

Client Case Study



Translink / Coast Mountain Bus Company Implements Fujitsu Enterprise Data Warehouse Solution

Customer Profile

Translink / Coast Mountain Bus Company was founded on April 1, 1999 as part of the family of operating subsidiaries under TransLink, the Greater Vancouver Transportation Authority. Translink / Coast Mountain Bus Company joined other subsidiaries, including SkyTrain, West Coast Express, HandyDART, Albion Ferry and West Vancouver Blue Bus, to complete a fully integrated transit system.

Today, Translink / Coast Mountain Bus Company operates conventional buses, smaller community shuttles, Sea Bus ferries and a fleet of state-of-the-art trolley buses in Greater Vancouver, which combined attract 400,000 passengers per day along 180 bus routes in a 1,800-square-kilometer region. Translink / Coast Mountain Bus Company is also tasked with managing the critical bus and ferry public transit systems that service millions of residents in the Vancouver area.

Translink / Coast Mountain Bus Company's IT team is responsible for maintaining the company's IT infrastructure that supports a number of critical systems, including fleet management, financial management, HR management and many others.

Business Challenges

Translink / Coast Mountain Bus Company's enterprise data resides on many disparate systems. The process of extracting key information from these systems was tedious, time consuming, expensive and posed many key challenges:

- **Lack of Integrated Information:** Members of Translink / Coast Mountain Bus Company's Data Warehousing and Business Intelligence steering committees along with other business sponsors consistently identified the lack of integrated information as a business impediment. The process of collecting, storing and sharing data was ubiquitous. Some of this data was manually integrated on a weekly or monthly basis for reporting purposes, resulting in re-work and data duplication.
- **Lack of timely Information:** Decision makers identified the process of compiling data into information as too cumbersome and rarely delivered on time.
- **Lack of Common Dictionary:** Several members of the steering committee also identified problems sharing information without a common vocabulary. Data from various systems often had disparate data definitions, meanings, formats, formulas and business rules that needed to be resolved in order to successfully integrate the information.

- **Lack of Corporate Picture:** The big corporate picture combining data from various line-of-businesses to construct key performance indicator (KPI) was missing. In-depth exploration, historical trend analysis and cross business impact analysis were also absent.
- **Lack of Data Access Software:** There was no common standard for analysis and reporting software. Translink / Coast Mountain Bus Company users relied on subject matter experts and spreadsheets for information. This presented obstacles for effective information sharing in terms of format and accessibility.
- **Additional Data Requirements:** Many steering committee participants identified a need for more data than what was collected.

A high-quality, reliable, integrated information system was needed to support Translink / Coast Mountain Bus Company's long and short-term decision-making process. Translink / Coast Mountain Bus Company's information users presented a need for consolidated data store that could provide Translink / Coast Mountain Bus Company with 360-degree business insight.

This contributed to the Enterprise Data Warehouse (EDW) strategy, that was outlined in the Request for Proposal documentation and was distributed to selected vendors for implementation.

The Solution

Translink / Coast Mountain Bus Company not only needed a trusted partner, but also a solution provider with expertise and presence in the Business Intelligence market place.

Because of a proven and excellent Business Intelligence track record, Fujitsu Consulting was selected to provide a complete end-to-end solution. Fujitsu was responsible for building and implementing the entire Enterprise Data Warehouse (EDW) solution. The first phase of the solution consisted of four data marts covering four key business segment of Translink / Coast Mountain Bus Company.

The EDW solution was built using the Fujitsu Macroscopic® methodology. Macroscopic manages the project solution with clear-cut scope, goals and deliverables. The methodology was used to create the architectural blue print that structured the solution in to sub-systems, each consisting of well-defined functions that encapsulate unit tasks such as the extraction, transformation and loading (ETL), on-line analytical processing (OLAP), Metadata and report packages. Using Fujitsu proven Data Warehousing and Business Intelligence (DW / BI) practices, risks were identified and mitigation strategies were crafted at a very early stage.

Fujitsu was also tasked with production infrastructure set-up, configuration management and project rollouts. The following technologies were used as part of the solution:

- SQL Server 2005: Microsoft's next generation database technology
- SQL Server Integration Services (SSIS): SSIS is Microsoft solution for organizations to automate the ETL of data into the database from disparate sources
- Erwin 4.1: Computer Associates' Data Modeling tool
- Congos 7: Used for OLAP and reporting
- Hardware: IBM H-40 blade servers
- Storage: Two terabyte FC disk IBM TotalStorage SAN

Selection of these technologies was the result of a combined Fujitsu and Translink / Coast Mountain Bus Company effort.

The project started in October 2005 and time frame for the delivery was approximately nine months. A team of six Fujitsu developers was assembled to complete the mission. The biggest risk and downside at that time was that SQL Server 2005 was still in beta release and the team was new to the product. Not only did the team need to learn how to use the tool on the job but it also had to provide an enterprise class solution acceptable to the customer as per the service level agreement.

"All team members were seasonal DW / BI practitioners with strong implementation experience so it didn't take the team much time to master the new tools and hit the ground running" says Harman Brar, Lead Architect, Fujitsu Consulting. "Fujitsu BI / DW design patterns were easily transformed into selected tool set. We mainly used built-in components provided by SSIS and wherever there were gaps we used .NET scripts and in some case we also built our own custom components."

The solution was built using a federated data mart architecture that allows data marts to be plugged in to a common data bus as they are developed. This provided a very flexible and scalable environment that was easily extended into other business areas.

Data from 14 different source systems on multiple platforms (Oracle, Sybase, SQL Server, PeopleSoft, Decision Stream, spreadsheets, flat files etc.) was used to load the EDW. Loading data from so many source systems brought loading, integrating and scheduling challenges. Detailed quality processes were put in place for consistency and accuracy purposes. The end result over a period of nine months was a robust enterprise data warehouse solution consisting of 250 staging tables, 30 fact, 45 dimensions, 30 cubes and nine reports for four data marts that answer critical business questions.

The production infrastructure hosting EDW solution consists of three H-40 IBM blade servers one for data warehouse, one for OLAP and one for report server, all connected to dedicated fibre channel SAN array of two terabytes.

Benefits

Translink / Coast Mountain Bus Company gained much needed visibility soon after the data marts went into production. Labour cost data mart was the first one to go into production followed by the safety management datamart, the fleet management data mart and finally the revenue tracking datamart. Key benefits included:

- The labour department can now produce actual cost of salary / wages, benefits and entitlements for all employees. This gives them informative edge during union negotiations.
- Corporate safety can now identify the root cause of all accidents, assaults, incidents and claims which in turn help the department produce preventive measures to address key vulnerabilities and better risk management.
- Fleet Management now has a tool to compare and analyze labour consumption and material consumption within fleets. Understanding this information helps managing material and labour effectively. The data mart provides the ability to compare actual work orders with the work plan thereby enhancing the planning capability. Analysis of root causes of faults and oil samples enable scheduling of work before the vehicles actually breakdown; thereby reducing unplanned work orders. It also provides the ability to see which parts are in stock, depleted and / or have been ordered. This helps the department understand inventory levels and determine vendor performance.
- Revenue tracking helped produce key revenue figures for buses and trains categorized by sales channel such as dealers, employer-pass programs and students' university passes. It has also helped generate meaningful consumers travelling trends, rush hours scenarios and most profitable travel routes.

The increased user ability to detect useful intelligent trends and patterns through slice-and-dice proved the viability of the EDW solution and convinced upper management to broaden their commitment. "EDW solution gave business users a one-stop solution for all their analytical and reporting needs. At the end, Fujitsu delivered what they promised", says Roland Chan, Manager Enterprise Data, Translink / Coast Mountain Bus Company.

Translink / Coast Mountain Bus Company is currently engaged in the EDW solution through EDW phase-II with the help of Fujitsu Consulting.

About Fujitsu Consulting

A trusted provider of management and technology consulting to business and government, Fujitsu Consulting is the North American consulting and services arm of the \$40.6-billion Fujitsu group. Fujitsu Consulting integrates the core expertise of the Fujitsu companies and its partners to deliver complete solutions in the areas of enterprise information management, packaged application implementation, legacy systems modernization, IT governance, managed services and business process services. Through its full range of IT consulting, implementation and management services and its industry-recognized strategic approach, MacroScope®, Fujitsu Consulting enables clients to build more value into their IT investments and drive their leadership in the marketplace.

We work with you to create solutions and produce results that drive your business.

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