Freight Day VI

City Logistics Solutions for Express Package Delivery

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Challenges Faced by The Express Courier Industry

- High last-mile delivery costs including cost of transportation and parking
- Inefficient distribution (logistics) systems
- Provide greener delivery options
Urban Logistics offer unique tailor-made solutions for the transport of goods in cities by consolidating & creating innovative solutions for the future through the use of information and communication technologies.
Overview of Solutions for Express Couriers

Facility-to-Facility Distribution
- Mobile Hubs
- Consolidation Centres

Last Mile Delivery
- Express Tricycles
- Pack Stations
- Delivery Drones
Overview of Solutions for Express Couriers

Urban Distribution
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Pack Stations
Vehicle Routing with/without Pack-Stations

Without Pack-Stations

With Pack-Stations
Where to Locate Pack-Stations?

Build pack-station if \[ g < k\pi r^2 \sqrt{D} \]
200 m Radius of Each Pack Station
Which Pack-Stations to Open?
Which Pack-Stations to Open?
At Facility Cost  $g = 0.75$
At Facility Cost $g = 0.85$
At Facility Cost $g = 0.95$
Mobile Hubs
Mobile Hubs in The Distribution Network

Hub

Terminals

P&D routes
Base Case (Without Mobile Hubs)
Impact of Mobile Hubs on The Line-Haul Distance
Locating Mobile Hub Locations (parking lots)
Quantitative Analysis of Eaton Centre Walk Network

Driving Cost /km – Cycling Cost / km

Cost per vehicle stop

Yellow: Build the cycling facility
Blue: Do not build the cycling facility

$g = $500/day

$g = $1000/day

$g = $2000/day
Key findings

• Mobile hubs reduce the line-haul cost
• Pack stations reduce the local travel cost
• The effectiveness of a mobile-hub relies on the size of the line-haul trucks and the distance between the terminal and the service area
• The effectiveness of pack stations relies on the amortized cost of operating each pack station and the delivery density around the station
Questions?