Urban Freight Lab and City of Seattle testing smart lockers to ease the explosion of e-commerce deliveries

The Urban Freight Lab at the Supply Chain Transportation and Logistics Center, UW, is partnering with the Seattle Department of Transportation (SDOT) to pilot test a common-carrier smart locker system in the Seattle Municipal Tower from late March through April 2018. The pilot will test the ability of new mini-distribution centers in cities – such as smart lockers – to create delivery density and reduce the time delivery people have to spend in urban towers to complete their work. The Lab is collecting 'before' and 'after' data to evaluate the pilot's premise: that when delivery trucks can pull into a load/unload space that's close to a mini-distribution node with delivery density (lots of deliveries in one place), everyone benefits.

A fully-implemented common carrier smart locker system would allow all retailers and all delivery companies to use the lockers, as compared to branded lockers owned by Amazon, UPS, or FedEx that serve one firm. Lab members UPS and the United States Postal Service are participating in this pilot, so any package they deliver to the building may go into the locker system. The pilot was open to the first 100 Municipal Tower tenants who signed up to use the lockers.

SDOT plans to use the evidence-based results of the pilot test to determine which strategies to include in a new 'Goods Trip Reduction' set of tools that building managers, developers and designers could use to reach policy goals set out in the city's Freight Mobility Plan (https://www.seattle.gov/Documents/Departments/SDOT/About/DocumentLibrary/FMP_Report_2016E.pdf).

Previous research in the Urban Freight Lab (please see "The Final 50 Feet of the Urban Goods Delivery System; http://depts.washington.edu/sctlctr/research/publications) showed that delivery people spent more than 40% of their time in the 62-floor Municipal office tower delivering packages and goods to tenants door-to-door.

By placing the locker system as close as possible to the building's underground truck loading bay, the pilot will provide evidence of the strategy's effectiveness in reaching the Lab's two goals:

1. Reduce dwell time, the time a truck is parked in a load/unload space. Public and private benefits include:
    - More efficient use of truck load/unload spaces creates more curb, alley and private loading bay capacity without having to build additional spaces;
    - Lower costs for delivery firms, and potentially for their customers;
    - Room for cars to move through alleys, as parked trucks may block them.
2. Reduce failed first delivery attempts. According to members of the Urban Freight Lab, up to 15% of first delivery attempts in urban areas fail. The benefits of reaching this goal include:
    - Less traffic congestion, as trucks could make up to 15% fewer trips while completing the same number of deliveries;
    - More convenience and security for urban online shoppers;
    - Cut costs for retail and logistics firms;
    - Cut crime and provide a safer environment for residents and workers.

The Urban Freight Lab's suite of Final 50' projects analyze both the street network and cities' vertical space as one unified goods delivery system. By definition, the final 50' of the urban delivery system begins when a truck stops moving:

- At the city Commercial Vehicle Load Zone (CVLZ) or alley,
- Or in a privately-owned building's loading bay or dock, and
- Ends where the owner takes receipt of goods.

Urban Freight Lab members Charlie's Produce, Nordstrom, UPS and USPS set the goals for the Final 50' pilot test. The Seattle Department of Transportation, the Pacific Northwest Transportation Consortium (PacTrans), and the Urban Freight Lab are funding this pilot project. The Urban Freight Lab has several additional research projects underway:

- Feasibility study to locate smart locker systems at or near three Sound Transit Stations;
- Curb and alley occupancy studies in Seattle, to help understand current use and to predict future demand for scarce load/unload space;
- GIS mapping and measuring the features of the entire truck load/unload space network (curb, alley and private loading bays and docks) in Seattle's Center City area.