

Riders rule the rail

Platform strategies for redefining rail and mass transit



How digital technology can make rail the go-to choice for transportation

For companies and travelers alike, innovations in the rail and mass transit industries offer exciting opportunities for enhanced service, efficiency and new sources of revenue. By capitalizing on digital technologies, operators can offer richer, safer, more satisfying customer experiences as well as a more satisfying work environment for employees.

To realize this vision, operators must bring new ideas to market and need innovative technology to enable this new way of operation. A connected transportation platform is the key element that operators need to develop a deeper understanding of customer and partner needs, while getting to market faster with the kind of innovative services customers expect.

At some point, teleporters, portkeys and other fantastic fictional visions will reduce transportation to a snap of the fingers. While that time has yet to come, the travel experience is undergoing vast change that's being driven by new technologies and customer expectations, as well as out-of-the-box thinking.

It didn't take long for consumers to acclimate to the capabilities that smart, mobile devices have made possible. Forty-eight percent of smartphone users in the U.S. — and 87% in India, 67% in Brazil — “are comfortable researching, booking and planning their entire trip to a new travel destination using only a mobile device.”¹ Digital convenience has permeated our lives to such an extent that consumers expect every business and service they interact with to deliver a fast, enjoyable experience, seamlessly integrated with day-to-day activities. Companies that use rail to transport freight have growing expectations as well. Supply chains are getting leaner and moving faster, requiring transportation links to offer more services and more detailed information about the status and delivery time of goods.

This new, more connected reality presents an opportunity that rail transportation and mass transit are uniquely positioned to capitalize on. Today's travel has already moved beyond getting customers from point A to point B. Now operators can become even more deeply woven into the fabric of everyday life, delivering a richer, safer, more satisfying customer experience through multiple channels and touchpoints. New technologies offer visibility into real-time activities and keep supply chains humming smoothly. And the opportunities extend beyond customers. Operators can create a safer, more satisfying work environment for employees, offering them ways to work more efficiently and collaboratively.

So why does this matter?

The reason it matters is that in order to realize that kind of vision, rail and mass transit companies must adopt a perspective that differs from past thinking. Punctuality and safety are critical success measures, but they are considered table stakes. To stand apart, companies will need to pay attention to unfamiliar measures, such as getting

¹ Source:
Google/Phocuswright Travel Study 2017
<https://www.thinkwithgoogle.com/consumer-insights/consumer-travel-smartphone-usage/>

to market faster with new, desirable goods and services to satisfy consumer appetites for instant gratification. Disruptive companies such as Amazon, Uber, Apple, Airbnb and countless others have turned industries upside down by crafting strategies with an obsessive focus on understanding and meeting customer needs. The connected transportation platform is an enabler of the same kind of disruptive transformation in the rail industry, including passenger, freight and mass transit.

A connected transportation platform is the key element that operators need to develop a deeper understanding of customer and partner needs while getting to market faster with the kind of innovative services customers expect. Specifically, DXC Technology's Connected Transportation Platform can enable forward-looking organizations to put quality in motion, offering the agility, flexibility and speed needed to serve customers well and help businesses succeed. As competition grows, operators that demonstrate a customer-focused drive to digital leadership will prevail over those that stick to strategies based on business as usual.

Simply put, rail and mass transit have the opportunity to become so integrated with daily life that considering any other form of transport would earn a quick reply: "It's easier to go by rail or mass transit. I wouldn't take anything else."

The connected transportation platform defined

The DXC Connected Transportation Platform strategy is built on the disruptive models proven in other industries. It leverages adjacent platform business models such as the Apple Store, Amazon Shopping, Netflix and the Uber/Lyft models to establish blueprints for a connected platform business model for the transportation industry.

It is further enabled by DXC's expertise, which brings together a wide array of resources such as enterprise services, a partner ecosystem, API gateways and infrastructure delivered by scalable hybrid cloud computing and storage. The platform can incorporate external data sources, such as internet of things (IoT) sensors and geolocation data. It enables third-party access via an API portal, with software distributed through an app store (see **Figure 1**).

At the heart of a digital strategy: DXC's Connected Transportation Platform

Digital Transportation Applications



Digital Transportation Framework



Transportation components

- Passenger/retail
- Air & rail operations
- Warehousing/supply chain

Data and analytics

- Location analytics
- IML, AI & bot development
- Analytics platform
- Next-gen data platform

Transportation ecosystem

- Platform services
- Technology services
- Business services



Figure 1: DXC Connected Transportation Platform

The various elements of the platform are connected by ubiquitous, software-defined, secure digital networks. Initial functional domains under construction will address workforce optimization; maintenance, repair and overhaul; disruption management; rail operations and traffic management; and loyalty and account-based ticketing.

Digital enablement runs the gamut from deploying mobile tracking solutions to using analytics to improve fulfillment and distribution. By digitizing essential functions in the value chain, an operator can integrate data in a way that delivers value. This approach allows the company to separate out various operational pieces and adopt a strategy that embraces an outside-in approach to innovation. It enables agility and responsiveness to unforeseen occurrences, including new regulatory requirements — a necessity in today's business environment.

In a best-case scenario, tactical and operational information from external and internal sources is ingested, cleaned and validated, and then analyzed to deliver actionable business intelligence.

Quality in motion = business benefits

The features of a connected transportation platform such as this translate directly into a myriad of business benefits, beginning with the ability to develop a much broader and deeper view of customers.

An intimate portrait of customers

Innovative ideas can be successful only when they are founded on a complete understanding of customer needs and wishes. The DXC Connected Transportation Platform develops this picture, creating detailed profiles of the travelers (riders, passengers) that provide input into nearly every facet of the operation. Segmenting travelers by attributes such as preferred payment methods, frequency of travel, usual routes, time of day and countless other factors can inform operations such as train schedules and maintenance tasks. Such profiles can also serve as valuable input to marketing functions that can tailor offerings for rider loyalty, or drive traffic at other commercial venues that operate inside rail and mass transit facilities.

The seamless experience that customers crave is built on a digital, connected core that can be rapidly updated with new products and services. Multiple, mobile-friendly channels enable customers to make seamless payments and gain access to trains, simplifying the process for customers while accelerating cash flow for operators.

That same level of detail offers important advances in security for customers, the company and law enforcement agencies. Transportation companies need to focus not only on border protection but also on peripheral protection. Expanded capabilities mean having a full view of travelers before they arrive for boarding, and seeing the full journey while securing each transaction along the way. A better understanding of who purchases tickets and boards trains, buses, light rail, etc., also provides operators with an improved ability to identify individuals on watch lists and others who might create security concerns.

To the degree that an operator builds relationships with alternate modes of transportation, that same level of connectivity can be leveraged in more strategic ways. For example, location awareness of customers during their journey can be used to offer innovative new services and enable an operator to stay ahead of competitors.

Improved operations and staff productivity

The improvements in connectivity and collaboration made possible by the DXC Connected Transportation Platform offer benefits to employees and passengers alike.

Reliable communication is crucial for smooth operations and maintaining punctual service. Today's patchwork of technologies often results in missed messages that lead to delays, inefficient use of staff and unscheduled repairs. A modern digital transportation platform offers robust connectivity through multiple mobile-friendly channels that offer faster, more reliable message delivery. Improved communication enables train and mass transit drivers to communicate real-time conditions faster, engage with customers, turn around trains more quickly and schedule maintenance more effectively.

Better communication offers managers real-time updates about train positions and performance, which results in more predictable, on-time performance — a key element in keeping customers happy.

A better top line — and bottom line

On one level, digital transformation improves performance and creates efficiencies in IT infrastructure and application portfolios that drive down ongoing IT maintenance costs. But that's just half the story. Strategically, a connected transportation platform results in savings in every area of the operation.

The ability to better predict maintenance results in lower supply chain costs. Improving collaboration with inventory suppliers means that an operator is better able to plan for just-in-time inventory and can carry less inventory, with the wait time for parts from the warehouse reduced.

A seamless payment experience that offers customer convenience also results in the ability to better enforce ticketing rules, capturing events that ordinarily would be difficult to enforce, resulting in lower revenue leakage.

Improved performance at every level translates into larger, faster cash flows that, in turn, result in better numbers at the top and bottom of the financial statement.

How it works

An essential element that distinguishes a connected transportation platform from current technologies is the ability to develop an intimate, 360-degree understanding of the customer journey. Customer personas allow a platform to connect with users in a more personal way by understanding who they are, where they are, why they're traveling and what kind of experience they expect or need at that moment. The context drawn from this approach yields important, clarifying insights that guide every decision a company makes.

Understanding customer preferences, habits, usage patterns, mistakes, inconveniences and all of the elements that constitute the customer experience can be used to drive decisions about operation that result in more customers, higher satisfaction and revenue growth.

That same perspective can be applied to the partners that are part of the operator’s ecosystem. Developing strategies that help partners operate more efficiently and effectively is key to creating the kind of ecosystem that’s needed to offer a seamless customer experience. This kind of “outside-in” view is needed to make the rail and mass transit experience superior to other forms of travel, and to surpass the experience customers might have with a competing operator.

By analyzing the data captured by the platform, companies can home in on specific use cases and business problems to solve. The better business outcomes that result from these insights can differentiate an operator in the marketplace. Automation and machine learning architectures boost the possibilities in this space. And with cloud applications, the company can make these insights available wherever and whenever needed — to both customers and employees.

Part of the reason companies can’t implement new services like these is because they can’t access and leverage the necessary data. Silos still exist, and mission-critical data often resides in legacy databases. A common platform, enabled by the cloud, allows these data sources to interact and opens up the environment to third-party solutions. Differentiation comes from bridging those silos and creating new value.

Figure 2 illustrates a client use case in which rail passengers are required to purchase a surcharge if they are riding a train past a specific point on the track. From this use case, a business process flow was created and then mapped into the DXC Connected Transportation Platform by Persona, Event and Microservices. With the customer as the Persona, the major business events are: disembark train, scan ticket, settlement (if surcharge was not previously purchased). The business process flow was enhanced with optional events and microservices that may be applicable.

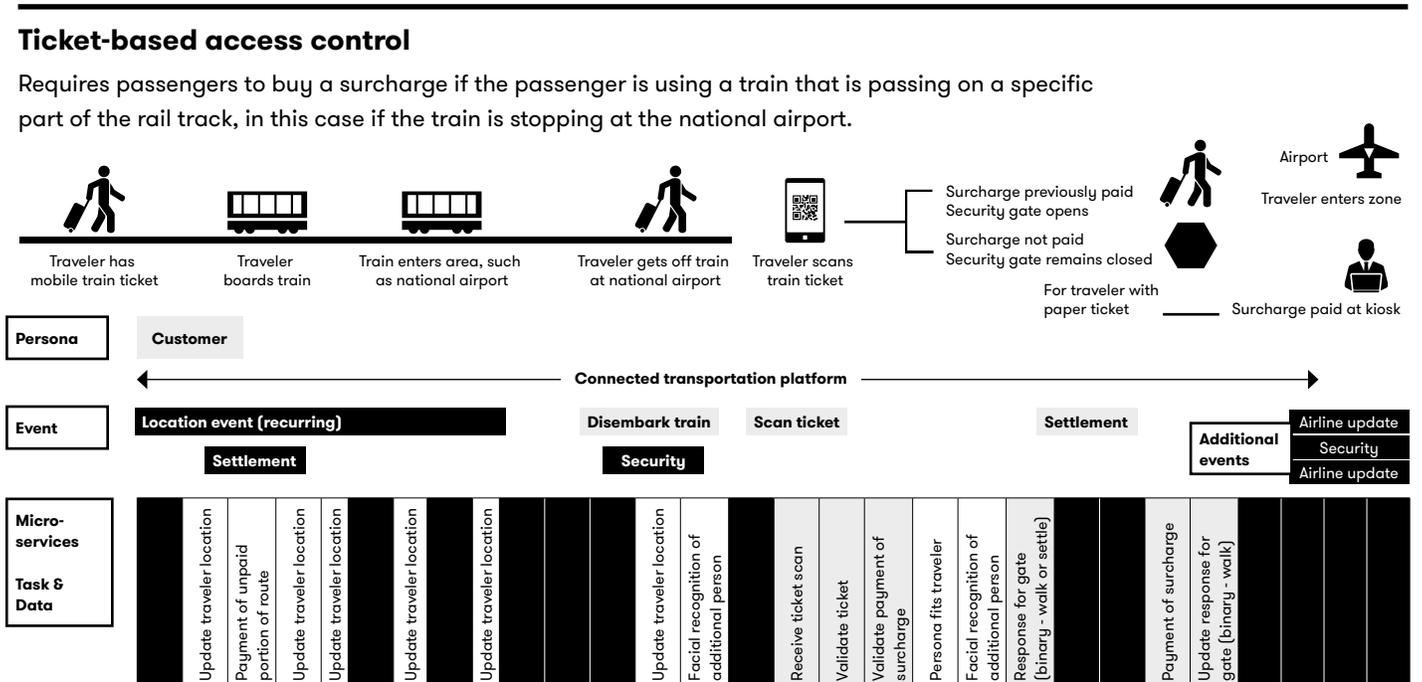


Figure 2: Ticket-based access control

Successfully getting from point A to point B

Transportation operational systems are complex, but the model for moving from a large IT estate and a broad applications portfolio to a more granular and adaptable approach is well defined. One of the most significant concepts of this approach is the conversion of applications into a collection of services.

An application is a large, complex set of computer code that is designed to perform many tasks. Applications are designed to stand alone and can be used independently of one another. While this model worked well when the number of applications was limited, it began breaking down as IT penetrated wider and deeper into the enterprise. An application that served one business unit might be duplicated, with small changes, to suit the special needs of another business unit. Concepts such as business logic and regulatory rules were often hard-coded into applications. To update the rules or change a business process, a company would need to go to the expense of modifying not just one, but every application that contained the same hard-coded logic.

Today's connected platform builds applications from a set of highly granular, single-purpose services. Each service performs one function. Services are strung together to perform a business process using the platform. So rather than building monolithic, standalone blocks of code, applications are assembled from component parts that can be swapped in or out for different business needs and processes. Where a service has been created for one process, it can be leveraged for another. The same features don't have to be developed over and over to facilitate processes in different silos in the business.

Perhaps more important, this approach eliminates the redundancy in the business that creates escalating maintenance costs and mounting inefficiencies. It speeds the process of adapting the business to changing conditions and regulations. It accelerates the speed at which old equipment can be retired, reducing the overall cost to the business. At the same time, it increases the speed at which new business features can be added.

An established roadmap

The approach we endorse and use enables clients to begin realizing benefits immediately and sets the stage for future transformation tasks.

Deploy a tethered platform. The first stage of transformation begins by tying applications in the corporate portfolio to elements of the DXC Connected Transportation Platform, using services as a mediator between the legacy portfolio and the new platform. This allows the operator to quickly adopt a new model, engage in a different experience with customers, expand the business and move fast. This is the stage at which we recommend clients begin. It is a low-risk proposition because existing applications and infrastructure remain in place, but it does not generate significant cost savings.

Begin selective migration. In the next phase, applications are carefully dissected to assess what specific services they provide. Each service is developed as a separate, discrete function and deployed in a cloud-native architecture. Data is moved out of the legacy system into an architecture that supplies the newly developed services.

Some applications continue to serve processes that weren't moved to the new architecture. This model marks an important transition toward a fully connected, digital architecture. It contains a higher degree of risk, but it also begins to deliver more significant cost savings.

Achieve full transformation. Eventually, a company on the digital journey will arrive at the point where wholesale transformation is necessary. This is the point at which core business logic is removed from all applications and converted into discrete services. At the conclusion of this stage, applications can largely be retired. This stage encompasses the conversion of applications connected to the platform to eliminate the need to build bridges between converted and legacy systems.

While the final stage represents the most significant effort and risk, it also results in the greatest business benefits: enduring cost savings, greater agility and flexibility, and faster delivery of innovative services to customers.

Destination: Digital transformation

Rail and mass transit operators face critical decisions today that will affect a company's strategic direction and long-term prospects. Today, customers drive the conversation. Companies that make the effort to adopt an outside-in, customer-focused perspective are those that stand to prosper.

Strategies that once relied on looking inward and on optimizing a company's operations are too limiting to address the scope of change that's required today. The same is true of legacy systems and application portfolios, rigid systems built on static models, designed to perform a highly defined set of tasks.

Things have changed. Today's operating environment, customer expectations and shifting regulations have simply rendered old models unworkable. The DXC Connected Transportation Platform, built on services and deployed on the cloud, offers operators the best foundation on which to build a 21st century railway — the one that becomes the go-to method of moving from place to place.

Learn more at
www.dxc.technology/travel

About DXC Technology

DXC Technology (DXC: NYSE) is the world's leading independent, end-to-end IT services company, serving nearly 6,000 private and public-sector clients from a diverse array of industries across 70 countries. The company's technology independence, global talent and extensive partner network deliver transformative digital offerings and solutions that help clients harness the power of innovation to thrive on change. DXC Technology is recognized among the best corporate citizens globally. For more information, visit www.dxc.technology.