

WhereScape®

CANADIAN NATIONAL RAILWAY

CN Rides Data Warehouse Automation to Better Customer Service and Safety



About Canadian National Railway Company (CN)

CN, headquartered in Montreal, Quebec, serves Canada and the Midwestern and Southern United States. The company is the largest railway in Canada, in terms of both revenue and the physical size of its rail network. Today CN owns and maintains more than 20,000 route miles of track and employs approximately 22,000 people.

WhereScape talked with Business Intelligence Manager Alain Bond about the revamp of CN's BI strategy to better and faster serve its vast and diverse user community. Bond has 24 years of IT experience, the second half being focused in the BI domain, where he led BI teams in the insurance, banking and transportation industries. He currently manages a team of 55 data architects, modelers, developers and practitioners.

Bond discusses how the company's increasing use of GIS and sensors is exploding the amount of data the company needs to manage and analyze. Bond also discusses how WhereScape RED's automated and iterative rapid prototyping capabilities are providing a revolutionary game changing approach to CN development as the company strives to better customer service and safety.

Would you please highlight CNs' BI infrastructure?

We are a large SAP shop where a lot of our ERP resides. We also have very large SAP BW footprint, with more than 160 cubes, most of them financial as well as mechanical and engineering data that tracks items like repair incidents as well as HR data. A large portion of our legacy data warehouse resides on IBM DB2 with COBOL as ETL. In the mid-90s, we added Oracle databases targeting additional measures, while in the mid-2000s we added Netezza which serves as our enterprise data warehouse with IBM InfoSphere DataStage as ETL.



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Business Objects remains our predominant front-end tool, with 3,500 supported users and an average of 2,000 users per month on the system. We also have 20 Tableau licenses, a few Qlik licenses and we currently use R for our data scientists.

The GIS group within the BI organization is expanding exponentially, growing from a staff of three to thirty in the past three years. The group generates massive amounts of data, and as a result more and more data sources need to be integrated. We recently implemented Oracle Exadata to handle the GIS side of the business.

CN recently reshaped its IT organization. What is new?

CN IT is currently in the midst of a huge transformation where the ultimate goal is to plan and build a solid foundation that will support the railway's evolution. To keep pace with the company's strategic agenda we are in the process of improving how we work as an IT function. As part of that, we redefined our BI Strategy, within which we strongly highlighted the need to have the ability to serve data much faster for analysis, ad-hoc or discovery purposes, without jeopardizing our long term enterprise informational ecosystem.

To aid in delivering its BI initiatives, CN introduced automated and iterative rapid prototyping capabilities from WhereScape within its agile methodology which enabled a revolutionary game changing approach to our development. Classic ETL development as we know it is dead.

What has been your approach to delivering results to the business?

In every organization, the reality is we are all facing various degrees of Shadow IT within the business units who are driven to deliver point

solutions to the business faster than IT typically delivers. While fostering the concept of governed self-service and empowering our power users with even more efficient ways of being autonomous doing data discovery, we should also have an "alternate development path" within IT for discovery purposes which should not be a slow and procedural process requiring tons of upfront documents and analysis before even showing any glimpse of value to our end users.

I understand you have started a predictive analytics initiative. What was the impetus for starting the project and what are its goals?

We started our predictive analytics initiatives last fall that was initiated with a huge pull from the business. The focus is preventative maintenance—helping prevent track or car failures, for example. The initiative is broken into two segments—engineering or fixed items like bridges, tracks and crossings; and mechanical or rolling items like locomotives and cars. We spend billions annually on maintenance so there is a tremendous opportunity for improved safety as well as cost reductions.

What have been your experiences and results with WhereScape?

It is very difficult to define requirements early on—but with WhereScape we spec out requirements much quicker and earlier. In addition, our sandbox environment is very easy to evolve and change—our overall development lifecycle is managed more quickly overall and more efficiently.

In one of our initiatives, after using WhereScape RED for just one week, we had integrated multiple data sources, had Tableau working on top of it, and

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were showing business users a demo with actual CN data in a very iterative development approach. The ability to iterate—delivering close to what the business is looking for, delivering the findings and then iterate again, engages everybody in IT and the business and enables us to react very quickly and respond to the business exponentially faster.

During one working session, a business user asked for data that we found required a 10 million row abstract. Once we got that data extract, we provided the new iteration the next day—we just simply changed the model, hit the ‘big red’ button, and WhereScape regenerated the data structures and populated it. The ability to meet with the business and provide an update version for review the next day is a game changer for us and has helped us regain the trust of our business users as well as react very quickly and respond to changing business conditions. On one recent project, we had five cycles—or iterations—in one day. WhereScape RED enables us to get our sandbox and prototyping solutions right very early in the development process. ‘Good enough’ is not good enough anymore.

Any final thoughts?

The prototype and iterate approach using WhereScape’s data warehouse automation platform is working incredibly well at CN, dramatically aiding and increasing the delivery velocity and clarity in the early phases of our agile process. Our approach is to prototype first, get it right, then build the enterprise solution with the specs and documentation WhereScape provides. Going from waterfall to agile is one thing, but using WhereScape’s rapid, iterative prototyping capabilities with agile is really a quantum leap forward—from evolutionary to revolutionary, if you will. This more timely access to data will enable CN to further improve customer service and safety.



About WhereScape

The pioneer in data warehouse automation software, WhereScape empowers organizations constrained by time, money or lack of resources, to deliver business value from their decision support infrastructure – including enterprise data warehouses, business facing data marts, and big data solutions. WhereScape has global operations in the USA, UK, Singapore, and New Zealand. www.wherescape.com