Burlington Northern

CASE 1, CIS 410-50 FALL 2019

RYNE WICK

Executive Summary

Burlington Northern Railroad (BN) is considering investing in a new technology system called ARES (Advanced Railroad Electronics System). The $350m project would drastically change railroad operations and would impact nearly all parts of BN. ARES has been though a 9 year development cycle since it was originally proposed by the company and many executives still question the feasibility of the new program. Based on the information given it is recommended that BN partially implement the ARES system at current time. Specifically, BN should focus in development and implementation of the Scheduling Programs. This modular implementation will allow BN to begin to recoup its investment in the ARES program sooner while being able to implement quality systems.

Industry Competition Analysis

Burlington Northern Mission

BN is a railroad company operating primarily in the northwestern and central parts of the United States. It has corporate headquarters in Fort Worth, Texas, operations headquarters in Overland Park, Kansas, and other corporate functions located in St. Paul, Minnesota. BN's primary goal is to provide customers with low cost, high volume transportation of goods on a reliable cycle time. BN is one of the largest and most reliable rail companies in the United States with a vast network of rails transporting goods throughout the central part of the U.S.

Burlington Northern Strategy

BN is committed to making investments in current railroad technology in order to reduce cycle time and improve reliability for its customers with reducing costs. BN has 7 major business segments including: Coal, Agricultural (Primarily grain), Industrial products (Chemicals,

Metals), Intermodal (Truck trailers and Marine containers), Forest products (Lumber, Pulp Paper), Food and Consumer, and Automotive (Finished vehicles). Of these segments coal and grain shipments comprise BN top 2 income earners with coal comfortably on the top of revenue generating segments with over $1.5b in revenue in 1989.

Burlington Northern Organizational Structure

BN has a centralized organizational structure headed by CEO Jerry Grinstein and COO Bill Greenwood.

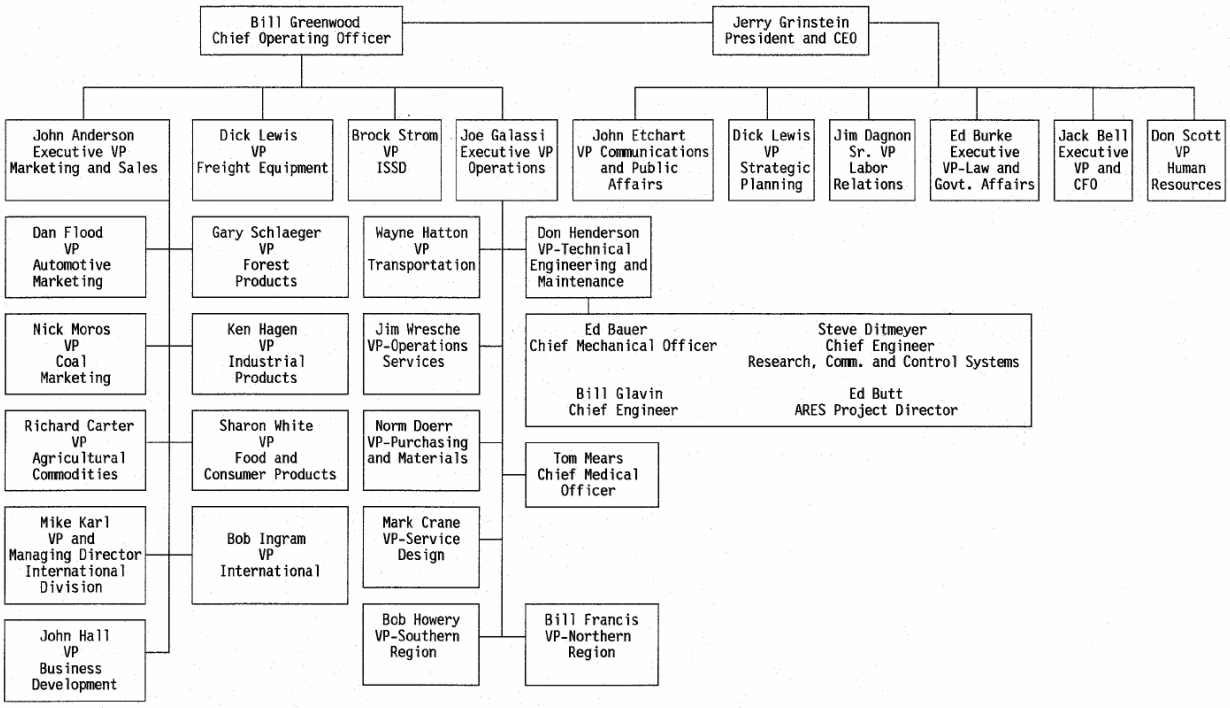

Figure 1 BN Org Chart

BN Competitors

BN primary competition is Union-Pacific (UP) who has made a number or investments in its infrastructure over the recent years including double track rails and new energy efficient locomotives. With UPs expansion it is speculated that it has excess capacity on its coal rail lines whereas BN is running at or near capacity on its single rail lines. The rail transportation market

has few competitors with UP and BN being the primary leaders in the market and the only companies with a large presence in the Western U.S.

Supplier Power

BN has relatively few buyers in its top segments. In particular over 90% of the coal is hauls come from the Powder River Basin of Montana and Wyoming. BN has invested heavily in the region to serve the Powder River Basin and sees its low-sulfur coal as a major growth area in the coming years. Coal is contracts are generally long term. Grain customers are primarily those located in the Midwest and Great Plains of the U.S. and its customers are very price sensitive. Due to the random nature of grain and fluctuating demand long term grain contracts are uncommon. BN also sees grain as a potential market for growth in the future.

Buyer Power

BN primary coal buyers are energy utility companies who in most markets operate as a natural monopoly. This means that there are few buyers for BN to sell to domestically. BN is looking to expand delivers to western ports to service coal sales to international markets like Japan and other Pacific Rim countries. Grain buyers are highly price and time sensitive which makes in substantially different than the coal market. Because of this Buyers look for low-cost and on time delivery of grain shipments and are likely to choose switch if their needs aren't met.

Threat of Substitution

BN primary threat of substitution comes in the form of the highway trucking business. Trucks offer reliable, and short cycle time deliveries of goods. This comes at a higher cost than a train delivery but customers are will to pay for the shortened delivery time and door to door service that trucks provide. However, trucks are not a primary competition for coal and grain shipments are these goods are extremely heavy, high volume, and have low time sensitivity .This means

that BN primary competition in the trucking space is for industrial products, food, consumer, and automotive products. BNs peak on time delivery for goods is 75% for general merchandise and 80% for intermodal. However the trucking industry has an on-time delivery rate between 90% and 95% which makes it the preferred method for just-in-time service. If BN can reduce its cycle time, improve reliability, and keep costs low it has the ability to carve out a segment of the market for Just-in-time service now served by the trucking industry.

Threat of New Entry

The railroad industry has high barriers to entry in terms of capital expenditures, government regulations, and economies of scale. These factors are the reason there are so few direct competitors in the market which most areas have no more than 2 railroad companies operating in them at any time. Costs of equipment and railroad infrastructure are very high. It is very difficult to obtain proper licenses to operate railroads from the government. In order to be profitable railroads must ship large quantities of goods at low prices. Consumers will not pay top dollar for a slower service when other faster methods exist. Because of this the threat of new entry is very weak.

The Problem

Currently BN employs a network of dispatchers to who manage territories of trains using technology developed around 1920. Dispatchers are often 20 to 30 trains operating in their territory and spend considerable time just attempting to establish communications between trains and maintenance crews. This leads to maintenance crews missing their small windows to do rail maintenance because they are unable to get in contact with dispatchers. BN notes that dispatchers are only able to effective expedite 5 to 7 trains which means remaining trains will

have less time and attention dedicated to them. This could also mean that a train behind schedule may go unnoticed by a dispatcher. Also dispatchers cannot see any information about territories outside of their own meaning if a train had slack to make up for a delay further down the line a dispatcher would have no information about it.

Stakeholders

BN Employees: All employees but especially those most affected by ARES. Including dispatchers, Maintenance crews, and conductors

BN Customers: All customers but especially those who would greatly benefit from improved reliability and cycle time such a Coal, Grain, and Industrial products.

BN Shareholders: Any other invested party with a monetary stake in BN as a business.

Solutions

Fully develop and implement ARES

This solution would push the upfront costs of ARES to their full amount and would roll out all related systems of ARES at the same time. This implementation of ARES has the largest capital expenditure cost estimated a $350m. The impacts of stakeholders would likely be long term reduction of dispatchers as the ARES system would eliminate most of the busy work that required a high number of dispatchers to manage effectively. It would also improve the safety of maintenance crews who would more effectively be able to work on rail tracks.

Partial implementation of ARES

This solution would immediately develop and implement the Scheduling programs which include two modules: the Strategic Traffic Planner (STP) and the Tactical Traffic (or Meet and

Pass) Planner. These two modules provide the most upfront benefit to improving BNs network efficiency will allowing for other less developed modules like the Energy Management System (EMS) and Locomotive Analysis and Reporting System (LARS) the time and data they need to be properly developed.

Do Nothing

This option leaves BN much as it is now. It would likely continue on its current track and may lose ground to rival UP and substitute industries like trucking. The likely long term impact of this decision will be lost profitability and market share as other companies continue to innovate.

Proposed Solution

Based on the information presented in this case I believe that the Partial Implementation Solution is the best fit for BN. This solution will have the same $80m in infrastructure costs that the first solution calls for but spreads out software development costs over a longer period of time so the upfront costs would be less impactful. This solution also allows BN so gather more accurate data for the development of EMS and LARS as previous testing or information was unable to provide reliable data on how these systems should be developed. The added benefit of implementing the scheduling programs now would be the quicker iteration of algorithms that govern the scheduling programs. With the new highly accurate data developers can further implement changes to these programs to make them more efficient as time goes on. This solution would immediately improve cycle time and reduce long term cost of shipping for BN and give its customers more reliability and control over their shipments.

Works Cited

Hertenstein, Julie H., and Robert S. Kaplan. “Burlington Northern: The ARES Decision (A).” Harvard Business School Case 191-122. Feb. 1991.

Tanwar, Ritika. “Porter’s Generic Competitive Strategies.” *IOSR Journal of Business and Management* 15.1 (2013): 11–17. Web.

Kalakota, Ravi, and Marcia Robinson. *E-Business 2.0: Roadmap for Success*. 2nd ed. Boston, MA: Addison-Wesley Educational Publishers, 2000. Book.

Morgan, Gareth. *Images of Organization: International Version*. Thousand Oaks, CA: SAGE Publications, 1997. Print.

Goldratt, Eliyahu M, Jeff Cox, and David Whitford. *The Goal: A Process of Ongoing Improvement*. 3rd ed. Aldershot: Gower Publishing, 2004. Print.