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FEATURES

We Do Amazing Things: 2010 Chairman's Award for Excellence



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WE DO AMAZING THINGS

2010 CHAIRMAN'S AWARD FOR EXCELLENCE

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Whether helping trains run on time, offices go paperless, or sending data centers into the cloud, CSC has been doing amazing things for clients for more than 50 years.

We put our ingenuity to work to create solutions that help clients solve technically complex, mission-critical challenges and provide future business opportunity.

Each year, we honor the more innovative projects by presenting the teams and individuals with the Chairman's Award.

"The Chairman's Award for Excellence recognizes the depth and breadth of innovation at CSC," says Michael W. Laphen, CSC's chairman, president and CEO. "These projects bring tremendous value to our clients, who look to CSC for ingenuity and efficiency in solving their mission-critical problems."

THE RECIPIENTS OF THE 2010 CHAIRMAN'S AWARD FOR EXCELLENCE HELPED OUR CLIENTS ACHIEVE ...

100% Digitization Automating Land Registration in Denmark



After using a paper-based land registry system in Denmark for more than 450 years, it was time to digitize the process.

Under the Danish Ministry of Justice, the Land Registry Court administers the registration of rights on all properties in Denmark, covering such things as ownership, deeds, easements, and mortgages. The system was time consuming, averaging two weeks processing time; managed a high volume (more than five million cases per year); and maintained an archive of 80 million paper documents. The information in the land registry books is legally binding and the Government of Denmark is liable and accountable for any mistakes.

The objectives of the project were to modernize and improve efficiency by digitizing 100 percent of the process, automating 60-70 percent of the process within five years, reducing costs, and improving consistency. A CSC team, lead by Ulle Tonne Bech, Hans Jayatissa, Henrik Korsbæk and Claus Ljunggren, developed eTL, the Danish digital land registry system.

The system is an important part of a large IT ecosystem that supports the property sales and mortgage sector in Denmark. It is integrated with a large number of public systems, including the Danish PKI infrastructure to handle authentication and legal signatures. Based on an event-driven service-oriented architecture, the system uses secure Web services for its internal and external portals to address the needs of its various stakeholders, including caseworkers, citizens, and financial institutions.

CSC developers kept the architecture design simple, creating a system that was easy to deploy and maintain. eTL is built almost entirely on open source technologies on the Java/JEE platform

using an Oracle application server and database. Through agile principles and a test-driven approach, the team have ensured a constant high quality of the produced code.

The workhorse of the eTL solution is its core engine, which handles legal decisions for 80 different types of cases, each of which had its own paper-based process.

Deployed on September 8, 2009, eTL has successfully met the project's outlined objectives. With eTL's automation, self-service features and reduced process time (many cases are decided in milliseconds), Danish citizens are able to register rights on properties themselves and avoid costly lawyers' fees and the need for interim financing. With online access to a single source of land registry information, citizens can also subscribe to the system to track a specific property.

The eTL system is a core part of the property sales and mortgage sector in Denmark. To take advantage of eTL, the Danish financial sector created a central hub, e-Nettet, to handle land registration data shared by the banks and eTL. eTL has also enabled the financial sector, like Denmark's citizens, to be more self-sufficient, taking over certain work previously done by lawyers.

With the eTL project, the Danish government has made a tremendous breakthrough in its global digitization strategy and has vastly improved service for its citizens.

Space Telescope Repairs

Applying Innovative Software Processes in Orbit

The Hubble Space Telescope (HST) has been transmitting fantastic images of the cosmos for more than 10 years. But in January 2007 its flagship camera, the Advanced Camera for Surveys, suffered a power failure. CSC team members of the HST Payload Flight Software Team, including I-Ming (Annie) Chien, Dennis Garland, Michael Kelly and Wendy Lindboe, were key contributors to the design, development and testing of the flight software needed for the repair, which was the first on-orbit board-level repair by a NASA crew.

The camera repair was added to the already planned Service Mission 4 (SM4) scheduled to launch in May 2009. To meet the mission deadlines, the CSC team based at NASA Goddard Space Flight Center, designed, developed and tested the software in eight months, a dramatically compressed schedule with no room for error. Further, two new instruments being installed as part of SM4 had been designed to complement the camera, elevating the need for a flawless repair.

Our team applied well-established software processes to what was originally viewed as a hardware problem, modifying the processes and changing from the traditional waterfall model

that historically has been used for flight software to a rapid prototyping approach.

A major part of the repair involved interfacing the camera to a new application-specific integrated circuit (ASIC). The work also involved the integration and testing of field programmable gate array technology. These technologies represent an innovative advance in space flight hardware because they can replace custom hardware with software, which is much faster and less expensive to create.

The CSC team treated the ASIC as a flight software change in order to verify its compliance with proven space flight system integration processes used at Goddard. This shortened the system integration effort significantly while ensuring quality.

As a result of the combined efforts of the CSC team, the mission crew, and the scientists and engineers at the Space Telescope Science Institute and Goddard, Hubble's main camera is now able to provide more than 80 percent of the scientific observations for which it was designed.

An Online Presence

Positioning the Leading Web Merchant in France

French retail giant Fnac faced economic and market pressure to have a stronger online presence. It wanted its online shoppers to benefit from what was best in its brick-and-mortar stores: sales expertise and customer service.

In 2007, Fnac turned to CSC to help design and implement an Internet transformation program. We had already helped them build and launch their online music distribution service on Fnac.com in 2004. Now, the transformation program would align capabilities between Fnac's 149 stores and Fnac.com. After three years, the program has positioned Fnac.com as the leading Web merchant in France in terms of traffic. Our team consisted of Laurent Atlani, Joseph Tempier, Ali Haghypour and Frédéric Bouin.

The transformation program had three thrusts: a new business model based on an online marketplace strategy, the switch from being product- to customer-oriented, and international deployment.

Fnac was the first non-pure-Web company to open an online marketplace for third-party sellers. Today some 6,500 sellers offer roughly 2.4 million products on Fnac.com's MarketPlace, which was launched in May 2009. People can make purchases from the Web, a store, or their mobile device.

Fnac is harnessing the customer information captured via the Web to customize offers, promotions and recommendations on Fnac.com as well as enrich the customer's in-store experience. To this end, "My Fnac" was launched in October 2008 to give customers a personalized experience and to enable the company to define customer segments and create targeted offerings.

An international platform was created from the French solution and rolled out to Italy, Spain and Portugal, with plans for rollouts in Brazil, Belgium, Greece, and Switzerland. The core system had to be designed to plug rapidly into any local logistics back-office system. Italy and Spain are reporting strong improvements in sales and order handling.



A Sustainable Business Model

Turning a Recycling Program into a New Customer Offering



It's widely reported that the majority of people worldwide keep their old mobile phones, even if they don't use them. French telecommunications company Orange recognized this inefficiency as a huge opportunity. With CSC, it set out to transform its process for collecting old phones into a revenue-generating, environmentally friendly proposition.

The Eco Orange program is providing a second life to mobile handsets, while also helping improve customer loyalty, increase their purchasing power, provide eco-friendly benefits, and enable developing countries to obtain inexpensive mobile phones. The customers benefit by either paying less for a mobile replacement or by upgrading their mobile device to a superior model.

Eco Orange was developed within Orange Care, a new end-to-end portfolio of care services for customers, from the time they purchase a device to when they retire it. With this program, Orange has improved customer satisfaction and decreased its environmental impact, all without affecting its operational margins.

A CSC team, including Jean-Vincent Cazaux, Sébastien Marie, Maryna Fedrigo and Olivier Douville, designed the Eco Orange concept and managed its implementation and the required reverse logistics. The program used a standardized system applicable to multiple countries (the program was launched in eight European countries simultaneously), and the process included the whole value chain. Orange was intent on being a leader and proving that new, inventive actions were possible on a massive scale.

The Eco Orange concept is to collect old mobile phones and laptops from users, whether Orange customers or not. If the item is in poor condition, Orange recycles it. If it's in good condition, Orange issues a credit voucher that customers can use, in Orange shops, toward the purchase of a new mobile phone or another item.

The recycled phone is sold for parts or, if in good condition, refurbished and resold. Money from parts sold goes to charities like the World Wildlife Fund. Refurbished phones are sold to developing countries through brokers.

Eco Orange combines economic efficiency, social equity and environmental protection in a sustainable business model. The solution can be applied in any country with minimal modifications; it can be extended to other telcos, the retail sector, and organizations that have products that can be recycled.



A Next Generation Data Center

Launching NASA Into the Cloud

NASA's Jet Propulsion Laboratory (JPL) was out of data center space and CSC helped them determine the cost of building a new 10,000-square-foot data center would be \$40 million. JPL needed an alternative, cost-effective approach to keep up with continued exponential growth in computing demand.

CSC had already led a virtualization effort at JPL to maximize the compute capacity of existing data center floor space; now it was time to take the next step, to cloud computing.

JPL partnered with CSC to understand cloud computing and embark on a journey that has led to establishing JPL as a cloud leader in the U.S. federal government. The goal was to not only solve the compute capacity problem, but do more with less, enabling more of JPL's budget to be focused on NASA's missions of space exploration and climate change research and less on IT.

This was the first time CSC had undertaken a cloud project with the complexities of a NASA environment. Our team of Virinder Dhillon, Neil Kronimus, Todd Lucas and Joseph Marphis drew on extensive experience and expertise in technical architecture, design, engineering, networking and security to devise a secure way to handle a federal customer who needs to be compliant with the Federal Information Security Management Act (FISMA).

As a result, CSC successfully demonstrated the use of trusted clouds in the federal sector and created a cloud solution for federal clients.

CSC's Trusted Cloud Services (powered by Terremark) provide JPL with compute, storage and network services. JPL is CSC's first customer for its highly secure Trusted Cloud environment, which meets JPL's stringent security requirements. The cloud is flexible and fast, enabling JPL to provision servers in minutes with a few mouse clicks. JPL can be more responsive to business needs, and only pays for cloud services used.

The cloud solution for JPL was the first cloud to meet federal compliance regulations for security, reliability and transparency. In addition, it was the first community cloud built using VMware virtualization technology, which facilitates easier migration from VMware-based enterprise data centers.

New capabilities were developed to provide a secure virtual private network connection between a community trusted cloud and private data center resources, to enable cloud bursting into a trusted cloud, and to use trusted cloud infrastructure as a disaster recovery site for continuity of operations planning.

Punctual Trains and Happy Passengers

Controlling the Swiss Rail System

A precise dispatching system designed and implemented by the Swiss Federal Railway (SBB) with CSC is helping them run like clockwork. The Rail Control System (RCS) was developed over four-and-one-half years by a team of about 100 rail and technology experts. CSC's Matthias Krista, Benedikt Soom, Frédéric Auberson and Gilles Iachelini played key roles in the architecture, business analytics and software implementation.

RCS is a powerful solution for analyzing complex interactions between trains and provides fast, accurate operational data to dispatchers, ultimately keeping trains on time and passengers satisfied.

RCS provides near-real-time information on the current operational status of approximately 2,000 trains, 3,000 kilometers of track, and corresponding switches and signals in the Swiss Federal Railways system. Overall punctuality has improved from 94 percent to 96 percent, making Switzerland the leader in international punctuality statistics.

With RCS, timetables can be denser, allowing more throughputs, and traffic forecasts are more accurate. This enables dispatchers to detect conflicts and reroute trains quickly. RCS is the only system of its kind that manages extremely detailed data, for a network the size of the Swiss railway, using sophisticated algorithms that deliver data updates to dispatchers within one second.

One of the chief innovations of RCS is more accurate forecasting. A specialized algorithm was devised for forecasting simultaneous train journeys for all trains, including a highly efficient method for calculating the networkwide impact of delays.

The system receives and handles several hundred messages per second from different peripheral systems (e.g., timetables, train position sensors), processes these messages within a fraction of a second, calculates train journey forecasts, and delivers the resulting changes to hundreds of railway dispatchers and customers.

To do this, RCS uses a fast, message-oriented architecture, data grid technology, and high-speed graphical user interfaces. Once messages from peripheral systems are received, they are forwarded to core server components, which handle several thousands of messages per second.

A temporal subset of the data is stored in an in-memory data grid. This unique design means that database queries can be substituted with high-performance object queries distributed across the grid. Queries are executed in parallel, improving performance by up to an order of magnitude versus a traditional database query. This "database on steroids" can be scaled up by simply adding compute servers at a fraction of the cost of an additional database server.

Data reaches the dispatcher at a workplace consisting of eight high-resolution monitors. The Java-based application provides the main functions for train dispatching. Monitors are powered by innovative client and graphical user interface software that processes and displays data in near real time. The software displays the results of intensive parallel processing of detailed business data, such as track occupancy data and connection timetables, and redraws up to 18.4 million pixels per second. ■



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About CSC

The mission of CSC is to be a global leader in providing technology-enabled business solutions and services.

With the broadest range of capabilities, CSC offers clients the solutions they need to manage complexity, focus on core businesses, collaborate with partners and clients, and improve operations.

CSC makes a special point of understanding its clients and provides experts with real-world experience to work with them. CSC is vendor-independent, delivering solutions that best meet each client's unique requirements.

For more than 50 years, clients in industries and governments worldwide have trusted CSC with their business process and information systems outsourcing, systems integration and consulting needs.

The company trades on the New York Stock Exchange under the symbol "CSC."