

Information
Builders

Customer Profile



Canadian National Railway Turns to FOCUS to Modernize Inventory Control System

There is no question that client/server has made an impressive start reshaping our corporate information systems. But for large processing tasks, centralized architectures anchored by a powerful host computer are still the order of the day.

"The power of the mainframe, coupled with its security, controlled access, reliability, and mature system utilities are difficult to duplicate in a client/server environment," says Joe Mangoni, a project officer in the Marketing, Safety, and RAD Systems group at Canadian National Railway, a \$4.1 billion transportation firm in Montreal, Quebec.

The development team faced these architectural decisions in a big way when it came time to update the inventory control system at their CN CargoFlo facilities. CN CargoFlo is a

Snapshot

Organization: Canadian National Railway.

Profile: \$4.1 billion transportation firm.

Headquarters: Montreal, Quebec, Canada.

The Challenge: Update a limited PC and UNIX-based inventory control system to support growth.

Results: New inventory control system built using Mainframe FOCUS allows company to keep pace with rapidly expanding operations.

“There are lots of new languages and tools out there, but many of them come from new companies. Information Builders has a long history of leading-edge technology and a well established technical support group.”

service for the transfer, consolidation, and specialized handling of liquid and dry bulk flowables. There are currently 21 CargoFlo break-bulk facilities in the Canadian National network, covering markets in Canada and the northern United States. Typically, products arrive at CN CargoFlo facilities by rail, are held until needed, and then shipped by truck to customers.

Growing Pains

For years, Canadian National relied on a PC UNIX-based inventory control system at its Toronto CargoFlo terminal. It began as a single-user system, but soon

evolved to manage up to 16 users in Toronto, Montreal, and Warren. By early 1994, the limitations of the PC-based system architecture began to reveal themselves: numerous system hardware failures, data integrity concerns, and limited networking capabilities.

“The old system was simply not capable of supporting the expanding operations,” Mangoni explains. “Additionally, management wanted an easier way to obtain a complete picture of the entire operation. The UNIX systems were not integrated, which meant reports had to be printed at each terminal and then manually consolidated at headquarters.”

The development team envisioned a more cohesive inventory control system that could span all twenty-one sites, be scaled as operations grew, and automate many manual functions. At first they considered a distributed network architecture that would extend the existing UNIX-based system. But as they looked more closely at their needs, they realized a centralized, host-based architecture made better sense. They looked at it from many angles, but the benefits of a centralized system far outweighed those of a distributed system in this instance.



Developers also wanted to interface the new inventory control system with many of Canadian National's other business systems, such as EDI, E-mail, and Billing, all of which currently ran on an IBM 3090 mainframe computer at headquarters. Given CN CargoFlo's anticipated growth rate, the new system needed to make it very

easy to add new users and sites while guaranteeing consistent service levels to existing users.

“Most of these prerequisites proved to be difficult to meet in a distributed environment,” Mangoni adds. “We also had to consider

our primary expertise in operating systems, networking, communications, security, system backups, and disaster recovery. All of these things pointed to the mainframe.”

FOCUS, the Right Choice

The development team decided to build the new inventory control system, dubbed CargoFlo Inventory Management System (CIMS), using Information Builders' Mainframe FOCUS product with the Multi Session Option (MSO). Large CargoFlo facilities would access the centralized system through the existing SNA-TCP/IP backbone network, while smaller sites would be given dial-in access on dedicated telephone lines.

“We had experience with FOCUS on two other major applications and had become proficient with its development capabilities,” Mangoni says. “There were other tools we could have used, but not if we were to get the job done in the allotted time frame. The UNIX system was on its last leg. We had serious problems that demanded fast solutions.”

CN Rail also had implicit confidence in Information Builders as a vendor. “There are lots of new languages and tools out there, but many of them come from new

companies,” says Mangoni. “Information Builders has a long history of leading-edge technology and a well established technical support group.”

New Development

Developers proceeded quickly, completing CIMS in just eight months. Mangoni worked closely with Bob Singer, Systems Manager of Marketing and Traffic Information Systems; Gabriel Marchitto, a senior programmer/analyst; Jim Brian, a technical support specialist; and Patrice Berube, a third-party FOCUS consultant. The result was a complete inventory control and distribution system which monitors and controls transfer, delivery, and billing at all CN CargoFlo facilities.

“The beauty of FOCUS is that it allows us to build robust applications very quickly using a simple yet powerful methodology,” Mangoni says. “We can mock up a prototype, get immediate user feedback, then progress in an iterative fashion until the application is completed.”

FOCUS’ Rapid Application Development (RAD) methodology allowed Canadian National to cut down on development time while giving users the opportunity to include a variety of features designed especially to meet their requirements. The result was a computer system that is bilingual, superior in quality, and closely coupled with CN CargoFlo’s operations and procedures.

“It wasn’t obvious at the outset just how the system might evolve,” Singer recalls. “The tools and techniques we used allowed us to respond to new ideas from the customer, iterating until we had developed the final product. FOCUS supports a cyclical methodology, which means we didn’t have to define all the specifications in advance. We had a low up-front cost for prototyping.”

Developers also appreciated the power and functionality of the FOCUS Multi Session Option. “MSO runs as a started task that comes up like a CICS address space,”

Brian explains. “Everyone can log in to this started task and share the same address space, which offers tremendous economies of scale. Without MSO, each user would have to obtain his or her own address space, memory requirements, and system tasks.”

Another advantage to using MSO is that it allows Canadian National to manage CargoFlo activity as a separate and distinct mainframe region, Brian adds. “We can shut it down or upgrade it without affecting other users and applications,” he explains. “It’s also quicker for users, since the task they need is already running when they log in. MSO gives us the benefits of a CICS region when using FOCUS in a time sharing environment.”

Successful Deployment

Montreal was the first CIMS site to be implemented in March of 1995, two weeks prior to the scheduled target date. Today, the 16 largest of 21 terminals are up and running with CIMS and not one single service disruption has been passed on to customers. Best of all, the users are pleased with the new system. “Having users participate in the original prototypes helped considerably,” Singer says. “Our management is also extremely satisfied with the system and the cost of its development.”

CIMS has allowed for tremendous expansion. For example, from 1990 to 1995, the volume of commodities transferred in Canada and the U.S. has more than tripled. This rate of growth is expected to continue at least until 1999. Canadian National’s major terminals are now capable of providing operations 24 hours a day, 7 days a week.

“Our rapid growth is partly due to the new efficiencies brought on by CIMS,” Singer says. “We’re seeing significantly higher transfer volumes, without the need to increase terminal staff.”

CIMS has also enabled CN CargoFlo to centralize its data, Singer adds, giving

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senior managers a consolidated view of all facilities while maintaining a reliable and easily supportable environment.

Automated Operations

Once the deployment to the 16 major facilities was complete, developers began work on Phase 2 of CIMS, adding additional capabilities which further increase CN CargoFlo terminal productivity. They automated 90 percent of the billing function and centralized all billing activities in Mississauga. They also added automated functions such as advanced warning of expected cars, faxes automatically routed to customers, and more extensive EDI capabilities, all using the existing mainframe infrastructure and programs.

CIMS's inherently flexible architecture will allow it to be easily expanded for use by other Canadian National distribution facilities, such as Lumber and Steel. "We have grown with FOCUS significantly," Mangoni says. "We are able to reuse a lot of existing code and have done many things to push the technology envelope. It has been very successful."

Perhaps most important, CIMS has helped Canadian National to close the loop on its billing procedures. Where clerks used to handle local billing at each terminal, then send it in to headquarters for processing, today 90 percent of the billing is automated by system-to-system EDI links. Clerks only handle miscellaneous charges. The bulk of the billing is performed according to predefined rate contracts, with no human intervention required.

"With the implementation of CIMS, CN CargoFlo took its first step into the next generation of computer managed inventory and distribution systems," Mangoni concludes. "We're now equipped with leading-edge information technology that allows us to keep pace with a rapidly expanding operation." ❖

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DN7502005.1096



Printed in the U.S.A.
on recycled paper