Improving the Urban Goods Delivery System
A Systems Engineering Approach in the Final 50 Feet

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The Urban Freight Lab

• Members of the Urban Freight Lab at UW, in partnership with the City of Seattle Department of Transportation (SDOT), are using a systems engineering approach to solve delivery problems that overlap cities’ and businesses’ spheres of control.

• The Urban Freight Lab is a living laboratory where potential solutions are generated, evaluated, and pilot-tested inside urban towers and on city streets.

• Members of the Urban Freight Lab fund the Lab and dedicate senior executives’ time to it.  
  - Charlie’s Produce
  - Costco Wholesale
  - Nordstrom
  - UPS
  - USPS
Final Fifty Feet Research Project

The Urban Freight Lab’s first project focuses on the final 50’ of the urban delivery system:

• Begins at the city-owned Commercial Vehicle Load Zone (CVLZ) or alley,

• Or in a privately-owned building’s loading bay or dock, and

• Ends wherever the owner takes receipt of goods.

Photo by University of Washington (UW)
The Final Fifty Feet is a New Research Field

The Final 50’ project is the first time that researchers have analyzed both the street network and cities’ vertical space as one unified goods delivery system.

It addresses:

• The use of scarce curb, buildings’ internal loading bays, and alley space;
• How delivery people move with handcarts through intersections and sidewalks; and
• On the delivery processes inside urban towers.

Photo by Anna Bovbjerg, UW
Reduce dwell time, the time a truck is parked in a load/unload space.

Public and private benefits include:

• Lower costs for delivery firms, and therefore potentially lower costs for their customers;
• More efficient use of truck load/unload spaces creates more capacity without building additional spaces; and
• Room for other vehicles to move through alleys.
Final 50’ Goal #2

Reduce failed first deliveries to:

• Improve urban online shoppers’ experiences and protect retailers’ brands;

• Lower traffic congestion in cities, as delivery trucks could make up to 15% fewer trips while still completing the same number of deliveries;

• Cut costs for the retail sector and logistics firms;

• Cut crime and provide a safer environment;

• Ensure that all city neighborhoods can receive online orders, not just a few.
Final 50’ Goods Delivery System Analysis

Key Finding:

Processes inside the City’s towers control the number of failed-first-deliveries, as well as the truck dwell time in curb, alley and private parking spaces.

Photo: Seattle Municipal Tower
Public and Private Building Policies, Processes and Layout Control
Current and Future Delivery Operations

I. Policies -

When building management decides whether to offer a concierge or goods locker service, they are deciding whether delivery people can go to one floor and leave, or must go door to door on multiple floors.

II. Design -

When cities set building codes and developers ask for exceptions, those tradeoffs enable trucks to park where there is capacity – or make them compete for curb space. Design options that make a difference:

• Are there underground freight bays and loading docks?
• Do the passenger elevators go to the loading bay level, making it compliant with the American Disabilities Act (ADA)?
System Users’ Behavior Also Controls the Ability to Achieve Goals

III. Behavior -

Delivery people. Experienced staff have the knowledge. New staff need wayfinding help inside city office, retail, hotel and residential towers.

Building security. Automated or in-person?

Tenants and other goods receivers. Market acceptance of strategies such as common carrier lockers in office, retail and public spaces – transit mobility hubs - is unknown.
Final 50’ Project will Pilot Test a Common Carrier Locker System at the Muni Tower

Expected Results:
1. For firms carrying small-to-medium packages, significantly reduce:
   A. ‘Deliver’ tasks;
   B. Waiting for elevators.

2. Large goods still need to go to the receiver’s location.

Challenge:
1. Paying for the new system:
   A. Include in rent, or
   B. Pay a daily or weekly rate?
How is SDOT Using the Research Results?

SDOT and the Urban Freight Lab are developing a suite of Goods Trip Reduction strategies. By applying systems engineering we can make receiving online goods as efficient as ordering them – without clogging city streets and curb space, or losing packages.
Questions?

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