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## Call for Papers Mobil.TUM 2019 – Proposal

# **Urban Logistics – a theoretical perspective on a problem that may exceed economics and engineering**

Keywords: *action theory, decision model, urban freight, urban logistics, theoretical framework*

Total Length: 1499 Words

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## Problem statement

Since 2007, the UN World Urbanization Prospects show the majority of the world population is living in cities. For Europe the number will rise from 74.5% in 2018 up to 83.7% by 2050 (UN DESA 2018). While cities are constantly trying to adapt with new ideas for city planning and design towards this trends, transportation is not yet on their agenda (Hesse 2010; Muñuzuri *et al.* 2012; Kawamura 2015; Dablan 2007). With the emergence of green and smart city initiatives throughout Europe, public transportation becomes more and more relevant (Mora *et al.* 2017). Nevertheless, there is just little thought about how these cities will be supplied with goods in the future. Since late 1980s, many problems and solutions were published with the label city or urban logistics, mostly from the field of management and engineering sciences. It changed the supply chain operation by solving routing problems or answers on how to assess performance of emission reduction (Lagorio *et al.* 2016). The impetus of this work is to shed another perspective on the field of urban Logistics and to deliver an answer on “how to organize transportation of goods and people without a supporting theory?” by developing of such a theory.

The initial idea of city logistics came from the fear of congestion and emissions from heavy-duty vehicles and its rise in numbers since the 1970s. This understanding led to first inquiries and studies what urban goods movement might include (Ogden 1992). In Germany, many initiatives and pilots started with the aim to consolidate outbound logistics in the 1990s. Unfortunately this did not fully cover the entire supply of goods in a city (Thoma 1995) . The success in reducing emissions and traffic impact of the freight vehicles was very limited, mostly because it was organized as voluntary collaboration without any need by regulation or economic pressure (Wagner 2002).

In the 2000s, the assumption was made as to whether the sociological significance of the problem could support the existing economic explanatory approaches. Economic actions in an urban agglomeration might be not entirely up to businesses, instead: “[...] *cities have to be seen as a site in distanciated*

*economic networks, with site effects that have more to do with the light sociology of urban institutions than with the nature of ties between proximate trading partners” (Amin and Thrift 2003, p. 76).*

A full structured literature review shows a solid trend on stakeholders involvement in urban logistics and how they interact with each other next to optimization problems (Lagorio *et al.* 2016). This indicates that a societal impact of urban logistics is already implied. But still research requests rather decision models for practical use instead of developing a theory of action (Quak and Koster 2009). Further, the local supply chain is not part of geography or urban planning (Belina *et al.* 2018). Their focus rests on the person as inhabitant of a quarter or the immobile as buildings, places and roads. This leaves the movement of goods nearly completely to management and engineering and in a state where: “[...] *the focus has moved to stakeholder involvement in the decision-making process, where much work may still be necessary. Finally, this paper identifies three areas for further investigation, specifically, stakeholder management, urban logistics ecosystem and data availability” (Lagorio et al. 2016, p. 926).*

Therefore, this work argues to involve the social sciences might improve the understanding of stakeholder involvement and urban logistics ecosystem as well. Only a few theoretical streams are used to interpret the economic actions in the city. Supply chain management mostly refers to systems theory and it is rather bound to the entity company than city (Nyhuis 2008). The often-referred stakeholders approach by Robert Freeman focusses on management and describes the need to integrate all company stakeholder to ensure the survival of the company. Its novelty is to include i.e. the governmental body and local residents in addition to the common supplier and customer relations (Freeman 2010). But even sociological systems theory is not ready to explain economic actions or the city alike (Beckenbach 1989; Stichweh 1998). In the light of growing public attention on urban logistics and the demand for a cleaner and better-organized city, it is high time to support the academic discussion with a theoretical framework that can be used across all adjacent disciplines.

## Research objectives and methodological approach

This work aims for three research objectives. First, identify theories used today to explain urban logistics. Second, identify the theories suitable to explain actions of stakeholders in urban agglomerations. Third goal is a integration of the theories found into a specific Urban Logistics Action Model (ULAM). The model should explain interrelationships of actors and actions in urban freight. This submission covers the review of recent theory applications in urban logistics, urban studies and urban social sciences. The focus will be set beyond economic systems theory and stakeholder as well as sociological systems theory.

Then, the ULAM will be tested on plausibility in three different scientific settings as the:

1. economics and engineering
2. civil engineering, city planning and public administration
3. general social sciences

After the evaluation across these disciplines, the ULAM will be applied on current pilots of urban logistics in Germany. The assessment will include structured interviews with project members using the problem centered interview technique (Witzel and Reiter 2012). At the same time, corresponding project reports will be evaluated on basis of the used problem solutions strategies continuing on analysis of logistical cooperation (Schaarschmidt 2011). The final step will be a series of discussion

groups with the main urban stakeholders as supply chain professionals, city council, local residents and city planning and transportation administrators.

## Expected results

The first result will be a descriptive analysis and overview on how theories were used to model research for urban logistics, urban freight and transportation in the city. Combined with not yet used theories an action model should be developed (ULAM), including the roles of stakeholders, their impetus and limitations of their actions. This theoretical framework aims to explain the success and failure of urban logistics projects. Ideally, the inclusion of the surrounding disciplines ensure its interdisciplinary usability. The ULAM is a work in progress that will be part of the full paper. It shall feature how stakeholders choose between their roles in the cities (i.e. truck driver, local resident and company shareholder) and which personal networks are engaged in urban logistics projects.

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