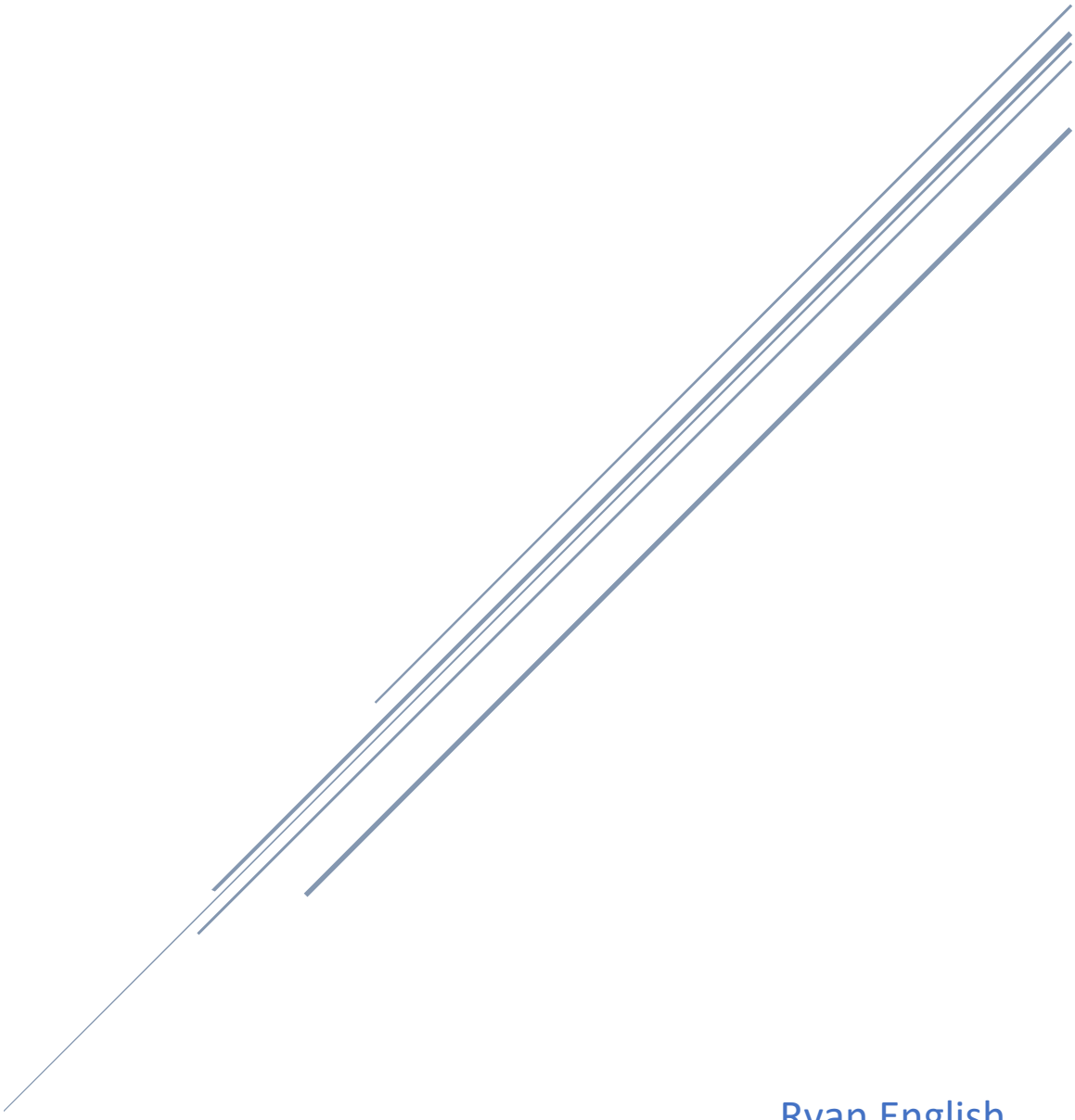
CASE ONE

Burlington Northern ARES Case



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Introduction

Should Burlington Northern invest $350 million in the Advanced Railroad Electronics System (referred to as ARES), or an alternative solution, to remedy the current issues facing the company? This document will provide an in-depth analysis of the issues facing Burlington Northern and how ARES will provide an ample solution to these issue. In conjunction, this document will analyze alternative solutions the company could take; and then finally provide any final recommendations for Burlington Northern.

Executive Summary

Burlington Northern, a conglomerate formed in 1970, through research and development, devised a technology dubbed the ARES project. ARES, built on technology from the airline industry, was developed in order to combat five key issues Burlington Northern: Train dispatchers limited range of scope, difficulty of train maintenance, abundance of train *meet-and-passes*, propagating effect of train delays, and manual data tracking. ARES remedied these issues by providing three categorical technologies to the current railroad system: Control, Data, and Vehicle. With the combination of these segment ARES drastically increases the utilization and safety of dispatchers and maintenance-of-way crews. Higher utilization of the dispatchers decreases the chance of trains meeting and passing throughout the route; and higher utilization of maintenance-of-way crews increases the actuality of completing necessary maintenance on trains and decreases wasted efforts.

It is recommended that Burlington Northern implement the ARES project a segmented territory at a time, based on the bottleneck status of the territory. By segmenting the implementation this allows Burlington Northern to remedy the problem areas for largest benefit to decrease the margins of meeting time quotas with customers. Once a segmented territory implements ARES, Burlington Northern can reevaluate the bottleneck status of its territories; and determine if it is necessary to continue implementation.

Implementing ARES is projected to increase revenue of Burlington Northern by $618 million (present value); but also has a non-monetary benefit of increasing utilization and safety of dispatchers and maintenance-of-way crews creating a better work environment and motivated employees. Other solutions offer remedies to the issues facing Burlington Northern, but lack the additional benefits.

Organizational Issues

Train dispatchers limited range of scope

Dispatchers are sectioned off into territories throughout the railroad system. As trains enter a dispatcher's territory it becomes their train, until it moves on to the next territory. Dispatchers have no field of view outside their territories. Dispatchers must make decisions based on the limited information of their territory; this ends up causing meet-and-passes due to trains with delayed schedules, and higher priority cargo, needing to get around the lesser train.

Difficulty of train maintenance

In order for engineers to determine if a train is in need of maintenance the train must be halted. The meters are placed on the outside of the train. This is highly inconvenient for a company in transportation of goods; especially one that suffers propagation of delayed schedules.

Once maintenance is needed maintenance-of-way crews are sent to a location on the route and wait for instruction from the territories dispatcher to determine if the route will be clear for enough time for the crews to complete maintenance. This necessary communication causes maintenance-of-way crews to travel distances only to determine they will not have enough time to complete operations.

Abundance of train "meet-and-pass"

Not all trains are created equal. Burlington Northern has a ranking, based on revenue, of different customers. If a coal train is facing huge delays in their path and they meet a food train, the food train will come to a full stop and allow the coal train to pass, creating what Burlington Northern deems a

meet-and-pass. These meet-and-passes are a tremendous waste of resources and Burlington Northern estimates that dispatchers allow 10,000 meet-and-passes per day.

Propagating effect of train delays

As previously mentioned, dispatchers only have scope of their current territories. If a trains schedule becomes derailed this affects all the trains within the same route. Dispatchers attempt to mitigate the issue by increasing the speed and utilizing meet-and-passes but due to their nature, once a schedule is delayed the damage is done. The customer may still receive their shipment in ample time; but not without costing the Burlington Northern.

Manual data tracking

When trains enter the territory of a dispatcher their arrival is noted in the system manually by the dispatcher; if this dispatcher is currently busy or caught working other issues a 12 o'clock train arrival might not be entered until 12:30, causing the dispatcher in the previous territory to be unaware of the trains current position. When dispatchers lack the current information, it leads them to make uneducated guesses on the optimal path for trains to take.

Recommended Solution

Sectional implementation of ARES

Due to ARES being neccessary to continue cost leadership amongst the railroad industry, it is recommended that Burlington Northern implement ARES in stages. ARES, with its three segments Control, Data, and Vehicle, can mitigate most of the issues currently facing Burlington Northern; by increasing the throughput of its dispatchers and maintenance-of-way crews.

Implementing ARES into a territory increases the throughput of that territory in two distinct ways. One: The dispatchers will have current data, provided by the Control segment of ARES, in regards to trains speed, path, and schedule. This improved data will allow dispatchers to make more educated and affective decisions about routing trains and maintenance-of-way crews. This will increase the effectiveness of train maintenance and decrease the amount of meet-and-passes.

On the other hand; the Vehicle segment, will provide train engineers with a better snapshot of their trains current maintenance situation without having to stop the train and transporting its cargo. This allows for the engineers to be more proactive; rather than reactive to the maintenance of their trains, increasing the effectiveness of transportation.

In order for implementation to go as smoothly as possible, it is recommended that Burlington Northern segment territories based on bottleneck status and elevate the bottleneck by implementing ARES. Goldratt defines a bottleneck as “any resource whose capacity is equal to or less than the demand placed upon it.” (Goldratt, *The Goal*) In this case; the dispatchers themselves are the bottlenecks of the system; the demand of each dispatcher is around 20 trains, but their capacity hovers around 7 trains. Determining which territories put the most strain on their dispatchers will allow Burlington Northern to be effective with implementation. Once implemented in a territory, Burlington Northern can reevaluate the bottlenecks and continue implementation as needed. (See Goldratt’s “*Five Focusing Steps*”).

Once implemented to the necessary extent Burlington Northern will notice many of the issues listed above have been mitigated and will project an increase in revenue of $618 million. Burlington Northern will face resistance to change from current employees and must over the proper channels to unfreeze and refreeze their employees. “A detailed action plan has to be prepared using project management technique to successfully implement the solution” (Gupta).

Alternative Solutions

Continue Operations as is

One solution to the problems facing Burlington Northern is complete operations as is; without implementing ARES or any alternative. This solution would allow for Burlington Northern to continue focusing on providing cost leadership for the train industry by optimizing current company operations. Currently Burlington Northern sees the most profit per transportation in their intermodal customers; with an additional focus on increasing utilization Burlington Northern can increase customer relations.

This solution is not recommended, however, due to the changing market. When *Staggers Rail Act* was introduced Burlington Northern began to get heavy competition from other railroad companies due to the deregulation of costs on railroad transportation. With regulation playing a part in operations; it is better to be ahead of the curve.

Wait for competitor to implement technology

One of the board of directors recommended that Burlington Northern wait for a competitor to implement ARES like technology into their routes. This is not recommended. If Burlington Northern waits for a competitor, like Union Pacific, to implement ARES than Burlington Northern will be playing catch up, potentially loosing many customers in the process.

Burlington Northern leads the competition with a low cost, just in time transportation service. When Union Pacific implements technology that will lower the cost and decrease the margins of JIT

transportation, then many customers will move from Burlington to Union. Then, once satisfied the bugs have been worked out, Burlington Northern will implement the technology causing the company to undergo change; but the damage will already be done.

"Many industries have seen changes in the dominance of the market leaders as new entrants and technology alter the dynamics of the market." (Porter) The entry to market on the railroad system is much to high; but Burlington Northern is susceptible to new technologies shrinking their market share, thus making it not ideal for Union Pacific to be first to market.

Better employee compensation

The current system of meeting quotas falls on the shoulders of dispatchers. Burlington Northern can increase the benefits granted to dispatchers if quotas are met with customers. This solution is not recommended. It is a "band-aid" solution that would only better the processes Burlington Northern has in place; but will only cap to a certain amount.

Full Scale Implementation of ARES

Similarly, to the recommended solution, Burlington Northern can implement the ARES system full scale all at once. This not recommended. Change for a company is not an easy feat, and due to Burlington Northern territorial distance, such change could cause the entire system to halt. The cost to benefit ratio is just not enough to warrant a full-scale implementation.

Citations

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