Helping Trans Link Systems launch the world’s first nationwide, multi-modal electronic fare management system for public transportation

Trans Link Systems was established in 2002 as a private company responsible for developing and implementing a nationwide electronic ticketing and payment system for all modes of public transport in the Netherlands. The company—which is based in Amersfoort and employs approximately 100 people—is a joint venture of the five largest Dutch public transport companies. The founding companies include: Nederlandse Spoorwegen (the national train service); Connexxion (the trans-regional bus service); Gemeentelijk Vervoerbedrijf (Amsterdam’s public transport operator); Rotterdamsche Electrische Tram (Rotterdam’s public transit system); and Haagsche Tramweg-Maatschappi (the public transport group for The Hague). Together, these operators provide approximately 80 percent of public transport service in the Netherlands.
Business challenge

The Netherlands is one of the most populated countries in the world. As such, its road networks are among the most congested, especially during the morning and afternoon "rush" hours in and around major cities such as Amsterdam, Rotterdam and The Hague. Biking—which has become a way of life in the country—is a popular alternative for many Dutch citizens but can only do so much. The onus of reducing congestion, congestion-related pollution and private driving times falls primarily to the country’s public transport systems, which routinely carry 13 million passengers on 1.4 billion trips per year.

Recognizing the important role of public transport in Dutch society, transport operators continually look for ways to improve service and accessibility. In 2002, the five largest public transport operators in the country came together to explore how they might offer passengers more convenient, faster and safer service. They decided to create a joint venture responsible for overseeing the design and implementation of a nationwide electronic ticketing and payment system: Trans Link Systems.

At the time, "smart card" transport systems were operational in several major cities around the world. The Dutch plan was different, however, because this would be the first time such a system was established across an entire country and for all modes of domestic transport, including train, tram, metro, bus and ferry. Jeroen Kok, who was then responsible for public–private partnerships at the Dutch Ministry of Transport, Public Works and Water Management, was asked to lead the new venture—not least because he clearly understood the challenges and the complexity that lay ahead.

This project marked the fifth serious attempt to introduce a nationwide electronic ticketing and payment system in the Netherlands. Previous projects foundered because of a lack of agreement among the country’s nearly 20 different, and often turf-conscious, public transport authorities, each of which represented a region or municipality. To avoid similar setbacks this time, Mr. Kok laid out strict conditions to guide the project. Chief among them was that Trans Link Systems would need to be a fully independent company. The five major transport operators would take joint responsibility as equal shareholders and capital providers. If the company’s corporate governance was right, Mr. Kok reasoned, the country’s other public transport operators, whose long-term cooperation in a nationwide system was obviously essential, would be more likely to come on board.

Mr. Kok also recognized that Trans Link Systems’ success would depend on the skills of the team responsible for designing, building and implementing the new eTicketing solution. Ultimately, an international consortium led by Thales and Vialis was selected. Accenture was a member of this group, as was Mass Transit Railway (MTR Corporation), a company whose Octopus smart card had been operating Hong Kong’s mass transit system successfully for more than eight years.

"When Trans Link Systems selected the consortium, we were sure that we had a set of providers that had done it before and actually made one of the best examples of eTicketing so far."

How Accenture and the consortium helped

Trans Link Systems was clear in its requirements—as was Mr. Kok: “We had a once-in-a-lifetime opportunity to revolutionize a transport system. We had to get it right.” The solution called for the consortium to deliver a nationwide, integrated system that was based on an open architecture and flexible enough to accommodate changing customer and operator requirements—a first for any smart card transport network. Accenture, Thales and Vialis did not disappoint. Each provided unique and critical components of the solution and, importantly, worked together and with Trans Link Systems to create a first-of-its-kind system. Specifically:

- Thales, the French electronics group, designed and implemented all the operators’ fare collection systems.
- A world leader in integrated fare systems, Thales built on its knowledge and experience in delivering contactless card technologies in other places such as Oslo, Singapore and New Delhi. Thales also brought in Hong Kong’s MTR Corporation and Octopus Cards Limited as subcontractors to provide core back-office systems, as well as general expertise in smart card operations.

- Vialis Verkeer en Mobiliteit (Traffic & Mobility), a subsidiary of the Dutch construction group VolkerWessels, installed and maintained the system’s physical infrastructure, including the smartcard readers, as well as the ticketing and fare machines.

- Accenture deployed a team of professionals highly skilled in fare management technologies and public transport solutions to provide overall program management support, coordinate system delivery and design business processes. Accenture also deployed resources from its business process outsourcing group to set up Trans Link Systems’ new service operations organization, which was responsible for several key business areas such as IT operations, cardholder services, and revenue clearing and settlement for all participating transport operators.

When it came to rolling out the new fare management system, Trans Link Systems and the consortium opted for a phased approach. Phase One, completed at the end of 2005, saw the distribution of approximately 15,000 smart cards—OV-chipkaarts—in Rotterdam for use on the city’s public transit system and on 150 trans-regional buses. This phase involved testing the system, including the fully functional back-office operations. In Phase Two, which was completed in 2006, the card was extended to include trains traveling between Hoek van Holland and Rotterdam. The system was also connected to the metro in Amsterdam, where an additional 100,000 cards were distributed. Since that time, additional deployment phases have extended the system’s reach to other cities such as Arnhem/Nijmegen, Utrecht and The Hague.

In 2006, with the integrated system on its way to full implementation, Accenture and Trans Link Systems
decided that the time was right to transition the back-office operations into the Trans Link Systems organization. This ended Accenture’s official involvement with the consortium. However, a short time later, Trans Link Systems asked Accenture to return—this time as a direct provider of customer relationship management and card distribution management applications. According to Jeroen Kok, “We knew Accenture was the right choice to deliver the system’s CRM and distribution management components because of the company’s strong record of providing similar customer-facing solutions within other transit operations.”

Since then, Accenture has developed new customer service applications that augment a dedicated call center and allow passengers to, among other things, purchase smart cards (for pickup at thousands of locations across the country), report stolen cards, add value to their existing cards, or take advantage of discount purchasing—all via an easy-to-use Internet portal. In delivering the customer relationship management and card distribution management applications, the team relied on the Accenture Fare Management Solution for eTicketing. This proprietary solution framework, based on open standards and a service-oriented open architecture, is specifically designed to support multi-operator interoperability, reduce implementation risks, and enable a comprehensive set of functional areas, from financial and asset management to business intelligence and reporting. Accenture continually refines the customer-facing applications and is currently exploring innovative ways that will allow Trans Link Systems to extend its functionality and services to additional devices and channels.

Accenture is now also working closely with Trans Link Systems to identify opportunities by which the two companies can offer their experiences and insights to other transport systems. Mr. Kok is pleased by the international interest this project has garnered. “We’re seeing other countries, primarily in Europe, really wanting to understand how we’ve used open architecture in public transport on a nationwide scale and, equally important, how we’ve governed the complexity of the implementation. We have a great story to tell.”

The success of the Trans Link Systems’ project to date does not mean, however, that the multi-year implementation has been free of challenges. The complexities associated with the nationwide implementation of an electronic, multimode and multi-provider transport system have been legion. For example, the smart card readers’ laser beams had to be altered when it was found that rain and snow interfered with their functioning. Fears about vandalism led to the redesign of some ticket reader components. Computer hackers revealed a security flaw in the smart cards’ Mifare classic RFID technology, which caused major political debate. And in another instance, various regional authorities or transport operators wanted different fare management structures, which warranted additional adjustment of the overall system.

As Mr. Kok points out, these types of setbacks are to be expected when one is deploying a first-ever, nationwide fare management system. “We’ve had tremendous challenges and delays left and right. But we’ve overcome all these issues because Trans Link Systems and its providers, including Accenture, have had a shared vision for how to work together and a common focus on the benefits this system will ultimately provide.”

High performance delivered

Accenture’s experience shows that a public transport operator’s path to high performance via eTicketing can be difficult to navigate. To be successful, integrated fare management systems and their providers need to gain the trust of travelers, offer payment choices, support fare structures between and across travel modes, and manage the complexities of governing various stakeholders. What’s more, such systems must be open, flexible, modular, reliable and scalable, offering solutions that can adjust over time to continually shifting demands.

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—Jeroen Kok, Trans Link Systems

With Accenture’s help—and the help of the consortium—Trans Link Systems has created just such a fare management system. Today, with all system components in place, Trans Link Systems is well on its way to achieving its goal of having the world’s first nationwide electronic payment system for all modes of transport, from trains to buses to ferries. The historic and groundbreaking nature of the project has caught the attention of a number of innovation leaders, including the Computerworld Honors Program, which in 2007 recognized Trans Link Systems as a recipient of the 21st Century Achievement Award for its exceptional use of technology to better society.

The system is now fully functional across 80 percent of the Netherlands. By the end of 2010, cardholders will be able to use their smart cards on any form of public transport anywhere in the country. At that time, the system is expected to support 1.4 billion passenger trips each year. According to Mr Kok, there’s more. “Within the year, people will also be able to use their cards in taxis and
for parking. This shows the value of having an open architecture—the ability to connect and extend services in ways previously unimagined.

Passengers do not have to wait until year’s end to benefit. The smart cards that have already been distributed make travelling faster and easier. Customers no longer have to wait in long lines at ticket gates, nor scramble for small change while boarding a bus or tram. The introduction of gates—opened and closed by the use of a smart card—help improve safety and can have a significant impact on fare evasion. In addition, smart cards can be easily loaded with value by using machines in stations or via the Internet, with links to the cardholder’s bank account. Also, the cards provide public transport operators with valuable information about where and when travel occurs. In turn, they can use this information to continuously improve service and respond more effectively to fluctuating ridership demands. In all these ways, the system is helping to redefine what high performance means in the public transport industry.

Once customers use the new system, they are hooked. This is reflected in customer satisfaction scores, which show that customers not yet exposed to the new fare management system rate public transport service at a 3 (on a 10-point scale). After using the new system, that score soars to 7.2. Customer approval is also borne out by the rising numbers of daily and weekly system transactions. From the time it was fully introduced in Rotterdam in mid-2009 to today, passenger transactions across the country have climbed from 300,000 per day to four million. Sixteen million transactions are settled weekly, including eight million in Amsterdam, alone.

While part of the reason for the surge in eTicketing transactions is due to the fact that traditional paper tickets have been phased out in places like Rotterdam and Amsterdam, Mr. Kok points out, “the elimination of paper tickets had nothing to do with the most recent surge in usage. In January 2010, we saw a jump from eight to 17 million transactions, with no additional marketing of the system on our part. We’ve maintained that rate ever since. To me, that confirms a cultural shift is taking place. People are realizing they can use the smart cards nationwide, and they are embracing that option.”

Given the customers’ enthusiasm, it’s no surprise that public transport operators are now moving as fast as they can to be part of the new system. This places even greater pressure on Trans Link Systems. Mr. Kok takes this in stride, noting that, “Not long ago, many operators were hesitant to join the network. They were cautious and a bit skeptical. Now that they understand the value of the system, they are asking us to accelerate its rollout. It’s exactly the type of response we hoped for. And it’s exactly the type of reaction a revolution deserves.”

About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with more than 181,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world’s most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$21.58 billion for the fiscal year ended Aug. 31, 2009. Its home page is www.accenture.com.