

TEACHING MATERIAL GUIDANCE

1. Title of the material

K.O. Schöcke, P. K. Schäfer, S. Höhl, A. Gilbert: LastMileTram. Empirische Forschung zum Einsatz einer Güterstraßenbahn am Beispiel Frankfurt am Main (in German). ReLUT. Research Lab for Urban Transport.

https://www.frankfurt-university.de/fileadmin/standard/Hochschule/Fachbereich_1/FFin/Neue_Mobilitaet/Veroeffentlichungen/2020/Abschlussbericht_LastMileTram.pdf

2. Which section of the SUMP it is relevant to?

It is relevant to Section 4.1 which refers to developing scenarios of the potential future. The guidance is addressed primarily to municipalities to assist them in defining the expected benefits and prerequisites of modal shift in urban freight.

3. Which Mobility Manager knowledge this material is the most relevant to?

The scope of this report is related to logistics and urban freight management (4) regarding the type of movements covered, but content-wise is it related also to the development of mobility solutions meeting community challenges (1.d).

4. Problem approached and content overview

The report examines a potential to use an existing tram network and rolling stock to deliver goods in an urban environment based on the example of Frankfurt. It was elaborated as a result of the LastMileTram project finalized in December 2019.

The research is an response to a increased demand for alternative delivery methods, especially due to the current requirements for reduced transport-related emission levels. The focus was on the following research questions:

- which criteria determine the use of existing tram infrastructure for deliveries?
- how can the logistical processes can be adapted to use the tram infrastructure in a practical manner?
- which transport units are suitable for deliveries with freight trams?
- how the economic performance of a delivery system can be ensured based on cost analysis?

The report starts with an analysis of existing freight tram application examples and feasibility studies. On this basis, the critical factors of this solution were identified. This initial analysis was followed by expert interviews with selected logistics operators with a purpose to identify opportunities and risks related to freight tram, the structure of operational processes with regards to the incorporation of handling deliveries by tram, legal framework. The interviews were summarized by defining criteria for the implementation of the freight tram form operators perspective.



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A short pilot test was carried out involving tram operator VGF and logistics operator Hermes. Its aim was to design operational processes and procedures and verify their applicability in practice. The pilot included also final delivery of packages from trams to customers by cargo bike.

Further research included the design of a route concept based on the existing tram network. It included the availability of tram stops suitable for transfer of goods and receiver locations based on data from logistics operators. Project prototype of a standardized transport unit for handling goods was designed based on previously identified criteria.

The report is concluded with a detailed analysis of transport options for freight tram based on existing examples and results of the pilot test. There options were considered: a) use of a dedicated freight tram, b) simultaneous transport of goods and people in the same tram, c) passenger tram with an additional trailer for goods. Different cargo handling equipment was also evaluated, including access ramps as well as cargo bikes.

5. Who could be interested in this material?

Due to its innovative and empirical character, the report might be an inspiration for decision makers helping them to understand the multimodal potential of existing services and infrastructure. Students might benefit from a detailed technical and operational analysis of logistics processes related to the handling of goods by trams, useful for the implementation of their projects and understanding factors determining options for change in existing freight delivery patterns.

6. What is worth mentioning as an innovative factor for the reader?

- comprehensive analysis of existing examples of freight tram system feasibility
- inclusions of logistics operators point of view when defining requirements for the system
- pilot test to verify the theoretical assumptions
- detailed requirement analysis and considered evaluation of freight tram operational variants.

7. Limitations

Findings of the report are applicable in most cities with tram networks after consideration of some location-specific factors such as network characteristics and stops design.

