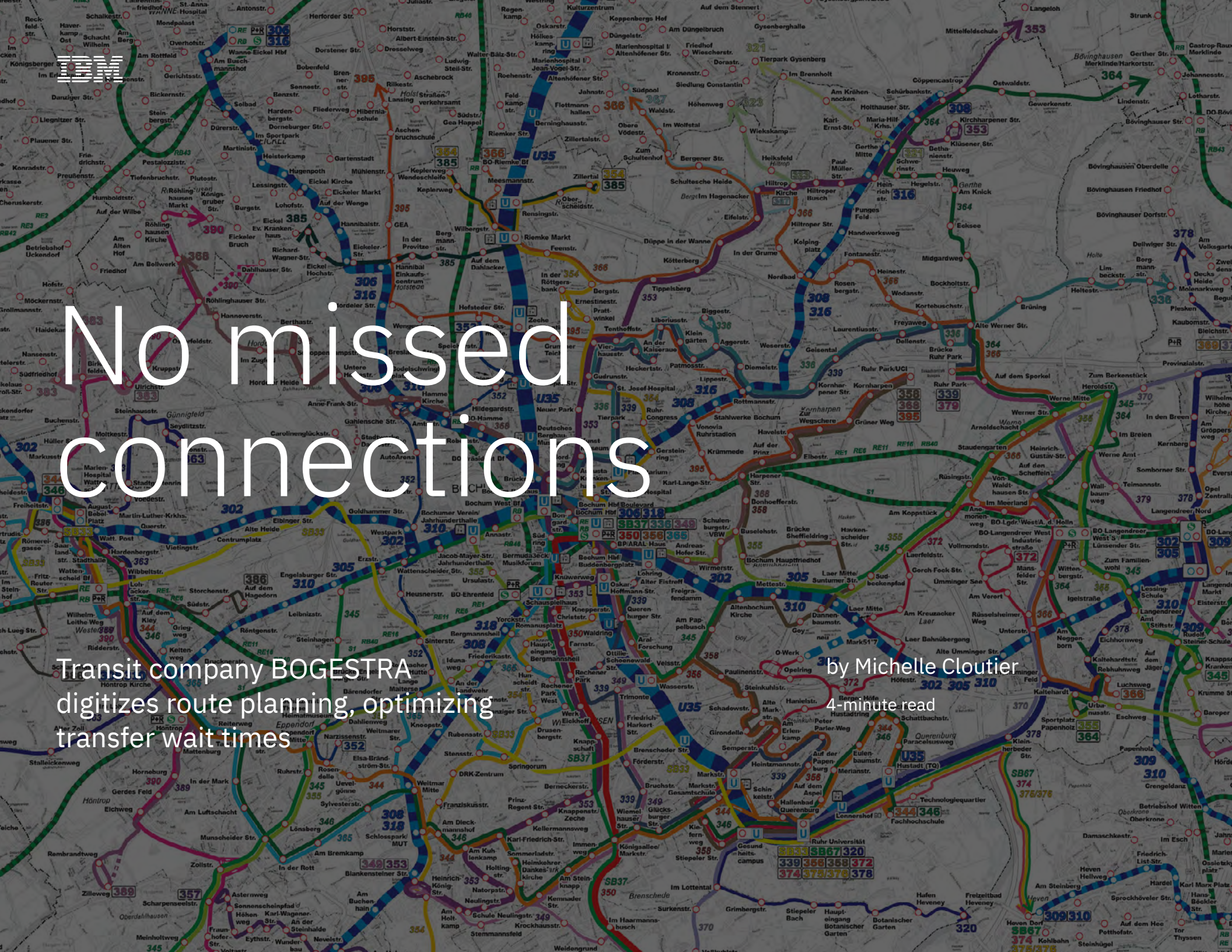




# No missed connections

Transit company BOGESTRA digitizes route planning, optimizing transfer wait times

by Michelle Cloutier  
4-minute read



Public transportation can be an ideal way to get around, especially in cities where traffic jams and expensive parking are the norm. But good transit requires exceptional planning to ensure that a multimodal system runs smoothly.

Nothing is more frustrating for public transportation passengers than missing a connection to the next tram, train or bus. Tempers flare, especially when the schedule says that they would have made the connection if their bus hadn't gotten stuck in traffic.

Transportation planners know that customer satisfaction is dependent on shortening passenger wait times as much as possible, especially for



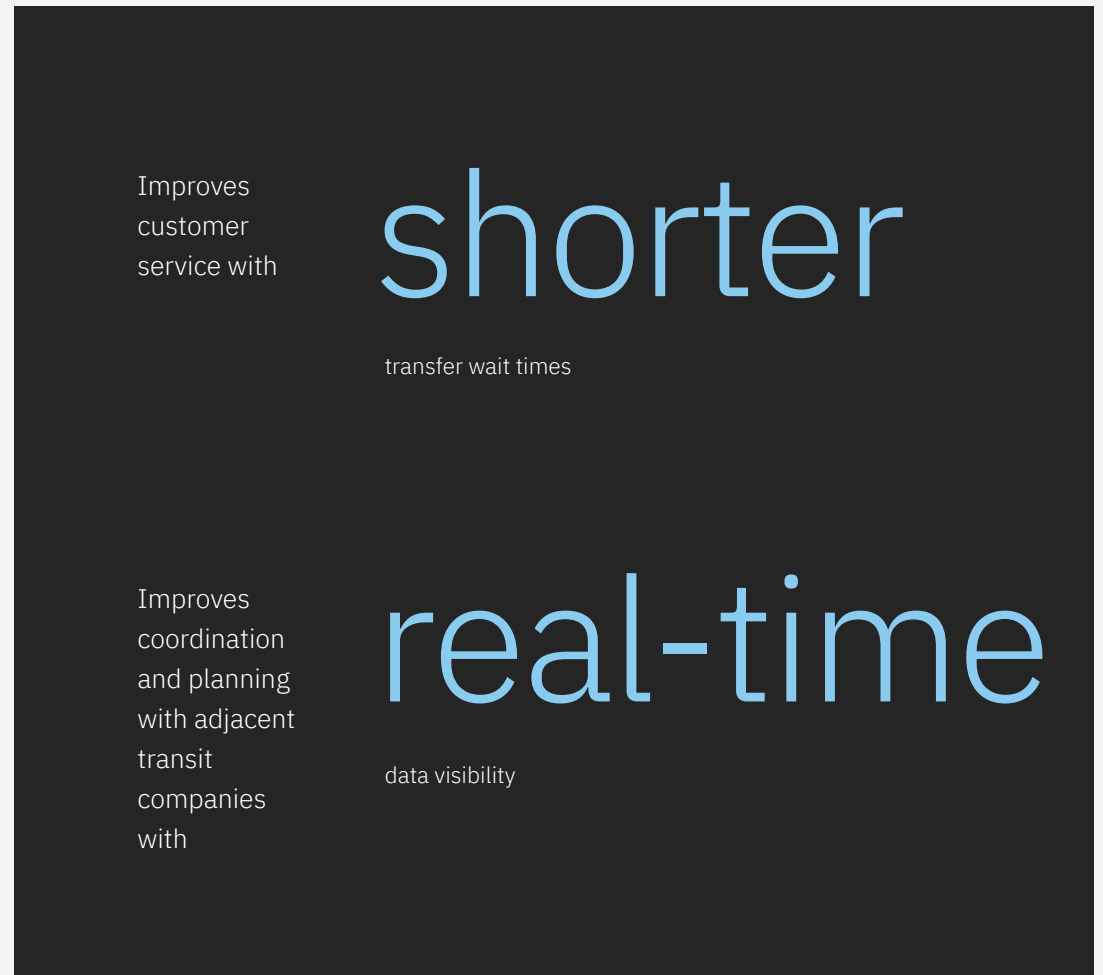
transfers between modes, for example, from a bus to a tram or train. But typical spreadsheet-based planning methods are static, limiting the ability to dynamically plan and respond to actual transportation situations such as increased rush hour traffic or slow-downs due to construction.

BOGESTRA AG operates the public transportation system in the central Ruhr region of Germany. Its network includes 83 bus and 12 train lines that serve almost 150 million passengers each year. BOGESTRA wants to provide exceptional service to each one.

Until 2018, BOGESTRA used Microsoft Excel spreadsheets for route planning timetable creation. BOGESTRA not only planned individual bus and train routes, but also coordinated the transfers between those lines, for example, working to ensure that someone taking a bus would not miss, or wait too long for, the tram or train that would take them to their final destination.

The planning process was detailed, manual and time-consuming for the team of five planners at BOGESTRA. And, before making changes to its own timetable, the company needed to coordinate with other, adjacent transportation operators to optimize connections with their systems. This required sending the spreadsheet by email for multiple, iterative reviews and follow-up meetings by telephone.

In an age of instant communication and digitization, BOGESTRA wanted to find



an innovative, digital solution to optimize its planning processes. Improving service quality, especially line transfers, for its customers was the paramount driver for

the change. BOGESTRA also anticipated improving internal efficiencies, allowing its planning staff to focus on other critical tasks.

# Efficient connection planning across the fleet

BOGESTRA turned to IBM Business Partner Bechtel Logistik & Service GmbH, an IT services provider with whom it already had a relationship, to explore possible digital planning solutions. Bechtel in turn introduced the client to SPOO Group GmbH, which had developed a [transportation planning solution](#) (external link) for local transit providers.

Bechtel, which provided overall project management, recommended that BOGESTRA deploy the SPOO Group solution on [IBM Cloud®](#). IBM Cloud provides the flexibility and scalability that BOGESTRA needed at a lower price



than other cloud providers. SPOO Group developers also appreciated the ease of development and deployment

using [IBM Cloud Kubernetes Service](#) as well as the built-in security features of IBM Cloud.

All participants in the project worked closely together to help ensure that the final platform met BOGESTRA's needs and expectations. "We started with workshops to record the customer requirements in detail," says Florian Schindler, Chief Product Officer (CPO) at SPOO Group. "We involved the customer very deeply in the requirements phase and in product development to ensure that the technology would meet their business and market needs."

SPOO Group standardized the solution so that, after importing and defining the relevant master data into various IBM Cloud databases, BOGESTRA could quickly begin using the platform for planning purposes. It provides an intuitive user interface that allows planners to easily visualize existing routes and connections, including wait times for transfers.

The platform integrates with Google Maps and includes real-time simulation

capabilities to measure passenger walking and waiting times. The solution also accounts for rush hours and uses a traffic light alert system to help planners see current wait times and optimize routes to eliminate long waits and improve service. Real-time simulations help planners refine and improve routes. Finally, it includes line-sharing capabilities with neighboring transit companies to facilitate coordination.

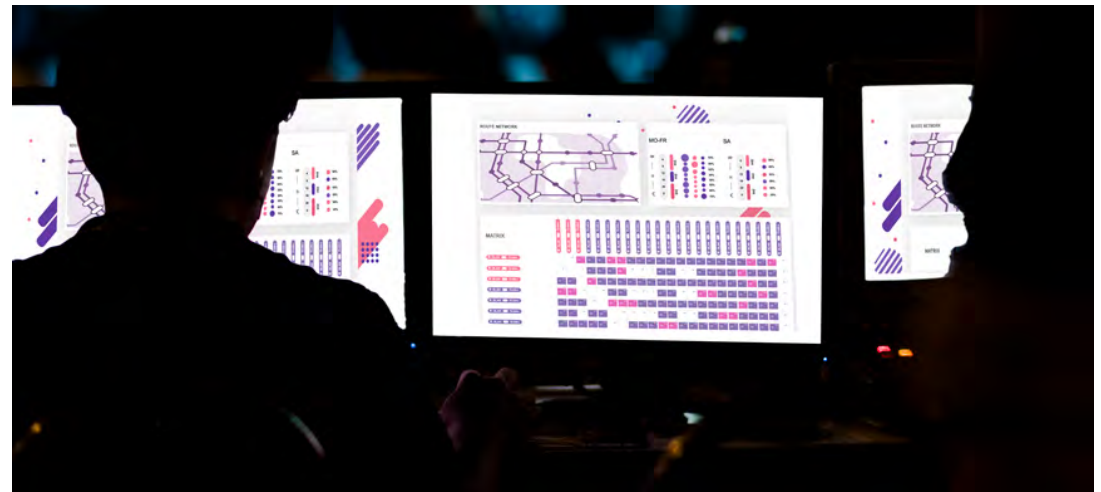
“With the revolutionary public transport platform of the SPOO Group, based on IBM Cloud technology and the cloud expertise of Bechtle, we were able to optimize the entire route network of BOGESTRA through real-time simulation within a very short time and thus lay the foundation for customer-oriented future planning.”

**Jan-Niklas Huerkamp**, IT Manager, BOGESTRA AG

# Better planning, better service

BOGESTRA can now use the digital transportation platform to plan and optimize its entire public transport fleet, including line transfers and coordination with neighboring transit companies.

“With the revolutionary public transport platform of the SPOO Group based on IBM technology, we were able to optimize the entire route network of BOGESTRA through real-time simulation within a very short time and thus lay the foundation for customer-oriented future planning,” says Jan-Niklas Huerkamp, IT Manager at BOGESTRA.



BOGESTRA expects to improve customer satisfaction by providing better service to passengers, specifically by reducing transfer wait times. Other departments that are involved in the planning process

will also benefit from the solution's line-sharing features, which allow BOGESTRA to coordinate route changes with its neighboring transit authorities through a web interface with the SPOO Group platform's dashboard.

“Adjacent public transport companies can use the common stop and line data in the platform,” explains Huerkamp. Coordinating timetable changes with other transit providers can now be done digitally, in real time, between companies. This saves what Huerkamp calls “massive amounts of time” by eliminating all the manual iterations and exchanges of Excel spreadsheets in the previous planning process.

The digital solution also speeds the internal BOGESTRA planning process, allowing planners to focus on

optimization and other critical tasks. By running the scalable solution on IBM Cloud and by using an intuitive web interface, multiple people can work simultaneously, in contrast to the previous Excel-based planning process.

“The platform is highly available and scalable,” says Huerkamp. “This saves time and is cost effective because it doesn’t require a separate physical infrastructure.”

The solution helps BOGESTRA continually improve service and reduce

wait times. For example, it uses client-defined key performance indicators (KPIs) to alert BOGESTRA to service problems. Furthermore, the real-time simulation capabilities reveal any discrepancies between expected transfer wait times and the reality on the ground, allowing BOGESTRA to take measures to improve service. Finally, SPOO Group is planning to add machine-learning capabilities to the solution, which will automatically suggest improvements for route optimization.

“We involved the customer very deeply in the requirements phase and in product development to ensure that the technology would meet their business and market needs.”



### About BOGESTRA AG

Founded as Bochum-Gelsenkirchener Straßenbahnen Aktiengesellschaft in the Ruhr region of Germany in 1896, today the transit company known as [BOGESTRA](#) (external link) serves approximately 147 million passengers each year. Its 2,400 employees operate a system of 83 bus, subway, train and tram lines that interconnect with surrounding transit systems to serve the region.

### Solution components

- IBM Cloud®
- IBM Cloud Kubernetes Service



### About Bechtle Logistik & Service GmbH

[Bechtle Logistik](#) (external link) is part of the Bechtle Group of companies established in 1983 in Neckarsulm, Germany. It offers a wide range of IT-related services and solutions, including server, storage, security and software. The company employs 450 people.



### About SPOO Group GmbH

[SPOO Group](#) (external link) is located in Denzlingen, Baden-Württemberg, Germany. Founded as a B2B e-commerce software company in 2018, SPOO Group has evolved with the digital age. Today the company is focused on developing future-oriented and innovative solutions including cloud, Internet of Things (IoT) and mobile applications. Its [digital transport planning solution](#) (external link) was developed by timetable planners for timetable planners.