Urban consolidation centres
A viable business model and their role in electric powered city logistics

Hans Quak
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2nd Innovation in Urban Freight International Workshop
City perspective

**UCC as a solution for unorganized logistics activities**

*UCC as a solution from city perspective*

- City logistics activities appear to be unorganized from city perspective
- UCC as a solution to organize and optimize last mile deliveries
- (Local) authorities see UCCs as solution for carriers because:
  - No city access restrictions or time-windows
  - No difficulties maneuvering trucks in narrow streets and historical centers
  - No congestion and parking issues in cities
- Carriers have a different perspective: solving issues is their job!
- Many UCCs initiated from city perspective failed
Urban consolidation

Why? For whom?

- Urban consolidation => city perspective
  - Optimizing logistics from the destination side

- Current practice logistics planning =>
  - Optimizing logistics from the origin side (e.g. carriers’ warehouse, retail distribution center)
### Urban Consolidation

**Business Model Canvas and Value Proposition**

<table>
<thead>
<tr>
<th>Key Partners</th>
<th>Key Activities</th>
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<th>Customer Relationships</th>
<th>Customer Segments</th>
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**Private**

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**Public**

Private Cost Benefit Analysis
Case 1:
Bentobox transhipment bike - van
Case 1: Bentobox transhipment bike - van

Key Partners

Partners needed for Bentobox and location

Key Activities

> by bike
< by car

Bundling of shipments

Handling in warehouse

Handling for Bentobox

Bentobox, software and location

> Bike couriers
∆ Vehicle fleet

Key Resources

Value Proposition

Customer oriented, high quality city logistic services at reasonable prices

Delivery within 2 hours

Environmental friendly services

Customer Relationships

CRM via Service center

Channels

Online and telephone booking

Face to face contact with courier (>bike and <car) driver

Customer Segments

Senders and receivers of parcel deliveries: from documents to EURO-pallets - Mainly retailers

Cost Structure

Planning service

Investment in Bentobox Couriers

Revenue Streams

Price per shipment

Increase of investment costs
Lower operational costs per shipment
Case 2: Bentobox as delivery locations retail deliveries
Case 2: Bentobox as delivery locations retail deliveries

**Key Partners**
- BentoBox and location

**Key Activities**
- Time needed for delivery: Outside peak hours
- BentoBox, software and location

**Value Proposition**
- Flexibility
- Customer oriented, high quality city courier services at reasonable prices
- CRM via Service center
- B2B customers

**Cost Structure**
- Investment in BentoBox concept, software and training.
- Avoid traffic peak hours
- Delivery costs

**Revenue Streams**
- Email and SMS service on a daily basis
- Shopping mall and 4 TNT customers
- No longer face to face contact

**Main costs**
- Fixed: Maintenance trucks, depreciation
- Variable: Fuel

**Main revenues**
- Courier fees

**End customer** has to pick up parcels by himself.

**Process**
- Software user friendly and the process was generally speaking smooth.
- Ensure deliveries even if the shop manager is not physically present.
- End customer has to pick up parcels by himself.

**Case 2**
- Bentobox as delivery locations retail deliveries.
- Shipments could have already arrived before the customer starts daily business.
- A void traffic peak hours.
- Ensure deliveries even if the shop manager is not physically present.
- No waiting time, no need for receiver signature…

**Consolidation of freight on one single drop off point** can save time during the delivery round (Eg - no waiting time, no need for receiver signature…).
Urban consolidation

Business model and value proposition

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Business as usual
Urban freight transport organized form logistics perspective (origin-based)

Urban consolidation
Urban freight transport organized form city perspective (destination based)
Binnenstadservice - introduction
A Dutch UCC active since 2008: The concept

Nijmegen
- one of the oldest cities in the Netherlands with over 161,000 inhabitants
- medieval city centre is situated on a small hill and has a historical structure with streets where many small, independent retailers are located
Urban consolidation
Case of Binnenstadservice

› ‘Low price’ services packages for local stores: receiving goods, delivering goods at a predictable time, organizing reverse logistics (shopkeeper needs to change his/her delivery address to BSS)

› Extra services (value proposition receiver): storage, home-deliveries, value added logistics, possibilities for e-tailing

› Locally focus on small, independent retailers, since their deliveries are often not organized nor optimized.
Urban consolidation

Case of Binnenstadservice

› Nationally focus on shippers and retail chains
› BSS bundles deliveries of multiple suppliers
› BSS uses clean transportation (value proposition authorities): electronic bicycles and natural gas trucks, electric vehicles
Urban consolidation

Case of Binnenstadservice: effects (after 1 year)

Local effects

- Decrease in vehicle km (5% after 1 year, max. 32%)
- Hardly any difference in NO$_2$ and PM10 concentration.
- After one year small decrease of nuisance. In maximum scenario a clear shift towards nuisance fewer residents
- Traffic safety and quality of life in city centre expected to be improved
- VP to local society and local retail
Urban consolidation

Case of Binnenstadservice: effects (after 1 year)

National effects (more cities with BSS simulated)

- Considerable savings per delivery (for carriers)
- Savings vary based on:
  - Type of deliveries
  - Limiting factor for length vehicle roundtrip
  - Number of kilometers between city and carriers’ DC
  - Number of deliveries in city

- VP to society and private carriers
Binnenstadservice

Multiple business models required

- Starting with a ‘free’ service makes it difficult to develop to a financially viable business model => *always a fee for all services*
- Difficult to get rid of label ‘subsidized’ => *use subsidy not for operations, local authorities as customer*
- Local growth is difficult: costs (vehicles, staff, IT) develop non-linear in contrast to volume of customers => *develop towards non-asset based UCC*
- National growth is difficult: local heroes / entrepreneurs needed, national coverage necessary for value proposition to shippers

Value propositions

- Small retailers: is evident (but relatively limited), local hero required for each city
- Shipper: only in case of national coverage
- Carrier: no real proposition, last mile deliveries are the core of carriers’ work
- (Local) authorities: cleaner, quieter, less nuisance, safer
UCC in L’Hospitalet de Llobregat (Barcelona)

Demonstration in STRAIGHTSOL

Setting:
- Demonstrating how UCC can work
- Local retailers as customers
- Local authorities as big launching customer
- DHL Supply Chain as operator
- Using existing facilities

Issues after demonstration:
- Financially viable business model
  - Retail involvement, big freight attractors, local authorities, other carriers
# Urban Consolidation Centre DHL

## Business models

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**Receivers/Retailers**

**DHL SC Spain/UCC**

**Shipper**

**Transporter / LSP**

**Negative business case**
Urban Consolidation Centre DHL

Lessons: possibilities for a financial viable UCC

- Different value propositions for different stakeholders

Towards financial viability?

1. Agreement with the *receivers* (small retail and big freight attractors) with other value added services for which they would like to pay
2. Agreement with other *LSPs* for cost or benefit sharing
3. Agreement with *shippers* (paying UCC separately for last mile delivery instead of only LSPs) => *requires other conditions*
4. Serious entrance barriers (natural or by restrictions) for city
   Active involvement of the municipality to restrict the entrance for not fully loaded / polluting or otherwise undesired vehicles in the city center
5. UCC as enabler for other solutions such as electric vehicles or bicycles
Urban consolidation

Enabling zero emission city logistics

- Limited vehicle capacity and range require adaptation of logistics system in order to use electric vehicles (EV)
- Transhipment from conventional vehicles to EV at city border (transhipment site)
- Potential to go from transhipment (single company) to consolidation at these sites
- Examples:
  - Cargohopper (TransMission) Amsterdam
  - Madrid (FREVUE)
  - TNT Mobile depot (STRAIGHTSOL)
Urban consolidation  
Enabling zero emission city logistics

Example: TNT’s Mobile depot (STRAIGHTSOL)

Key Partners
- Partners for mobile depot, property.
- Tricycle courier company

Key Activities
- 1. Deliveries and pickups by tricycle instead of vans in city.
- 2. Transport of MD
- 3. Handling at MD.

Key Resources
- Mobile depot, space, electric tricycles, employee for handling. Place for charging. < fuel.

Value Proposition
- Shortest delivery time possible delivery. On time and in perfect condition

Customer Relationships
- Both short term and long term relationships
- Focus on specific client needs.

Customer Segments
- Express services

Channels
- Telephone, internet, website, face to face contact with delivery person

Externalities
- < emissions
- < space occupancy

Cost Structure
- Mobile depot, insurance, space, electric tricycles, personnel. < costs for fuel.

Revenue Streams
- Usually, the receiver does not pay TNT, this is done by the Sender (TNT’s customer). Depending on their volume, frequency, destinations etc., TNT Express and the client mutually agree on a price.
A viable business model??

- It is not easy to find a viable business model
- **Value proposition and creating revenues**
  - Efforts in convincing stakeholders (local and national)
  - Value for individual stakeholder value is often limited
  - Different groups should be targeted with different value propositions

- **Limit costs**
  - Making use of existing infrastructure
  - Interesting developments for zero emission city logistics (transhipment areas as enabler for consolidation)

- Solution from city perspective (destination), so local actors (city authorities, local retail) should be supporting it
Thanks for your attention

Questions?

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