Berliner Verkehrsbetriebe (BVG)

Because we love you.

Over 16,000 employees

Sector: Public transport

ORGANIZATION DESCRIPTION

With more than 16,000 employees from over 80 nations, over 240 professions and an annual turnover of 1.62 billion euros (2023), Berliner Verkehrsbetriebe (BVG) is Germany's largest public transport company, using innovative strategies and modern technology to meet the major ecological and social challenges of future mobility.

For over 90 years, BVG has been keeping the German capital on the move, transporting over a billion passengers a year to their favourite destinations across a total area of 892 km².

ORGANIZATIONAL VISION

With its underground, tram, bus and ferry services, BVG ensures that all passengers reach their destination on time, in an environmentally friendly and cost-effective manner. Our aim is to operate reliably and innovatively and to respond flexibly to the requirements of a changing and constantly growing city. We want to actively drive forward the transport revolution by intelligently networking various mobility services. Our goal is and remains mobility for everyone and from a single source. In short: we want to move all of Berlin, around the clock, day after day, today and in the future.

"Because we will continue to love you in the future."

The capital is growing and with it the demands on the future of urban life. Berlin has set out to become a smart city - intelligently networked, climate-adapted and safe. We want to follow this path. What's more, we want to successfully bring the vision of a smart city to the streets: with sustainable and post-fossil mobility services.

We have been testing driverless transport in various projects since 2017. After deploying highly automated vehicles with escorts in the "STIMULATE" pilot project on two sites of Berlin's Charité hospital, an automated shuttle travelled on Berlin's public roads for the first time on the "See-Meile" from 2019 to 2020. Since 2022, the use and monitoring of the operation of fully automated, driverless vehicles has also been developed as part of the "KIS'M" project. Our latest project, "NoWeL4", has been running since 2023 and aims to enable the use of a driverless fleet of automation level 4 shuttles in north-west Berlin by mid-2027. Operation will be offered as an on-demand service, i.e. demand-driven.

"In this way, we are making Berlin a role model for smart and digital mobility and utilising the potential of our city. As BVG, we are already ensuring that Berlin keeps moving. Now we are preparing the capital's mobility for the future." - Henrik Falk (Chairman of the Board of Management of BVG)

This case study is part of the Digital Future Challenge (DFC), initiated by the Deloitte-Stiftung and the Initiative D21.

PROBLEM STATEMENT

Description of the problem and formulation of the question

Opportunities and challenges in autonomous public transport

Autonomous driving in local public transport offers great potential for the mobility of the future. It makes it possible to densify the existing public transport network and increase its attractiveness in peripheral areas. This improves the connection between outlying areas and the city centre and thus has a positive influence on social participation in Berlin. It can be used flexibly as a feeder to conventional public transport or as a shared means of transport from door to door. And this can be done without major prior infrastructure adjustments, as the vehicles can travel on existing roads. In addition to reducing emissions by bundling road traffic, the increasing degree of automation can also improve road safety and counteract the prevailing shortage of skilled labour in local public transport.
However, driverless passenger transport still presents us with challenges at present. Before the shuttles can make their way through the streets of Berlin completely on their own, safety drivers are first needed on board who can intervene at any time. Above all, one thing needs to be considered: safety.

Objective and subjective safety in public transport

An important aspect of attractive local public transport is safety in vehicles, at stops and stations. Both objective safety and the subjective feeling of safety of users are individual and can depend on various aspects, such as the equipment and layout of the vehicles and/or waiting areas, the time of day or even fellow travellers.

Based on current studies and statistics, it is possible to recognise potential for the further expansion of existing safety precautions. This is exactly where we want to start. We regularly conduct surveys, derive measures for action from them, and review and establish solution concepts. For example, customer surveys have shown that passengers feel safer thanks to the use of video systems and recordings. As a result, all station facilities and vehicles were equipped with network cameras. In addition, structural measures such as the use of light-coloured floor coverings and the creation of clear lines of sight by removing niches were implemented. In 2022, a pilot project was launched in which music was played at four stations to increase the sense of well-being and security. In addition, staff were stationed at less frequented stations at night as part of the "station concierge" project.

Different groups of people have different mobility safety requirements. Studies show that women* statistically feel less safe on public transport than men. The proportion of our female passengers on Berlin's public transport network is around 58% (SrV2018/Kantar). We would like to focus on this large group in terms of safety when establishing new technologies. We are therefore looking for innovative ideas and solutions that we can also integrate into our autonomous vehicles to create and maintain safety.

Research question

What needs to be considered for the objective and/or subjective safety of women* in public transport with a focus on autonomous driving?

JOKER QUESTION

How can your findings and ideas be transferred to other social groups?

This case study is part of the Digital Future Challenge (DFC), initiated by the Deloitte-Stiftung and the Initiative D21.

OTHER

For example, existing guidelines, previous efforts, and strategies for responsible AI, digital ethics, or digital responsibility.

The vehicle:

For our current autonomous driving project called "NoWeL4", the all-electric VW ID. Buzz AD, which can transport up to five passengers in two rows of seats. The vehicle is equipped with cameras and other sensors to enable it to drive autonomously. However, there is also a driver's workplace so that it can also be controlled manually.

This type of vehicle can serve as a guide to get an idea of what autonomous shuttles could look like in the future. However, the vehicle body will still change for future regular operation and the use of different vehicle models with different bodies is also conceivable.

The company:

As the service will be available on demand, a vehicle can be booked and shared by several people at the same time via the app. Passengers can hop on and off at a large number of virtual stops, which should enable the shortest possible distances between the starting point or destination and the vehicle. After successfully booking in the app, passengers board the shuttle via NFC (later via Bluetooth) using a smartphone.

Security:

During operation, the vehicles are always monitored remotely from a control centre and are in contact with the technical supervisor and vehicle operators. In addition to monitoring the vehicle functions, driving commands can be given to the vehicles via remote access if necessary, which lead to a safe stop.

In addition to the vehicle operators, passenger operators will also be provided, who will also look after the concerns and safety of passengers from a control centre using a camera and microphone. Among other things, they will check before departure that all passengers are buckled up and ready for departure. They will also be available at all times to interact with passengers if they have any questions, concerns or other problems to report. Passengers can therefore request assistance at any time.

This case study is part of the Digital Future Challenge (DFC), initiated by the Deloitte-Stiftung and the Initiative D21.