Interview with Rahul Jalali on "Union Pacific Railroad: Transforming a Fortune 200 Company Through Digital Platforms"

Sunil Wattal

Rahul Jalali
Senior Vice President, Chief Information Officer at Union Pacific Railroad

BISE: You are at the helm of technology in a company that has been around since the time of Abraham Lincoln. What is your strategic vision on how technology can transform this business?

S. Wattal (✉)
Fox School of Business, Temple University, Philadelphia, PA 19122, USA
e-mail: sunil.wattal@temple.edu

Jalali: Union Pacific (UP) is a 160-year-old company founded by Abraham Lincoln, and has remained a core supply chain partner for the whole country over these years. Technology stacks have been very beneficial as the company has gone through various stages of industrialization. During the current time, when the world is emerging from a pandemic, many established paradigms for doing business have changed. The time is right for technology enabled disruption, especially on older domains such as railroads. For example, at UP, there is a huge focus on efficiency and modern technology trends. Digital

platforms and related concepts such as product thinking, agile mindset, pervasive use of data, Artificial Intelligence are all coming together to create a service which can improve efficiency and make a meaningful difference in our customers' lives.

BISE: In your article in Forbes, you mention that "Platforms should be agile and able to connect seamlessly to ecosystems, including supply chain partners and customers." What is the role of technology platforms in this Digital Transformation journey?

Jalali: Our vision is to be a platform-based company where data flows horizontally, both across different lines of business as well as outside the company with suppliers and customers. Currently, the company is set on a divisional model defined by various product lines each serving a particular segment, and the siloed structure makes it hard to grow. Gone are the days when you can call yourself a growth company if you just stay within your boundaries and not be connected to what is surrounding your industry.

For example, as a railroad, we are a point A to point B company – we take stuff between points A and B which are terminals and railroad yards. But for us to be meaningful to our customers, we have to be connected with the ecosystem well beyond the terminal points so our customers can get visibility into their supply chain. This is especially beneficial as the world is moving towards much shorter estimated time of arrival (ETA) and lead times. We need to be able to connect across different domains through digital APIs and be integrated with the last mile and with peer industries through the use of digital platforms. These platforms should be nimble enough to ingest all kinds of data from many different processes and produce outputs can be easily consumed in a timeframe that can truly exemplify agile. In our industry, long lead times have been the norm, and therefore going to an agile mindset is going to be a game changer.

BISE: What are some examples of these platforms at Union Pacific?

Jalali: A great example of such a digital platform is our core transportation management system which will go in effect later this year. It is the central nervous system of how the railroad works and is built on a set of APIs and we have been agile in putting it into production and getting pieces of information that can start generating value. The system is handling about 5.6 billion API calls a day on this platform. The platform is designed to connect end to end customers. For example, Union Pacific can get into our customers' forecasting systems to understand demand so we can prepare our equipment in a much better way. On the back end, we are able to give tremendous amount of data and visibility to our customers based on how the goods are

moving. This creates an ecosystem connected directly via APIs such that machines can directly interface and connect with each other.

BISE: What benefits has the organization seen (or anticipates) due to digital platforms? How do you plan to quantify these benefits?

Jalali: One of the key benefits of these digital platforms is to be able to build a deep analytics engine, which will increase the efficiency of running railroads as well as enable a strategy of customer centricity. An example of metrics for efficiency is how many miles faster the trains are running. Another key benefit is that the organization will be more predictive in meeting demand rather than reactive, given the immense visibility that digital platforms bring into the ecosystem of customers and suppliers. These digital platforms will be an engine to build a completely different railroad of the future.

Talking about benefits, what matters for a railroad in the long run is whether it can effectively increase revenue of the company while running reliable and consistent services. Technology based platforms play a key role in both driving revenue, decreasing cost, as well as increasing efficiency. There is tremendous opportunity in the market since rail is the most ESG friendly mode of transport. The greater the share of total goods transported by rail, the better it is for the country. Currently, about 93% of goods are transported by road in the United States – and if Union Pacific can commit to high levels of reliability and timeliness, more and more customers will be comfortable switching to rail. Also, trains cannot provide a door to door service unlike road transport; therefore, companies such as Union Pacific need to demonstrate value by creating an efficient and connected ecosystem to provide end to end transport solutions. Digital technologies and platforms will play a huge role in this.

BISE: In transitioning from standalone software to digital platforms, how did the requisite skill sets of IT workers change? What resources did the organization provide for upskilling these employees?

Jalali: As technology stack changes, from older to cloud-based modern stacks, it is imperative for companies to upskill their technology as well as non-technology workforce. One of the things that UP is doing is hiring more mid-career professionals with experience in cloud and other digital technologies who can hit the ground running. We have also tied up with companies and local universities to create specific courses tailored for current UP employees. Other than technical knowledge, workforce in the era of digital platforms needs to adopt a growth mindset based on soft skills such as product management mindset and ability to think in terms of agile methodologies.

BISE: How does the organization balance the openness of digital platforms with privacy and security considerations?

Jalali: UP recognizes that increased connectivity, especially across companies, leads to an increase in security concerns. As more and more business moves to cloud-based platforms, principles such as zero trust architecture from a security perspective become paramount. Zero trust architecture means that there is authentication at every step on whether the user requires the information or not. Another security paradigm that the company operates on is called micro-segmentation which is to build a very strong perimeter, and even within the perimeter, there is authentication as you move from one part to the other. Finally, it is essential for an infrastructure company such as Union Pacific to collaborate with government agencies to keep abreast of security threats on the horizon.

BISE: What new technologies on the horizon excite you for the digital journey of your company? How do existing digital platforms prepare the organization to integrate future technologies?

Jalali: I am particularly excited about cybersecurity. As a 160-year-old company, we deal with technologies that are old, as well as those that are ultra-new and cloud based. One of the technologies we are exploring is cyber mesh, which is about keeping the company safe with these two bookends of old and new technologies. Another trend that is exciting is the move to cloud-based back office, cloud-based analytics, cloud-based CRM systems. This saves on the need to expand datacenters, and also be able to use new toolsets which lead to a great amount of speed to attack a real-world business problem. The company is investing in artificial intelligence, machine learning and deep leaning to take advantage of vast amounts of data created by these hyperconnected systems. It is essential to build a culture of deep analytics and deep leaning so we can run these connected platforms in a very efficient ecosystem.

Finally, I am excited about the talent at UP – they are the key to our mission of building transformative digital platforms. They have been able to achieve amazing milestones in a short time frame and are adept to change in mindset required to operate in this era of digital platforms. We see ourselves positioned to keep the company great, and help in the core mission to build America.

BISE: Thank you very much for your time, and for this highly insightful interview.