implemented a Clinical Decision Intelligence System (CDIS) solution that leverages the health system's wealth of clinical data derived from its decade-long use of one of the industry's most advanced electronic health record systems. Based on an IBM InfoSphere™ (DB2®) Warehouse 9 platform, the solution forms the foundation for integrating clinical, financial, operational, claims, genomic and other data.

The analytics engine built around IBM Balanced Warehouse for AIX® technology consists of IBM System p5® 575 servers with an IBM System Storage™ DS4800 storage server and IBM Tivoli® Storage Manager software for local area network (LAN)–free backup to an IBM Linear Tape-Open (LTO) library. The data warehouse platform consists of IBM InfoSphere Warehouse Information Server software plus a reporting tool from IBM Business Partner Business Objects.

Benefits

- Consolidates information about injuries, illnesses and finance for a comprehensive patient view, including medical history
- Provides a massive storehouse of clinical information, procedure and research, enabling rapid analysis and reporting to foster best-practice care
- Enables extensive, diverse medical information to be used as the basis for medical research, treatments and life-saving breakthroughs

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Produced in the United States of America
January 2009

HLC03009-USEN-01

Geoscience Australia manages crucial data with a dynamic storage solution from IBM

Overview

- **Challenge**
  To help this government agency better accommodate and manage a large and growing data archive
- **Solution**
  Implementing an IBM System Storage™ TS3500 Tape Library, an IBM System Storage DS4200 disk storage system, and Scale-out File Services from IBM
- **Key Benefits**
  Increases storage capacity, improves operational efficiency, and enables faster access to over 1.2 petabytes of research data

Geoscience Australia was established in 1946 to facilitate systematic geological and geophysical mapping of Australia, to help ensure informed resources exploration. Today, Geoscience Australia continues to serve that mission, maintaining an archive of offshore seismic data and satellite remote sensing data that has been collected in Australia over the course of decades—and that continues to be collected to this day.

"We have a special law in Australia whereby companies that do offshore exploration for petroleum and gas are required to lodge the data they collect with our agency," explains Paul Trezise, Executive Officer of the Petroleum and Marine Division of Geoscience Australia. "After the confidentiality period specified in the law has expired, that data is then made available to others who may need to use it for their own work."

Because the data is retained indefinitely, the current archive contains data that dates back to the 1960s. The archive continues to grow at an exponential rate, as modern data collection techniques enable larger data sets to be collected more easily. Trezise estimates that the current archive contains over 1.2 petabytes of data.

Petabyte-sized goals

Maintaining an archive of this size, and providing ready access to it, began to pose challenges to the organization—challenges that Geoscience Australia sought to address through the implementation of a new storage solution. The agency initiated a formal tender process for a solution that would help them meet a number of goals for the archive. The first goal was to improve the speed of access to data. The second goal was to improve operational efficiencies, replacing labor-intensive and error-prone tasks with automated processes wherever possible. The third goal was to move the data to modern media that would take up less floor space, provide more storage flexibility, and accommodate the future growth of the archive.

A blended storage solution from IBM

At the conclusion of the tender process, Geoscience Australia selected IBM Premier Business Partner Tardis Services to provide an IBM storage

solution featuring an IBM System Storage TS3500 Tape Library and an IBM System Storage DS4200 disk storage system. The solution also includes Scale-out File Services performed by IBM Global Technology Services, who also provided project management, implementation, and integration services.

"We were fairly specific in saying what we wanted, and the IBM solution came out very favorably in the tender process," Trezise notes. "In particular it was very favorably priced compared to other options."

The IBM solution currently provides two petabytes of storage, giving the agency a comfortable margin above existing requirements. In addition to helping Geoscience Australia meet their primary goals for the archive, the blended IBM solution allows the agency to take advantage of the best features of both disk and tape to meet the needs of different types of data sets.

"A big step forward"

Trezise says the data migration process, which is currently underway, will likely take one to two years, but that the IBM solution will enable significant gains toward the agency's goals in the meantime. As higher priority data is migrated to the new system, for example, access times could be reduced from a month or more to as little as a day. Eventually, some data will even be available for immediate download from the agency's Web site.

"That will be a really big step forward," says Trezise. "The benefits will be quite dramatic."

Solution Components

Hardware

- IBM System Storage TS3500 Tape Library
- IBM System Storage DS4200

> *"The IBM solution came out very favorably in the tender process. In particular it was very favorably priced compared to other options."*
>
> *–Paul Trezise, Executive Officer of the Petroleum and Marine Division, Geoscience Australia*

For more information

Contact your IBM sales representative or IBM Business Partner. Visit us at: **ibm.com**/storage and **ibm.com**/services

For more information about Tardis Services, visit: www.tardis.com.au

For more information about Geoscience Australia, visit: www.ga.gov.au

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Produced in the United States of America
August 2008

TSC03044-USEN-00

Gewandhaus Gruber increases customer loyalty and sales revenue by using cutting-edge IBM and IBM Business Partner technology.

Overview

Gewandhaus Gruber
Erding, Germany
www.gewandhaus-gruber.de

Industry
- Retail

Employees
- 1,000

Products
- IBM Anyplace Kiosk
- IBM DB2® for Linux®

IBM Business Partner
- it-werke Technology GmbH

"The system is unusual and distinctive…it has a number of practical advantages… particularly in terms of lower operational costs. With no need to print cards, post them, manage them and replace them when lost, the savings are considerable."

—Svenja Wittrowski, project leader, Gewandhaus Gruber

Gewandhaus Gruber is a clothing retailer with a 350-year history of dressmaking and retailing. It currently has eight branch stores, two outlets and a sports shop where it sells both traditional Bavarian clothing and formal dresses of other brands.

Challenge

Gewandhaus Gruber is a successful mid-level to high-end clothing merchant in Germany. Wanting to better understand and reward its existing customers while attracting new ones, the company decided to implement a customer loyalty program. But traditional card-based loyalty solutions were predictable and could be expensive to maintain. Instead, the retailer sought a cutting-edge loyalty offering that would help it increase revenue and differentiate itself from its competitors.

Solution

Using a combination of IBM and IBM Business Partner technology, the retailer launched the first fingerprint identification–based loyalty program and payment method in Germany. The solution allows the client's loyalty club members to quickly and conveniently pay for items via a fingerprint scanner that also tracks purchases and that rewards members through loyalty incentives. Further, it provides Gewandhaus Gruber with in-depth sales reports that provide decision makers and marketers with valuable insight into the way customers spend their money.

Benefits

- Earned €2.6 million—15 percent—of annual revenue in just six months through approximately 4,500 club members
- Saved €100,000 in operational costs over a comparable card-based loyalty program
- Increased revenue by 4% and improved customer satisfaction

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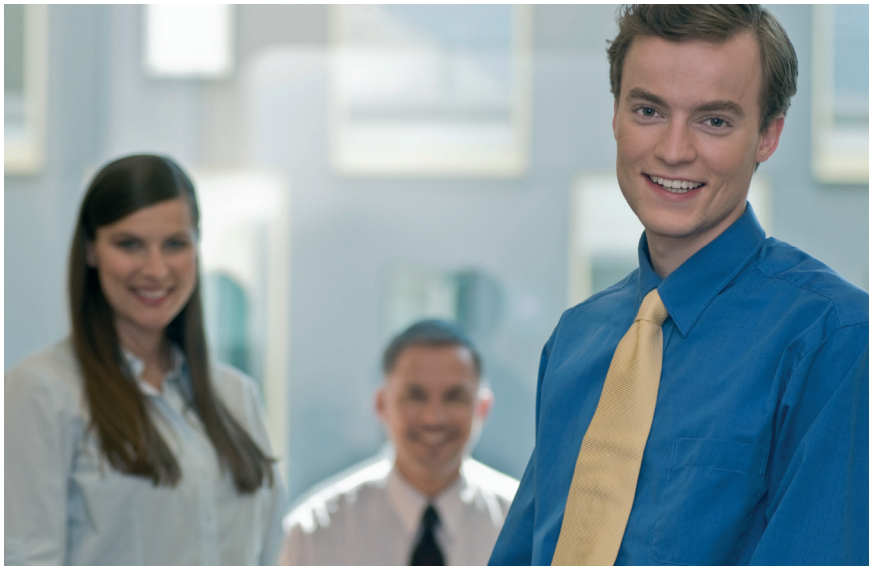
Produced in the United States of America
September 2008

REC03001-USEN-00

Groupe Mutuel puts a premium on business flexibility in redesigning its core processes

Overview

- ***Business Challenge***
  To achieve its goal of becoming number one in the Swiss health insurance market, Groupe Mutuel needed to become more flexible and cost efficient—but without changing the decentralized structure that is a pillar of its business model.
- ***Solution***
  Groupe Mutuel worked with IBM to map the key components of its business processes as a prelude to redesigning them. To support these new processes, the company built an SOA-based infrastructure that enables the reuse of services across all 14 of its business units.
- ***Key Projected Benefits***
  - *Reduction in operational costs through the standardization of backend processes*
  - *Reduction in the time and cost of integrating new acquisitions via SOA-based integration*
  - *Reduction in time to market with new insurance products*



Based in Martigny, Switzerland, Groupe Mutuel provides a wide range of insurance services to more than one million customers representing 1.8 million insurance contracts. The company, made up of 14 loosely coupled business units, is the second largest health insurance provider in Switzerland.

In 1996, Switzerland passed a law that fundamentally changed the nature of the health insurance market in that country. Reacting to rising costs and a tendency for insurance providers to skim the healthiest and lowest risk customers, Switzerland mandated that all of its citizens have health insurance. One hallmark of the plan is a reliance on private insurers, from whom consumers can choose from among multiple policies. With much of the rest of Europe following a state-sponsored health insurance model, this practice sets Switzerland apart. The other key element of the law is that consumers

> *"Our unique business model has been a big part of our rapid growth and success. By making our systems and business processes more flexible, IBM has helped us to evolve that business model to make Groupe Mutuel a stronger and more adaptable competitor."*
>
> – *Pierre Marcel Revaz, CEO and Founder, Groupe Mutuel*

Projected Business Benefits

- Reduction in operational costs through the standardization of backend processes
- Reduction in the time and cost of integrating new acquisitions via SOA-based integration
- Increase in customer satisfaction and retention through reduction in re-enrollment and claims cycle time
- Reduction in time to market with new insurance products
- Reduction in time required to comply with changing regulations
- Improvements in the cross-selling and proactive customer management capabilities through a portfolio view of the customer

cannot be denied coverage from any provider, regardless of their actuarial risk. To help them balance this risk in their underwriting practices, the law allows private insurers to assess each individual's risk and reflect that in the premium they charge. For Swiss insurance providers, this change in the landscape created not only a stricter regulatory framework, but also a substantial market opportunity. Part of this stemmed from a general increase in health insurance demand due to government mandate. But a whole other level of opportunity also presented itself in offering consumers a greater variety of choices, with different levels of benefits, deductibles and premiums. The providers that could best meet this new set of needs stood to gain in the marketplace. In this way, the Swiss mandate served to shake up the competition in what had become a very mature market.

Groupe Mutuel, a provider of health and life insurance, has adapted nimbly to this new environment and, as a result, has emerged as one of the market's most successful insurers. Based in Martigny, Groupe Mutuel (www.groupemutuel.ch) has grown by a factor of 10 over the past decade, becoming the number two health insurance provider in Switzerland with more than a million members. With the market's maturity making rapid customer growth through organic means difficult, the company instead focused on growth for acquisition, adding a number of small and medium-sized providers to its portfolio in its quest to become the number one provider in the market. Not surprisingly, a key rationale for Groupe Mutuel's approach was to achieve scale-based efficiencies by pooling the operations of these companies, especially within more commodity-oriented business processes—such as enrollment and claims processing—that typically represent a large share of the cost of operations.

Local strength

However, the approach that more deeply defines Groupe Mutuel's business model is the company's effort to cultivate and maintain the strengths, character and identity of each of its 14 operating units within their respective locales. By maintaining a local presence—in terms of brand, customer service and other differentiating factors—Groupe Mutuel aims to preserve within each unit the qualities that made them successful to begin with. For this business model to work, however, Groupe Mutuel realized it needed to create a common set of optimized processes at the core of its operations, which would give the company the flexibility and efficiency it needed to win in the dynamic Swiss market. Groupe Mutuel turned to IBM Global Business Services for assistance in designing this new process environment and for the flexible technology infrastructure needed to support it.

> *"Our key challenge was to federate all of our units' systems for efficiency while continuing to maintain our separate brands for competitive purposes in each part of Switzerland."*
>
> – *Pierre Marcel Revaz*

From a competitive standpoint, the most basic impact of Switzerland's 100 percent-insured policy is that it creates a zero-sum game for health insurance providers, with each new customer coming at the expense of another provider's base. This means providers have little or no margin for error in any of the business

processes that affect the acquisition and retention of customers. One such process governs the annual reenrollment of members, a function that requires Groupe Mutuel to calculate a new premium for each member and then send out a new application in the shortest time possible, to avoid giving any customer a reason to switch. Another is new product development, under which the company can quickly adapt its product line to changes in available drugs and treatments—based on breakthroughs as well as changing regulations—to ensure members have access to the broadest range of options. Still another is claims processing, which must facilitate a speedy, transparent and error-free experience for the customer to ensure satisfaction and retention.

Diving into process improvement

Groupe Mutuel's plan for addressing these requirements had two parts. First and most important, it sought to create a common set of business processes in these areas that could be used across all of its units. Second—and a precursor to the first—Groupe Mutuel aimed to redesign its IT infrastructure to deliver the flexibility and IT asset reusability it would need to create the common business processes it envisioned. To this end, Groupe Mutuel engaged IBM Global Business Services to lead its corps of internal business process experts and analysts through the IBM Component Business Modeling (CBM) methodology, a framework that breaks a client's organization into logical groupings of people, process and technology called "components," enabling the alignment of business strategies, processes and underlying technology. The CBM methodology enabled Groupe Mutuel to gain a deep and fundamental view of how the company's processes needed to work to enable maximum efficiency and competitive differentiation.

Using the CBM as a roadmap, IBM Global Business Services helped Groupe Mutuel redesign and rebuild its core infrastructure with SOA capabilities, principally the ability to create a layer of abstracted services that can be easily reassembled or redeployed in any of the company's operations with little to no integration effort. The main enabler of this capability is IBM WebSphere® Enterprise Service Bus (ESB), which simplifies connectivity between Groupe Mutuel's backend systems. At the hardware level, Groupe Mutuel consolidated a large number of its existing servers with IBM BladeCenter® HS20 blade servers and a pair of IBM System p5® 595 servers; the latter run its new core applications and employ IBM High-Availability Cluster Multiprocessing software to manage additional partitions and memory to support Groupe Mutuel's ongoing rapid growth. The company's older applications run on two IBM System i® 595 servers, while storage is handled by IBM TotalStorage® 3500 Tape Library devices that are connected to servers via IBM SAN Switches. With the infrastructure foundation in place, IBM Global Business Services turned to the process side, providing Groupe Mutuel's executive management with guidance on business process transformation strategies that

Solution Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM WebSphere Application Server
- IBM High-Availability Cluster Multiprocessing (HACMP™)

Hardware

- IBM BladeCenter
- IBM System p5 595
- IBM System i 595
- IBM TotalStorage 3500 Tape Library devices
- IBM SAN Switches

Services

- IBM Global Business Services

Transformation at a glance

Groupe Mutuel fully capitalized on the changing market landscape through a series of successful acquisitions. By enabling the optimization of core processes across the entire business—while maintaining each business unit's unique market identity—Groupe Mutuel's new SOA enables the company's operational efficiency to catch up with its rapid growth.

drew heavily from best practices from other IBM insurance engagements around the world. Lower in the organization, IBM is leading a series of change management seminars and workshops to propagate the benefit of process change more broadly to employees.

Building on strength

The most important benefit of Groupe Mutuel's work with IBM is that it makes a good business model even better. While Groupe Mutuel can continue to leverage the local market strengths of its individual units, the fact that it can do so on a foundation of flexible, standardized and lower-cost processes makes it a more nimble and efficient competitor. Take, for example, the account renewal process. Because each unit now follows common business rules related to the measurement of risk, the company as a whole is better able to manage risk and calibrate its premium structure in a way that maximizes profitability for the company as a whole. For Groupe Mutuel, the broader benefits of leveraging common business rules are two-fold. First, they facilitate the automation of a wide range of key processes, thereby increasing their efficiency and reducing their costs. Second, the fact that common business rules can be extended—to new business units, channels and acquisitions—gives Groupe Mutuel far more operational flexibility.

Groupe Mutuel's SOA infrastructure also provides a strong basis for differentiation based on agility. For instance, the company's ability to provide an overall "portfolio" view of each customer's coverage profile positions it to respond to the growing importance of consumer-oriented offerings, thus increasing customer satisfaction and retention. This same quality also supports Groupe Mutuel's top-line growth by enabling it to find additional cross-selling opportunities, while the application reuse qualities of SOA gives the company the means to introduce new plans and features faster than competitors. CEO and Founder Pierre Marcel Revaz sees the company's new business process framework as an important step in its quest for market leadership. "Our unique business model has been a big part of our rapid growth and success," says Revaz. "By making our systems and business processes more flexible, IBM has helped us to evolve that business model to make Groupe Mutuel a stronger and more adaptable competitor."

For more information

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U.S.A.

Produced in the United States of America
October 2008

ODC03100-USEN-00

GSMS, Incorporated aims for safer drugs with a pioneering drug track and trace system

Overview

- ***Business Challenge***
  With the threat of drug counterfeiting growing and new regulations on the horizon, GSMS, Inc. sought to leverage its critical role in the pharmaceutical distribution chain by offering drug track and trace capability to its trading partners.
- ***Solution***
  Teaming with IBM, GSMS deployed an ePedigree solution capable of detecting counterfeit or otherwise unknown drug products from the manufacturing line to the pharmacy counter, enabling a major leap in consumer safety.
- ***Key Benefits***
  - **For customers:** *Increased consumer safety through reductions in drug counterfeiting and faster product recalls*
  - **For trading partners:** *Faster compliance with imminent state and federal drug traceability requirements*
  - **For GSMS, Inc.:** *Increased revenues and the addition of new trading partner and customer accounts*

GSMS, Inc. is a contract manufacturer, wholesaler, distributor, and repackager of pharmaceuticals. Operating out of a 95,000-square-foot facility in Camarillo, California, GSMS employs one of the industry's first ePedigree systems as well as some of the most sophisticated packaging equipment available today.

When it comes to consumable products such as food and prescription drugs, the average American citizen has largely taken his/her safety for granted. This mindset attests to the success of watchdog agencies such as the U.S. Food and Drug Administration in maintaining the integrity of the supply chain through a comprehensive set of process guidelines, rigid monitoring and strict enforcement. Up to this point, the fabric of measures taken to ensure the public safety has been largely proactive and preventative in nature, aimed at detecting and heading off problems upstream in the supply chain, at or near the point of production. While these safety measures remain critically important, the ongoing evolution of production, packaging and distribution

> *"We're committed to the safety of consumers using our pharmaceuticals. With IBM's proven track and trace solution, we're ahead of the curve in serialization regulation and expect to attract more trading partners because of it."*
>
> – *Jim Stroud, President and CEO, GSMS, Incorporated*

Business Benefits
For customers
• Increased consumer safety through reductions in drug counterfeiting and faster product recalls
For trading partners
• Faster compliance with imminent state and federal drug traceability requirements • Reduction of potentially billions of dollars in lost revenues and brand equity due to counterfeiting • Reduced compliance costs
For GSMS, Inc.
• Increased revenues • Addition of new trading partner and customer accounts

practices—especially in the area of pharmaceutical drugs—has led to the emergence of a new set of vulnerabilities within the supply chain, the biggest of which is the threat of drug counterfeiting. Around the world, revenue from counterfeit drug sales—growing twice as fast as the pharmaceutical market as a whole—is projected to exceed $70 billion by 2010.

The rise in drug counterfeiting coincides with—and is likely affected by—big changes occurring at all levels of the global pharmaceutical market. In the U.S., the most fundamental trend is an overall increase in prescription drug consumption, driven on the demand side by the aging and longevity of the population, and on the supply side by the availability of new classes of drugs. As the volume and diversity of pharmaceutical commerce has grown, the industry's value chain has also become more globalized and complex.

To reduce costs, for instance, large pharmaceutical manufacturers are increasingly turning to smaller suppliers—both domestic and offshore—for commodity manufacturing. Competing on versatility, many of these so-called contract manufacturers also provide specialized services such as pressing pills from "bulk" powder and packaging them at specific dosage levels. Wholesale distributors also tap contract manufacturers to break down bulk volumes into smaller batches before distributing them to retailers. Increasing globalization and complexity are also evident in the industry's changing distribution model. While sales through traditional pharmacies still account for the largest share, the cost and flexibility advantages of Internet and mail order channels are propelling their rapid growth.

> *"The peace of mind that customers get from knowing where their drugs come from generates goodwill across the entire value chain–from the pharmacy where they pick up a prescription to the manufacturer whose name is on the label."*
>
> – *Jim Stroud*

Dynamism breeds opportunity

For the industry as a whole, a key impact of these changes is that pharmaceutical shipments are likely to follow much more diverse and convoluted paths than before—making it harder to validate the point of origin, or pedigree, of each shipment. It was in this challenge that GSMS, Incorporated (www.gsms.us), a fast-growing, progressive contract manufacturer with an expertise in packaging, saw opportunity. With regulators moving to require the electronic tracking of a drug's origin—a capability known commonly as ePedigree—across the distribution chain, GSMS sought to bring its own offer to market first. It saw IBM's technology, process expertise and market credibility as a strong foundation for the success of its groundbreaking initiative.

In the 20-plus years since it was founded as a contract manufacturer, GSMS had distinguished itself by a steady stream of drug packaging improvements, each conceived from a deep knowledge of the market needs and executed with agility.

These include the introduction of "unit-of-use" packaging, which, by distributing pills to pharmacies in 30-, 60-, and 90-count containers, reduces dispensing errors and improves pharmacy efficiency by eliminating the need for manual counting. Like this practice, the company's ePedigree solution was an early response to a burgeoning need among the industry's key stakeholders. What makes GSMS especially well suited to deploying an ePedigree solution is operational versatility, which enables GSMS to perform multiple roles in the drug distribution chain—from manufacturing to wholesaling to repackaging—each of which represent important touch points in the ePedigree process flow.

As the company introducing ePedigree to its trading partners, GSMS needed to deploy a system that was flexible enough to accommodate the labeling systems used by all pharmaceutical manufacturers. To that end, it worked with IBM to design a system capable of scanning both 2-D barcodes and RFID tags. The ePedigree cycle begins at the point of manufacture, at which point each individual container (or "unit of use") is scanned or tagged with its pedigree data, including country of origin, manufacturer, lot number and expiration date. Leveraging the functionality of IBM WebSphere® Premises Server, the captured data is then sent to IBM InfoSphere™ Traceability Server (formerly IBM WebSphere RFID Information Center), the cornerstone of the solution, where the ePedigree record is stored in a secure repository, running on IBM DB2®. Once the initial profile has been established, it is updated each subsequent time the unit ships from one location to another, providing traceability all the way back to the point of manufacture.

Rigorous demands

Because it effectively functions as the nerve center for product tracking across the entire distribution chain, InfoSphere Traceability Server needed to meet a demanding set of requirements. At a basic level, this includes ensuring granular access security, such that each trading partner can only see what it is supposed to see—even though all access the same core repository. From a business value perspective, InfoSphere Traceability Server's biggest strength is its ability to embed event-driven intelligence into business processes through alerts and reporting. If, for example, an unrecognized product makes its way into the distribution chain, InfoSphere Traceability Server will flag that product as unrecognized and automatically issue an alert. The same capability can be used to identify and isolate other "flagged" items such as expired batches or products subject to recall.

In terms of process flow, the distribution side of the pharmaceutical value chain is highly diverse, with manufacturers, wholesalers and contract manufacturers performing different functions under different relationship models, each of which has its

Solution Components

Software

- IBM WebSphere Premises Server
- IBM Tivoli® OMEGAMON® XE
- IBM Tivoli Composite Application Manager for Web Resources
- IBM InfoSphere Traceability Server
- IBM DB2

Services

- IBM Software Group Lab Services

Smarter Wholesale Distribution

With its pioneering introduction of drug track and trace capability, GSMS, Inc. has laid the groundwork for end-to-end transparency of the entire pharmaceutical drug distribution chain. Through a system of automated alerts, the entry of counterfeit drug products can be detected at any point in the chain, thus increasing consumer safety and preventing damage to manufacturers' brands.

own set of process flows and requirements. In the course of designing the solution, the IBM team—relying on its deep knowledge of pharmaceutical industry processes—generated detailed models of each flow. The team then used these insights to design these flows into the business logic and security parameters of the solution. To manage the solution, GSMS also deployed an IBM Service Management solution that helps maintain high application availability. Using IBM Tivoli Composite Application Manager and IBM Tivoli OMEGAMON XE for DB2, staff can proactively and quickly identify and respond to problems before customers are impacted.

A path to compliance

By enabling ePedigree capability across its trading partner relationships, GSMS is laying the groundwork for achieving the ultimate goal of increased consumer safety. With the first ePedigree regulations scheduled to take effect in 2011 in California—and broader action likely to soon follow—GSMS is providing a cost-effective way for pharmaceutical manufacturers and wholesalers to comply. On a more strategic level, the solution will provide these manufacturers with a powerful tool for thwarting counterfeiting activity, thereby preventing the loss of billions in revenue and incalculable damage to their brand. But as president and CEO Jim Stroud points out, ePedigree is about more than stopping a bad thing. "The peace of mind customers get from knowing where their drugs come from generates goodwill across the entire value chain—from the pharmacy where they pick up a prescription to the manufacturer whose name is on the label," says Stroud. "That's why we see ePedigree as a tremendous benefit for the entire pharmaceutical value chain."

For GSMS as a company, Stroud sees its new drug traceability solution as an important source of competitive differentiation in the catalyst for even faster growth. "We're committed to the safety of consumers using our pharmaceuticals," says Stroud. "With IBM's proven track and trace solution, we're ahead of the curve in serialization regulation and expect to attract more trading partners because of it."

For more information

To learn more about how IBM can help transform your business and help you innovate, please contact your IBM sales representative or IBM Business Partner.

Visit us at: **ibm.com**

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Produced in the United States of America
November 2008

ODC03107-USEN-00

DPLNG brings a reliable new source of energy to a booming economy.

Overview

- ***Business Challenge***
  To satisfy its growing need for power, China is turning to natural gas, with DPLNG leading the pioneering project. With five power plants and millions of customers dependent on it as an energy source, DPLNG needed to put processes in place that would ensure the efficient, reliable and safe production of natural gas from liquefied natural gas (LNG).
- ***Solution***
  DPLNG teamed with IBM to design and deploy a comprehensive business process framework from the ground up that lays the foundation for the reliable delivery of power to millions of residents in China's fastest growing region.
- ***Key Benefits***
  - *Maximization of efficiency through flexible, integrated processes*
  - *Ability to dynamically optimize LNG production processes as demand grows*
  - *Maximization of reliability and safety through the use of proactive asset management practices*

The LNG project of Guangdong Dapeng LNG Company Limited ("DPLNG"), the first of its kind in China, addresses the whole process of LNG import, storage, re-gasification and transmission in China's Guangdong Province. Some of DPLNG's main clients and consumers are the fast growing cities of Shenzhen, Dongguang, Guangzhou, and Foshan City.

China – a country with the world's fastest-growing economy – is in the throes of change. Economic development and business formation is proceeding at a breakneck pace. Spurred by the desire to take part in this prosperity, Chinese citizens are flocking to the regions and cities where much of this growth has been concentrated. To accommodate these population shifts, and to smooth the way for continued economic growth, China continues to invest staggering amounts in its physical infrastructure, from roads and bridges to housing, schools and airports.

> *"Establishing a solid operational foundation was imperative for the successful launch of DPLNG. IBM created the business process structure that allowed us to move seamlessly from the construction phase into the operational stage."*
>
> – Tom King, President, DPLNG

Business Benefits

- Maximization of efficiency through flexible, integrated processes
- Ability to dynamically optimize LNG production processes as demand grows
- Maximization of reliability and safety – and minimization of downtime risk – through the use of proactive asset management practices
- Maximization of terminal capacity through optimized scheduling and harbor management capabilities

Keeping up with growth

As fundamentally important as these investments are, none have as much impact on China's continuing prosperity as the availability of energy resources to sustain it. Because of the speed and scale of its development, China faces an energy challenge that has no precedent. Among the more deeply rooted economies of the West, relatively steady growth made it possible for countries to develop their energy sources organically over decades, with growth in energy demand met by incremental additions to capacity and evolutionary change in technology. In contrast, the lightning speed of China's development has compelled the country to take a more proactive, aggressive stance in securing its energy needs. China's energy challenge also stands out because of its potential for adverse environmental impact. Realizing the importance of mitigating this risk, China's leaders have made cleaner, "greener" energy sources – most notably natural gas – a central element in the country's energy strategy. The interplay of these forces is on display in Guangdong Province, a fast-growing hotbed of manufacturing in a part of southeastern China known as the Greater Pearl River Delta. To establish a means to deliver natural gas and sustain the region's torrid growth, a number of cities in the province teamed up with China National Offshore Oil Corporation and BP to form a joint venture known as Guangdong Dapeng LNG (DPLNG).

DPLNG (www.dplng.com) faced significant challenges in meeting this goal. The most obvious was the need to put in place the physical infrastructure – including port facilities, pipelines and other processing equipment – to handle the natural gas. Just as important, however, were the many business processes and systems required to monitor and manage the storage, processing and distribution of natural gas. Citing its business process expertise and track record in the industry, DPLNG selected IBM Global Business Services to define, deploy and integrate these systems. To understand the challenges IBM faced in this engagement, one needs to understand the complexity of the processes governing natural gas processing and distribution. In the case of DPLNG's project, the gas is delivered from Australia in a liquefied state aboard liquefied natural gas (LNG) tankers. Once a tanker arrives in port, its cargo is offloaded into large tanks. From there, highly specialized equipment warms the LNG to "re-gas" it, or convert it back to a gaseous form. It is then sent into the network of pipelines that connect the LNG facility to power plants across the province that will use the gas to generate electricity, and to other end customers.

Starting from scratch

What posed the most fundamental challenge for IBM was the fact that DPLNG – the very first LNG project in China – was starting from a blank slate. As such, the hundreds of business processes that were essential to the facility's operation needed to be designed from the ground up. In many ways, the LNG processing flow is a balancing act between LNG coming in on tankers, LNG that is undergoing "re-gasification" and the pipeline network. In the middle are the facility's storage tanks, which provide a buffer between inflows and outflows. The negative ramifications for upsetting this balance are significant. If, for instance, the storage tank is too full to receive a new shipment, tankers will be unable to unload their cargo, potentially depriving the port of gas supply and processing revenues. Conversely, if the tank is not sufficiently replenished and allowed to go too low, the facility would be unable to deliver gas into the pipeline network, thus endangering its ability to deliver reliably. A key part of IBM's role was to design and deploy the scheduling and management processes that maintained this balance and ensure the facility's reliability in the natural gas supply chain.

Another factor affecting reliability is the ongoing maintenance and upkeep of the complex equipment used to unload and re-gas the LNG. This equipment, which is central to the process flow, represents a potential single point of failure. Because of the enormous costs and disruptions such a breakdown would entail, it was critical that IBM put in place systems and processes that could detect these breakdowns before they happened. The importance of reliability for the DPLNG solution cannot be overstated. Put simply, the region's ambitious long-term economic development plans are literally built on the reliability of DPLNG's capabilities. With vigorous population growth and accelerating economic activity on the horizon, the cities connected to the DPLNG network have staked their future on natural gas – and on DPLNG's ability to deliver it reliably. The fact that DPLNG chose IBM to design and implement the processes and systems needed to ensure this reliability signifies how seriously DPLNG takes the challenge.

In addition to designing DPLNG's core processes, such as scheduling and vessel management, IBM also addressed processes in the area of administration (such as HR and finance) and commerce (related to the processing of gas contracts). In total, IBM designed 341 business processes as part of the DPLNG project. On the systems side, IBM's key role was to implement SAP R/3 FI/CO, which addresses both Financial (e.g., general ledger) and Controlling (e.g., cost center accounting) processes, as well as a gas management solution (Telvent's Gas Suite) to handle specialized technical and commercial functions.

Key Components

Software

- Strategic Asset and Service Management (IBM/MRO Software)
- SAP R/3
- Telvent Gas Suite

Servers

- IBM System p5™ servers
- IBM TotalStorage® DS4300

Services

- IBM Global Business Services

Time frame

- Process design: 1 year
- Implementation and Integration: 9 months

Why it matters

The first-of-a-kind system and process infrastructure developed by IBM to run China's first LNG plant enables DPLNG to keep pace with the growth of China's fastest growing region. Built from the ground up, DPLNG's new infrastructure orchestrates the plant's complex process flow while maintaining maximum reliability and safety.

IBM also deployed and configured the asset management platform used to proactively manage the maintenance of the terminal's processing equipment. DPLNG specified the platform – the Strategic Asset and Service Management by MRO Software (an IBM company) – because of its strength as an oil and gas industry solution. After deploying these platforms, the IBM team then integrated them with the business processes they had defined at the outset of the project. The solution runs on three IBM System p5 servers and employs an IBM TotalStorage DS4300 disk system for storage.

Ready to grow

In designing the process and system framework to run the DPLNG facility, IBM had to custom configure it to take into account aspects of DPLNG's business model, which substantially increased the complexity and had a direct impact on its long-term success. The first consideration was the need to construct a solution that would suit the needs of all 11 shareholders in the joint venture. Because of the enormous costs of building LNG terminal facilities – and the risks inherent in the world market for natural gas – joint ventures are the predominant business model for developing these facilities. To optimize the solution for this model, IBM employed industry-standard technology and designed the systems to maximize the visibility of critical business and financial information to all of DPLNG shareholders, thus improving the speed, efficiency and quality of decision-making. The fact that the scope of DPLNG's operations would be ramping up over time, and thus represented a "moving target," also posed a major design and implementation challenge. To address this, IBM designed a flexible, standardized solution – employing reusable components – that could easily be expanded and optimized as the terminal's volume increased along with the number of power plants and cities it served.

Soon after deployment, the DPLNG terminal received and processed its first shipment of 66,000 tons of LNG from Australia, inaugurating a 25-year contract for an annual gas supply of 3.63 million tons with The North West Shelf ALNG Company. "Establishing a solid operational foundation was imperative for the successful launch of DPLNG," says Tom King, President, DPLNG. "IBM created the business process structure that allowed us to move seamlessly from the construction phase into the operational stage. This foundation allowed us to receive and process our first shipment of LNG and will enable us to scale our operations to match the anticipated growth of our business."

For more information

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Produced in the United States of America
8-07

ODC00390-USEN-00

Honda Italia Industriale teams with IBM to jump-start a significant business transformation project by adopting RFID technology for its production processes.

Overview

Honda Italia Industriale S.p.A.
Atessa, Italy
www.hondaitalia.com

Industry
- Automotive

Employees
- 800

Products
- IBM Global Business Services
- IBM Global Technology Services
- IBM WebSphere Application Server – Network Deployment, Version 6

HONDA
The Power of Dreams

"Implementing RFID technology is a fundamental step in our 'Outstanding Quality' production strategy. Thanks to IBM Global Business Services and the IBM WebSphere platform, we have a superior foundation on which to build our RFID solution."

—Nicola Marrone , Project Executive, Honda Italia Industriale S.p.A.

Selling motorcycles, scooters and off-road bikes, Honda Italia Industriale S.p.A. (Honda Italia) is the world leader for powered two-wheel (PTW) vehicles. In 2006, Honda Motor Company's Italian subsidiary sold more than 12.7 million PTW vehicles, earning 785 million.

Challenge

To achieve greater efficiency and accuracy in its production lines, Honda Italia wanted to integrate a radio frequency identification (RFID) tracking solution into its Atessa, Italy, production plant. The PTW manufacturer wanted to quickly implement best-of-breed RFID technology, so it sought to engage knowledgeable RFID experts.

Solution

Honda Italia turned to trusted advisor IBM to provide leadership for the RFID initiative. IBM Global Business Services and Global Technology Services support the client in the design and development of the RFID project, which will enable the manufacturer to identify and track each vehicle along the production chain in real time. Additionally, the RFID tags will allow the client to track critical vehicle components, such as engines.

The IBM group collaborated with Honda Italia engineers to design new processes and to identify the best RFID solutions. The IBM team will integrate the selected technology with the client's existing IT systems through an open-standards-based application built on the IBM WebSphere® Application Server – Network Deployment, Version 6 platform.

The first phase of the project transformed the client's motorcycle assembly line, enabling Honda Italia to use RFID tags to monitor the traceability of critical components, manage work-in-progress and replenish inventory. Next, the client will apply the RFID technology to its scooter production line.

Benefits

- Facilitates a significant business transformation that provides real value to Honda Italia
- Improves inventory supply and quality control
- Increases the efficiency of assembly line and configuration management processes.

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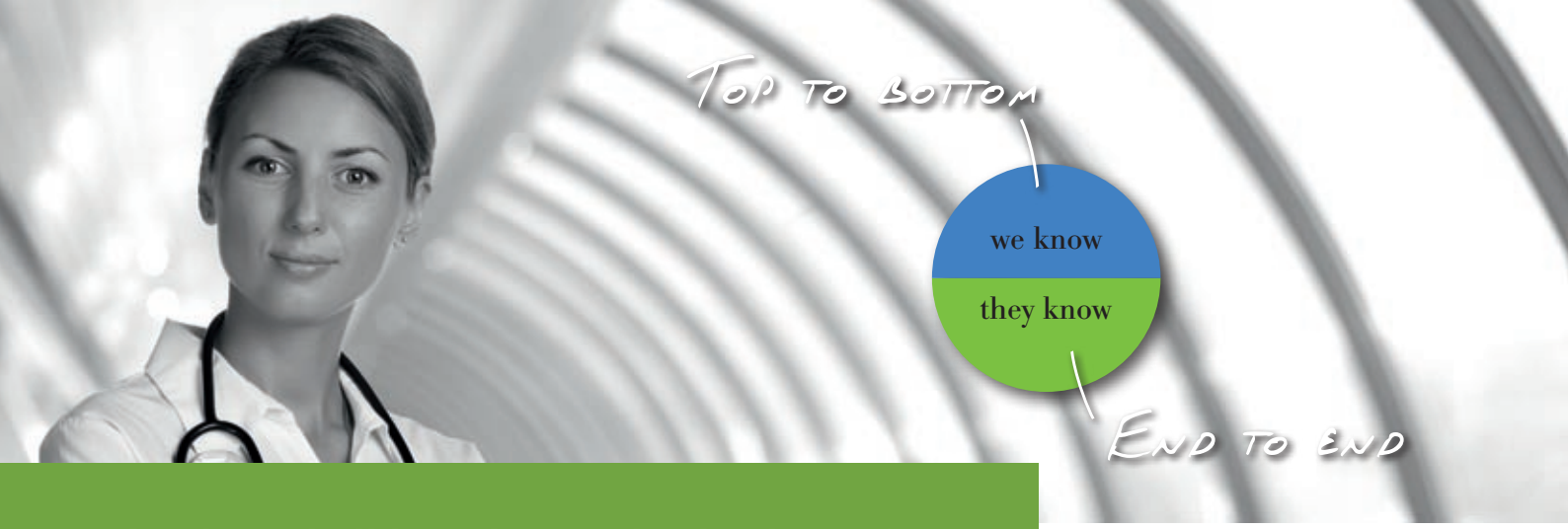
Produced in the United States of America
02-08

SAC03002-USEN-00



Implanet builds an innovative business from scratch with SAP and IBM RFID

Overview

■ ***The Challenge***

As a start-up business supplying orthopedic prostheses to hospitals and clinics, Implanet needed to execute its financial plan and come to market as quickly as possible. The challenge was significant: the company had just 12 months to define the product set, build the supply chain and partnerships, gain relevant European Union and ISO certifications, and put in place all of the necessary internal infrastructure to create a fully operational business. New (2009) EU regulations require full traceability of surgical implants throughout the supply chain – presenting a significant additional challenge.

■ ***The Solution***

Implanet selected the IBM Express Consumer Product Solution for SAP Business All-in-One, a pre-configured solution based on SAP ERP. IBM Global Services managed the end-to-end deployment not only for the SAP software, but also for an innovative client portal and an integrated RFID warehousing solution based on IBM WebSphere Premises Server.

■ ***The Benefits***

Experienced IBM consulting team ensured an extremely rapid rollout of a fully functional SAP solution (13 weeks from start to finish), and met budget targets; SAP software gives Implanet full visibility of inventory, in its own warehouses and client locations, and has enabled better control over these fixed assets; the new portal enables clients to manage stock and replenishment functions online, cutting administration time by almost 90 per cent; RFID enables warehouse automation, improving efficiency and helping Implanet to offer superb customer service with extremely competitive pricing.

■ ***Key Solution Components***

Industry: Life sciences
Applications: IBM® Express Consumer Product Solution for SAP® Business All-in-One, SAP NetWeaver® Portal
Software: IBM WebSphere® Premises Server
Services: IBM Global Services, IBM Sensor and Actuator Solutions Unit at IBM La Gaude

Established in 2007 and based in Bordeaux, France, Implanet is a fast-growing company that provides modern solutions to enable healthcare professionals to improve their productivity. For each country in which it operates, Implanet offers a carefully selected set of gold-standard surgical prostheses designed to meet the needs of the local healthcare system.

With a philosophy based around squeezing costs out of the supply chain, Implanet aims to ensure that its clients never need to make a trade-off between quality and cost. The company makes extensive use of automation in its warehouse and sales operations, keeping the cost of sale to a minimum while providing clients with direct, high-speed service.

Emmanuel Grenier, Head of Information Systems at Implanet, comments: “As a start-up, we needed to get to market as rapidly as possible. We set ourselves a limit of 12 months to become fully operational: selecting the products, designing the supply chain, building partnerships, gaining all the relevant certifications – and, not least, creating all the infrastructure to support the business.”

IBM | SAP®

"IBM Global Services managed the implementation phase from start to finish across the ERP solution, the portal solution and the RFID solution, which is based on IBM WebSphere Premises Server. The IBM consultants were very impressive: they had perfect knowledge of the technical architecture of the SAP software and a high level of specialist knowledge within each functional module."

Emmanuel Grenier
Head of Information Systems
Implanet

Innovative business model

Implanet aimed to have a unique market proposition: rather than focusing on technical innovation around products, it would use recognized 'gold-standard' implants and instead focus on supplying them as cost-efficiently as possible. In particular, Implanet wanted to create innovative IT services for its clients that would automate most order- and inventory-management processes, saving time and money on both sides. The planned services for clients would also include a full track-and-trace capability based on RFID tagging, helping them to meet EU regulations for the traceability of medical implants.

"Our business model required fewer intermediate layers and smaller sales teams, which meant that we could offer top-quality products at very competitive pricing and with value-add services for our clients," says Emmanuel Grenier. "It was vital to select an ERP solution that we could implement within a very short timescale – to allow us as much time as possible to develop and refine our client-facing portal services."

In addition to the speed of rollout, Implanet identified several additional criteria for its ERP solution. The planned global expansion made it vital to assure multi-language and multi-currency support, and Implanet wanted to work with a durable software vendor that focused entirely on a single ERP product – to assure the longevity of the solution.

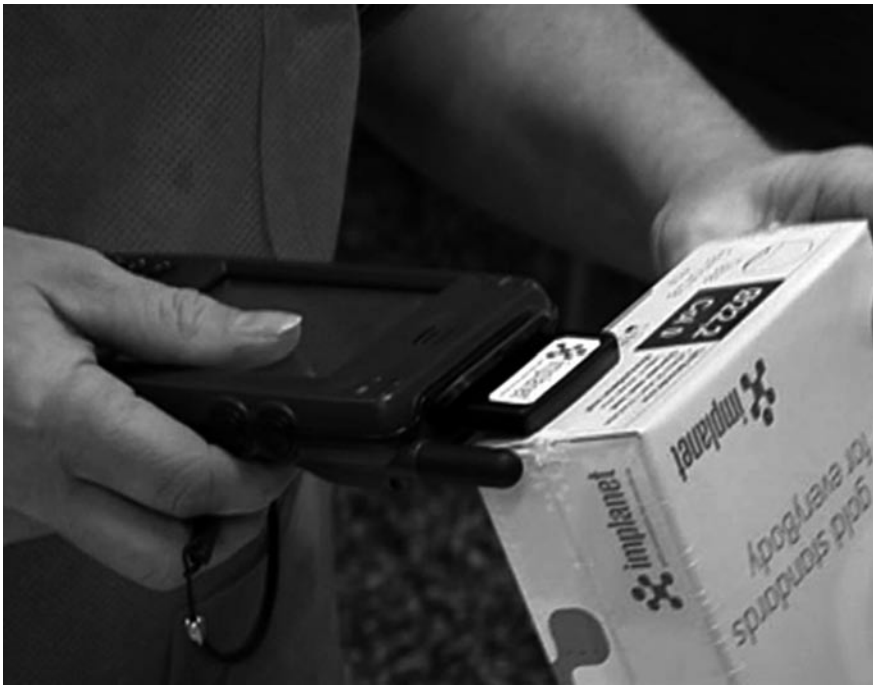
"We wanted an ERP solution that could accompany us in our growth, and that was well-supported throughout the world," says Emmanuel Grenier. "We also looked at what our clients and competitors were using – by matching them, we could facilitate future business and information exchange in our market sector. For all of these reasons, SAP Business All-in-One was absolutely the logical choice."

Teaming for rapid roll-out

With a small internal team, Implanet needed an implementation partner that could provide intensive local support during the design and deployment of the ERP environment, with long-term global support as the business grew – and selected IBM Global Services.

"Implanet needed a true partner for the implementation and support of the SAP ERP application, because in many ways the value-add proposition of our business depends on it," says Emmanuel Grenier. "IBM Global Services was clearly a company that could offer both the local and the global support, and could also help us with every aspect of the new architecture: the ERP system, the client portal and the RFID track-and-trace solution. IBM had significant competence in all three areas, and the ability to get very senior consultants on site at a moment's notice."

To support Implanet's goal of extremely rapid deployment, IBM Global Services provided a pre-configured ERP solution, the IBM



Express Consumer Product Solution for SAP Business All-in-One.

"This pre-configured solution implemented by IBM Global Services allowed us to achieve our objectives in terms of the speed of deployment," says Emmanuel Grenier. "We completed the entire ERP program inside five months, including all the planning and design stages – this was thanks to the pre-configuration, which very closely matched our business requirements. The implementation phase for the SAP software itself took just 13 weeks."

Prior to implementation, Implanet and IBM rigorously defined the functional specifications for the ERP environment, then designed and documented the planned workflows. The pre-configuration carried out by IBM, combined with the extensive planning and preparation, ensured an efficient implementation phase that came in under budget. In total, the solution was around 90 per cent preconfigured, and only minor modifications were required to meet the customer's specific needs.

Emmanuel Grenier comments: "A vital success factor was having a team – composed of both Implanet and IBM employees – that clearly understood the different functional elements of our business and was able to accurately model them as workflows in the SAP application."

Gaining a clear view of the business

IBM Global Services provided a number of detailed introductory sessions to demonstrate the SAP ERP application to Implanet employees, helping them get up to speed quickly. The company now runs virtually every business process through the SAP software.

"The major benefit of using IBM Express Consumer Product Solution for SAP Business All-in-One is that it gives us a global view of our inventory," says Emmanuel Grenier. "Much of our stock is held on our clients' sites, but we can manage it as if it were held in our own warehouse. In SAP ERP, everything is linked and integrated, so we can access consolidated information across finance, sales and inventory, giving us a real-time view of our business. And for all the benefits we have already achieved, we are still only just beginning to unlock the full potential of the SAP software."

Fully integrated solution

After implementing the SAP software, IBM helped Implanet to develop both its client portal solution and the RFID tracking solution. Implanet uses IBM WebSphere Premises Server to handle the capture of RFID data from handheld terminals and integrate it with SAP Business All-in-One. The IBM WebSphere software drives automation in the Implanet warehouse: during order fulfillment, Rotomat carousels use RFID to present the correct products to warehouse staff based on order information held in SAP.

"IBM managed the implementation phase from start to finish across the ERP solution, the portal solution and the RFID solution, which is based on IBM WebSphere Premises Server," says Emmanuel Grenier. "The IBM consultants were very impressive: they had perfect knowledge of the technical architecture of the SAP software and a high level of specialist knowledge within each functional module. Additionally, it was a significant advantage to have in IBM Global Services a single partner capable of handling all aspects of our technology stack."

To create the RFID solution – which is also a key element of the track-and-trace application – Implanet worked

"The ISS solution powered by SAP Business All-in-One and SAP NetWeaver Portal allows us to deal automatically with repeat business, so we don't need to employ armies of sales people. This enables us to maintain the rapid growth of our business without a corresponding rise in operational costs."

Emmanuel Grenier
Head of Information Systems
Implanet

with specialists from the IBM Sensor and Actuator Solutions unit and its center in IBM La Gaude.

"IBM has centers of excellence both in France and globally, so they can always quickly find a solution to whatever problem you might be facing," says Emmanuel Grenier. "As a result, we never encountered any roadblocks during implementation."

IBM Global Services and Implanet used SAP NetWeaver Portal as the basis for Implanet S.M.A.R.T. System (ISS), the innovative client-facing portal. ISS delivers tailored information from the back-end SAP ERP database directly to registered clients through a secure portal.

"The ISS solution powered by SAP Business All-in-One and SAP NetWeaver Portal allows us to deal automatically with repeat business, so we don't need to employ armies of sales people to man the phones and re-key data provided by clients," says Emmanuel Grenier. "This has delivered a significant gain in productivity both for us and for our clients, and enables us to maintain the rapid growth of our business without a corresponding rise in operational costs and staff numbers."

Clients use ISS to manage their stocks of surgical implants and place orders online – and can set up automatic replenishment based on daily usage of implants. In addition, the Implanet portal provides a wealth of information aimed at surgeons, helping them to manage their surgical activity.

"Surgeons who use our portal can see how many prostheses they've inserted, for what types of pathology, for what kinds of patients, and so on," says Emmanuel Grenier. "They can also track and trace all implants in full compliance with 2009 regulations from the European Union. The beauty of the solution is that everything is automatic and involves almost zero manual administration, because all the data we deliver to clients is sourced directly from the back-end SAP ERP database."

Quality up, costs down

Thanks to the high quality of inventory information provided by the IBM and SAP solution, Implanet has been able to reduce the amount of stock held by its clients, and to refine inventory management to match client needs more precisely. On the client side, ISS offers a further significant benefits, as Emmanuel Grenier explains:

"Operating theatre managers typically spend nine hours a week managing stocks and suppliers, doing low-value tasks such as making phone calls to ensure that re-stocking will take place. Today, if one of our clients puts all his orders through ISS, we estimate that his administration time will be just one hour per week. Additionally, all the data relating to inventory and traceability is held in the same place, available for immediate access and analysis."

Working with IBM Global Services to deploy SAP software and related portal and RFID technologies, Implanet successfully achieved its time-to-market goals and is now growing rapidly. The IBM solution has given the company a genuine competitive edge, enabling the delivery of high-quality medical products and services at low cost.

"Our experience of working with IBM Global Services and SAP was that there were no limits to what was possible," says Emmanuel Grenier. "No-one ever said to us, 'you can't do that, because the software works like this.' By contrast, the SAP software and the IBM services were completely open and flexible. Backed by the excellent implementation and support from IBM, the SAP solution has really become the backbone of the Implanet business."

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SPC03051-FREN-00 (08/08)

Metabasis Therapeutics speeds time to market for important disease therapies with dynamic CADD technology running on a powerful IBM supercomputer.

Overview

Metabasis Therapeutics, Inc.
San Diego, CA, United States
www.mbasis.com

Industry
- Life Sciences

Products and services
- IBM System p5 575 server
- IBM AIX V5.3 operating system

"Leveraging powerful IBM technology positions us to commercialize our unique solution, which will enhance and accelerate the drug-discovery process industrywide."

—Metabasis Therapeutics, Inc.

Metabasis Therapeutics, Inc. (Metabasis), is a biopharmaceutical company that discovers, develops and commercializes drugs used to treat metabolic and liver diseases. The company centers its research on developing treatments for some of the most common and widespread diseases.

Challenge

Metabasis wanted to develop more accurate, easy-to-use computer-aided drug design (CADD) methods to accelerate the drug discovery process. The company developed accurate Free Energy Perturbation (FEP)-based CADD software, which improves the reliability of predictions on which drug design decisions are based—reducing the time it takes to find suitable drug candidates to evaluate in human clinical trials. But the company needed a high-performance computing environment for its FEP calculations.

Solution

Teaming with IBM, Metabasis deployed an IBM System p5® 575 supercomputer running the IBM AIX® V5.3 operating system to enhance throughput for its CADD solution and to perform numerical computations. The supercomputer's 16 powerful processors can process certain stages of complex computations in parallel, further accelerating the drug discovery process. Metabasis has successfully used the CADD application running on the System p5 575 server to complete validation for ten structurally diverse sets of small organic molecules and for several inhibitors.

Benefits

Metabasis's first-of-its-kind CADD solution significantly reduces drug-discovery time and costs by eliminating about 80 percent of the compounds to be synthesized and tested in the lab for a given drug target—enhancing the potential and speed of bringing the new drugs into the marketplace. With the solution, the company can facilitate better selections of candidate compounds to be synthesized and tested in the lab. Plus, Metabasis has positioned itself to commercialize the unique solution, which would enhance and accelerate the drug discovery process industrywide.

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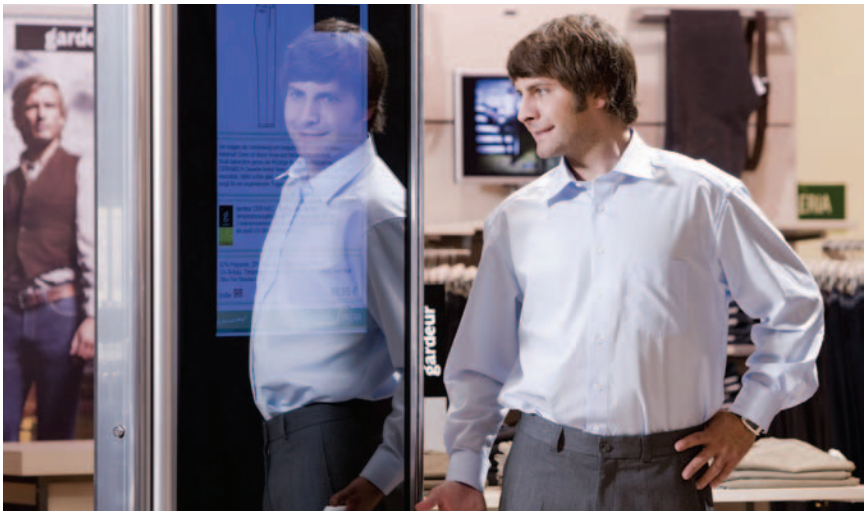
Produced in the United States of America
November 2008

SWC14017-USEN-00

METRO Group moves closer to its "Future Store" vision with smart merchandising enabled by RFID.

Overview

- ***Business Challenge***
  To meet rising customer expectations and stay ahead of the competition, METRO Group sought to enrich the shopping experience of its retail customers by providing them with valuable and relevant content – in real time, as they shop.
- ***Solution***
  METRO Group and IBM worked together to create a first-of-a-kind "smart" retail solution that tailors in-store merchandising messages by tracking product movement in real time. This same capability provides METRO Group with real-time business intelligence and the means to optimize its retail processes.
- ***Key Benefits***
  - *More engaging customer experience through detailed product information delivery*
  - *Improvements in inventory and shelf-replenishment management*
  - *Reductions in out-of-stock situations and lost sales through automated replenishment alerts*



Based in Duesseldorf, Germany, METRO Group is the fifth largest retailer in the world, with some 290,000 employees working at over 2,100 outlets in 32 countries in Europe, Africa and Asia. Its brands include Metro Cash & Carry, Real, Media Markt, Saturn and Galeria Kaufhof (pictured above).

To be successful over the long term, retailers have to do a lot of things right, and do so consistently. It means having not only the right mix of products, but a retail experience that is compelling and satisfying enough to keep customers coming back. While creative and effective merchandising is essential to achieving this, it's just as important for retailers to meet a more basic requirement – that when a customer wants a product, it will be on the shelves and not out of stock. This last point underscores how important it is for retailers to seamlessly align their downstream retail operations – the parts of the business that customers see – with their upstream supply chain operations.

> *"Our use of RFID is improving our operational effectiveness as well as the shopping experience of our customers. Our relationship with IBM has been a strategic component of our RFID programs and one of the biggest factors in our success."*
>
> – Dr. Gerd Wolfram, managing director, MGI METRO Group Information Technology

Business Benefits

- More engaging customer experience through personalized product information delivery
- Reductions in out-of-stock situations and lost sales through automated replenishment alerts
- Increased revenue through improved cross-selling capabilities
- Reduced inventory and logistics costs
- Improved sales associate productivity
- Ability to perform instantaneous inventory counts
- Significant expected reductions in logistical errors related to parts shipments

"Our success depends on our gaining the trust of the customer at every stage of the retail interaction. This means making sure we have the products our customers want and a retail shopping experience that rewards and builds on that trust."

– Dr. Gerd Wolfram

The fact that it's always in motion due to constantly changing products, customer preferences and purchasing patterns, to name just a few, makes it even more of a challenge.

Another constant in retail is the steady upward trajectory of customer expectations, specifically around how technology can be used to improve and enrich the shopping experience. For a long time, rising retail expectations were focused on the quality and convenience of the online shopping experience. Retailers responded first by effectively emulating their brick-and-mortar experience online, and then moving beyond it by providing a richer array of information and services to supplement the online experience, ranging from detailed product information to user-generated content. Now there comes a new chapter in the technological evolution of retail.

Great expectations

Recognizing how much consumers have come to expect easy access to information in every sphere of their lives, one of the major international retailers – METRO Group (www.metrogroup.de) based in Duesseldorf, Germany – is pioneering the use of RFID. The crux of METRO Group's project is the use of RFID to automatically deliver the most relevant information to customers at different points of the purchase process, thereby making the customer experience more efficient, memorable and satisfying.

While METRO Group's importation of advanced technology into physical retail breaks new ground in the industry, the initiative actually builds on a number of first-of-a-kind projects employing intelligent RFID, albeit in a different part of the company's operations along the entire supply chain. It began in 2002, when METRO Group started working with a number of technology partners to lay the groundwork for next-generation retail processes, an effort that came to be known as the METRO Group Future Store Initiative. The first phase of the initiative culminated in the deployment of Europe's largest supply chain RFID solution. Designed and deployed with IBM and powered by IBM software, the solution enables the METRO Group to track shipments from its suppliers to its warehouses and distribution centers and then on to its outlets in Europe.

When METRO Group decided it wanted to extend the Future Store Initiative more deeply into its in-store retail operations, it again turned to IBM. As conceived by METRO Group, the project would focus on the company's Galeria Kaufhof department stores, a chain of more than 140 stores in Germany and Belgium focused primarily on fashion items. While the project would have a significant supply chain angle, its distinct emphasis was on weaving RFID deeply into the fabric of the customer's in-store experience.

Working closely with Kaufhof personnel, IBM Global Business Services conducted a detailed process assessment – covering everything from back-room operations and merchandising to shelf-replenishment and floor sales practices – and from that, designed a first-of-a-kind RFID solution that was implemented on a pilot basis in the men's department of a Kaufhof store in Essen. Working with a series of technology partners, IBM led the implementation of the RFID infrastructure.

RFID a good fit

The source of the solution's intelligence is the ability to detect the movement of products within the store via RFID, and then use that data to invoke and display information. This movement, in turn, corresponds to (and is driven by) specific actions on the part of the customer, such as removing an item from the shelves and bringing it into a dressing room. To enable this, each of the roughly 30,000 articles in the men's wear department in the pilot have an additional RFID tag, while RFID readers are placed at strategic spots throughout the store. On the shop floor, intelligence comes into play, when RFID readers embedded within "smart shelves" detect and record each time an item is removed from the shelf so that the data can be analyzed for patterns later. It's in the next stage – when the customer takes the item to try on in a reader-equipped smart dressing room – that the system's intelligence is manifested in a richer customer experience through showing additional product information and cross-selling ideas on a touch screen.

Once the product enters the premises, the system recognizes it and records it as a transactional event in METRO Group's merchandise information systems, where the IBM RFID tracking solution (implemented by IBM Global Business Services and the first to use the new global EPC Information Services, or EPCIS, standard) serves as a repository for all information. Leveraging underlying business logic, the system is then able to look up content associated with the product and display it to the customer in the form of suggestions ("Other products that would go well with that shirt include...") and information on other available sizes and colors for the product. This same type of automated assistance is also provided by an RFID reader-equipped "magic mirror." In the event a customer wants to retrieve a complementary product, or a different color or size, the system informs the customer whether it is in stock and where it is on the shelves or in the back room. Overall, the solution demonstrates how the "right" information can be used to create a more convenient and satisfying shopping experience.

Solution Components

Software

- IBM WebSphere® Application Server
- IBM WebSphere MQ

Services

- IBM Global Business Services

Smart solutions for retail

Incorporating RFID into its in-store retail operations, METRO Group broke new ground by enabling "smart" merchandising practices that provide a more customized and engaging customer experience. The solution's real-time sensing and reporting capability enables a quantum improvement in retail process efficiency, while providing METRO Group with the valuable insights into consumer trends it needs to optimize its product mix and increase its revenues.

By bringing RFID-based business intelligence into the physical retail environment and making it transparent, METRO Group is also dramatically improving the effectiveness of its decision making and processes. On an operational level, the system's dashboard-based reporting capability gives store managers a real-time window into on-site inventory and provides automated out-of-stock alerts, thus ensuring that the most popular products are always available to customers and lost sales are minimized. Dashboard analytics can also alert managers to potential product abnormalities or problems by flagging patterns, such as a product that is frequently taken from the shelf and/or tried on but not purchased. Over the longer term, METRO Group can also harvest the business intelligence generated by the solution to gain insights into customer buying trends to ensure that it stocks the right products on its shelves. This helps METRO Group to not only maximize the revenue efficiency of its merchandising strategies, but also improve the accuracy of inventory counts, minimize inventory carrying costs and reduce the logistics costs of returning unsold products to suppliers.

Smart means efficient

With cost control a concern for all retailers, the solution's positive impact on process efficiency further strengthens METRO Group's business case for smart retail. It starts at the loading dock door, where RFID readers provide workers with detailed information about goods received from the warehouse, thus minimizing the need to physically inspect boxes and significantly reducing the cost and time of the receiving process. On the retail floor, the ability to track down products on the shelves or in inventory means employees can spend less time searching and more time helping – and selling to – customers. By combining smart tools for sales associates with the cross-selling benefit of smart dressing rooms, METRO Group is putting in place a strong foundation for faster revenue growth, increased customer satisfaction and stronger customer loyalty.

Dr. Gerd Wolfram, managing director of MGI METRO Group Information Technology, sees the Galeria Kaufhof project – which was one of the first to use the new EPCIS RFID standard that METRO Group helped develop – as clear evidence of the benefit of smart technology in all aspects of retail. "Our use of RFID is improving our operational effectiveness as well as the shopping experience of our customers," says Dr. Wolfram. "Our relationship with IBM has been a strategic component of our RFID programs and one of the biggest factors in our success."

For more information

To learn more about how IBM can help transform your business, please contact your IBM sales representative or IBM Business Partner.

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Produced in the United States of America
December 2008

ODC03116-USEN-00

Montreal Informática enables Rio de Janeiro's public transportation federation to make bus and subway travel faster and more convenient for passengers.

Overview

Montreal Informática
Rio de Janeiro, Brazil
www.montreal.com.br

Industry
- Computer services

Employees
- 1,500

Products and services
- IBM zSeries 890
- IBM z/OS V1.6
- IBM System z Application Assist Processor (zAAP)
- IBM DB2 for z/OS V8 software
- IBM WebSphere Application Server for z/OS V5.1

IBM Business Partner
- Ingram Micro

M.I. MONTREAL INFORMÁTICA
Integrando Tecnologia aos Negócios

"The ticketing system from IBM is more convenient for passengers. But it also gives Fetranspor more insight into its customers, so the organization can provide customized services that better meet its customers' needs."

—Montreal Informática

Founded in 1987, Montreal Informática (M.I.) is one of the largest IT service providers in Brazil. The company employs 1,500 people throughout Brazil.

Challenge

Fetranspor (the Public Transportation Federation of Rio de Janeiro) contracted M.I. to develop and host an electronic ticket processing application for all public transportation systems within Rio de Janeiro. To support the new Web-based ticketing system, M.I. needed a robust, resilient IT infrastructure capable of operating 24x7.

Solution

Montreal purchased an IBM zSeries® 890 server from IBM Business Partner Ingram Micro to replace its existing server and support the new Fetranspor RioCard ticketing application.

The IBM System z® server, which runs the IBM z/OS® V1.6 operating system, features the IBM System z Application Assist Processor (zAAP), a specialized processing unit that provides a lower-cost execution environment for Java™ technology–based applications and offers the power needed to more quickly and effectively process large workloads. The RioCard application utilizes IBM DB2® for z/OS V8 software and IBM WebSphere® Application Server for z/OS V5.1 middleware.

Benefits

In the past, Fetranspor printed, verified and distributed more than four million bus and subway passes. Since implementing the RioCard solution, the company has issued travelers more than 600,000 smart cards, which significantly reduces the administrative burden of issuing tickets and reduces the time needed for a traveler to purchase and receive subway and bus tickets by more than half. The RioCard application tracks purchasing and traveling trends, allowing Fetranspor to tailor services to individual customers and to customize promotions. And because the company no longer has to manually print and distribute tickets, the RioCard system will help reduce Fetranspor's overhead costs.

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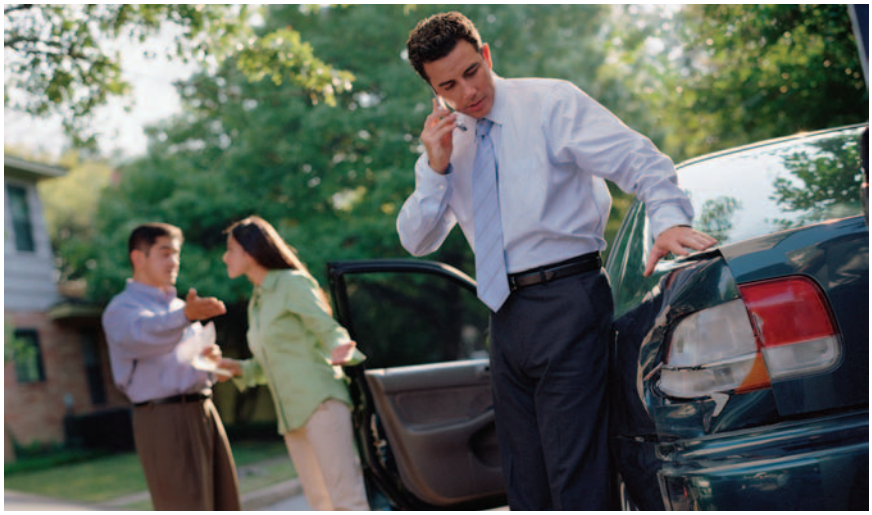
Produced in the United States of America
November 2008

ODC03110-USEN-00

Nationwide Insurance: Using virtualization as a foundation for innovation

Overview

- ***Business Challenge***
  Faced with the need to build a new, multimillion-dollar data center to cope with server proliferation and seeking to streamline application development and daily operations overall, Nationwide Insurance instead made a strategic decision to move to a flexible, virtualized IT environment.
- ***Solution***
  Nationwide deployed two IBM System z™ mainframes running Linux.® The solution is a cornerstone of Nationwide's strategy of moving all new development to virtualization and J2EE as a means of "future-proofing" its IT environment.
- ***Key Benefits***
  - *US$15 million cost savings anticipated over three years*
  - *85-90 percent server utilization*
  - *80 percent reduction in environmental costs*
  - *Web hosting costs lowered by 50 percent*



The server proliferation issue

Most large corporations face the problem of server proliferation. With the servers in use at a major company typically numbering in the thousands, costs related to purchase and support can be very high, especially in an era of rising energy costs and increasing IT usage related to new applications and services.

Nationwide Insurance, a Fortune 500 company and one of the United States' leading underwriters, is no different. Like other large insurance companies, Nationwide has a mixed IT environment that includes both traditional, mission-critical mainframe-based applications and enterprise applications running on distributed servers.

> *"The ability to flexibly add capacity wherever we need it changes the whole mindset of the developers. It promotes out-of-the-box thinking, because the risk cost is so low. What virtualization really gives us is a strong foundation for innovation."*
>
> – Buzz Woeckener, manager of Linux, Nationwide

Business Benefits

- Provides anticipated cost savings of US$15 million over three years
- Enables server utilization of 85-90 percent
- Reduces environmental costs by 80 percent
- Lowers Web hosting costs by 50 percent
- Leverages investments by using development/testing hardware for business continuity
- Promotes cost savings through reduced licensing fees and avoidance of investment in new facilities and additional equipment
- Simplifies and speeds server provisioning, enabling developers to try out new ideas quickly and with very little risk, thereby fostering innovation

"Rapid provisioning lets us try things that we'd never have considered attempting before."

– Buzz Woeckener

This mixed environment comes from the nature of Nationwide's business. From an IT standpoint, the insurance industry requires high-speed transaction processing to handle the tremendous amount of activity, such as policy verification and claims handling, associated with serving millions of policyholders around the clock. This kind of workload is best done by mainframes. Other kinds of workloads, such as enterprise applications or Web servers, do not warrant the use of a mainframe, and so are normally deployed on smaller, distributed servers. As the business grows, however, the number and variety of these smaller servers begins to increase, until it becomes unsustainable.

"We were facing the same problems that any company our size has to deal with," says Buzz Woeckener, manager of Linux for Nationwide. "We were running out of floor space, cooling and electricity, and our servers were drastically underutilized."

There were productivity issues as well. Server provisioning – the activity of allocating capacity to a new task – took anywhere from weeks to months, which was stifling application development. "It simply wasn't worth the risk to try out new ideas most of the time," Woeckener says. "The costs, should a given project not pan out, were too high."

Changing course to save money

In 2005, it became evident that unless a new direction was taken, Nationwide would have to update the power and cooling at its Tier 4 data center and possibly build a new data center at a cost of millions of dollars to accommodate growth. To avoid this expenditure and to address the underlying proliferation issue, Nationwide made a major strategic decision: to deploy a virtualized infrastructure.

The new environment is based on IBM System z mainframes and key technologies including IBM z/VM® virtualization software, IBM WebSphere® middleware and IBM DB2® database, which Nationwide analysis had shown could deliver a much faster, and much greater, ROI than other platforms due to its inherent cost of ownership savings. These savings, according to Woeckener, come in large part from reduced licensing fees. In a situation like Nationwide's, where there are thousands of servers in use, the cost of software licensing is considerable. But because of the way license fees are calculated – by processor – a solution that can employ a few very powerful processors to replace many individual servers can result in significant license fee savings.

"The software and maintenance costs add up to millions. And, of course, there are all the ancillary cost savings as well…floor space, cabling, switches, network administrators…it all adds up," Woeckener notes.

Virtualization provides a significant performance boost for Nationwide's overall IT environment, which translates into reduced response times and greater productivity. The consolidated servers run a version of Linux compiled to run on IBM System z. Combined with z/VM virtualization, this eliminates the physical separation of Linux servers and enables resource sharing. With a distributed infrastructure, enterprise and line-of-business applications on standalone servers interact with the mainframe via a conventional network infrastructure. But with Linux on z/VM, the virtualized servers are able to use the fast I/O of the mainframe directly, while at the same time taking advantage of the traditional mainframe strengths of reliability and high availability.

In addition to moving to Linux for new applications, Nationwide has also strategically decided on the use of the industry-standard Java 2 Enterprise Edition (J2EE) environment for all future application development, which is seen as a good way to ensure future extensibility and development of applications.

By consolidating workloads onto its virtualized infrastructure, Nationwide has replaced hundreds of standalone servers running various applications under several different operating systems, and also avoided having to purchase hundreds of new servers to handle growth. "Our virtualized environment is configured to handle the most important applications, but we still have a distributed infrastructure," says Woeckener. "We've consolidated servers where it made sense to do so, but with a business like ours you're never going to completely replace all of the distributed servers."

The two System z mainframes that run the virtualized environment are located at two separate data centers. One of the mainframes runs the production environment consisting of enterprise, line-of-business and Web applications, and the other is devoted to application development and testing. The second mainframe also doubles as a disaster recovery resource. Data is replicated between the two sites on a 30-second delay. In this way, the investment in hardware is leveraged to provide business continuity with no additional outlay.

Key Components

Software

- IBM WebSphere Application Server
- IBM DB2
- IBM z/VM
- Linux

Hardware

- IBM System z

Why it matters

A fully virtualized Linux environment running on IBM System z has saved Nationwide Insurance millions of dollars by eliminating hundreds of servers and avoiding the need to build a new data center, while at the same time providing performance increases. More importantly, the new environment has made the development of new applications far less risky through the rapid, low-cost and efficient provisioning of server capacity. This enables Nationwide developers to try new ideas that would otherwise not have been attempted, fostering innovation and out-of-the-box thinking.

The combination of cost savings and performance increases made virtualization on System z the best choice for Nationwide's needs, according to Woeckener. "We anticipate saving approximately US$15 million over three years," he says. "We're seeing dramatic improvements across the board. An 80 percent reduction in environmental costs including power, cooling and floor space; hardware and OS support efforts cut in half; Web hosting monthly costs also cut in half through capacity optimization and overall server utilization running at 85 to 90 percent."

Rapid provisioning changes the mindset of developers

While the initial reason to deploy a virtualized environment was related to money, the new IT architecture's flexibility has provided a significant added benefit. It gives Nationwide's application developers much greater freedom thanks to the ease with which computing capacity can be allocated, or provisioned, to new workloads. This enables them to bring new services to market more quickly, which in turn drives competitive advantage.

With a distributed infrastructure, provisioning a new project can take days, weeks or even months. Equipment must be retasked, or new equipment purchased. As a result, the costs involved in testing new ideas can be prohibitive, which tends to stifle development.

"With the virtualized infrastructure," Woeckener says, "we can provision servers literally in minutes. That gives us the benefits related to rapid scalability that you might expect. For example, we premiered a high-profile ad during the Super Bowl last year, and we knew it would result in a usage spike on our Web portal. So we temporarily added capacity to the Web servers to handle it, very simply and easily."

It's the indirect benefit, however, that Woeckener highlights. "Rapid provisioning lets us try things that we'd never have considered attempting before. If something doesn't work out, well, no problem…we just take the capacity back and use it for something else, right away. The ability to flexibly add capacity wherever we need it changes the whole mindset of the developers. It promotes out-of-the-box thinking, because the risk cost is so low. What virtualization really gives us is a strong foundation for innovation."

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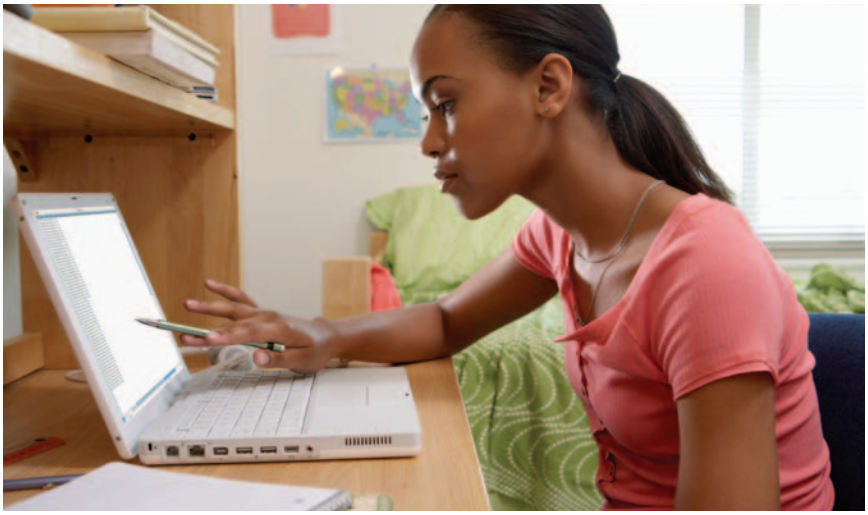
9-08

ODC03091-USEN-00

NC State makes a breakthrough in improving access to academic computing resources.

Overview

- ***Business Challenge***
  Growing demand for academic computing resources at NC State made it increasingly difficult to deliver the service level that its key user populations – students, instructors, researchers and administrators – required. NC State needed to fundamentally change the way it managed these resources.
- ***Solution***
  In collaboration with IBM, NC State looked to the domain of high-performance computing to create a new "cloud computing" model for provisioning technology that offers a quantum improvement in access, efficiency and convenience over the traditional computer labs it had relied on.
- ***Key Benefits***
  - *Projected savings in software licensing costs of up to 75 percent*
  - *150 percent increase in students served per application license*
  - *Increased flexibility to shift computing capacity between instructional, research and administrative needs*
  - *Ability to meet significant growth in enrollment without building additional computer labs*



Based in Raleigh, NC, North Carolina State University is a comprehensive university known for its leadership in education and research, and globally recognized for its science, technology, engineering and mathematics leadership. NC State has more than 31,000 students and nearly 8,000 faculty and staff.

As a look into virtually any college or university will tell you, academic computing has grown steadily more integral to the way institutions of higher education fulfill their multi-faceted missions. While the ubiquity of personal technology devices on campus may be its most familiar sign, the effect of this trend on the overall educational experience runs deep and broad. In the classroom, it is basically reshaping the way instructors and students interact, while giving students greater exposure to the technology tools they will be dependent on in the "real" world.

> *"Our goal was to rethink the way we met the academic computing needs of students, instructors and the other populations we serve. By collaborating with IBM, we are now better able to deliver on that mission."*
>
> – Mladen Vouk, head of the Department of Computer Science, North Carolina State University

Business Benefits

- Projected savings in software licensing costs of up to 75 percent
- 150 percent increase in students served per application license
- Higher student satisfaction through more convenient access
- Improved access to most recent software releases for instructors
- Increased flexibility to shift computing capacity between instructional, research and administrative needs
- Ability to meet significant growth in enrollment without building additional computer labs
- Overall improvement in server utilization levels

The infusion of technology is also raising the bar for academics to find more innovative ways to engage students, while at the same time providing them with a growing pool of computational power to push the boundaries of academic research. Perhaps most importantly, the growth of academic computing is helping colleges and universities meet what is arguably their paramount goal of improving access.

But as technology has become more pervasive on campuses – and enrollment continues to grow – institutions striving to keep pace with ever-growing resource requirements are coming under increasing strain. The need for increased raw computing capacity to support a continually growing user base is just one dimension of this. The bigger and more complex challenge for schools is to provide a level of service that meets the diverse needs of their "customers," the students, instructors, researchers and administrators whose everyday lives have become deeply dependent on technology. North Carolina State University (www.ncsu.edu) is one institution that – with the help of the IBM Research Triangle Park Center for Advanced Studies (CAS) – took a decidedly unique approach in addressing this challenge. As with most universities, NC State's campus-based computer labs represent an important conduit through which its students access (and instructors deliver) curriculum-related applications, especially those that are more costly or require intensive processing, such as engineering programs. When a new application or release comes out, instructors typically approach the IT organization with a request to update the back-end system, where applications are embedded into a series of application clusters or "images" – each of which are accessed by specific classes in specific labs.

> *"Deploying a new software application in our student labs on a timely basis had become a major challenge due to the sheer volume of software utilized in our engineering programs. A more scalable approach was clearly needed."*
>
> – Thomas K. Miller III, vice provost for Distance Education and Learning-Technology Applications, North Carolina State University

Hampered by complexity

For NC State, it became increasingly difficult to fulfill these requests. The reason was complexity. For NC State's IT staff, one of the biggest challenges to preparing an image was in making sure all the applications within it interacted smoothly. Because it took so long to perform the necessary integration and testing, IT was forced to impose a deadline on the porting of new applications months before classes were due to start. As a result, instructors wishing to add the latest applications or releases had to wait as long as a year to get them in the hands of students. To fill that gap, NC State envisioned a more flexible, user-driven provisioning framework that would enable fundamental change – in the way the university's internal customers access academic computing resources and, more broadly, in the way these resources are managed. While its physical computer labs would continue to play a key function, NC State sought to move beyond them for the benefit of all key university stakeholders.

In moving from conception to design, NC State established two basic requirements. The first was a modular yet integrated pool of computing resources; the second was a platform to efficiently and centrally manage it. The university chose to deploy the IBM BladeCenter® platform in various places across the university to run high-performance computing applications. While the BladeCenter's native management capabilities for functions like remote deployment provided a solid foundation, NC State's proposed solution would also require advanced scheduling capabilities to enable automated provisioning.

To address this need, NC State worked with local IBM BladeCenter development and CAS, the latter an outreach organization within IBM designed to foster information exchange with university researchers. As an outgrowth of this collaboration, NC State decided to employ an IBM open-source management tool known as Extreme Cluster Administration Toolkit (xCAT) – which had been used principally for workload scheduling in high-performance computing environments – and import that functionality into an academic computing environment. Using these building blocks, NC State built a first-of-a-kind provisioning and scheduling system – known as the Virtual Computing Lab (http://vcl.ncsu.edu/) – that has completely redefined the way students, faculty and researchers interact with NC State's IT resources, and has enabled the university to reach a new level of resource optimization. Distinct from a grid computing solution, and operational now for almost five years, VCL was, in effect, the first true "cloud computing" solution developed for education – long before the term became popularized.

In designing VCL, NC State put a premium on simplicity and convenience, qualities that are perhaps most evident at the user interface level. Perhaps the most basic difference is that users can access VCL from anywhere they want, enabling them to trade the inconvenience of a late night at the lab for the convenience of their own dorm room, office or home. Based on their access privileges, users can select a granular application image (consisting of the operating system and a suite of applications) either for current use or future use, at a set time and for a set duration. Instructors can create block reservations for an entire class, reserve clusters of servers and even add new applications – all without the assistance of NC State's IT staff. Some of VCL's most noteworthy properties are enabled by the system's intelligent provisioning architecture, which automatically allocates blade computing capacity in accordance with each user's needs. Once a scheduled session is over, that user's "virtual space" – which had been running on one or more blades – is wiped clean, enabling the blades to be put back in the resource pool, where they can be re-provisioned by other users as needed.

Solution Components

Software

- IBM Extreme Cluster Administration Toolkit (xCAT)

Servers

- IBM BladeCenter

Services

- IBM Research Triangle Park Center for Advanced Studies (Raleigh, NC)

Smarter Education

With demand for academic computing resources skyrocketing, NC State took a flexible and intelligent provisioning system originally developed for high-performance computing and adapted it to meet the university's broader technology needs. By introducing virtualization into academic computing, NC State has changed its basic formula for managing its resources, enabling it to deliver more resource support across the university at lower cost.

While its decision to fundamentally change application provisioning was driven by the need for better service, NC State also saw the benefits of such a change spilling into other critical areas. For instance, under its more fixed, location-based application model, NC State was essentially forced to "over-provision" to ensure that a certain number of lab-based machines were equipped to deliver specific applications. With its new self-provisioning model, NC State can now follow a more efficient licensing strategy based on real utilization, reducing its future licensing costs by up to 75 percent. What's more, the model's greater flexibility of access has enabled the university to increase the average number of students served per license by more than 150 percent. The net result – fewer application licenses serving more students at a lower cost – epitomizes resource optimization through flexibility.

University-wide benefits

NC State's intelligent provisioning system also improves its ability to flexibly allocate resources between instructional, administrative and research activities, each of which has its own peaks and valleys of resource requirements. A key example is the near complete drop-off of student computing activity that is typical during breaks between semesters. The new system gives NC State the ability to quickly and easily switch the bulk of its roughly 1,000 IBM BladeCenter server blades to the computationally intense requirements of researchers – such as running complex models and simulations – and in the process leveraging what would have been idle server capacity to advance the goals of the university's researchers. The same capability would enable NC State to shift capacity to administrative functions like class registration that produce a surge in processing activity before each academic semester.

All of these benefits point to how intelligent provisioning and similar "cloud" initiatives effect the more granular optimization of computing resources, which enables NC State to handle the academic computing requirements of a growing student population while minimizing the growth of its infrastructure. Mladen Vouk, head of the Department of Computer Science at NC State and one of the project's key visionaries, believes that the new solution heralds a shift in the way universities address the challenges of academic computing in a time of tight resources, growing enrollment and rising expectations. "Our goal was to rethink the way we met the academic computing needs of students, instructors and the other populations we serve," says Vouk. "By collaborating with IBM, we are now better able to deliver on that mission."

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Produced in the United States of America
December 2008

ODC03113-USEN-00

NYPD changes the crime control equation by transforming the way it uses information.

Overview

- ***Challenge***
  An innovation leader in tactics, NYPD needed to more effectively exploit its data resources to strengthen its processes.
- ***Why Become an On Demand Business?***
  By integrating its siloed crime data systems, NYPD gets a more holistic view of information it can act on more rapidly.
- ***Solution***
  IBM and Business Partner Cognos created a real-time Crime Information Warehouse that makes NYPD more proactive and effective in fighting crime.
- ***Key Benefits***
- *Ability to redeploy resources in response to crime patterns and trends*
- *Ability to resolve crimes and apprehend criminals more quickly*

» **On Demand Business defined**
An enterprise whose business processes – integrated end-to-end across the company and with key partners, suppliers and customers – can respond with speed to any customer demand, market opportunity or external threat.

The New York City Police Department (NYPD), the largest police department in the United States, has primary responsibility for law enforcement and investigation within the five boroughs of New York City. The NYPD has approximately 37,000 sworn officers.

As a general rule, crimes occur in a particular place at a particular time. Though the effects of a crime may linger, the crime itself does not. The same is *not* true from the angle of law enforcement. From the moment a crime is detected and reported, and throughout its investigation, the law enforcement system generates broad and diverse streams of information related to that crime.

> *"The NYPD's innovative policing strategies depend on our ability to gather, share and act on information. IBM – its people, partners and technology – have helped us redefine how information can be used to fight crime."*
>
> – James Onalfo, Chief Architect and CIO, NYPD

On Demand Business Benefits

- Support for more proactive policing tactics by virtue of an ability to see crime trends as they are happening
- More efficient use of NYPD resources resulting in more public safety per tax dollar
- Faster and higher rate of case-closing through more efficient gathering and analysis of crime-related data
- Continued improvement in quality of life
- Improved overall data integrity and speed of data access to optimize decision-making
- Improved officer safety through better risk assessment capabilities

While these streams are bound by a common thread – the crime – each concerns a different perspective of it – from the 911 call, to the dispatch of officers, to the various reports filled out by officers at different stages of the investigation. Over the years, major police departments have become extremely adept at capturing this information, doing so almost as fast as it is generated. The problem, however, is where the information goes *after* it's ingested.

Hindered by silos

Big-city police departments are for the most part highly compartmentalized, and their functions highly specialized. When crime information systems were first built as long as 30 years ago, they were – not surprisingly – designed to meet the needs of a specialized, vertically oriented process framework. At the time, little or no thought was given to more advanced forms of reporting or analysis, or to the sharing of information across different departmental functions. The result was an environment made up of siloed systems that were very efficient at capturing data but were challenged in sharing it.

This situation had a direct impact on the detectives and officers investigating crimes, whose job it is to pull together all the strands of information and create a coherent picture to guide their efforts. With case information residing in pockets throughout large departments, officers spend much of their time on the phone or on their feet trying to track it down, leaving them less time to do what they were trained to do – process the information to solve crimes.

In addition to streamlining the nuts and bolts of casework, large police departments like the NYPD are increasingly looking to the "bigger picture" to guide their policies, practices and resource decisions. The new wave among major metro police departments is to use information to become more proactive in the fight against crime. It's about recognizing patterns within crime statistics and using this recognition to modify policing tactics so that resources are directed to where they're most needed. The NYPD's CompStat program is a strong case in point.

Ask any New Yorker about "quality of life" and most will tell you it improved markedly during the administration of Rudolph Giuliani, a time of dramatically falling crime rates. Driving this reduction was an increased focus on more granular policing, under which so-called "quality-of-life" crimes (such as public

"There's no substitute for interacting with people to solve cases. Our goal is to make the process more efficient: instead of having to talk with ten different investigators in different parts of the city, they'll have to talk with two. That's a lot more time available to solve cases."

– James Onalfo

drinking, panhandling and disorderly conduct) are aggressively enforced, and enforcement accountability established at the neighborhood level. CompStat, a weekly process under which crime data is gathered, analyzed and shared, has proven an effective auditing tool that holds Commanding Officers accountable for any crime spikes in their precincts. It did not however provide the powerful data mining capability that is now being employed by the NYPD to identify patterns and to find and capture individual criminals.

Putting the pieces together

The NYPD knows that it's exceptionally good at both the bottom-up casework to solve crimes and the innovative, metrics-based policies that prevent them, but never enough to be satisfied. From both perspectives, time – namely, the time required to get a holistic view of crime information and then act on it – is the enemy. Time keeps perpetrators on the streets longer, hinders efforts to spot developing trends and increases the risks to officers. The NYPD was determined to reduce this time by fundamentally transforming the way crime information is managed and exploited. The department recognized that to more effectively solve and prevent crimes, it needed to provide information to key users – from precinct detectives to crime analysts to department leadership – more holistically, thus strengthening their ability to synthesize various bits of information into actionable intelligence. A key lesson of 9/11, that having pieces of the puzzle, unassembled, isn't enough, provided a key foundation of this understanding.

To frame and execute its transformation strategy, NYPD engaged IBM Business Consulting Services. IBM's first move was to conduct a thorough user study designed to identify the information elements needed at every level of the department and from it establish the solution's high-level business requirements. From them, the team produced a conceptual design of the solution as well as a new underlying data model to facilitate the integration of information from the department's many systems. The solution that came out of this process, known as the Crime Information Warehouse (CIW), provides a single, easy-to-use point of access to data on virtually all crimes committed in NY's five boroughs. In the backend, the solution pulls data from various standalone systems, transforms it to the new data model format and integrates it on the CIW. The solution's core technology, IBM DB2 Universal Database Data Warehouse Edition, runs on an IBM System p5 575. The CIW is backed up in real time on an IBM TotalStorage DSS800 storage server running IBM Tivoli Storage Manager.

Key Components

Software

- IBM DB2® Universal Database™ Data Warehouse Edition
- IBM WebSphere® Portal
- IBM WebSphere Application Server
- IBM Tivoli® Storage Manager
- Cognos ReportNet

Hardware

- IBM System p5™ 575
- IBM TotalStorage® DSS800 storage server

Services

- IBM Business Consulting Services
- IBM Sales and Distribution
- IBM Hardware Group
- IBM Software Group

Business Partner

- Cognos

Time frame

- Business requirements: 6 months
- Design: 3-6 months
- Development: 6-9 months
- Deployment: Ongoing

Why it matters

Everyone knows good police work relies on good information. But in today's big cities, speed is becoming just as important. NYPD proved that data-driven police tactics can produce dramatic reductions in crime rates. With its Crime Information Warehouse, it's proving that integrated crime data, delivered in real time, can change law enforcement even more. It's the ability to see trends as they form – instead of in the rearview mirror. It's the ability to see connections and break cases faster. It's the ability to make life-saving decisions by seeing the big picture.

Powerful processes with real-time speed

Having replaced its siloed systems with a common crime data repository, the NYPD is now able to do far more with the information, systems and processes that it already had in place. Indeed, the solution's architecture reflects the department's key criterion that it be flexible enough to support a wide range of processes and users – both current and future. In that goal it has excelled. At the tactical control level, for instance, the CIW solution provides the information foundation for the NYPD's state-of-the-art Real Time Crime Center. Using business intelligence software from IBM Business Partner Cognos along with GIS mapping and visualization tools, officers and analysts in the center can detect crime patterns as they are forming, enabling precinct commanders to take proactive measures to keep ahead of these trends – and head off spikes in criminal activity. The department's CompStat program, already a milestone in innovative policing tactics, was also transformed into a more effective crime-fighting tool by replacing its traditionally manual method of data tabulation with the CIW's real-time data feed. Reports that could take weeks or months are now available instantly.

Empowering officers

But it's not all about the big picture. This same ability to see deep and wide also enables dispatchers to flag dangerous situations for responding officers, thus contributing to increased officer safety. The CIW also promises to transform the tasks of investigators – perhaps the most critical link in the law enforcement chain – by unleashing their most valuable quality: their judgment. Investigators that once spent a huge slice of their time chasing down information can now access all of it through a single, portal-based interface (based on IBM WebSphere Portal) or by working with the Real Time Crime Center. Freed from low-value data gathering, officers can now turn to the higher value, more analytical activities they are trained to do, such as formulating and testing hypotheses. The ability of the CIW to support robust, multidimensional queries and drill-downs on crime databases enables them to refine and test their hunches far more quickly than was even imaginable a few years ago.

The prime driver of the initiative, Chief Architect and CIO James Onalfo, sees the new solution as an example of the "culture of innovation" within the NYPD that has made New York the nation's safest large city five years running. "The NYPD's innovative policing strategies depend on our ability to gather, share and act on information," says Onalfo. "IBM – its people, partners and technology – have helped us redefine how information can be used to fight crime."

For more information

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Produced in the United States of America
5-06

ODB-0144-01

IT hosting company On Line do Brasil nourishes its growing business with an energy-efficient and cost-effective IT platform from IBM.

Overview

On Line do Brasil LTDA
São Paulo, Brazil

Industry
- Computer services

Employees
- 25

Product
- IBM BladeCenter HS21 XM
- IBM BladeCenter E chassis
- IBM System x3550
- IBM SAN Switches
- IBM System Storage 3310 Tape Library

"We can proudly promote the IT infrastructure that supports our hosting business. The BladeCenter and System x environment provides our customers with optimal availability and gives us an energy-efficient and cost-effective solution."

—On Line do Brasil LTDA

On Line do Brasil is a service and hosting provider for midsize and small companies. The company maintains one hosting data center in São Paulo for its 150 business customers in Brazil, and it earns approximately US$2 million annually.

Challenge

After experiencing rapid growth for more than three years, On Line do Brasil needed to expand its data center operations, which no longer had the power, efficiency or scalability to support the hosting provider's flourishing business. On Line do Brasil sought a solution that would help it expand its data center while providing energy efficiency, advanced management capabilities and high availability for its customers.

Solution

To address its system performance limitations, On Line do Brasil engaged IBM to consolidate its existing systems onto three IBM BladeCenter® HS21 XM servers housed in an IBM BladeCenter E chassis. The systems feature excellent energy management, integrated management tools and ideal rack-to-blade conversion for optimized efficiency.

In addition, On Line do Brasil and IBM implemented an IBM System x3550 server to manage the new environment. The System x™ platform offers a highly functional infrastructure that delivers more memory, lowers power consumption and dramatically increases performance.

IBM SAN Switches provide connectivity between the System x3550 server and a new IBM System Storage® TS3310 Tape Library, which provides four hours of backup for On Line do Brasil's customers who subscribe to the service.

Benefits

- Improves system availability, cuts energy consumption and reduces management time by 30 percent
- Fully supports 150 customers using a nominal amount of the platform's available memory and processors
- Expects to achieve a full return on investment (ROI) in as few as three months

IBM Corporation
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Route 100
Somers, NY 10589
U.S.A.

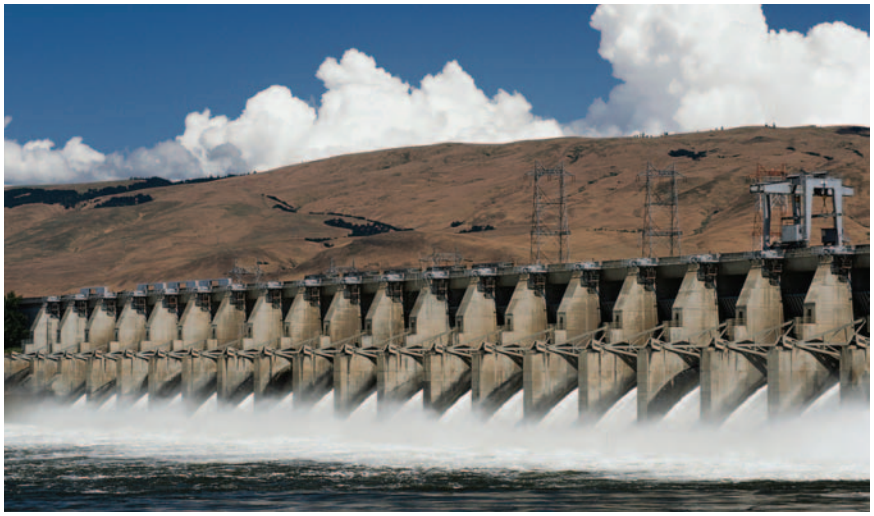
Produced in the United States of America
June 2008

BLC03011-USEN-00

Oxxio uses smart utility metering technology to give more control – and options – to customers.

Overview

- ***Challenge***
  To maintain rapid growth in an increasingly competitive Dutch market, new-age energy retailer Oxxio needed a cost-effective way to offer a fundamentally new class of services.
- ***Why Become an On Demand Business?***
  To further differentiate itself, and do so in a way that both leveraged and reinforced its image in the marketplace.
- ***Solution***
  Oxxio worked with partners Enel and IBM to adapt their Automatic Meter Management solution by adding an innovative, real-time wireless connection.



Oxxio is the largest independent energy supplier in the newly liberalized Dutch market. It serves nearly 600,000 residential and small business customers. Known as a "green" energy supplier – since it procures wholesale power exclusively from hydroelectric sources – Oxxio was founded in 2000.

- ***Key Benefits***
- *Projected 50 percent reduction in meter-to-cash costs*
- *Improved customer retention and competitive differentiation*

The trend toward deregulating, or liberalizing, electric power markets is an accelerating worldwide phenomenon. As liberalization has unfolded over the last few years, electric power markets have become more layered, specialized and competitive, resulting in more diverse service options and lower prices for customers.

> *"Our experience reaffirms our belief that IBM and Enel are at the forefront of smart energy metering. We see our decision to work with them as a sign of our commitment to giving our customers the best possible value."*
>
> – Erik de Heus, CEO, Oxxio

» **On Demand Business defined**
An enterprise whose business processes – integrated end-to-end across the company and with key partners, suppliers and customers – can respond with speed to any customer demand, market opportunity or external threat.

On Demand Business Benefits

- Replacing estimates with real-time, usage-based billing improves Oxxio's internal process efficiency and increases customer satisfaction.
- Advanced features like load profiling provide competitive differentiation, increase customer retention and promote conservation.
- AMM solution expected to reduce overall meter to cash costs by 50 percent.
- Oxxio's AMM solution enables it to offer variably priced services, further distinguishing it in an increasingly competitive marketplace.

While liberalization models vary across the world, their common characteristic is an unbundling of the industry's main functional elements – power generation and power distribution – and the opening of these areas to competition. Customers can still rely on full-service "incumbent" providers for their power needs. But they can also turn to a new set of players – independent generators, wholesalers and retailers – that arose to meet the market's burgeoning opportunity. On the whole, this influx of new players and business models has made the world's electric power market more dynamic, faster-moving and above all more customer-centric. To meet the challenges and opportunities these conditions present, utilities have increasingly sought to transform their most important business processes through innovation. Netherlands-based Oxxio (www.oxxio.nl), a young and fast-growing independent supplier, provides an ideal example of this in action.

Founded in the midst of Dutch market liberalization, Oxxio has since become that nation's largest independent energy supplier, with nearly 600,000 residential and small business customers. The key to its success thus far has been its ability to grow fast while maintaining a "lean and mean" cost structure. Unlike traditional electric utilities, Oxxio owns no grid assets, instead buying electricity from wholesalers and reselling to its customers. From the start the company grew rapidly, driven by a discounted pricing strategy made possible by its low costs, as well as its image as an innovative and environmentally responsible energy provider. However, with Dutch liberalization attracting new market entrants, rising competition would eventually take an inevitable toll on Oxxio's growth.

To sustain its growth, Oxxio realized that it needed to further differentiate itself from a growing tide of low-cost competitors while at the same time improving its already high levels of efficiency. In staking out a new path, Oxxio also knew it wanted a solution that would reinforce its image as an innovator in the Dutch marketplace. But while the desire to break new ground was high, so was the need for a proven technological solution. Oxxio knew that it had gotten as far as it did by keeping a tight focus on what it did best and keeping itself open to better ways of doing things. It found such a lesson in Italy, where a large utility named Enel had worked with IBM to create an enormously successful automated meter management (AMM) solution. It was a lesson Oxxio sought to capitalize on.

"We decided to work with IBM and Enel because theirs was the only proven automatic meter management system that was deployed on a large scale."

– Erik de Heus

Breaking ground in "smart" meters

Eight hundred miles to the southeast, Rome-based Enel had taken preemptive action to strengthen its competitiveness ahead of the 2007 opening of the Italian electricity market. Working with IBM, it undertook a series of initiatives designed to offer a richer array of choices for its customers as well as to increase operational efficiency. These efforts built on Enel's advanced research on remote meter management, the byproduct of which was a unique ability to conduct two-way data communications with residential customers and, as such, a potentially powerful and innovative platform to deliver a new generation of real-time services. With competition certain to intensify, the capacity to deliver intelligent services would provide Enel with an important source of differentiation, while at the same time helping it to streamline and automate its operations.

But Enel had even bigger plans in mind. It saw the worldwide trend toward market liberalization as driving global demand for the kinds of service capabilities it was seeking to develop. To capitalize on the opportunity, Enel needed to create a solution that would address its own requirements while being flexible enough to adapt to the diverse systems and processes of utilities around the world. The automated meter management (AMM) solution that came out of Enel's project is now recognized as the leading large-scale platform in the world. One of the strongest messages of this story is how Oxxio took this solution and – working with IBM – adapted it to address its own unique business issues.

The baseline AMM solution uses IBM WebSphere MQ to create a secure, reliable middleware infrastructure that establishes a real-time link between household meters and the utility's centralized control facilities. Under the Enel solution, meters in customers' homes automatically send usage and other data over Enel's low-voltage power lines to data concentrators located within electrical substations. From there, data is aggregated and sent further upstream via WebSphere MQ to an IBM DB2 database (backed up by IBM Tivoli Storage Manager) where it can be integrated with key backend systems. The system's sense-and-respond capability also gives utilities a means to implement sophisticated demand and capacity management and usage-based pricing schemes, while downstream communication capabilities enable call center agents to activate a new account in virtually real time.

Key Components

Software

- IBM WebSphere® MQ
- IBM WebSphere Application Server
- IBM DB2® Universal Database™
- IBM Tivoli® Storage Manager

Services

- IBM Global Business Services
- IBM Global Technology Services
- IBM Engineering and Technology Services
- IBM Systems and Technologies Group

Time frame

- Business case: 6 months
- Design: 3 months
- Deployment: 9 months

Why it matters

Energy market deregulation has not only induced lower prices and more choices for customers – it has also induced a change in the energy market ecosystem, with new kinds of players, business models and business requirements coexisting with traditional "incumbent" providers. Oxxio, an example of this new kind of player, needed to link with its customers but, as a product of its low-asset business model, lacked the grid infrastructure to make this link. IBM solved Oxxio's problem by adapting its core AMM solution through an innovative wireless connection.

A flexible solution for a reshaped market

IBM Global Business Services played the central role in deploying the AMM solution for Oxxio. The central tasks were adapting and integrating the core AMM solution to suit Oxxio's unique needs, many of which were a function of its low-overhead, middleman-type business model. For example, under the initial AMM solution, Enel as the incumbent provider owned each link in the chain, from the meter in the home to the wires that ran to electrical substations. Oxxio, on the other hand, owned neither. It needed a way to move data between the customer's meter and its control facilities that would bypass the electric grid. Working with the Enel engineers who helped design the core solution, the IBM team led an innovative redesign of the communications infrastructure. In the place of the grid, IBM designed a wireless data communication module that gathers data from the meter and sends it directly to Oxxio's central control facility, effectively leapfrogging an entire communications layer. Downstream delivery works the same way, with information and commands sent wirelessly to the communication module and then on to the meter, all in real time. In effect, a necessary adaptation became a functional improvement.

Another way the Oxxio AMM solution pushes the envelope is its first-of-a-kind integration of electric and gas meters into the solution. Using a self-service platform known as "myOxxio" customers can obtain an up-to-date profile of both their electricity and gas consumption that they can use to optimize their consumption behavior – to the benefit of their budgets and the environment. In addition to delivering value to its customers, Oxxio was also determined to remain true to its low-overhead business model. To achieve this, Oxxio engaged IBM to organize a separate business unit for meter reading, and then outsourced the management of that operation – as well as the underlying IT infrastructure – to IBM.

With the groundbreaking solution in place, CEO Erik de Heus sees Oxxio as a stronger competitor in the increasingly open Dutch energy market. "Our experience reaffirms our belief that IBM and Enel are at the forefront of smart energy metering," says de Heus. "We see our decision to work with them as a sign of our commitment to giving our customers the best possible value."

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6-06

ODB-0172-00

Pacific Coast Producers uses RFID technology to step up customer service and improve supply chain visibility.

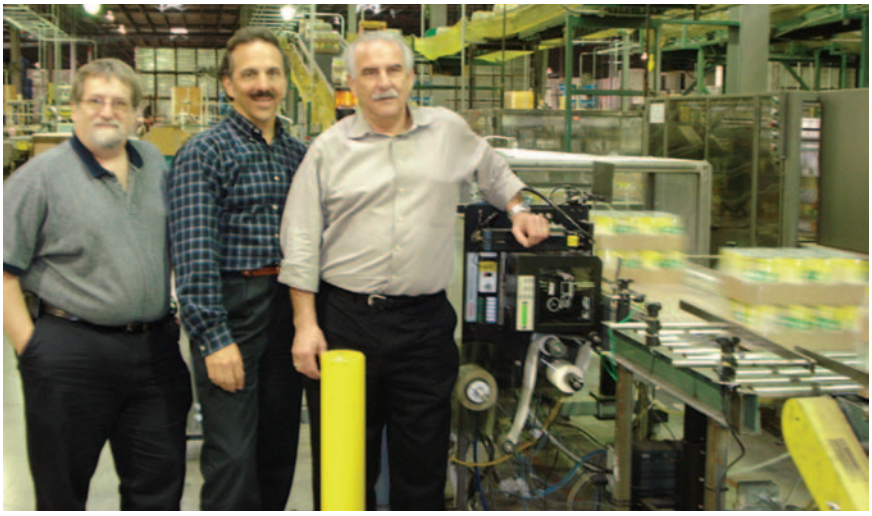
Overview

■ ***Business Challenge***

Pacific Coast Producers needed to respond to a major retail chain's request mandating that suppliers tag shipments with radio frequency identification (RFID) devices. With an eye on competitive advantage, the company saw an opportunity to go far beyond mandated capabilities and develop a scalable, integrated and analytics-enabled solution that would provide the impetus to transform business processes for the company as well as its customers.

■ ***Solution***

The company opted for an inline RFID tagging system solution, fully integrated into the IT infrastructure. Pacific Coast Producers can now expand beyond the compliance efforts of its competitors and use business intelligence gained to improve business processes. The company further positioned itself as a preferred supplier, as the solution allows it to collaborate more closely with its customers by using the analysis of its inventory data much more effectively than before.



Pacific Coast Producers implemented a fully integrated RFID solution with capabilities far beyond industry standards, further strengthening the company's position as a preferred supplier.

■ ***Key Benefits***

- *Answered retailer mandate for RFID*
- *Enabled increased supply chain visibility, useful for tracking business processes like display promotions and shelf replenishment*
- *Implemented a scalable solution in advance of anticipated increased RFID mandates*
- *Enabled inventory decision making informed by more accurate information than was previously available*
- *Enhanced collaboration with customers, improving ability to avert out-of-stock situations in retail stores*

Transforming business processes to efficiently increase customer service

Pacific Coast Producers (PCP) is a California-based private-label packer of premium canned fruits and tomatoes. The company, a cooperative of more than 180 growers, runs three processing facilities and a distribution center in Northern California. Recently, PCP's largest customer began mandating that their suppliers ship cases and pallets tagged with radio frequency identification (RFID) devices.

Like other food distribution companies, PCP relies on bar-code labels placed on boxes and pallets to provide tracking capabilities to its retailers. Wanting to move quickly, the technology team at PCP turned to IBM and IBM Business Partner OATSystems.

Business Benefits

- Answered retailer mandate for RFID tracking capabilities
- Enabled increased supply chain visibility for tracking business processes like shelf replenishment
- Enabled closer tracking of products included in retailer's special promotional campaigns
- Implemented a scalable solution in advance of anticipated increased RFID adoption
- Enables inventory decision making informed by more accurate information than was previously available
- Increased collaboration with customers, improving ability to avert out-of-stock situations in retail stores

"We are actively processing RFID data using OATSystems and IBM software in order to monitor and improve business processes like display promotions and regular shelf replenishment. Our findings have led to the most immediate benefit of the RFID solution – it has further enhanced PCP as a preferred supplier to major retail chains."

– Peter Wtulich, chief technology officer and vice president of information services, Pacific Coast Producers

Collaborating to deliver a better solution

Using a consultative partnering approach, IBM, OATSystems and PCP personnel conducted a business analysis session; the team offered budget estimates, analyzed distribution processes and made recommendations on how best to use RFID technology for business value. IBM Global Business Services consultants then conducted a two-day RFID Solution Development Workshop. The workshop familiarized PCP's shipping personnel with RFID technology and best practices, helping ensure that the company would meet retailers' needs, and helped PCP's people understand the RFID solution options.

PCP fully understood the possibilities RFID offered beyond compliance, and realized it could differentiate itself with an integrated solution. The company knew that the most important benefit to be gleaned from its embrace of RFID would be improved relationships with its customers; using OATSystems software, the company would now be able to share RFID data, and the analysis of that data, in an unmatched, collaborative effort to improve business processes in conjunction with major retailers.

RFID solution identifies preferred suppliers

"Right now, in the food processing industry, RFID is similar to bar coding in the 1970s," says Peter Wtulich, chief technology officer and vice president of information services, Pacific Coast Producers. "Companies are reluctant to go through the expense and don't see the benefits yet. The most immediate benefit for us was that it has further enhanced us as a preferred supplier to major retail chains, and with increased visibility into our supply chain, we'll be able to improve our business processes." Further, the integrated solution provides the data necessary to improve stocking and replenishment processes, while also giving the company an easily scalable solution that will allow them to anticipate and quickly fulfill upcoming retail industry RFID mandates with other customers.

Most other suppliers in PCP's industry use a manual process to apply RFID tags, referred to as "slap and ship." The process is inefficient, as cases must be reprocessed to tag each case on the production line. PCP's approach moves beyond slap and ship with a "tag@source" solution. OAT tag@source is a complete, automated, inline tagging solution for applying RFID tags to products and is integrated on IBM WebSphere® RFID Premises Server. With inline printers and taggers, the company can apply RFID tags to more than 30 cases per minute, far faster than a manual solution.

Distribution chain visibility has improved dramatically, as PCP now has real-time information regarding the location of its products. In addition, the new RFID tracking system provides order fulfillment and delivery validation, improving visibility. In one instance, the company is now tracking the performance of its products involved in promotional activities much more closely, hoping to understand why individual stores in a chain show inconsistencies within sales ranges expected.

IBM, OATSystems and DSI enable an integrated RFID solution

At the heart of the solution is IBM WebSphere Application Server, the IBM WebSphere RFID Premises Server and IBM MQSeries® messaging software. PCP uses Data Systems International's (DSI) dcLINK,® a fully integrated, real-time automated data capture solution to enhance business process communication; dcLINK gathers PCP's RFID information generated in manufacturing and shipment processing for subsequent analysis in OATSystem's OATaxiom. OATaxiom, an enterprise RFID data management system with built-in adaptors for trading partner data, delivers a record of inventory and goods movement across the supply chain. It also serves as a robust analytics platform, enabling PCP to extract value from the electronic product code (EPC) data. In addition, the solution includes OATSystems' OATxpress to provide EPC number management and control all business process operations of the inline tagging operation.

The use of IBM middleware in the solution has allowed PCP to fully integrate the RFID solution into its IT infrastructure. The solution gathers and analyzes RFID data with software from IBM Business Partners DSI and OATSystems, with IBM middleware enabling the applications to talk to each other. The company now has the infrastructure in place to expand beyond the compliance efforts of its competitors and use business intelligence gained to improve business processes.

"Since we were on the leading edge with this solution, no one provider could supply everything we needed," Wtulich explains. "IBM was able to assist me in coordinating all the pieces, giving us a first-of-its-kind solution in our industry, in a reasonable amount of time."

Key Components

Software

- IBM WebSphere Application Server
- IBM WebSphere RFID Premises Server
- IBM MQSeries messaging software
- Data Systems International (DSI) dcLINK
- OATxpress® (tag@source scenario management)
- OATaxiom® (EPC business intelligence)
- DSI Trancollector™ script mods to accommodate data related to pallet inventory
- DSI Interface with OAT for collection of data

Hardware

- IBM System x™ servers
- Symbol Technologies RFID readers
- Symbol Technologies wireless hand scanner
- Weber RFID printer applicator
- Weber RFID tags

Services

- IBM Global Business Services – Vendor and project coordination

IBM Business Partners

- OATSystems Business Solutions Services
- Data Systems International (DSI)

Why it matters

Pacific Coast Producers (PCP), a private-label packer of premium canned fruits and tomatoes, needed to respond to a major retail chain's mandate that suppliers tag shipments with RFID devices. With an eye on competitive advantage, PCP implemented much more – a solution that goes beyond industry standards and allows visibility and tracking at the store level, increasing supply chain efficiency and improving replenishment processes. These improvements have positioned PCP as a preferred supplier while creating a new level of collaboration with its customers.

Using RFID data to create information and drive process improvement

"We have visibility at the store level that we never had before, and we're starting to turn our inventory data into information," said Wtulich. "With that information we believe we can improve business processes within our facilities and also improve replenishment and stocking for our customers. Basically, we can use the integrated RFID information in OATaxiom to help us make sure we have the right inventory in the right store at the right time." And with the scalable solution in place, when a major retailer requests additional RFID tags, PCP can quickly expand their initial RFID activities with increased volume and additional SKUs, all while engaging in pilot RFID programs with other retailers.

For more information

To find out more about how IBM and the IBM Business Partner Network can collaborate to conduct an RFID workshop at your company, or help you implement a fully integrated RFID solution, please contact your IBM representative.

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About OATSystems, Inc.

Headquartered in Waltham, MA, and with offices in Austin, Chicago, London, and Bangalore, OATSystems, Inc. is a recognized RFID framework leader, providing software that empowers businesses to achieve competitive advantage from radio frequency identification (RFID).

About Data Systems International (DSI)

For nearly three decades, DSI has served clients worldwide with industry-leading technology solutions. More than 750 companies in 31 countries have looked to DSI for complete data capture and RFID solutions – software, scanners, mobile computers, integrated label/tags, implementation services and global support.

ODC00329-USEN-00

PPS brings unprecedented flexibility to the South African insurance market

Overview

- ***Business Challenge***
  The Professional Provident Society (PPS), a leading South African provider of specialized insurance services for professionals, wanted to improve its ability to bring new products to market in order to respond to changing customer demands and stiffening competition.
- ***Solution***
  Working in close collaboration with IBM Business Partner Silvermoon Group, PPS replaced all of its legacy systems with a completely new, modular application infrastructure based on the principles of the IBM Insurance Application Architecture (IAA)—the first end-to-end implementation of IAA in the South African market. The common IAA-based platform unified several previously disparate policy systems.

- ***Key Benefits***
  - *Enabled PPS to bring nine new insurance products to market in less than one year*
  - *Allowed rapid modification of new products in response to competitor actions*
  - *Reduced application development costs by 50 percent*
  - *Decreased audit findings by approximately 80 percent*
  - *Eliminated more than 90 percent of system code*
  - *Significantly improved controls for collecting premiums*

> *"Most of what we need to do to introduce a new product is now easily accomplished … It is vastly more efficient than it was before."*
>
> – *Stephan Clark, head of business applications, PPS*

Business Benefits

- Enabled PPS to bring nine new insurance products to market in less than one year, compared to only one new product being introduced in the previous three years
- Allowed extensive modification of new products in response to competitor actions in a matter of weeks—an entirely new capability
- Reduced application development costs by 50 percent
- Decreased audit findings (items requiring remedial action) by approximately 80 percent
- Eliminated more than 90 percent of system code
- Significantly improved controls for collecting premiums

> *"Our end-to-end implementation of IAA gave us [that] solid core, and we've been able to build on it and leap far ahead of the competition."*
>
> – *David Gnodde, chief operating officer, PPS*

A challenge of flexibility

The Professional Provident Society is a South African provider of insurance products to a highly-specialized market: graduate professionals such as doctors and lawyers. The company has been in existence since 1941 and is a leader in its niche, but increasing competition has been putting pressure on PPS to innovate and introduce new products into the marketplace. The inherent nature of its legacy systems made application and product development very complex, costly and fraught with risk. As a result, it took years to introduce new products into the marketplace: PPS had only introduced one new insurance product in three years.

In order to overcome this obstacle, PPS would have to change the way the game is played on a fundamental level—making incremental advances in capability would not be enough. PPS knew that its competitors faced similar development challenges, so the company decided to make an end run around the rest of the industry by completely replacing its systems and reinventing the business.

In an industry as conservative and risk-averse as insurance, the willingness to undertake such a dramatic change is remarkable, and unheard-of in the local market. But the move paid off, and the results have been astonishing. In less than a year, PPS has introduced nine new products into the marketplace, taking their competitors completely by surprise.

A clear, objective viewpoint sets PPS apart

An important insight on the part of PPS was to recognize that what's truly important is not what the company's differentiators are, but rather what makes the company similar to its competitors. According to David Gnodde, PPS's chief operating officer, "Many insurers focus on what they believe makes them different and as a result get tied to old systems and processes, believing them to have some intrinsic value. But the fact is, from a systems administration and business process point of view—the behind-the-scenes activities—insurance companies around the world are all actually very much the same. This has important implications, because it means that it's possible to devise an industry-specific architecture that will apply to any insurance company."

That's what IBM did in the 1990s, when it created IBM Insurance Application Architecture. IAA is a widely accepted business and application architecture blueprint for insurance company core operations. PPS was familiar with the suite of models and chose to adopt it in its entirety, using IAA as the centerpiece of its transformation initiative. This end-to-end service-oriented architecture (SOA)-based implementation of IAA, the first of its kind in South Africa, set PPS apart from its competitors, which have only adopted IAA in a limited fashion.

Breaking the development logjam

Introducing new products to the market in the insurance industry is so difficult because of the way legacy systems work. “Our legacy systems were bound up, so to speak,” says Stephan Clark, head of business applications at PPS. “As is typical of older architectures, there were many dependencies and a great deal of duplication of data. What this meant was that if you wanted to change a rule or a policy in the system in order to introduce a new product offering, you’d have to change not just one part of the system, but many, while still keeping everything in sync. It was very risky…there were so many interdependencies that any one problem could bring multiple systems down.”

By contrast, the modular nature of the new infrastructure vastly simplifies matters. “Now, a given piece of data or code only appears once and is reused over and over, instead of being duplicated and embedded throughout all our systems,” Clark says. The new systems are thus much more streamlined with approximately 50,000 lines of code versus over 600,000 lines in the legacy systems. Development of new products is a much simpler task than it had been.

Collaborating to innovate

PPS knew up front what it needed to make the transformation happen. “Our strength is in knowing what an insurance company needs in order to run efficiently. What we wanted was a partner with the technological expertise to make that happen. We wanted a close collaborative relationship,” says Gnodde. PPS found its partner in Silvermoon Group, an IBM Business Partner that specializes in modular, service-oriented applications that rigorously follow the IAA model.

The heart of the infrastructure is built on IBM WebSphere® Business Integrator and WebSphere MQ, which handle the interactions between Silvermoon’s modular, service-oriented application components. IBM Rational Rose® tools are used to develop new products, the infrastructure is run on IBM System x™ servers and a storage area network based on IBM TotalStorage® is used to house the data. IBM Global Business Services also played a role, providing IAA training to PPS.

Compelling results

Not only has PPS been able to introduce new products at an unprecedented rate, the modular nature of the infrastructure makes modifying those products very simple. “Our competition responded to one of our new product introductions with an offering of their own,” says Clark, “but within a matter of only a few weeks we were able to modify our offering in reply. Our newfound agility has allowed us to catch our competitors completely off guard.”

Key Components

Software

- IBM Rational Rose
- IBM WebSphere Business Integrator
- IBM WebSphere MQ
- Silvermoon Group IAA-compliant applications

Hardware

- IBM System x
- IBM TotalStorage

Services

- IBM Global Business Services, IAA Training

IBM Business Partner

- Silvermoon Group

Why it matters

South African specialty insurance provider Professional Provident Society (PPS) dramatically improved its speed to market by changing its IT architecture and business processes to a degree unheard of in its local market. PPS implemented a first-in-market, end-to-end service-oriented architecture based on the IBM Insurance Application Architecture that has allowed it to leap far ahead of its competition with an unprecedented rate of new product introductions.

The reinventing of business operations at PPS has resulted in a number of benefits beyond the immediate goal of improving the company's speed to market. An important benefit of adopting the IBM Insurance Application Architecture is that it provides a comprehensive, validated structure for the entire business, which helps companies comply with regulatory audits. As is the case in most of the world, the insurance industry in South Africa is very tightly regulated and companies are routinely checked for compliance. By embracing IAA principles, PPS has reduced its audit findings—items requiring remedial action—by some 80 percent. The new applications are also producing improved business results, with significant improvements in controls for collecting premiums.

The implications of technology

According to Gnodde, it takes considerable courage to let go of the past and use technology to innovate, especially in a conservative industry like insurance. "Doing what we've done—fully embracing a proven architecture and deploying a service-oriented architecture based on it—is in a sense straightforward, but in the context of this industry and this market, a fundamental change like we've made amounts to a whole new way of doing business. Our competitors are so focused on the perceived value of their existing processes, systems and offerings that they're unwilling to break free of them or even see that those legacy assets are in fact hampering them. We focused instead on the core of the business and thought about how to make those core functions work better. Our end-to-end implementation of IAA gave us that solid core, and we've been able to build on it and leap far ahead of the competition."

For more information

To learn more about how IBM can help transform your business and help you innovate, please contact your IBM sales representative or IBM Business Partner. Visit us at: **ibm.com**/innovation

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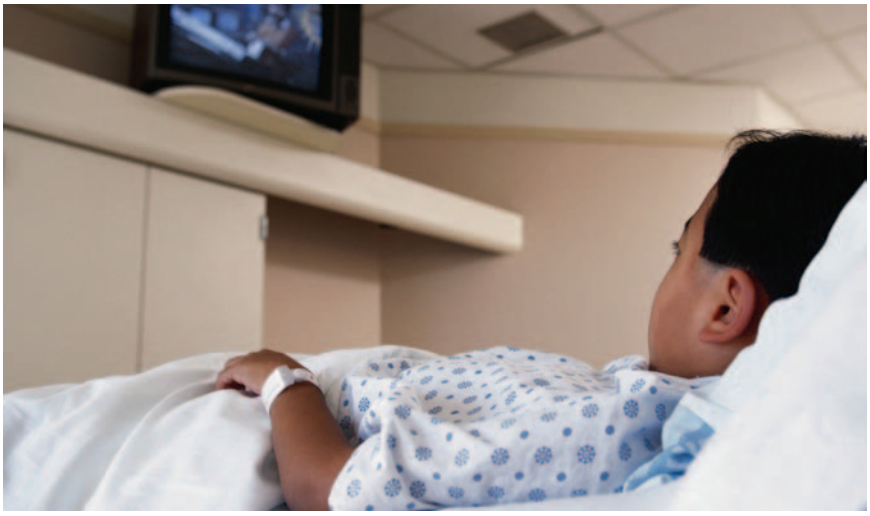
Produced in the United States of America
May 2008

ODC03072-USEN-00

Sainte-Justine Hospital positions itself for breakthroughs in pediatric research and treatment.

Overview

- ***Business Challenge***
  To realize the potential benefit of genomics in pediatric research, Sainte-Justine Hospital Research Centre needed to streamline the way it gathered, managed and updated the clinical information it relied on. Data fragmentation combined with manual processes led to wasted resources and a longer research cycle.
- ***Solution***
  Sainte-Justine teamed with IBM to transform its existing infrastructure for integrating patient information into a powerful research support tool. Automated workflows keep clinical databases up to date, enabling the hospital to channel more of its efforts and resources to core pediatric research.
- ***Key Benefits***
  - *Expected 90 percent reduction in time required to gather research cohorts*
  - *Expected 75 percent reduction in administrative costs associated with data gathering and validation, which Sainte-Justine can channel into core research efforts*
  - *Faster development of new treatments for complex pediatric diseases*



Established in 1907, Sainte-Justine Hospital is the largest pediatric hospital in Québec and the second largest pediatric hospital in North America. Sainte-Justine Hospital's Pediatric Research Centre is well known for its work in such pediatric diseases as childhood leukemia and other complex pediatric diseases.

Behind most every medical breakthrough is an enormous body of research, much of it taking years to compile, analyze and translate into new and more effective treatments for patients. Not surprisingly, the clinical research process is often characterized as a search for hidden clues or patterns within a vast pool of biomedical data. The recent emergence of genomics as a primary tool for researchers, and the successful use of ultra-powerful computing resources to spot genetic patterns in diseases, have reinforced the notion that the key to medical research is unlocking secrets in the data.

> *"With IBM's assistance, we have vastly increased our ability to exploit the knowledge of the human genome in the way we understand and treat pediatric illnesses."*
>
> – Dr. Daniel Sinnett, head of the Oncogenetic Research, Sainte-Justine Hospital Research Centre

Business Benefits

- Expected 90 percent reduction in time required to gather research cohorts
- Expected 75 percent reduction in administrative costs associated with data gathering and validation, which Sainte-Justine can channel into core research efforts
- Improved information accuracy and the elimination of duplicate entries
- Faster development of new treatments for complex pediatric diseases
- Optimization of existing pediatric treatment practices to maximize responsiveness and minimize side effects
- Improved ability to secure research funds and expertise

"All research projects will eventually be supported from a single database and integrated infrastructure. And starting now, our physicians can access data in a way suited to their specific needs. This provides long-term follow-up with patients well into adulthood."

– Dr. Daniel Sinnett

But if you talk to the people actually engaged in the process – from senior researchers to technicians to administrative personnel – the odds are good that they'll view their biggest challenge as obtaining and validating the base of data needed to do the research. Standard research practices revolve around the tracking of groups of patients with common attributes or clinical profiles, known as cohorts. Depending on their focus, researchers' data needs in establishing a cohort can range from family health information to genetic profiles, test results and treatment histories. All too often, obtaining this information requires researchers to extract information from patients' paper-based files, in some cases spread across different departments. This tendency for critical information to live in "pockets" throughout the hospital has in effect created a structural bottleneck in the research process, which not only draws precious resources from hospital staff, but also lengthens the time required to develop new and more effective treatments.

In the realm of pediatrics, these challenges are amplified by a number of factors. For one, the pediatric illnesses targeted by researchers are by comparison quite rare, making it harder for researchers to assemble a cohort to study them. An even greater challenge relates to the inherent complexity of understanding the dynamics of pediatric illnesses, since their onset and progression tend to coincide with major metabolic and physiological changes in the children themselves. As a result, pediatric researchers are especially dependent on patient data points gleaned over a long time horizon – starting as early as their mothers' prenatal care and extending as far as years after their treatment – to understand the interplay of factors involved in pediatric illnesses. The combination of small cohort populations and the need to track them consistently over time place a heavy burden on hospitals like Sainte-Justine Hospital Pediatric Research Centre, which are dedicated to pediatric research.

End of the rainbow

A teaching hospital affiliated with the University of Montreal and the second-largest pediatric hospital in North America, Sainte-Justine (www.recherche-sainte-justine.qc.ca) had been the first hospital in Québec to implement an electronic health record (EHR) solution. Developed by IBM Canada in an initiative known as "Project Rainbow," the solution was designed to provide a framework for Sainte-Justine and two sister hospitals to share patient information and improve the quality of care and the patient experience. In the wake of this highly successful engagement, Sainte-Justine and IBM sat down to establish a roadmap that would build on the new capabilities that resulted from the project, chief among which was the ability to gather and aggregate a wide variety of clinical information. While its EHR solution was designed to serve the clinical side of its operations, Sainte-Justine and IBM realized that the integration infrastructure that lay at the heart of the solution could be extended and adapted to vastly improve the efficiency of the hospital's research operations.

With advances in genomics changing the face of medical research, Sainte-Justine saw both the need and the opportunity to take its research capabilities to the next level. Although Sainte-Justine viewed advanced computing technologies as a key part of this transition, it recognized that the most fundamental change would be in resource efficiency. Put simply, streamlining and automating its "front end" processes would enable Sainte-Justine to channel more of its scarce resources into the core research activities.

With the electronic health records solution as a starting point, IBM needed to create a technology and process framework on top of it that would perform all of the updating, validation, security and patient authorization functions necessary to use the valuable data. In addition to medical data drawn from hospital records – such as tests and records of treatments – the solution also needed to incorporate genotypic data drawn from patient tissue samples. This combination was essential to understanding not only the genetic basis of disease, but also how genetic makeup could affect the way a patient responds to a particular course of treatment, or the likelihood of a patient experiencing side effects from a particular treatment. Lastly, IBM needed to create a powerful, flexible and easy-to-use interface through which researchers could analyze or query the data.

Following a new flow

Led by IBM Global Business Services, IBM developed a solution that meets each of these requirements. From a process perspective, the starting points are the many clinical systems throughout Sainte-Justine that generate patient data. Each time a patient's information changes, the information is automatically sent to a gateway that serves as a hub to all the hospital's clinical systems. Once a patient's record reaches the gateway, an information broker (powered by IBM WebSphere Business Integration) employs a series of business rules to filter, process and compile the information. The first function is to check the patient's file for parental consent, which is stored as an electronic signature. If the consent is not on file, the information is automatically discarded. If the signed consent is on file, the solution then locks in the patient's privacy by replacing the patient's name with an anonymous global patient identifier that remains attached to the patient and – importantly – can be traced back if a new treatment is found. The broker's final function is to extract pre-specified data elements (such as blood count) from the overall record, and to send those elements to a master patient record stored in an IBM DB2 database running on an IBM System p5 570 server. Each time a patient undergoes subsequent procedures, testing or genomic profiling, the results are automatically incorporated into this database.

Key Components

Software

- IBM WebSphere® Business Integration
- IBM DB2®
- IBM Data Discovery and Query Builder

Hardware

- IBM System p5™ 570

Services

- IBM Global Business Services
- T.J. Watson Research Labs

Time frame

- Design and prototype development: one year
- Full rollout: in progress

Why it matters

Using its recently built patient data infrastructure as a foundation, Sainte-Justine created a new process framework to automate the gathering, managing and updating of critical research information. By overlaying this with a powerful querying and analysis tool, Sainte-Justine gives its researchers real-time access to a vast and continually updated reservoir of clinical and genomic information, which will help speed childhood cancer research and improve patient outcomes.

In addition to automation and efficiency at the front end, Sainte-Justine's solution also provides a powerful analytical inquiry tool for researchers. By using the IBM Data Discovery and Query Builder (DDQB), Sainte-Justine's researchers are able to identify potential cohort members by specifying attributes at a very granular level virtually in real time, replacing a process that often required several months and substantial administrative resources. Even more powerful is DDQB's ability to analyze and identify correlations between elements of patients' clinical files and their genomic patterns. Formerly, such analysis required the manual inputting of data into a database and a database administrator to run complex routines. With the new solution, researchers themselves can use intuitive query language to see the relationship between genetic patterns and susceptibility to certain pediatric disorders. But this is just one dimension of the solution's capabilities.

Perhaps most important is the fact that the new solution gives Sainte-Justine's researchers the means to cross an important threshold in complex genomic analysis. Thus far, research has focused on "Mendelian" disorders, which examined the role of heredity in pediatric illnesses and birth defects. The new Holy Grail for pediatric research is to use genomic analysis to optimize the treatment of childhood diseases by understanding how a child's genetic makeup can impact their responsiveness to particular treatments, as well as their vulnerability to side effects. It's not uncommon for a child to receive a cocktail of half a dozen different drugs, with the impact of each component potentially affected by his or her genetic makeup. Understanding this complex relationship – a discipline known as pharmacogenomics – gives physicians a tool to maximize the effectiveness of childhood treatments while minimizing their side effects. Achieving this goal requires not only powerful analytical capability but also the ability to procure and validate a deep reservoir of patient information over time. Sainte-Justine's solution, by securely, efficiently and automatically performing this function, provides the hospital with a foundation for this next generation of pediatric research. To help build this foundation, Sainte-Justine's researchers worked with computational biologists from IBM T.J. Watson Research Labs.

Dr. Daniel Sinnett, head of the Oncogenetic Research at Sainte-Justine's Research Centre, expects the IBM solution to keep the hospital at the forefront of pediatric research, thereby increasing its ability to attract both funding and world-class research expertise. "Today our fundamental understanding of genetic susceptibility to disease is very limited, particularly in pediatrics," says Dr. Sinnett. "With IBM's assistance, we have vastly increased our ability to exploit the knowledge of the human genome in the way we understand and treat pediatric illnesses."

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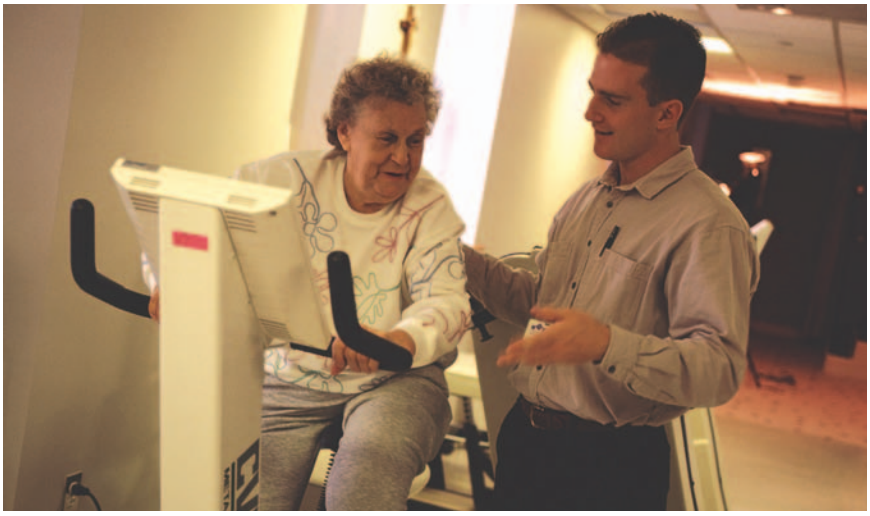
4-07

ODC00326-USEN-00

Storstrøms ErhvervsCenter lays the foundation for a new model of elderly at-home healthcare.

Overview

- ***Business Challenge***
  A regional business development group, Storstrøms ErhvervsCenter sought a way to mitigate the looming strain on healthcare resources that the region's growing elderly population represented – and do so in a way that created new revolutionary service opportunities.
- ***Solution***
  Storstrøms ErhvervsCenter worked with IBM and local healthcare providers to create a predictive health monitoring system. By combining advanced telemetry technology with leading-edge practices in other industries, SEC laid the groundwork for a whole new way of managing chronic illnesses among the elderly.
- ***Key Benefits***
  - *Estimated reduction of €100 million in healthcare costs associated with debilitating falls over a ten-year period (for a region of 800,000 citizens)*
  - *Estimated reduction of €25 million in healthcare cost savings related to improved means of monitoring hypertension*
  - *Improved quality of life for elderly citizens*
  - *More efficient allocation of scarce healthcare resources*



Storstrøms ErhvervsCenter (SEC) is a publicly funded independent business development center whose mission is to assist small and medium-sized enterprises, with the aim of strengthening the economy of the Storstrøm region in Denmark. One of SEC's top goals is to inspire companies in fields such as healthcare services to leverage new technologies and services to support growth.

While there may be a number of ways to define it, business innovation is at the core about finding new ways to solve problems or improve practices. In many cases, innovation tends to happen within an industry or a market, since many business practices, issues and requirements are specific to particular industries and markets. But it's also true that some of the most notable improvements come about when innovations cross industry boundaries. Making cross-industry innovation work depends not only on the strength of the initial idea, but on the creative vision to connect it to broader problems.

> *"The work we achieved with IBM provides clear evidence that remote predictive monitoring of chronic medical conditions can help healthcare organizations deliver better outcomes while achieving a whole new level of resource efficiency."*
>
> – Ann Roldan, project manager, Storstrøms ErhvervsCenter

Business Benefits

- Estimated reduction of €100 million in healthcare costs associated with debilitating falls over a ten-year period (for a region of 800,000 citizens)
- Estimated reduction of €25 million in healthcare cost savings related to improved means of monitoring hypertension
- Improved quality of life for elderly citizens
- More efficient allocation of scarce healthcare resources

Lessons from the farm

One particularly compelling example of this exchange originated in Denmark's livestock industry, where time-tested processes came into conflict with regulatory changes. As long as there have been livestock farms, success has depended on getting the most from animals, and that includes maximizing their reproductive efficiency. For pig farmers, one of the biggest challenges in this area has been in knowing when a sow was ready to mate, a determination usually made by visually observing their behavior while immobilized in a pen. When the European Union established new rules that restricted their ability to restrain their pigs, farmers – especially on large farms – needed to find a more practical and efficient method of sensing a sow's reproductive readiness and reacting accordingly. Working with a group of farmers, researchers from the University of Copenhagen used 3D accelerator sensing technology to develop a wireless telemetry solution that detected the telltale changes in a sow's gait that indicated estrus, and automatically notified the farmer. This enabled pig farmers to circumvent the disruptive effects of the new regulations.

The second half of this innovation story shifts the focus to Storstrøm County, a 2,000-square-mile region in southeast Denmark with a population of just over 260,000 – and into the realm of human healthcare. Like most of Scandinavia, Storstrøm County operates a world-class healthcare services infrastructure. While funding comes from the Danish government, it is the responsibility of counties such as Storstrøm to administer healthcare services. Beyond this, Storstrøm also plays a more general role in supporting regional business development through Storstrøm ErhvervsCenter (SEC), a publicly funded organization whose mission is to assist small and medium-sized enterprises and to inspire them to leverage new technologies and services to encourage their growth. It was in the latter role that SEC (www.sec.dk) provided a catalyst for healthcare innovation.

> *"The right combination of fresh, creative thinking and enabling technology can fundamentally change the equation in healthcare service delivery."*
>
> – Ann Roldan

Heading off trouble

Like much of the developed world, SEC recognized the increasing strain that an aging population was likely to place on the county's healthcare infrastructure. Of particular concern was the growing population of elderly patients with high blood pressure or mobility issues that make them prone to falling. To manage their conditions and prevent adverse events, caregivers need to make frequent and costly visits to patients' homes to monitor them. With this population expected to surge – along with that of chronically ill elderly citizens in general – Storstrøm foresaw even greater strains on its healthcare resources in the future. The real motivator, however, is the much higher personal, clinical and financial costs society incurs when prevention fails and at-risk patients become victims of debilitating falls, broken hips and strokes.

SEC sought not only to head off this problem, but to do so in a way that would catalyze Storstrøm's healthcare community. Cross-industry innovation proved to be a critical ingredient in realizing this vision.

In collaboration with local municipalities and healthcare providers, SEC engaged IBM to help it develop a pilot system to demonstrate the viability of the concept. At its most basic, the system needed the ability to detect and then transmit the relevant health data, which were defined as blood pressure readings and – more challenging – a measure of the "normalness" of a patient's physical movement. It was at this point that IBM introduced the idea of adapting the livestock motion detection approach to the human motion requirements of SEC's solution. It was a perfect fit, opening the door for a first-of-a-kind healthcare telemetry solution.

Sensing trouble and sending help

Led by IBM Global Business Services, IBM designed and successfully built a wireless predictive monitoring solution that measures blood pressure and muscle movement at the patient's home and feeds it – securely and automatically – to a centralized facility where it can be analyzed and acted on by healthcare providers. In designing the solution, IBM's overarching goal was to maximize its ease of use and minimize its intrusiveness on patients' day-to-day activities. It achieved this by simplifying the sensing method on the front end of the solution. To read blood pressure, elderly patients step on a scale in their homes and affix a measuring device enabled with a Bluetooth wireless sender. In stepping on the scale, the patient automatically transmits the data from the device to an asset monitoring hub, a specially configured Sony Ericsson P910i Smartphone that performs the solution's most critical functions. The "brains" of the hub are an embedded software solution called IBM Personal Care Connect (PCC) that was developed by IBM using the IBM WebSphere Everyplace suite of products. The key sensing function is performed by IBM WebSphere Event Broker, which – upon detecting the signal – triggers IBM WebSphere MQ Everyplace to deliver the information to a remote IBM System p server, which stores it in an IBM DB2 database. If the central system detects a blood pressure reading outside of a normal range, it can be configured to send an alert that would trigger the appropriate medical intervention.

The motion sensing part of the solution was rooted in the observation that among the elderly, abnormal movements tend to signal a higher likelihood of falling. This is where the existing motion sensing technology used in the livestock solution comes in. As the patient walks, a small, belt-mounted sensing device uses Bluetooth to send motion data to the PCC hub, which uses the

Key Components

Software

- IBM WebSphere® Event Broker
- IBM WebSphere MQ Everyplace®
- IBM Mobile Connect
- IBM WebSphere Everyplace Suite Embedded Edition
- IBM WebSphere Everyplace Connection Manager
- IBM DB2®

Servers

- IBM System p™

Services

- IBM Global Business Services
- IBM Software Services for WebSphere

Time frame

- Solution design: 12 months
- Implementation: 6 months

Why it matters

In its role as a regional business catalyst, Denmark's Storstrøm ErhvervsCenter (SEC) applied a fresh approach to an old but growing problem – keeping the at-risk elderly population healthy. Leveraging advanced sensing technology, SEC laid the foundation for the automated monitoring of elderly patients in their homes, and a fundamental change in the way healthcare services are delivered.

same combination of WebSphere tools to upload the data to the centralized server. Once there, an algorithm compares the patient's motion to a baseline that the system calculates from empirical observations. As with blood pressure sensing, a motion pattern that deviated from an established norm would signal the need for caregivers to check on the patient and head off a potentially catastrophic fall. By leveraging the fundamental approach of the livestock application, IBM and SEC have established a means by which the Storstrøm healthcare system can improve patients' lives by being more proactive in the way they deliver care.

Changing the formula

As with any healthcare initiative, the most important measure of success for the predictive monitoring system is what it does for patients. To underscore this benefit, one need only look at the human and financial cost when the warning signals of hypertension and fall proneness are missed and patients suffer strokes, falls and broken hips. That's just what SEC did in a business case it compiled in the wake of the pilot. The biggest beneficiaries were the at-risk elderly, who would be far more likely to sustain high-quality lives. But so too were the broader base of citizens, for whom the efficient use of scarce healthcare resources will become an increasingly important priority. By SEC's estimates, a region of 800,000 citizens would be expected to reduce the healthcare costs associated with debilitating falls by as much as €100 million over a ten-year period, with another €25 million in savings related to improved monitoring of hypertension.

But that's just the start. True to its mission of nurturing opportunity, SEC has applied for grant funding from the European Union to further its studies and work with IBM, which will expand the system's capabilities and develop a market-ready offering. Ann Roldan, a project manager at SEC, sees the solution providing similar preventative benefits for other chronic conditions – such as diabetes – as well as in monitoring patients at home after surgery. "The work we achieved with IBM provides clear evidence that remote predictive monitoring of chronic medical conditions can help healthcare organizations deliver better outcomes while achieving a whole new level of resource efficiency," says Roldan. "It shows how the right combination of fresh, creative thinking and enabling technology can fundamentally change the equation in healthcare service delivery."

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Produced in the United States of America
12-06

ODC00257-USEN-00

Swedish Medical Center embraces the leading edge with a first-class data center built with help from IBM.

Overview

- ***Challenge***
  Design and construct a data center that would better support medical center needs
- ***Solution***
  A resilient, scalable and reliable data center
- ***Key Benefits***
  - *Established a central, reliable source for IT operations and control*
  - *Eliminated single points of failure*

Providing exemplary healthcare—96 years and counting

Superior healthcare goes beyond just treating the physical. It combines innovative treatment and expertise with kindness and sensitivity. It blends state-of-the-art facilities and services with genuine compassion and concern. And it provides a healing environment for those who need it—throughout the community or from around the world.

Swedish Medical Center (www.swedish.org) is one such healthcare provider. Founded in 1910 with just $10,000, a renovated apartment building and 24 beds, Swedish Medical Center is now one of the largest, most comprehensive nonprofit healthcare providers in the Pacific Northwest region. Based in Seattle, Washington, it has four campuses—First Hill, Providence, Ballard and Issaquah—that include multiple specialty clinics, a new community-based emergency room, a network of 12 primary-care clinics, a home-care services program, and affiliations with suburban hospitals and physician groups. In addition, Swedish Medical Center is a regional referral center and provides specialized treatment in cardiac care, oncology, orthopedics, high-risk obstetrics, neurological care, sleep medicine, pediatrics, and organ transplantation. The hospital also conducts clinical research.

> *"I would never have wanted to attempt this type of project without IBM and their leadership."*
>
> *—Janice Newell, CIO, Swedish Medical Center*

"We have distinguished ourselves by delivering extremely high-quality healthcare. Our doctors have earned great reputations," says Janice Newell, CIO for Swedish Medical Center.

For Swedish Medical Center, the leading edge is a critical place to be—not for the prestige, but to continue offering the most innovative healthcare available. To keep its positive momentum going, Swedish Medical Center had launched a US$120 million clinical information system. As part of the initiative, the healthcare provider was transitioning from paper-based medical records to electronic records to improve the quality of care and help minimize errors as well as help improve day-to-day operational support for medical staff members.

Performing surgery on an outdated IT environment

But as Swedish Medical Center embraced its new initiatives, its senior managers quickly realized that the current IT environment could no longer keep up with the evolving technological requirements.

"We had to get ourselves to a data center that was capable of supporting our delivery of care with technology," says Newell. "Our data center was wholly inadequate."

The hospital's IT operations and data center had reached maximum capacity. The data center also needed to upgrade its power capabilities to support new applications, which in turn would increase its cooling requirements. In addition, the overall physical IT environment for housing support personnel was constrained. The hospital clearly needed a solution that could extend its existing IT environment and infrastructure and provide the flexibility needed to meet the demands of an ever-evolving organization.

Not only was Swedish Medical Center's data center insufficient, but it also needed to be relocated to make way for the expansion of several other buildings on campus. The new data center had to be designed, constructed and brought online in less than 12 months—and schedule slippage was not an option.

Building a robust data center from the ground up

Swedish Medical Center turned to the IBM Global Services team to determine how to achieve the hospital's overall technical goals and begin the process of building a world-class data center. Initially, IBM helped Swedish Medical Center establish a statement of requirements and provided a schematic design to outline the data center's specific design points. IBM then evaluated the levels of data redundancy that were needed to avoid any single points of failure.

Swedish Medical Center and IBM also collaborated on facility size requirements to help ensure that the new data center was designed to be flexible and scalable enough to accommodate future opportunities and growth. IBM was then able to complete the design and construction of the new data center. As the general contractor for the build out, IBM assumed complete responsibility for all aspects of the construction project and specified, procured and installed all the necessary equipment to support all data center functions and operations.

After the IBM team completed construction, it tested and commissioned the facility to ensure that it was functioning properly. IBM also managed the relocation of approximately 500 servers and numerous computers and storage devices to the new facility. The relocation was accomplished with detailed planning and scheduling. Each specific application and its associated server/storage were mapped to successfully bring the application back online. The relocation was choreographed in weekend move waves to help reduce any effect on Swedish Medical Center operations.

The result was a data center that could meet Swedish Medical Center's current and future requirements—and one that was constructed within the hospital's aggressive timeline.

"IBM's strict project management processes and dedication—such as the running of crews almost 24x7—helped keep the project on its critical timeline," says Steve Horsley, director of IT infrastructure for Swedish Medical Center.

> *"I can truly say IBM led to our success."*
>
> *—Steve Horsley, director of IT infrastructure, Swedish Medical Center*

Today, Swedish Medical Center has a data center it truly can rely on. Designed to minimize the chances of downtime, the new data center incorporates dual power sources all the way back to the main building power plant. Each server cabinet includes dual power distribution units fed by separate remote power panels, which are in turn fed by dual power distribution units supported by dual uninterruptible power supply (UPS) modules with separate battery systems. The electrical system is then backed up by a redundant building generator plant. The cooling system is also redundant and features a chilled water solution supported by water source feeds from two sides of the data center and redundant air-conditioning units.

In addition, IBM provided and installed a dual-path cabling system throughout the facility. The system, which incorporates dual-fiber runs to every cabinet and copper runs where needed, is coupled with Swedish Medical Center's redundant network core to help create a highly available communications network.

At 6,000 square feet, the new data center is nearly twice the size of the old data center. It incorporates seismic supports and a number of security features, including a dry pipe preaction sprinkler system and an FM200 fire suppression system. The facility also includes a new state-of-the-art network operations center (NOC) that IBM designed and built. The NOC features custom ergonomic furniture and a 10.8' x 9' sectional screen for monitoring IT operations.

To allow for future growth, the main infrastructure was sized to accommodate the installation of additional UPS and cooling systems as needed. And because Swedish Medical Center's management team requested that IBM ensure that upgrades and maintenance would not affect ongoing IT operations, the hospital should experience no outages when it expands its systems.

"It's just night and day from where we were," Newell says.

Collaborating with IBM—facing a healthier future

With the new data center in place, Swedish Medical Center can now move forward on other key business objectives. The completion of the NOC and the IT improvements will enhance the quality and speed of medical services as well as provide noticeable financial savings. Plus, the inclusion of environmental status alerts on power and cooling along with enhanced security monitoring will help Swedish Medical Center monitor its IT operations more closely around the clock, every day. The new data center allows Swedish Medical Center to:

- *Focus on core competencies*
- *Sustain high levels of redundancy and increased capacity using dual-fed connectivity*
- *Provide future growth capacity for the new operations*
- *Accommodate existing and future UPS systems and air-conditioning requirements.*

"I would never have wanted to attempt this type of project without IBM and their leadership," says Newell.

Horsley agrees. "I can truly say IBM led to our success."

For more information

To learn more about IBM's data center solutions, contact your IBM representative or visit:

ibm.com/services/datacenter

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Produced in the United States of America
02-07

This customer story is based on information provided by Swedish Medical Center and illustrates how one organization uses IBM products. Many factors may have contributed to the results and benefits described; IBM does not guarantee comparable results elsewhere.

GTC00649-USEN-00

Telenor pioneers a new way to bring the benefits of RFID to small and mid-sized companies.

Overview

- ***Business Challenge***
  Intent on expanding its revenue base with high-value services, Norway-based Telenor set its sights on the fast-growing market for "machine-to-machine" (M2M) services, targeting small and mid-sized businesses for whom M2M have been out of reach due to cost and complexity, as well as larger enterprises looking for a low-cost, entry-level M2M solution.
- ***Solution***
  Telenor teamed with IBM to create the first-ever hosted M2M offering. By creating a flexible, low-cost shared services platform, Telenor has drastically expanded the number of companies that can make a strong business case for offering M2M.
- ***Key Benefits***
  - *Increased wireless traffic over Telenor's network*
  - *A new revenue stream for Telenor, leading to higher average revenue per user (ARPU)*
  - *Enhanced ability to leverage the growth of M2M and move up the wireless value chain*
  - *Improved ability to penetrate the small and mid-sized business market*

Headquartered in Fornebu, Norway, Telenor is emerging as one of the world's fastest growing providers of mobile communications services, with approximately 130 million subscribers spread over 12 countries in Scandinavia, eastern Europe and Asia. Telenor also has a strong position in the growing Scandinavian market for broadband services and is the largest provider of television and broadcast services in the Nordic region.

For providers of telecom services, intense competition has become a way of life. One of the biggest challenges they face is the need to establish a solid foundation for future revenue growth. While traditional voice service still represents the primary component of average revenue per user (ARPU) for the industry as a whole, voice is rapidly becoming a commodity service and the epicenter of aggressive price competition between providers. Thus, even as user volume rises, the "treadmill effect" of falling prices is making it increasingly difficult for providers to increase ARPU.

> *"By enabling us to be the first Nordic telecom service provider to offer a hosted M2M service, IBM has helped us to open a new door for the rapid growth of the market."*
>
> – Rolv-Erik Spilling, manager, Telenor Business Norway

Business Benefits

- Increased wireless traffic over Telenor's network
- A new revenue stream for Telenor, leading to higher average revenue per user
- Enhanced ability to leverage the growth of M2M and move up the wireless value chain
- Improved ability to penetrate the small and mid-sized business market

That's just one dimension of a deeper strategic imperative of telecom providers, namely that they carve out a sustainable role for themselves in an increasingly complex and diverse services environment.

Moving up the chain

This is especially true in the realm of wireless communications, which has witnessed an explosion in the number and variety of services around messaging, music, video and gaming – to name a few. An important underpinning of this growth has been the efficient, reliable and affordable transport services that telecom service providers have been able to deliver over their networks. However, when it comes to future growth and profitability, most providers see the need to move beyond their role as a "pipe" in the services ecosystem and move up the value chain. This goal is perhaps the biggest reason providers are investing billions to build next-generation networks through which they can add value and thus extract a greater piece of the growing service pie. But they also realize that technology change is only half of the formula for success. The other half is a change in mindset, with service providers energized to find new opportunities and apply innovative approaches to capitalizing on them. Telenor (www.telenor.com), a diversified provider based in Norway, is showing how such an approach can fuel rapid growth and success in today's global telecom market.

Telenor's aggressive pursuit of opportunity has been most evident in the mobile communications arena, where it serves an estimated 130 million subscribers worldwide. It's seen in the company's expansion into a number of rapidly growing markets in eastern Europe and Asia. Another recently seen facet of the company's vibrant growth strategy – and the focus of this story – is Telenor's first-of-a-kind initiative aimed at developing the market for "machine to machine" (M2M) communications, which is expected to be among the fastest-growing wireless applications.

> *"We looked at IBM's thought leadership in RFID – as well as its clear ambitions in this field – and we concluded that it was a good opportunity to partner with the best in the industry."*
>
> – Rolv-Erik Spilling

The main thrust of M2M communications is the use of RFID tags and sensors to track and monitor dispersed assets without human intervention. Some key uses of M2M include the tracking of shipments in transit, tracking vehicles within fleets and tracking inventory as it moves through a supply chain. The data captured by M2M systems range from basic geographic location (such as ensuring that a high-value shipping container is where it's supposed to be) to more parametric data such as temperature (such as ensuring that a perishable shipment stays continuously within a prescribed temperature range).

Because of the cost and complexity of deploying M2M solutions, adoption has been mainly focused within larger companies, which are more likely to have the resources to build and manage the stand-alone solutions that typify M2M today.

Fresh thinking on M2M

Telenor's insight was that many small and medium-size businesses in the same vertical segments driving large-company M2M adoption – transportation, utilities and retail, for instance – also have a compelling need for M2M capabilities, but lack the resources and in-house expertise required to make it happen. On paper, offering M2M as a managed service held the promise of overcoming these barriers, and, in so doing, unlocking a huge new source of revenue potential. This is amplified by the high probability that the European Union will issue new rules that require companies to improve their ability to track the conditions of perishable shipments while in transit.

To realize this potential, Telenor faced the technical challenge of taking what has traditionally been a custom, stand-alone solution and reincarnating it as a flexible, shared-services platform. In addition to the strong security that is critical to M2M, Telenor also needed to make the system easy enough to use for small and mid-sized companies with lean IT departments. More fundamental was the need to develop a viable go-to-market strategy and business model for what would be a truly first-of-a-kind offering.

IBM's key contribution was the design and development of a shared-service M2M platform that employs SOA features at its core. To accommodate a variety of customers and needs, the IBM La Gaude European Business Solution Center (EBSC) designed the M2M solution for maximum flexibility and versatility. This refers to the ability to gather remote sensing data from a variety of different sources (including – but not limited to – RFID), as well as to make that data accessible to other parts of the solution for purposes of business process automation, reporting and sharing. This role is played by IBM WebSphere® Enterprise Service Bus, which provides a simplified integration layer for sharing data between applications and services in the solution.

For example, in the case of a customer using RFID-based sensing, the solution uses IBM WebSphere RFID Premises Server to collect and filter RFID data from remote sites. From that point, the data can be used to trigger automated business process events through IBM WebSphere Process Server (also connected via WebSphere Enterprise Service Bus), or can be made available to IBM WebSphere Portal to generate customer reports on demand. The solution relies on Tivoli® Monitoring Server and Tivoli Enterprise Portal for end-to-end monitoring and runs on IBM System x™ servers, chosen for their inherent scalability.

Key Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM WebSphere RFID Premises Server
- IBM WebSphere Process Server
- IBM WebSphere Application Server
- IBM WebSphere Portal
- IBM Tivoli Monitoring Server
- IBM Tivoli Enterprise Portal Server

Servers

- IBM System x

Services

- IBM Global Business Services
- IBM Global Technology Services – Integrated Communications Services
- IBM La Gaude EBSC

Business Partner

- Intermec

Timeframe

- Design and implementation: 4 months

Why it matters

Determined to move up the telecom value chain, Nordic wireless giant Telenor teamed with IBM to create a new, hosted business model to deliver RFID-based asset management capabilities to the largely untapped small and medium-sized business segment. By simplifying and standardizing "machine-to-machine" applications, this new model promises to speed up the adoption of M2M by all segments.

The customer engagement model developed by Telenor and IBM is a model of collaboration. Before a new customer is brought on board the hosted M2M solution, IBM Global Business Services conducts a thorough business process audit to ensure that the customer's processes are optimally configured to get the most out of the solution. The installation of wireless equipment at the customer premises is performed by IBM Global Technology Services, while Telenor personnel are responsible for integrating remote wireless devices back to the host platform. IBM Global Technology Services also performs integration as needed to generate custom reports (such as temperature readings for perishable products) or to automate processes (such as triggering alerts when temperatures go out of range).

M2M for the masses

The notion that M2M services can improve a company's supply-chain transparency, decision-making and process optimization – to name just a few – is beyond doubt, and a big reason it's projected to grow faster than any other wireless service. But before Telenor and IBM broke ground with a hosted M2M offering, it was also beyond the reach of most companies due to cost and complexity. What changed this formula was fresh thinking all around. IBM technology, expertise and access to strong wireless partners enabled Telenor to create a new business model for offering M2M services. By the same token, Telenor's strategic vision ultimately promises to change the business case for companies seeking the benefits that M2M technologies have to offer.

Rolv-Erik Spilling, manager of Telenor Business Norway, sees the success of the M2M initiative as a testament to Telenor's strategic vision and to IBM's track record of helping to translate bold visions into solid businesses. "By enabling us to be the first Nordic provider to offer a hosted M2M service, IBM has helped us to open a new door for the rapid growth of the market."

For more information

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Produced in the United States of America
5-08

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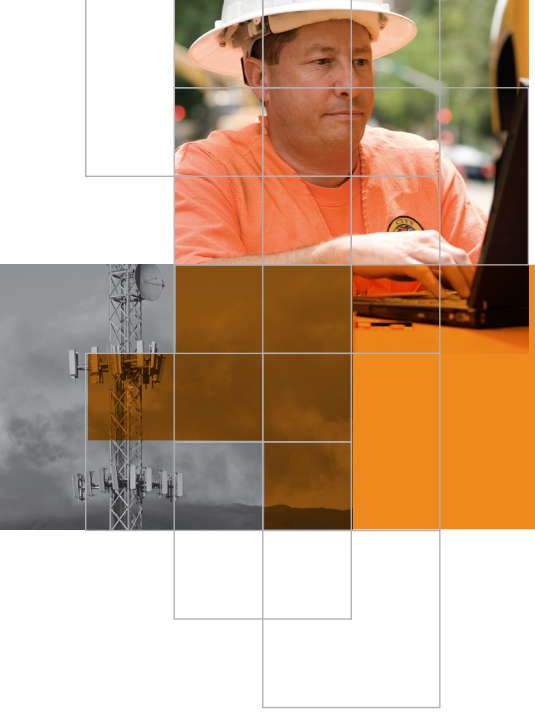
ODC03067-USEN-01



SUCCESS STORY

Cisco and IBM Provide High-Voltage Grid Operator with Increased Reliability and Manageability of its Telecommunication Infrastructure

Executive Summary

Customer Name

Terna—Rete Elettrica Nazionale SpA

Industry

Utilities

Business Challenges

- Eliminate grid blackout risks induced by possible telecommunications failures
- Improve quality of service and meet stringent target of Energy Not Supplied
- Replace ageing, expensive ATM network with faster, more reliable MPLS

Solution

- Back-up IP network over power lines supplements superior MPLS functionality
- Forward Error Control patch-panel solution with Asset Lifecycle Management
- Joint Cisco-IBM team covering development, implementation and maintenance

Business Results

- Improved safety and security across entire nationwide high-voltage network
- New equipment costs at field stations cut by 90 percent
- Low-maintenance costs
- Digital solution will allow central monitoring and control of electrical line failures

Business Challenges

Terna is the company in charge of electrical transmission and dispatching over high-voltage (HV) and extra high-voltage (EHV) lines for the whole of Italy. It owns 97 percent of the country's transmission infrastructure, and its main domestic role is to guarantee the balance between electricity supply and demand from a national control centre. Formerly in public ownership, as a wholly owned subsidiary of Enel, Italy's dominant electricity generator and distributor, Terna was privatized in 2004.

Along with 35 other European transmission operators, Terna is a member of the Union for the Coordination of the Transmission of Electricity (UCTE), sharing a wider responsibility for the safety and coordination of interconnected electrical networks across continental Europe. Terna is also pursuing new commercial opportunities abroad. It owns a controlling stake in Brazil's second-largest transmission network and is set to expand into new European markets.

In 2003, Italy experienced two major blackouts. The second, and more serious of these, was precipitated by damage to a high-power pylon in Switzerland, and the effects spread all over Italy. Terna established later that none of its transmission equipment had failed during the incident. The problem lay with a loss of telecommunications signaling in the leased lines used to monitor and manage its network. In order to improve the reliability of the network Terna needed a new and advanced back-up system to eliminate weak points and a centralized monitoring solution for effective remote operations.

Solutions

Terna's Italian national transmission network includes more than 300 field stations. Fluctuating demand for electricity must be kept in constant balance with supply, but the company's existing network management system which linked all its transmission assets to the national control centre, was based on a two layer network: the backbone based on an elderly Asynchronous Transfer Mode (ATM) network and an access network based on both Frame Relay technology and Power Line Carrier (PLC).

Cisco and IBM were ideally placed to create, test, and implement the new
an extended collaborative effort, working as strategic partners.

"In the energy sector, many of the technologies are very old and they are not open. We spotted the opportunity to create a way of dealing with our telecommunications that would get rid of a closed technology —a custom component—and instead integrate solutions on an open standard platform, like the Cisco MPLS network we are now deploying."

Carmine Auletta, CTO
Terna

In day-to-day operational mode, the ATM and Frame Relay network function over leased lines supplied by a leading Italian telecommunications operator. This is backed up by a proprietary, PLC solution, using military-grade broadband switches. It provides a maximum data transmission speed of 44 to 48 kbps, which is limited by the Forward Error Correction (FEC) algorithm used to eliminate electronic 'noise' on the lines.

In addition to being expensive to maintain or replace, the existing configuration offered minimal communication and control capabilities. Centralized monitoring of the power line communications network at any given moment was not possible. Engineers had to be sent out to each individual station to check for faults before any remedial action could be taken.

By 2004, Terna's management was already in discussions with Cisco on the design of a large new wide area network (WAN) in order to manage and control the grid more cheaply and effectively. The company chose a Multi Protocol Label Switching (MPLS) solution, with fibre optics, as the best option to combine improved monitoring and control with lower costs. In addition, the Italian company asked Cisco to carry out a feasibility study on a new data-over-power line solution, aimed at strengthening the capabilities of its back-up network.

At the time, IBM was already working with Terna, principally as a vendor. However, when IBM won the bid to become project manager for the new Terna MPLS network, including the integration, implementation, and maintenance, Cisco and IBM were well positioned to forge a close working partnership. The two companies already had a well-developed relationship after working together for three years at Enel, on another MPLS solution. In fact, Cisco and IBM were ideally placed to create, test and implement the new back-up power line solution for Terna through an extended collaborative effort, working throughout as strategic partners.

Terna wanted a back-up system that could operate independently of any outside telecommunications provider network. The most elegant and logical answer was to use its own power-line network to maintain continuity of grid network control and to safeguard against outside communications links going down. What began as a network renewal project thus switched focus to critical network outage management issues.

Carrying IP communications over power lines is not a new concept. There are various approaches to preventing the electronic 'noise' generated in power lines from disrupting IP traffic travelling over the same wires, so removing the

back-up power line solution through

need for data retransmission. Such techniques generally use the published FEC algorithm. In Terna's case, however, the proprietary nature of its existing solution blocked visibility of how FEC was functioning in its network. "There was no way to control the system remotely because we could not see from a central location whether each power line carrier was working properly," notes Auletta.

Terna's HV and EHV lines presented an additional challenge because they can create very high electronic noise levels—they are rated as 'very disturbed' (BER 10-3). IBM laboratories helped determine whether the standard FEC algorithm could be implemented on line-cards, to be inserted into Cisco routers, but for technical reasons this was not feasible. Cisco and IBM therefore had to look for an alternative solution.

Following extended discussions between Terna executives and Cisco technical experts, Cisco investigated the market in order to work on the software for an FEC 'patch panel'. It would have to be fully compatible with standard Cisco components and simple to connect. Cisco formed a joint team with IBM and third-party local consultant experts on telecommunications equipment, using Cisco Advanced Services extensively to support the development work, while IBM provided the high-level design.

After testing the concept in a small mock-up network in San Jose, the two companies presented the solution jointly to Terna. Cisco resold the third-party product to Terna as part of its overall solution package, while IBM retained responsibility as prime systems integrator, with an ongoing asset lifecycle maintenance responsibility for the FEC solution post-implementation to ensure optimum performance in the longer term.

Business Results

Field-tests of the prototype solution were conducted on two separate Terna high-voltage lines in Sicily and, by October 2007, the electricity company was poised to begin the roll-out by connecting 33 field stations in Sicily and Sardinia, joining up a network that will involve multiple jumps over interconnected PLC lines.

The national rollout to all Terna's 300-plus stations is scheduled to take place over three years, between 2008 and 2010. The company anticipates numerous benefits, including centralized control, improved network safety and security, and major cost savings.

From a technical viewpoint, the new system is expected to deliver an immediate 20 per cent increase in available bandwidth over PLC lines. The operational benefit is that whenever numerous lines register faults simultaneously under the existing system, restricted bandwidth becomes a bottleneck and processes slow down. In the future, this will no longer be the case, and the company foresees further bandwidth upgradeability by using progressively more sophisticated compression algorithms.

"Finding an innovative solution to handle the power line carrier network involved tight integration between IBM, as project manager, and Cisco, who carried out all the research and development. We were able to discuss any issues and problems face-to-face with Cisco, while IBM took responsibility for the testing and will now implement the full solution."

Carmine Auletta, CTO
Terna

"We now have the tools to adapt to each situation as it arises and can configure our solution to the specific case. With centralized management, it's not just a matter of making savings; it's a matter of network safety. Because we can monitor PLC lines form our central NOC and anticipate any trouble, we are making the system more secure."

Carmine Auletta, CTO
Terna

Moreover, Carmine Auletta anticipates that the switch to open standards will mean that power line data compression can be decoupled from use of FEC. It will no longer be necessary to keep FEC switched on at all times. Central monitoring will enable line controllers to switch FEC on and off as needed, so that it can be dispensed with at those times when electronic noise levels are low, thus further improving data speeds.

An additional operational benefit will be the ability to transition the separately controlled electrical network protection system, for back-up switching between stations, from analogue to digital. At present, this operates over an analogue network, and the only way to determine whether the network protection system is working is to send an engineer to test the lines manually on site. Here too, Terna expects to gain centralized monitoring and control, in the same way as it will have for PLC data.

The new solution also promises a dramatic reduction in Terna's costs. The cost per station to deploy the new FEC device has been cut by 90% compared to the former solution. The company will realize substantial savings on the costs of field monitoring and maintenance. Evidence of greater efficiency and significant cost savings should please its shareholders and help the company meet the demands of the disclosure obligations that have come in the wake of private ownership.

By increasing the reliability and the manageability of its telecommunication infrastructure Terna will also improve its capability to control the Italian power grid both during regular operations and more important in case of extraordinary events (e.g during black-outs) when public telecommunication infrastructures have showed their weaknesses.

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MD 10/07

The Bank of New York Mellon continues its leadership role in adopting automated technology

Overview

- ***Business Challenge***
  As one of the early adopters of check imaging, even before Check 21 spurred many banks into action, The Bank of New York Mellon resolved to adopt digital check clearing. It sought a solution that would fully leverage its existing check processing infrastructure, while enabling the operational flexibility the bank needed to adapt to a fast-changing market.
- ***Solution***
  Using IBM Payments Director and middleware technology, The Bank of New York Mellon deployed a new SOA-based electronic check processing system by service-enabling existing assets, thus allowing the bank to easily extend the system to its banking partners and deploy new payment services rapidly.

Established in 2007 from the merger of Mellon Financial Corporation and The Bank of New York Company, Inc., The Bank of New York Mellon is a leading asset management and securities services company, uniquely focused to help clients manage and move their financial assets and succeed in the rapidly changing global marketplace. Headquartered in New York, The Bank of New York Mellon has more than $20 trillion in assets under custody or administration and more than $1 trillion under management.

- ***Key Benefits***
  - *Up to 90 percent reduction in manual touch points in the check clearing process*
  - *Greater than 50 percent reduction in time required to integrate new banks into the check clearing exchange network*
  - *Reduction in processing errors and required remediation*
  - *Improved flexibility to introduce new payment services via SOA*

> *"IBM Payments Director enables us to take physical processes that were supported by our legacy check system and bring them 'above the line' by making them services-oriented... This greatly strengthens our ability to adapt and meet new opportunities."*
>
> – *Louis Arkenau, VP of Image Initiatives, The Bank of New York Mellon*

Business Benefits

- Up to 90 percent reduction in manual touch points in the check clearing process
- Greater than 50 percent reduction in time required to integrate new banks into the check clearing exchange network
- Reduction in processing errors and required remediation
- Improved flexibility to introduce new payment services via SOA
- Faster integration with acquired banks' check clearing systems

With technology permeating nearly every aspect of commercial life, the traditional check clearing process—in which customers receive their original, physical checks along with their banking statement—held on for a surprisingly long time. By now, however, many consumers are beginning to notice that instead of a stack of checks, they're receiving a smaller and more orderly deck of printed images that they can also view online. Accustomed to a steady flow of conveniences such as online banking, these customers see check imaging as the latest in a long string of innovations enabled by technology. But in reality, it reflects the confluence of a complex series of driving forces, important decisions on the part of banks and evolution in the technology itself.

Paper trail

Historically, for a receiving bank to clear a check, it would have to physically transport the paper check to the issuer's bank. Before this can happen, though, the receiving bank needed to run the check—along with thousands of others every day—through mechanical sorters, which group the checks into bundles based on issuing bank. Using a courier, each of these bundles would then be sent to the appropriate bank along with a "cash letter," which lists the amounts and instructions for transmittal to other banks. While less than efficient, physical check processing remained in place for two reasons: first, because it worked, and second, because replacing it would be costly and complex. It took the 9/11 terrorist attacks—which shut down air transport and kept billions of dollars worth of checks from clearing—to show that physical check processing represented a potential Achilles' heel to the entire economy, and that a catalyst for change was required.

Two years later, Congress passed the Check Clearing for the 21st Century Act, better known as "Check 21," which enables banks receiving paper checks to create and process digital versions of them—thus eliminating the need for further physical transport and handling of physical checks. By dramatically altering the regulatory landscape, Check 21 fully opened the digital door for banks, but another important incentive for banks to change their processes was already at work. With more and more consumers paying via credit and debit cards and more banks offering online bill payment, the volume of checks processed by banks has been declining, causing the unit processing cost per check to rise proportionally. Even before this confluence of events, however, The Bank of New York Mellon (www.bnymellon.com) saw that the future of banking required automation, and so beginning in 1994 it began the process of converting its traditional check clearing process into an automated process that utilized images of checks, not the physical checks. The bank chose IBM, on whose Check Processing Control System (CPCS) the bank had long relied for its traditional check clearing process, to help them convert to check imaging.

Electronic check processing solutions are comprised of components that address each phase of the check clearing process. One component needs to address the actual capture and storage of the check image. Another needs to enable the so-called "day-one" processes that take place after image capture within the bank's back office operations. Yet another needs to support the bank's subsequent "day-two" processes, which address exception items, such as illegible checks and overdrafts. While The Bank of New York Mellon's decision to use the IBM Payments Director solution would have a major role in shaping its future electronic processing capabilities, its choice of a broader architecture strategy—that is, how and where to deploy it within its existing infrastructure—would prove equally significant.

Dynamism demands flexibility

The bank's existing IBM CPCS solution had, for a long time, delivered exceptional reliability and performance running within IBM CICS® on an IBM System z® server. However, the process changes inherent in electronic check clearing dictated a new set of IT requirements centered on flexibility, since the need to support change was essential. As The Bank of New York Mellon formed new correspondent banking relationships, for instance, the new system needed the flexibility to rapidly, seamlessly and cost effectively integrate them into the process flow. Another source of dynamism was the demand for new services in the payments area, such as check clearing in Automated Clearing House (ACH) and least-cost routing services offered to banks, which provides new revenue streams and enhances the bank's ability to differentiate through value-added services. To effectively capitalize on these opportunities, the bank would need the ability to adapt or repurpose key elements of the solution without the major development and integration requirements that make such changes costly and time-consuming. For these reasons, it was essential that the bank follow a different approach than traditional mainframe deployments. It saw SOA as the answer.

Because many processes within IBM Payments Director are built around SOA, the bank was able to deploy the solution in a way that effectively turns key check-clearing functions into services that are invoked in the course of the process flow. One such component is IBM Payments Director Gateway, which serves as the front end of the system and the means by which transaction information and messages are directed to and from the core CPCS solution on the System z (where they are stored in an IBM DB2® database). Among these messages are "electronic cash letters," which previously had been delivered in paper form. IBM WebSphere® MQ provides the core messaging functionality within this SOA framework. To further strengthen the solution's SOA properties the bank is also deploying IBM WebSphere Message Broker as an enterprise service bus that will connect the solution's key components and provide an environment for future SOA integration.

Solution Components

Software

- IBM Check Processing Control System
- IBM Payments Director
- IBM WebSphere Message Broker
- IBM WebSphere MQ
- IBM DB2
- IBM CICS

Servers

- IBM System z

Services

- IBM Sales and Distribution

Timeframe

- Design and Implementation: 9 months

Why it matters

Moving from the manual processing of paper checks to an automated, image-based process enabled The Bank of New York Mellon to streamline its operations, while at the same time providing a source of new value-added payments services, bringing a new level of operational excellence. The fact that the solution was deployed within SOA enables the bank to develop and bring these new services—like check clearing in ACH and least-cost routing services—to market more rapidly and profitably.

Louis Arkenau, VP of Image Initiatives, sees IBM Payments Director's support for SOA as providing the bank with a new level of flexibility to optimize its key processes. "IBM Payments Director enables us to take physical processes that were supported by our legacy check system and bring them 'above the line' by making them services-oriented and disconnecting them from legacy hardware and legacy mainframe processes," says Arkenau. "This greatly strengthens our ability to adapt and meet new opportunities."

Straight through error correction

The most immediate benefit of the new system is its dramatic impact on the efficiency of the bank's check clearing operation. Under the previous system, a check could be touched by human hands many times over the course of the entire process, with each touch point representing a chance to mishandle the check. In such a case, the check would need to be returned through a laborious, time-consuming process. Since the Bank had long been imaging checks, the Payments Director solution allows for "truncated" checks which are incorporated into an automated workflow that cuts the number of touch points by up to 90 percent, bringing the bank closer to the much sought-after goal of straight-through processing.

Going forward, Arkenau believes that the flexibility enabled by IBM Payments Director will also strengthen the bank's ability to address its most pressing challenges, including the operational demands of rapid growth, the need to efficiently integrate newly acquired banks and the need to seize fast-moving opportunities.

For more information

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Produced in the United States of America
September 2008

ODC03094-USEN-00

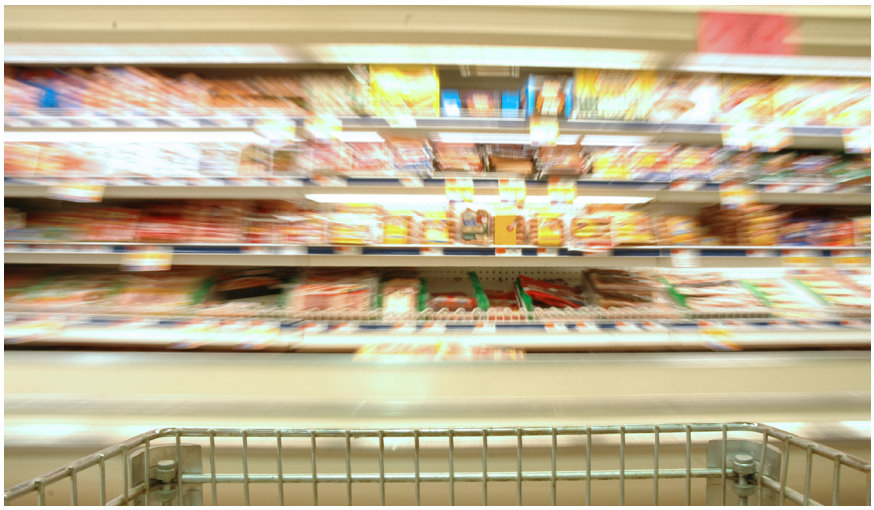
The Co-operative Group cuts 722 tonnes of CO_2 emissions with IBM

Overview

- ***The Challenge***
  Aiming to cut its total energy use by 25 per cent by 2012, The Co-operative Group identified overnight electricity consumption in its 2,200 food stores as a prime candidate for reduction

- ***The Solution***
  Working with IBM, The Co-operative's in-house IT team re-engineered its InControl store end-of-day batch processing system, enabling the introduction of 'Wake-up on LAN' capabilities for all 45,000 of its in-store POS-related devices

- ***The Benefits***
  By automatically switching off in-store devices overnight and re-starting them in the morning, the solution is expected to save 1.68 million kilowatt hours of electricity annually, saving an estimated £120,000 and cutting CO_2 emissions by an estimated 722 tonnes



The Co-operative Group (www.co-operative.coop) is the world's largest consumer co-operative, with 2.5 million active trading members and more than 80,000 employees. In 2007, the Group turned over £9.4 billion, carrying out 14 million food transactions each week.

Social responsibility is one of the four key ethical values of The Co-operative Group, so it should come as no surprise that the organisation is a leader in tackling global climate change. Some 4,000 of the Group's outlets are powered by energy from renewable sources, and The Co-operative Insurance Society's head office in Manchester is Europe's largest vertical solar project. All three sides of its 25 storeys are clad in solar panels, generating enough electricity each year to power 1,000 PCs.

With a corporate target of reducing energy consumption across all business premises by 25 per cent by 2012, The Co-operative Group resolved to cut out-of-hours electricity use in its 2,200 food stores. Against a backdrop of fast-rising energy prices, it made sound business sense – as well as environmental sense – to power-down non-essential systems during closing hours.

Cutting costs and CO_2

When The Co-operative Group's food stores close each evening, the Group's InControl store management software runs an end-of-day batch process to collate sales and stock data for submission to head office. Working with IBM Retail Store Solutions, The Co-operative Group's in-house IT team re-engineered the software to include a controlled

power-down of all point-of-sales (POS) equipment. When the stores re-open for business in the morning, the solution uses 'Wake-up on LAN' technology to automatically re-start all the relevant systems.

With a total of 45,000 pieces of equipment in its stores – including 7,500 POS terminals with linked receipt printer, 15,000 screens, 7,500 barcode scanners and 7,500 chip-and-pin card terminals – the positive impact of the solution will be considerable. Turning off non-essential systems during the night will cut an estimated 1.68 million kilowatt hours of electricity use each year, saving around £120,000 per year at current prices.

Beyond the financial benefits, the IBM and Co-operative Group solution should cut around 722 tonnes of CO_2 emissions, significantly reducing the carbon footprint of the food stores business and contributing to the fight against climate change.

Longer service and less waste

The powering-down of systems during the night should also extend the useful life of the POS equipment by as much as 30 per cent, enabling The Co-operative Group to reduce the frequency of investment in new hardware.

This should not only reduce capital expenditure, but also cut the amount of non-recyclable waste that will ultimately end up in landfill.

The need to comply with the EU Waste Electrical and Electronic Equipment (WEEE) directive has increased the cost of disposing of old equipment; again, by prolonging the service-life of its POS systems, The Co-operative Group should reduce its long-term costs.

Mark Hale, Director of IS Food Retail, comments: "The re-engineering of the POS system so it can be shut down at night clearly underlines The Co-operative Group's continuing commitment to the environment and to finding new ways of saving energy."

Janine Cook, Director of Retail Stores Solutions, IBM UK, comments: "IBM has a commitment to develop products and services that are designed to reduce the consumption of energy. Working with The Co-operative Group, we have applied our green know-how to help them release savings that they can plough back into their business."

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RTC03006-GBEN-00

UPMC rewrites the rules on IT investment to facilitate tomorrow's healthcare innovations

Overview

- ***Business Challenge***
  UPMC, Pennsylvania's largest integrated healthcare delivery network, sought to lower the cost and complexity of IT infrastructure to enable the continued investment in next-generation clinical systems and to lay the foundation for the best possible patient care.
- ***Solution***
  Now in the middle of a landmark, 8-year strategic partnership with IBM, UPMC is transforming its systems through consolidation, standardization and—most importantly—virtualization. Relying on IBM products and services, the mid-stream effort has already resulted in the reduction of hundreds of servers across the UPMC network.
- ***Key Benefits***
  - *$30 million in capital and operating cost reductions*
  - *150 percent increase in processing capacity*
  - *40 percent reduction in IT infrastructure floor space requirements*
  - *67 percent reduction in number of physical servers*

Widely recognized for its innovations in patient care, research, technology and healthcare management, UPMC is the largest integrated healthcare enterprise in Pennsylvania and one of the leading nonprofit health systems in the United States. Based in western Pennsylvania, UPMC is the region's largest employer, with 48,000 employees and nearly $7 billion in revenue.

When the University of Pittsburgh Medical Center (UPMC) joined with IBM in an 8-year, $402 million partnership designed to transform its IT infrastructure, the deal was viewed as a watershed in how IT vendors and their customers work together. Today, with the deal approaching the halfway mark, the UPMC and IBM collaboration has met the original expectations and, in many instances, has exceeded them. What continues to make the partnership unique is how the companies' shared vision of the future of healthcare delivery is cemented by a shared commitment to fostering healthcare innovation. The predominant focus of the partnership is on transforming UPMC's entire IT infrastructure to lay the groundwork for the future, an effort that is far reaching in scope and subject to major challenges—most or all of which are shared by major healthcare providers today. UPMC's strategy is

> *"Considering that IBM and UPMC are only midway through this transformation project, the results have been impressive. We have already proven that standardization, along with aggressive implementation of virtualization, yields unprecedented productivity and efficiency."*
>
> – *Paul Sikora, VP of IT Transformation, UPMC*

Business Benefits

- $30 million in capital and operating cost reductions through virtualization-driven efficiencies
- 150 percent increase in processing capacity with no increase in IT support costs
- 40 percent reduction in IT infrastructure floor space requirements, freeing up space for revenue generating services
- 67 percent reduction in number of physical servers
- Expected increase in average utilization per server from three percent to nearly 80 percent
- Faster integration of acquired healthcare operations

based on the simple idea that having the resources to meet future demands—be they operational, clinical and technological—requires the maximum efficiency of IT resources across the entire enterprise. This story revisits the initial goals and drivers of the partnership and, more importantly, tracks its progress according to key milestones. A key takeaway from the UPMC-IBM experience is that a well conceived transformation strategy can not only adapt to changing circumstances or intensifying trends, but indeed thrive under them.

Gauging progress

When the project was conceived, all key measures of information processing activity, including the volume of data and the number of applications, were projected to grow sharply, producing a commensurate increase in infrastructure and support costs. The transformation plan put forward by IBM was designed to effectively uncouple growth from cost by remaking the IT infrastructure through consolidation, standardization and—perhaps most importantly—virtualization. Since the project began, however, UPMC's information processing volume has grown even faster than the plan's initial aggressive expectations. That IBM was able to not only meet—but actually exceed—its infrastructure efficiency goals is compelling evidence of the robustness of the virtualization framework that UPMC and IBM put into place.

> *"We were being crushed by our own infrastructure. We saw increasing demand all around us, while at the same time systems had to be more reliable and run faster. We didn't see any light at the end of the tunnel for additional funding or staffing, so it became a question of how do we do more with what we have."*
>
> – *Paul Sikora*

Here's the path it took to get there. Having evolved from a major academic medical center to Pennsylvania's largest integrated healthcare delivery system—with revenues of nearly $7 billion and 48,000 employees—UPMC has acquired a reputation as one of the nation's most respected and influential healthcare providers and as an innovator in patient care, research, technology and healthcare management. As part of its growth strategy, UPMC also acquired several hospitals (now numbering 20) along with numerous other kinds of care facilities. While such acquisitions strengthen both the clinical breadth and depth of the UPMC network, they also tend to complicate the IT picture by adding to the heterogeneity—and overall complexity—of its infrastructure, as each new acquisition brings its own set of applications. Moreover, because it made integration inherently more difficult, this reality conflicted directly with UPMC's vision of leveraging information from across its entire network for the benefit of its patients.

Breaking the cycle

Resource efficiency was another huge driver for the project. Historically, UPMC's IT costs had been propelled inexorably upwards by what seemed to be an ironclad logic. More applications—and more users of those applications—meant more data, which in turn meant more servers to buy and more people required to run them. The growing requirement for servers and storage also consumed more and more of

the UPMC's physical space, which could otherwise have been used for clinical—and revenue-generating—purposes. UPMC's leaders saw that rising IT costs were ultimately at odds with its long-term goals around innovation and patient care, a dynamic likely to intensify given the ongoing tightening of resources in the U.S. healthcare market. The central goal of the IBM-UPMC partnership is to break this linkage by going down a completely new path for its IT strategy by consolidating and standardizing its disparate server and storage resources, and aggressively implementing virtualization. "Virtualization isn't an option," observes Paul Sikora, vice president of IT Transformation at UPMC. "It's a necessity."

And, by all appearances, it's working. Indeed, judging by the results UPMC has been able to achieve—even in the relatively early stages of the project—the virtualization strategy being implemented by IBM is exceeding even the most optimistic projections. The most telling indicator of the project's success is the difference between UPMC's actual capital and operating costs (related to IT) and those that would have been incurred had it taken no action. As discussed above, a key backdrop for this comparison is the surge in processing and storage volume that resulted from the faster-than-projected expansion in the scope of UPMC's industry-leading electronic health records adoption. In the "baseline" case—that is, had no action been taken—UPMC would have needed to more than double its number of servers, to nearly 300. Instead, it was able to reduce the number of servers by two thirds, and the consequent reduction and avoidance of $30 million in capital and operating costs. This number is projected to rise to $40 million by the end of year three of the transformation project.

At a strategic level, the project is succeeding because it has enabled UPMC to uncouple the inevitable growth in its processing capacity from the growth of its IT costs, thus rolling back what had become a major threat to its future investment in new treatments and the technologies they require. More broadly, this breakthrough—whose fundamental enabler is IT virtualization—is allowing UPMC to rewrite the rules that govern its resource decisions. By simplifying its IT infrastructure through virtualization, for instance, UPMC is able to support 150 percent more server capacity without the need to hire any additional support staff. On top of that, the server consolidation afforded by its virtualization strategy enabled UPMC to reduce its floor space requirements by nearly 40 percent. In addition to enabling UPMC to avoid facilities expansion that would have been needed under the baseline scenario, consolidation freed up space that UPMC can now repurpose for revenue-generating clinical activities.

Solution Components

Software

- IBM WebSphere® Application Server
- IBM WebSphere Business Integration
- IBM Tivoli product suite

Servers

- IBM System x
- IBM System p
- IBM System z
- IBM BladeCenter
- IBM TotalStorage Enterprise Storage

Solution

- IBM Component Infrastructure Roadmap

Services

- IBM Global Technology Services
- IBM Healthcare and Life Sciences
- IBM Research
- IBM STG Services
- IBM SWG Services

Why it matters

By transforming its IT infrastructure through consolidation and virtualization, UPMC has achieved more than a quantum improvement in resource efficiency. It has fundamentally changed the link between processing and resource needs—enabling it to meet an ambitious clinical agenda with a far lower rate of IT investment growth.

The tools of virtualization

The transformation making these benefits possible is being implemented by IBM Global Technology Services. Working in close cooperation with UPMC and following a phased approach, IBM's role is comprehensive in scope, including the design and definition of a virtualized, dynamic architecture, the consolidation and migration of applications to the new system, and the optimization of applications to maximize performance.

IBM hardware products at the core of the effort include IBM System x™, System p™, System z™ and BladeCenter® servers, as well as IBM TotalStorage® Enterprise Storage Servers, which are running the two UPMC storage databases that were consolidated from 40. Virtualization within and across these resources is enabled by IBM's Advanced POWER™ Virtualization, which performs partitioning and dynamic load distribution for System p servers, and VMware's Virtual Infrastructure 3, which will be used to consolidate more than a thousand Intel-based servers to 20 IBM System x servers. In the latter case, the utilization rates of the servers are expected to increase from the current average of three percent per server to nearly 80 percent. To manage the infrastructure centrally and efficiently, the solution employs a common toolset based on IBM Tivoli® products. The modular, standardized nature of the solution means UPMC can integrate new acquisitions into its network faster—enabling the more prompt realization of the acquisition's operational and clinical goals.

If anything, the importance and urgency of healthcare as an issue has only risen since the outset of the transformation project, as has the intensity of public discourse over how to address the resource challenges for the industry—and for society as a whole. This, in turn, only strengthens the value proposition underlying UPMC's transformation strategy. While Sikora acknowledges the long road ahead, he sees the merits of UPMC's efforts as beyond dispute. "Considering that IBM and UPMC are only midway through this transformation project, the results have been impressive," says Sikora. "We have already proven that standardization, along with aggressive implementation of virtualization, yields unprecedented productivity and efficiency."

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Produced in the United States of America
August 2008

ODC03084-USEN-00

Whirlpool Corporation focuses on operational excellence as global growth shifts into high gear.

Overview

■ ***Business Challenge***

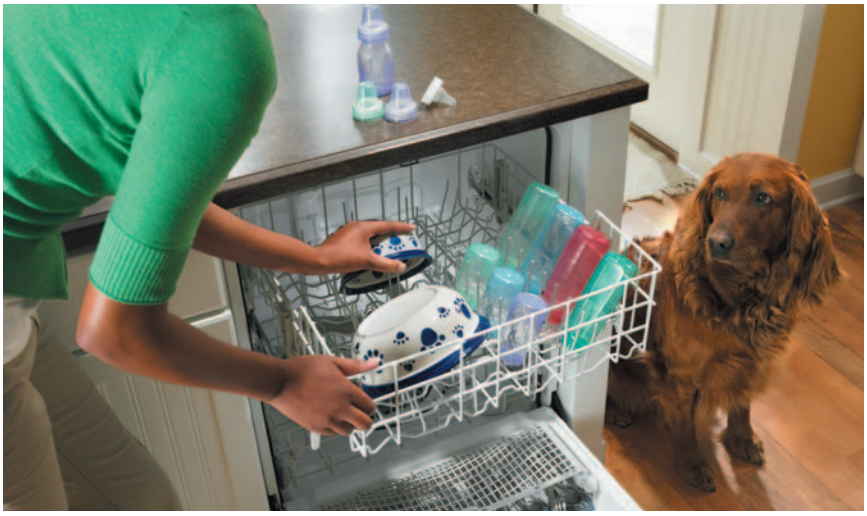
With its business processes becoming more numerous, disconnected and inefficient as it grew, Whirlpool Corporation reached a point where its profitability stagnated – despite rapid revenue growth. Whirlpool needed to not only consolidate its global business processes, but also integrate them to deliver maximum efficiency through its entire value chain.

■ ***Solution***

Whirlpool engaged IBM Global Business Services to reconstitute its fragmented business processes with best practices across all of its processes and lines of business. Standardized metrics – as well as product and parts taxonomies – enable Whirlpool to achieve a new level of operational efficiency on a global scale.

■ ***Key Benefits***

- *Substantially reduced finished goods inventory*
- *Faster product development cycles*
- *Improved ability to focus on the most profitable products and features*
- *More effective allocation of trade partner incentives*



Whirlpool Corporation is the world's leading manufacturer and marketer of major home appliances, with annual sales of more than US$18 billion, more than 73,000 employees and more than 70 manufacturing and technology research centers around the world.

While globalization creates a host of new market opportunities for manufacturers, it also tends to intensify – and in some cases redefine – the terms of competition. Put simply, global manufacturers need to do a lot of things right to perform successfully on a bigger and more demanding stage. Given the core importance of scale-based efficiency in the global manufacturing business model, perhaps no need is more basic than the vigorous and consistent growth of the business, through organic means, acquisitions or both. In the past decade, Whirlpool Corporation (www.whirlpoolcorp.com), the world's leading appliance manufacturer, has done just that. While Whirlpool

> *"We're relying on operational excellence to manage rapid growth more profitably and continue our leadership… By enabling Whirlpool to become a more globally integrated enterprise, IBM is helping us reach that goal."*
>
> – Kevin Summers, corporate vice president and Global CIO, Whirlpool Corporation

Business Benefits

- Substantially reduced finished goods inventory
- Faster product development cycles
- Improved ability to focus on the most profitable products and features
- More effective allocation of trade partner incentives
- Optimized product merchandising
- Streamlined parts inventories through standardized parts taxonomies
- Improved ability to manage the company and optimize performance on a global basis by virtue of standardized business processes and performance metrics

needed 90 years to reach US$10 billion in revenues, it took only ten years to reach the US$20 billion mark, aided in large part by its 2006 acquisition of Maytag. Its current plan calls for even faster growth in the next decade.

But Whirlpool is also cognizant of the new and intensifying challenges it faces in meeting this goal, which is why it conducted a top-to-bottom analysis of what it needed to do differently as a business to succeed. Whirlpool framed its analysis by asking itself: How does a company that grew large as a U.S.-centric distributor for Sears transform itself into an even larger global consumer packaged goods company? While the company saw IT issues as part of the equation, it viewed business processes as the true focal point of its efforts. To this end, Whirlpool spent several months drilling down into the processes of each of its lines of business and benchmarked them against the industry.

Among its key findings was the discovery that Whirlpool had roughly 100 separate instances of SAP running throughout the company – a figure that, for all its IT implications, was seen first and foremost as an indicator of the gradual, yet unchecked proliferation of business processes that had occurred over time. Underlying the problem was a chronic and self-perpetuating cycle: because processes were largely unique to a particular line of business or manufacturing location, each incremental addition brought with it a unique set of metrics, product taxonomies, part numbers and other support systems, producing a highly heterogeneous environment that made optimization across the global enterprise next to impossible.

"Having discipline around processes and metrics is important. If you don't have it, it becomes exponentially harder to optimize production as the company scales up. With 20 plants in North America alone, we vividly see the importance of standardized metrics."

– Kevin Summers

Threatened by complexity

While a smaller Whirlpool had been able to improvise around the situation, the growing size, complexity and global scale of the company quickly rendered its disjointed process framework unsustainable. In effect, Whirlpool had reached a tipping point where the growth of the business exacerbated its underlying process inefficiencies – producing a kind of "friction" that kept the Whirlpool bottom line stagnant as its top line grew. To Whirlpool, the key to sustained global leadership was operational excellence, and the only way to achieve it was to rationalize, improve and integrate its processes in a way that would enable optimization across its global operations. Whirlpool turned to the industry and process expertise of IBM Global Business Services to help put this vision into action.

While broadly aimed at process standardization, the IBM role in Whirlpool Corporation's transformation was multilayered. Its first task was to establish a deep understanding of the company's key processes that would become a starting point for optimization efforts. With that established, IBM leveraged

its process expertise and global track record in the consumer packaged goods space to begin laying out the groundwork for its future process framework. An important part of this effort was determining which processes were best suited to global deployment and which – due to local market requirements – would be best deployed regionally. As for the processes themselves, IBM is leveraging its broad portfolio of industry best practices, an intellectual asset that figured prominently in Whirlpool Corporation's selection of IBM.

Tackling redundancy

The deepest layer of IBM's process analysis is also the most granular. As an appliance manufacturer, one of the most basic information elements Whirlpool references is the part number. As the breadth of the Whirlpool product line has expanded, the number of underlying parts involved in making and servicing these products, from the smallest screw to the largest subassembly, has expanded at a proportional rate. In reality, however, many products – often across product lines – employ generic parts that, while functionally identical, have been categorized as different because each business unit has followed its own parts taxonomy. As mapped out by IBM, the implications of this redundancy ripple across Whirlpool Corporation's value chain, beginning with product development.

Say, for example, a new Whirlpool product design calls for a new part that – unbeknownst to its designers – could have been filled by an existing part. The fact that the new (and redundant) part needs to be designed and certified lengthens the product's development cycle and, by extension, its time to market. At the same time, the practice of multiple lines of business maintaining separate stocks of common parts keeps parts inventories at higher than optimal levels and prevents procurement optimization. With Whirlpool launching an average of 73 new products every year, the dramatic cost and efficiency implications of this redundancy underscore the importance of the foundational work IBM is doing to rationalize and standardize the Whirlpool parts portfolio across all business units.

If there is a big picture to the company's transformation story, it is that the key to achieving operational excellence is in moving beyond the standardization of core business processes to actual value chain integration. Whirlpool Corporation's goal of sharply reducing its global finished goods inventory is a case in point, notes Global CIO Kevin Summers. "Having good [Sales & Operations Planning] processes is important, but they can't only be focused on manufacturing. They need to extend up and down our value chain into areas like forecasting, go-to-market strategies, the supply plan and the production plan inside manufacturing. The process implementation roadmap being developed by IBM will be critical to our success in achieving this integration across our global operations."

Solution Components

Software

- IBM DB2®
- IBM Tivoli® family of products
- SAP R/3

Servers

- IBM System p®
- IBM System z®

Services

- IBM Global Business Services
- IBM Global Services – Strategic Outsourcing

Smarter Manufacturing

To stay ahead of rising competition, Whirlpool is implementing best practices across all of its lines of business and integrating them to optimize its business processes across its entire global value chain. Becoming a more globally integrated enterprise enables Whirlpool to achieve "operational excellence" – the delivery of the right product mix to local markets while maximizing the efficiency of its global operations, from R&D to retail merchandising.

A single picture of global production

With the global appliance market becoming more competitive and dynamic, Whirlpool views support for operational, tactical and strategic decision making as a critical underpinning for operational excellence. One of the most basic requirements of optimization is the ability to make production decisions based on capacity and inventory information across global manufacturing facilities. To enable this, IBM is also working to implement a standardized SAP solution across its 30 plus manufacturing sites, through which the Whirlpool executive team will have an "apples-to-apples" view of such key operational metrics as quality, asset utilization, labor utilization and inventory levels. A comparable solution, known as Business Performance Management, provides a dashboard view into key financial metrics such as procurement spend.

Finally, with sales through trade partners like Home Depot accounting for a large share of its revenue, Whirlpool is also seeking to gain more visibility into the effectiveness of the US$1.5 billion it spends annually on trade partner incentives – more than any other company in the industry – so that it can direct its resources to the most effective and profitable channels. To adapt to the increasing competition for retail floor space, Whirlpool is working with IBM to process map all aspects of its retail strategy – from merchandising to pricing – to ensure a product mix that maximizes profitability and increases market share.

In addition to readying its processes for rapid growth, Whirlpool is also working with IBM to strengthen its IT infrastructure, the core of which includes the IBM System z and System p servers, IBM DB2 for core database and data warehouse functionality, and IBM Tivoli products providing systems management and automated backup and recovery. Its data center in Benton Harbor, Michigan is managed remotely by IBM strategic outsourcing staff located in Brazil.

In Summers' view, Whirlpool is hitching its future prospects on rapid growth – and IBM is playing an essential role in helping Whirlpool fulfill the operational challenges of meeting that growth. "We're relying on operational excellence to manage rapid growth more profitably and continue our leadership in a more dynamic and demanding global appliance marketplace," explains Summers. "By enabling Whirlpool to become a more globally integrated enterprise, IBM is helping us reach that goal."

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Produced in the United States of America
December 2008

ODC03115-USEN-00

**IBM Systems and Technology
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