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NISSAN OPTIMIZES DISTRIBUTION WITH RED HAT JBOSS BRMS

NISSAN MOTOR CORPORATION

NISSAN   INFINITI   DATSUN

SOFTWARE AND SERVICES

FEATURED IN CASE STUDY

Red Hat® JBoss® BRMS

Red Hat Consulting

ALSO IMPLEMENTED

Red Hat Enterprise Linux®

Red Hat JBoss Enterprise Application Platform

Red Hat JBoss Web Server

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In April 2014, Nissan opened a new production plant in Rio de Janeiro, Brazil with an annual production capacity of 200,000 vehicles and 200,000 engines.

Along with a target of reaching 5% market share in Brazil by 2016, the plant's opening was aligned with Nissan's efforts to achieve 8% global market share, part of the "NISSAN POWER 88" five-year mid-term management plan initiated in 2011.

To help align their strategic and business goals with their use of technology, Nissan chose Red Hat JBoss BRMS to replace their legacy system.

Yokohama, Kanagawa Prefecture, Japan

HEADQUARTERS
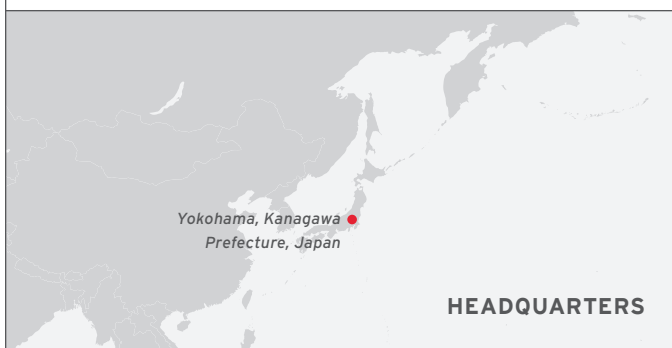
MANUFACTURING

142,925 EMPLOYEES (CONSOLIDATED BASIS)

CUSTOMER SINCE
2012

"*It is now possible to process eight months of production plans at our Brazil plant in approximately two minutes. This provides a system more than 10 times faster than what we use in Japan.*"

KOICHIRO SAKAKIBARA
ASSISTANT MANAGER, ENTERPRISE ARCHITECTURE DEPARTMENT, GLOBAL IT HEADQUARTERS, NISSAN MOTOR CO., LTD.

BENEFITS

• 200% improvement in productivity with automated business rule management

• Increased transparency of business processes for effective workflow management

• Five-year TCO projection halved

ACHIEVING OPTIMAL DISTRIBUTION FOR NISSAN'S DEALERSHIPS

In April 2014, Nissan opened a new production plant in Rio de Janeiro, Brazil with an annual production capacity of 200,000 vehicles and 200,000 engines. The company wanted to optimize how they distributed vehicles from the new plant to their 160 dealerships across the country by accounting for local buying habits.

In Japan, where their legacy distribution system was developed, customers take a longer time to consider a purchase – from reviewing specifications online or in person to actually making the purchase. If the desired model is not in stock, Japanese customers will typically wait for new stock to arrive.

In Brazil, however, customers tend to make their decisions based on the availability of a car from local dealerships. As a car manufacturer, this means taking a different approach to ensure that relevant stocks are readily accessible at the right dealerships. This can be done by matching dealership sales and customer buying trends (for example, by car types and models).

"The objective of our new plant is to optimize order management and production planning concurrently, as well as to make information more accessible to our customers. For Nissan, one of the biggest challenges is optimizing production planning, which requires a robust business rules management engine," said Mr. Sakakibara.

STANDARDIZING THE GLOBAL CORE SYSTEM

Nissan had implemented a number of systems in Japan, aimed at optimizing its production planning workflows. The initial plan was to choose one of these systems and extend it across the company's global network.

"These systems ran on a mainframe, and while there isn't a problem in terms of functionality, they were not ideal for scalability and global expansion. Our IT strategy 'VITESSE,' which supports the company's 'NISSAN POWER 88' direction, motivated us to think of ways to improve openness on a global scale. Hence, we concluded that a core global system based on open standards was needed," Mr. Sakakibara added.

Adopting this level of openness across the organization posed an incredible challenge because detailed conditions were fully integrated into the mainframe's source code with no transparency. Expanding the system globally became the greatest bottleneck they faced. Mr. Sakakibara recalls that they almost had to come up with a solution from scratch. To resolve this, flexibility was top of the priority list.

SHORT TIME TO MARKET WITHOUT COMPROMISE

The system Nissan introduced at its new Brazilian plant uses a packaged product for the construction of supply chain management-related, mission-critical systems and Red Hat JBoss BRMS for areas of order-to-delivery where more complex functionality is required.

The packaged product included order management and vehicle status information disclosure functions. Order-to-delivery required functionality for formulating production plans, considering production restraints, placing the optimal number of vehicles with each dealership, and reviewing production plans in view of pending orders. This was going to be an actual source of competitiveness for the company.

"When opening the plant, we needed to increase the system's delivery speed. We therefore decided to mix solutions developed from scratch, focusing on the package and JBoss BRMS. For product line management, using a package would facilitate future horizontal expansion into other countries. However, production plan formulation and review, as well as optimal placement of vehicle quantities, were the heart of the Nissan production system. Which is why we decided to use JBoss BRMS."

LOWER TCO, GREATER FLEXIBILITY

When making its selection, Nissan narrowed its options down to JBoss BRMS and a commercial product. Mr. Sakakibara explains why they ultimately chose JBoss BRMS:

"It offered all of the essential functions we requested. The crucial differences were its cost performance, flexibility, openness, and potential for future growth.

"When formulating production plans we need to consider various constraints, such as restrictions in the volume of engines and parts that can be supplied, as well as the lead time until the required parts are delivered. Then the demands of the sales side also need to be reflected. When doing this, the RETE algorithm included in JBoss BRMS is a huge advantage, and the project team verified its effects by proof of concept.

"Optimizing IT costs through system simplification is also one of the major goals of VITESSE, which makes JBoss BRMS an extremely attractive solution. After calculating the total cost for the next five years, it became clear that JBoss BRMS would only require around half the cost of other products.

"When considering future global expansion, the fact that JBoss BRMS is an open source solution was very important. Functions evolve rapidly due to community activities. JBoss BRMS is therefore much faster at adapting than the commercial product. Because it is an open source solution it has the flexibility of starting off small but being able to be amended easily. Ease of openness and globalization is a great weapon."

The actual implementation project began in November 2012, and the switch was completed with the product planning function in October 2013.

WORKING WITH A STRATEGIC PARTNER

On a production site where order changes occur daily, one of the most important system requirements is the ability to review production plans quickly and flexibly.

"Performance was a major concern when considering the use of the business rules engine. Although this matter has been examined in the aforementioned proof of concept, a single process initially took six-and-a-half hours."

The time that Nissan had allotted for this process was approximately 10 minutes, which is the time it took to process three months of production plans in Japan. The company therefore started performance tuning to meet this target value, and Red Hat was on site to support and provide consulting services.

"We were taught that the volume of data uploaded on each occasion to JBoss BRMS had a major impact on performance. Red Hat then examined the optimal volume of data, and thanks to the proposal we received, it is now possible to process eight months of production plans at the Brazil plant in approximately two minutes. This provides a system more than 10 times faster than what we use in Japan."

In addition, we could perform vehicle and order allocation optimization processes in a shorter period of time. Mr. Sakakibara emphasizes that this reduction in processing times has also had a major impact on the business side.

"Thanks to the cutback in processing time there is now room for recovery when reprocessing becomes necessary due to sudden requests. This has resulted in a decrease in business risk, such as avoiding the loss of sales opportunities."

LOOKING AHEAD

Nissan is currently working on the construction of an alliance-level next-generation common platform with Renault.

"We are currently in the introductory stage and plan to release the platform in October 2014. We are also looking to implement OpenStack® in order to achieve a hybrid cloud in the future."

The company is currently accelerating the creation of an application roadmap, which will be necessary for the IT side to support Nissan's business strategy.

"To do this, we will naturally not only require a roadmap of the applications themselves, but also supporting product roadmap information in a platform view. We believe that Red Hat will provide information in each of these areas, as well as even more detailed information at the component level."

ABOUT NISSAN

Established in Yokohama City, Kanagawa Prefecture in 1933, Nissan Motor Co., Ltd. currently manufactures vehicles in 20 countries and areas around the world, including Japan. Nissan offers products and services in more than 160 countries and areas worldwide.

ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.