

Burlington Northern is an American based railway company that is looking into the idea of purchasing a new operating system that will allow them to increase efficiency and cut operating expenses for their company. The operating system, known as the ARES Project, was first considered in 1982 when Burlington Northern contacted the Collins Air Transport Division of Rockwell International and enquired on if their aircraft technology could have any uses in the rail industry. Since then Burlington Northern has spent approximately \$15 million on testing and developing the Ares Project on a small portion of their rail systems. However, since the beginning of the ARES project and first demonstrations the company has seen four different CEO's and the only remaining member of the original ARES project is the current chairman. Because of this not many people in the position to make the decision of what they should do are fully aware of why they are implementing this project in the first place. Regardless, the company currently faces the decision of whether they would like to roll-out the ARES project on their entire rail system, cancel the project entirely, or further test it.

One of the main considerations the company has would be outside forces that may impact or be impacted by this decision. The easiest way to categorize these would be through Porter's Five Forces: suppliers, customers, new entrants, substitutes, and intra-industry competition. (Team FME, 6) Currently speaking the suppliers in this situation would be the Collins Air Transport Division and their technology advancements with aircraft. They are supplying Burlington Northern with the technology that they can then further develop for their own rail systems. While they are not entirely involved with the ARES project they are the initial suppliers of the technology that Burlington Northern is further developing for their own systems.

The customers are the same as they have always been for Burlington Northern, the main difference now is that with the ARES project they are hoping customers will be able to charge for the better service. If this is possible and customers are willing to pay for the improvement in service Burlington Northern would be able to justify the price of the new system much easier. However, if not and customers are not willing to pay more for it than Burlington Northern will still benefit through an improvement in things such as delivery times (allowing for more shipments) and in fuel efficiency. However, it was mentioned in the case report that due to inefficiencies with how they recorded train arrival and departure times it was not hard for a train to become off schedule and mess up other shipments. Due to this it is plausible that customers may be willing to pay more simply for more accurate shipping times regardless of if those shipments need people there to unload or not.

The Five Forces talks discusses how new entrants into industries are usually faced with an entry barrier. (Team FME, 18) However, in this case the new entrants would also be the suppliers for Burlington Northern. Since they are planning to take technology designed for planes and integrate it with rail systems with the help of the Rockwell International's Air Transport Division a new entrant into their industry would be Rockwell International. It is understandable to think that Rockwell International could become a possible competitor to Burlington Northern as well if they decide to create their own systems for better railway regulation while Burlington Northern is working on their own system in the ARES project and due to Burlington Northern having contacted them about the possibility it is not out of the question.

As far as intra-industry competition that Burlington Northern faces, their main concern would have to be other railroad systems. In the case report Burlington Northern goes out of their way to mention Union Pacific as one of their main competitors. It is known by Burlington Northern that Union Pacific has invested significantly in new technology and equipment that has led Burlington Management to believe that Union Pacific has excess capacity which could allow for more shipments and sales. Burlington Northern, who were operating close to capacity, did not have the luxury of doing such a thing. It is because of these advancements in technology that we can confirm Union Pacific as an intra-industry competitor because they are forcing the competition (Burlington Northern) to innovate their systems in order to stay a strong competitor in the industry. (Team FME, 11) Lastly, the possible substitutes (and therefore competition) they face in their industry would be the truck and air delivery companies such as UPS who can promise much faster shipping but at lower quantities.

A vast majority of the stakeholders involved with this decision were mentioned previously as one of the five forces. The most obvious stakeholders in this scenario are the employees of Burlington Northern but they can be split into three different groups. Burlington Northern's management holds a stake in this decision because they are the main decision makers and if it pays off it will make the company a lot of money but if it does not they will have simply blown \$325 million to implement an ineffective system. The other Burlington Northern stakeholders would be the operations based employees which can be split into two different groups: members of maintenance of way crews, and basic operations employees such as conductors or dispatchers. The competitors of the company are also stakeholders involved with this decision. Currently Union Pacific seems to have an upper hand with their advanced

technology and (assumed) excess capacity. Another competitive stakeholder is also a substitute to Burlington Northern's rail delivery systems, companies such as UPS, who specialize in air and land transport. The final two stakeholders we will discuss are the customers themselves, who are the intended beneficiaries of the ARES project, and Rockwell international who holds a stake as suppliers of the technology.

There are four different decisions that Burlington Northern could make. As mentioned before, the company could decide to follow through and fully implement the ARES project, they could decide to slowly roll out the project in phases to ensure it will be a success before completely implementing the system on their railways, or they could continue testing the project in the closed loop they are operating on, and finally, they could end the project and not implement the new software.

If they were to decide to implement the project they would have to invest approximately \$350 million to implement the system on their entire rail system. If done this way the management of Burlington Northern would have to fully trust that the system was ready to roll out, but provided there were no major issues implementing the system it would pay off in a decrease in operating expense and possible increase in revenue. However, we learn in Goldratt's "The Goal" that a corporation must find its main constraints and then decide how to exploit or further elevate the systems constraints. (Goldratt) Currently Burlington Northern is suffering from issues with scheduling and being held back by lack of technological advancements in their systems, in implementing this program they could help to fix those issues in the system. The Maintenance of Way workers would benefit due to the improvement in communications. With an increase in GPS tracking they would be more certain of windows

they could perform repairs in and have less wait times. However, the implementation of the ARES project would not have as positive of an impact on the regular operations workers. Due to an increase in the technology and accuracy of that technology there would be less of a need for employees holding dispatching positions as they would have the added assistance of technology improvements and therefore could oversee a greater number of trains operating at a time. This would also affect the workers on the trains as well as the aid of technology would mean that less work was needed to keep the train running. This would lead to a loss of jobs for many Burlington Northern employees but in doing so would cut costs for the company as whole. Competitors would see the greatest negative effects of the implementation of the system as Burlington Northern would have found a way to cut costs and possibly even gain more business through the increase in reliability for delivery times and decrease in costs of transportation. However, competitors that fall under the substitute category of Porters Five Forces will not be so directly affected because the delivery or product will not truly diversify just be further optimized with this system. (Team FME, 20) Customers of Burlington Northern would experience better delivery times and lower costs to transport their orders. However, Burlington Northern and the ARES project team are hoping that because of this improvement customers would be willing to pay more. The final beneficiaries of the implementation of the ARES project would be the original suppliers of the technology Rockwell International. Having supplied a new company with technology to better improve their systems they could market the technology they are using and possibly develop their own version of railway system improvements that could be sold to other companies in the railway industries.

The second option involves the implementation of the ARES project in phases throughout their entire rail system. This option would benefit many of the stakeholders in the same way as before just with a delay in the full positive or negative benefits. This would benefit the Management team of Burlington Northern since they would get to see the improvements of the system before they invested the full \$350 million into the implementation. This means they would be in a better position to catch any problems as they arose and the system was implemented. As for the employees the Maintenance of Way workers would receive the same positive benefits (though slightly delayed) while the regular operation based employees would still see a possible loss of employment. The competitors of Burlington Northern would still be impacted negatively but would have more time to react and respond to the change in the market that the ARES project would bring. Customers would be impacted much in the same way as they would be if they were to invest fully up front. While Rockwell International would still be able to market their current products in a new way.

If the company were to decide to wait and continue testing the ARES project the chief officers would be able to study the ARES project in more detail and get a better idea of the benefits. While the remaining stakeholders would continue with business as usual. Since there was no implementation there would be no improvement in location systems for trains for Maintenance of Way workers and there would be no fear of job loss until the system was implemented for operations based workers. Competitors and customers would see no change in the market for them to benefit, react, or fall victim to. While the suppliers of the original system providers at Rockwell International would have no evidence that their systems could work on rail systems.

The final option is that Burlington Northern could cancel the ARES project and take the \$15 million dollars they had currently invested as leading to nothing. Management would see no increase in sales or decrease in costs as it would go on to be business as usual for Burlington Northern. Because of the business as usual outcome from the cancellation Maintenance of Way workers would see no benefits in wait times or locomotive locations and operations employees would not be at risk of losing their jobs. Competitors such as Union Pacific would still have the upper hand with better technology and fuel-efficient trains. The customers would still have the same delivery and fees as usual just with less reliability and Rockwell International will see nothing come of the technology they shared with Burlington Northern.

I would recommend for Burlington Northern to implement their new system through phases. I believe this will aid the company through a decrease in operational cost. However, we learned in another section of Goldratt's "The Goal" that cost reduction is not the only thing necessary to save a company as it is a zero-sum game. (Goldratt) This decrease in costs would be complemented by a possible increase in revenues if the customers were willing to pay more for better and more efficient delivery. It would also be complemented by the reduced risk in investment for Burlington Northern as they could react to any issues in the implementation of the system in phases instead of all at once. With these implementations done in phases Burlington Northern will be able to reap the full benefits of the system with the minimal amount of risk needed to implement the system as a whole.

Sources:

Goldratt, Eliyahu M., and Jeff Cox. *The Goal: a Process of Ongoing Improvement*. North River Press, 2014.

Team FME. *Porters Five Forces: Strategy Skills*. [www.free-management-ebooks.com](http://www.free-management-ebooks.com), 2013.