

Analysing the integration of on-demand fleets with Zurich Public Transport



About Zurich Public Transport

Zurich Public Transport (VBZ) is a public transport operator in the Swiss city of Zurich. It owns and operates trams, trolley-buses, buses and a funicular. All services are operated within the tariff system of the cantonal public transport authority Züricher Verkehrsverbund (ZVV).

Goals

Zurich Public Transport strives to offer their customers an attractive and future-oriented mobility service. The goal of the study was to examine the potential demand for an on-demand ride pooling service.

Approach

To examine the future demand, the existing PTV Viseva model was extended. PTV Maas Modeller was then used to analyse the interaction between supply and demand.

CONTINUOUSLY IMPROVING THE SERVICE

Zurich Public Transport (VBZ) provides people in the city of Zurich and its surrounding regions with environmentally friendly and affordable public transport - 365 days a year, at least 20 hours a day. To always offer a high quality of service, VBZ is working to expand its operations in a resource-conserving and future-oriented way. With pilot tests, the Zurich Public Transport gets customers in contact with new solutions to gain important insights and based on them update their services. In April 2018, the VBZ decided to examine the effects of integrating on-demand services into local public transport.

INTEGRATING MOBILITY AS A SERVICE WITH PUBLIC TRANSPORT

For years, VBZ have been using a demand model in PTV Viseva for their supply planning. To analyse the potential demand of a Mobility as a Service fleet, the PTV Professional Services team added an intermodal offering to the model.

Talking about the challenges of the task, Silvan Weber, project manager market development at VBZ, says: "As a public transport operator, it is crucial for us that a potential on-demand service can be integrated with public transport. A new service should fit seamlessly into the existing public transport offer, i.e. complement it in such a way that it offers advantages for the user." One possible option would be to support the existing public transport with an additional on-demand service outside the city centre and during off-peak hours. The study therefore investigated different scenarios, each with a variety of parameters.

ANALYSING THE POTENTIAL DEMAND FOR A MOBILITY AS A SERVICE FLEET

In a first step, the analysis focused on a specific service area in which the bidirectional interaction between the spatial distribution of the demand for a Mobility as a Service and the quality of supply was examined. This analysis answers, for example, the question: What are the results if the on-demand service generates a demand that cannot be supplied by the fleets' capacity? On-demand mobility is considered economically successful when its service is so convincing that a maximum demand is generated and the available fleet is thus working at maximum capacity. The aim is to keep the percentage

PTV MaaS Modeller

Software for calculating the performance of Mobility as a Service, answering the following questions:

- ▶ Is there sufficient demand for on-demand services in dense urban areas in addition to existing public transport?
- ▶ Which customer segments are addressed by on-demand offers?
- ▶ Do on-demand offers attract new customers to public transport?
- ▶ Can on-demand offers be a possible business model for the VBZ in the urban area of Zurich?

Results

The study consists of various scenarios regarding the size of the service area and the service hours, it provides information on fleet sizes and the interaction between the new and traditional public transport systems. The VBZ market research uses the results to evaluate the impact and potential of future on-demand services and ultimately implement possible measures.

of unserved trip requests as low as possible. To find the most suitable solution with the best key data for the Zurich Transport Authority, PTV MaaS Modeller calculated various scenarios iteratively approaching the optimal solution and analysing the potential demand for a mobility as a service fleet.

ON-DEMAND SERVICES AND PUBLIC TRANSPORT COMPLEMENTING EACH OTHER

Setting up the model and the corresponding study only took a few months. "Our goal was to enable VBZ with the tools and know-how so that they can carry out independent investigations and further studies with this model. They are the basis for well-informed decisions," explains Dr Petr Senk, senior project manager at PTV. The results obtained with PTV MaaS Modeller provide information on the relationship between fleet size, operating area and service quality. For the investigated area in Zurich, it became clear that an additional on-demand service is particularly attractive if it runs at a similar price as the existing public transport in Zurich's city centre. A self-supporting operation is not possible with the current cost structure and the underlying tariff structure. However, it is apparent that in the future a significant leap in the quality of the offer can be expected due to automated vehicles, while the level of cost recovery remains comparable.

Christoph Baur, mobility analyst at VBZ, emphasises the benefits of the study: "With the help of PTV MaaS Modeller and on the basis of the insights gained, our assumption was confirmed that on-demand services do not necessarily cannibalise conventional public transport services, but they rather complement each other and thus increase the attractiveness and mobility in our city. We have recognised the potential of future on-demand services for us and now have a tool to incorporate them into our planning." Project manager Silvan Weber adds: "Now we need to put the pilot test on the road to verify the assumptions and understand the real challenges in the field. The real key figures from this investigation can then be taken into account again and benefit the traffic planning modelling."