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Case Analysis for Burlington Northern

In the late 1980s through the 1990s, rail freight was in need of an overhaul in planning and controlling their railways. After deregulation of both the rail and trucking industries in the 1980s, trucking industries saw a dramatic rate drop that made it harder for rail companies to compete. Railroad rates also dropped which caused fierce competition between rail companies. Burlington Northern sends lots of time-insensitive commodities on its railways, but with the increase in demand for just-in-time delivery, need to increase their ability to plan and control rail cars.

As a result of four different railroad companies being merged into one Burlington Northern, the company has a significant advantage as they own a vast rail network spanning the gulf states, Midwest, and Pacific Northwest, along with natural resources such as minerals, lumber, oil, and gas. Because of the size of their operation, the frequent need for commodities, and the lower costs than trucking, Burlington Northern can appeal to manufacturers who frequently need commodities to create other products. This focus on low cost means that while Burlington Northern is limited in what it can cheaply ship it does so for a lower cost than their competitors.

As it stands, Burlington Northern's mission is to deliver commodities at a low price. They are able to accomplish this with heavy, low-cost, time-insensitive commodities that come in large lots such as coal, grain, and agricultural, automotive, and industrial products. Coal is a

good example as it is a heavy, low-cost product that utility companies predictably need delivered. However, they are never time sensitive to receiving the product. These companies already keep a reserve, so when a rail car arrives it simply adds to the existing pile of coal the utility already has.

For companies that can wait for a delivery to arrive, rail has been a low-cost option. However, the rise in demand for just-in-time delivery has made trucking more competitive than rail. Even though shipping items by truck is more expensive than rail, they have two distinct advantages: being able to deliver door-to-door and achieving a 90 – 95% on time rate. In comparison, rail cars peaked at 75 – 80 % on time rate. Rail dispatchers were still using technology built in the 1920s. There was no information sharing between "territories", and it was difficult to obtain information about current operations.

Because the environment in which the rail companies operate have changed, such as an increase in trucking or demand for timely deliveries, companies such as Burlington Northern must make adaptations to their strategy to address the changing environment. The R&D department at Burlington Northern recognized this and began working with an outside company, Rockwell International, to see if aircraft technology could also be used in the railroad industry. They began working on system known as ARES.

In a nutshell, ARES is air traffic control software for trains. They helped install GPS systems onto trains that could calculate their position within a hundred feet rather than the 10 – 15-mile guess of the current system Burlington Northern has. They also added the ability to communicate and control locomotives. As this project began to grow in scope, so did the number of stakeholders that were involved in the project.

What started as a research project grew into a large project requiring input from operational departments such as dispatching, mechanical, maintenance, control systems/communications, freight car management, and information system services. As the research and concept validation of this project grew over time, the shareholders will continue to grow as well. Research into ARES began in 1982, and by 1990 the ARES team believed their system could provide better service along with reducing costs and improving asset utilization. The team at this point wanted to begin a full roll out of the system throughout the railroad, requiring a capital investment of roughly $350 million dollars.

Senior executives began to evaluate the work of the ARES team to determine whether or not to authorize this project to begin a system-wide rollout. However, over the course of 8 – 9 years, there had been many organizational changes at Burlington Northern, and the majority of executives currently with the company were not present with work on ARES first began or when they started the real-world trial using the Iron Range, a closed-loop portion of Burlington Northern's network.

Burlington Northern has several decisions it could make regarding the situation. One option is the company could do nothing. In 1990, Burlington Northern ran approximately 800 trains and logged 200,000 miles daily across the 23,356 miles of track they owned. Another option is to implement the ARES project with either all of the features developed or by implementing the ones most beneficial to company. A third option is for the company to wait for either ARES or ATCS (a competing system roughly 5 years behind in development) to mature and be adopted by other companies before Burlington Northern decides to do a full implementation.

Burlington Northern should make the capital investment and adopt the ARES system now. There are many reasons to make the investment, such as gaining a first mover advantage, increased safety, lower operating costs, and more. The company should avoid doing nothing as it has already invested $15 million into the project and has the system running on their Iron Range already. Burlington Northern should avoiding waiting as well as it could give a first-mover advantage to another company.

Burlington Northern had already invested roughly $15 million into ARES, and Rockwell International is estimated to have invested $45 million into the system. Since the company already has invested a large sum of money and almost a decade into this project, along with partially implementing the project on a portion of their railroad, it makes sense to continue investing and implementing ARES rather than abandoning it. Doing nothing would have little to no impact on the primary workers on the railroads.

Because dispatchers, mechanics, freight car managers, etc. all hold jobs that Morgan calls "fragmented and highly specialized duties in accordance with an elaborate system or work design and performance evaluation" (Morgan 24), their daily jobs would see no changes as a result of Burlington Northern electing to do nothing. They would still be using the same equipment from the 1920s, dealing with poor timeliness rates, and having more maintenance issues with locomotives. For other shareholders such as the executives, they could see profits continue to trend downwards as competitors such as trucking companies can beat not only on quality, but like Goldratt dealt with in *The Goal,* also on "price and deliveries" (Goldratt 18). The company would also continue to deal with its current issues such as high capital intensity, poor utilization of stock, and low asset turnover ratios. Although in the railroad industry their numbers are fairly good, they could still be much higher.

Burlington Northern should also not choose to wait for another company to implement ARES or ATCS first before electing to do so themselves. The company would lose their first-mover advantage, which would give them the opportunity to increase their efficiencies and safety mover advantaged by waiting to do it before someone else does. Although there is an upfront cost associated with implanting ARES, there is lower risk of an issue occurring as the prototypes have already worked successfully. Analysis has shown that customers would be willing to pay more for having increased service reliability of up to 6%, which for a company that had $243 million in income in 1989 could potentially earn an additional $14.6 million in the first year alone. Reductions in fuel costs, labors, maintenance, and preventative costs could save over $618 million in present value benefits.

Waiting to implement ARES could impact the daily workers by increasing their odds of an accident and causing disappointments. It was determined that ARES can reduce incidents or collisions by two magnitudes as it requires a failure from both a human user and the software. Not only would implementing ARES save the company money on property damage from collisions, but also the costs of human life or delayed shipping times. According to Morgan, assembly-line work, or any work where you are doing a repetitive task for hours on end "is simply boring or alienating" (Morgan 25). Having bored employees makes it more likely for them to have a mistake and having ARES as a backup can prevent those fatal mistakes from happening.

Waiting would also cause disappointments to union leaders who loved ARES and are eagerly ready to adopt it. They acknowledged that safety was a large piece of wanting ARES and can also make their job easier while also more important, especially for engineers. This helps improve an employee's work performance and sense of self-worth. According to Morgan, those

who have jobs where a company is like a machine often "encourages many organizational members to adopt mindless, unquestioning attitudes such as 'it's not my job to worry about that'" (Morgan 29). If an engineer feels that their job is more important, they'll be more likely to take concern with an address an issue rather than simply dismissing it because their small job component doesn't tell them how to handle it or because "it also lets them know what is *not* expected of them" (Morgan 29). Also, the bureaucracy of repetitive jobs by mechanizing "almost every aspect of human life" can "erode the human spirit and capacity for spontaneous actions" (Morgan 17).

The best case for Burlington Northern is to implement ARES. The system will increase the safety of the company's employees, increase the on-time percentage, and lower labor costs. Morgan emphasized the "importance of planning and an appropriate division of labor" (Morgan 17). Since ARES allows for better scheduling of trains and introduces some automation, the system can both plan and properly determine how much labor will be needed on a given day across all the shareholders.

Works Cited

Goldratt, Eliyahu M. and Jeff Cox. *The Goal*. The North River Press, 2014.

Morgan, Gareth. *Images of Organization*. n.d.