



By collaborating to overcome urban logistics issues - comparative introduction of 3 case studies

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What is the problem?



- 70% of the world's population will live in cities by 2050
- At the same time as cities grow stronger, urban traffic increases, more vehicles travel on the roads, the number of traffic jams will increase and, as a result, the level of environmental pollution will increase
- With the growth of e-commerce and changes in consumption habits, the number of product deliveries increases, shipping is one of the main causes of negative effects
- The city administrations have created action plans to counterbalance them
- Framework of city logistics initiative: UCC, UDC, cooperation of service providers (?)



The last mile problem

Last mile parcel delivery: delivery of the ordered parcel to the recipient's address by a parcel delivery service provider



Increasing e-commerce Change in customer expectations Inner-city parcel delivery is problematic



Increasing traffic and pollution City management's response: tightening, closure Countless solutions have been created in recent years



CEP service providers prefer their own resources Home delivery problem Almost all providers deliver everywhere, often to the same customer





Why don't they collaborate?



Examples from different part of the world



UCC in Bristol and Bath



UCC = "a location near a city centre where goods from outside the city centre are received, consolidated and subsequently delivered by smaller vehicles or by foot on designated routes in the city centre"

- Successful UCC implementation strongly depends on the involvement of all the stakeholders in the decision-making process
- According to Allen et al. (2014) and Paddeu et al. (2018) out of 200 UCC only 15 is still operating
- The general consensus is that UCCs must be financially viable in their own right in the medium- to long-term, though without some initial funding from the central or local government they will not survive

Bristol is the sixth largest city in England and is one of eight English 'core cities' outside of London

- It is affected by high levels of pollution due to urban congestion (500.000 car movements/day)
- Average speeds lower than 25 km/h and this makes Bristol one of the most congested cities in the UK
- Number of the vehicles entering the city of Bristol every day is 104,802; 13.3% of the whole inbound vehicles are Light and Heavy Goods Vehicles
- By 2002, it was the busiest and most polluted city
- In 2016 The city has introduced various regulations that have resulted in non-food last mile deliveries being delivered through UCC, where collaboration is based on the use of shared resources and deliveries.

- EU and UK national projects funds to establish and subsidy the Bristol and Bath UCC
- The UCC is managed by DHL Exel deliveries are made by electric vans (6 days a week) betweens 7:00 am and 2:00 pm.
- The goods primarily arrive from the Midland (Birmingham) by means of articulated vehicles, 18-t trucks, 7.5-t trucks and vans. Deliveries to the city centre are made by 9-tonne electric vans with a load factor of 5-t.
- In addition to deliveries, the UCC offers just-in-time deliveries, storage, pre-retailing, crisis stock management, drip feed of stock, recycling of packaging.
- Big companies (multiple retaileers) participate the scheme. Those ones who do not participate they percieve it as an additional cost in the supply chain
- Besides subsidies provided by the local city council, which accounts for 45% of operative costs, the revenue streams come from retailers and express couriers. For express couriers this represent a business-as-usual situation, where they outsource the last-mile delivery to a freight carrier.
- Emission reductions in Bristol were identified as a result of sharing delivery vehicles for the final leg of the supply chain (i.e. last mile deliveries)
- The first year after the UCC go-live date (initial trial peeriod) was free of charge for the participants
- The advantages indicated from participating in the scheme were: possibility of delivery to stock room, security of delivery, set delivery time, additional service provided (such as recycling of cardboard and plastics), staff time saved per delivery, duration of delivery, staff safety.



The operation of the UCC definitely requires cooperation between the actors involved

Sustainable urban logistics in Budapest - BKK

- In 2019 SULPITER project has been established with the participation of Bologna, Budapest, Poznan, Brescia, Maribor and Rijeka
- Goal: Sustainable Urban Logistics Planning for the Development of Regional Goods Traffic
- The SULPITER tool is a decision support system, the purpose of which is to make it easier for decision makers to create different urban logistics scenarios.
- On 29 May 2019, the General Assembly of the Municipality of Budapest approved the Budapest Mobility Plan for a period lasting until 2030, based on sustainable urban mobility planning (SUMP) guidelines
- The Budapest Mobility Plan 2030 is the transport strategy of the capital for the year 2030.
- BKK is the transport authority of the City of Budapest, responsible for the management of all transport modes.
- As an integrated mobility manager of Budapest, BKK is responsible for the development and implementation of Budapest Mobility Plan, organizing public transport; determining routes, scheduling, traffic layouts; passenger information service; public bike sharing; making strategic decisions in connection to city-logistics and parking; authorizing taxis (control and qualification of taxi hire services); strategic road network management; development of the extended infrastructure in the city.

- Strategic guidelines identifies three layers of the transport structure:
 - (1) liveable destinations,
 - (2) the backbone transport network and
 - (3) the fine network.
- The BMT defined the different scenarios for the 2018–2030 investment programme with the help of a complex evaluation and programming methodology derived from domestic and EU guidelines for SUMP that equally takes into account societal, economic and environmental impacts along with a strategic environmental evaluation.
- In the urban context, a mixed strategy involving land-use planning, pricing schemes, efficient public transport services and infrastructure for non-motorised modes and charging/refuelling of clean vehicles is needed to reduce congestion and emissions. Cities above a certain size should be encouraged to develop Urban Mobility Plans, bringing all those elements together.

One of the defining elements of the **Budapest Mobility Plan is the LEAD** project

 BKK is in charge of the examination of urban, on-demand freight services in Budapest and also in Hungary in the project in cooperation with the Győr-based Széchenyi István University and Waberer's-Szemerey Logistics Ltd. - as per different scenarios- through modelling and also the development of the freight layer of the Macroscopic Transport Model.

BKK works together with Széchenyi University on the LEAD project as well as with affected stakeholders





LEAD: Low-Emission Adaptive last mile logistics supporting on demand economy through Digital Twins



THE CIVITAS INITIATIVE IS CO-FUNDED BY THE EUROPEAN UNION



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What is LEAD?

- LEAD Digital Twins creation in 6 cities (TEN-T urban nodes)
- Solutions case scenarios







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Living Lab

Transforming a Parking Lot to an Urban Consolidation Centre



Living Lab

Turning retail stores to electric mobility nodes



Living Lab

Integrated last-mile logistics with demand-supply matching platforms



Living Lab

Validation of last mile distribution models



Living Lab

Green Crowdshipping through the mass transit network



Living Lab

Spatial Planning of Inner-City Loading Areas



Living Lab

Spatial Planning of Inner-City Loading Areas

Description

- <u>Context</u>
 - important logistics area,
 - concentrated population,
 - increased street level air pollution,
 - curfew season:
 - the spring of home delivery,
 - free parking during COVID curfew,
 - the changes in the habits of travellers
 - timing of scheduled freight deliveries to city centre,
- Objectives:
 - LL observations and framework to provide solutions and to quantify the different effects of the e-mobility to transportation scenarios.



Ambition

The following elements will be explored:

- advantages of UCCs, optimal distance from endpoint,
- Digital Twin with existing macroscopic transport model,
- impacts of UCCs on air quality,
- ways to refine and develop policies,
- impacts of freight vehicles from UCCs on the environment,
- Exploring additional means to emphasize and promote <u>e-mobility.</u>

Expected results

KPIs to support decision making:

- with quantifiable evidence to prove the necessity of UCCs in the city
- with quantitative assessment of local objectives





Conclusion



- 1. Bristol UCC is a live example which is alive since 2016
- 2. Budapest has started to plan the city logistics initiative in 2019
- 3. LEAD project cross country, is running since 2020, goal is simulate a part of city logistics' initiative
- 4. Key aspect: city logistics, UCC does not work without deep involvement of governmental subsidies
- 5. Common areas:
 - Main driver 1: more liveable cities
 - Main driver 2: environmental awareness
 - Private-public collaboration (even in planning phase)
- 6. Impact on last mile logistics:
 - Dialogue between private and public actors
 - Resource sharing
 - Business is not war anymore \rightarrow win-win scenarios
- 7. The goal is not far, but still a long way





What is the future?



Thank you for your attention!

