

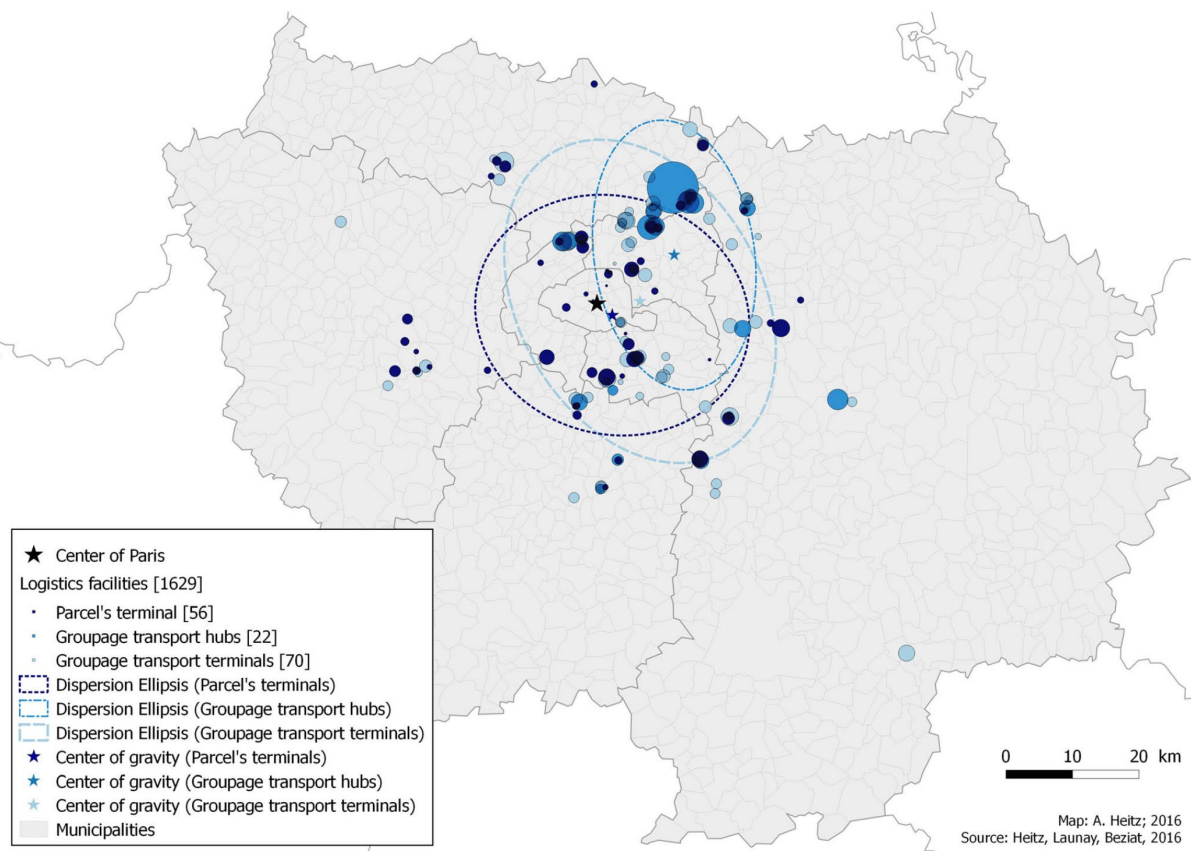
# Reducing freight traffic with smart urban logistics

Sustainable and liveable cities with low logistics visibility













Urban Transport Conference  
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# City logistics faces major challenges from city densification



- Activities related to transportation / delivery of goods pushed out of cities (Logistics Sprawl)
- Transportation volumes have increased, distances have become longer
- Swiss population projected 10M in 2040 (+25%)
- Parcel volume forecasts ZH:
  - +75% parcel volume by 2040
  - +37% expansion of logistics fleet
  - +58% more small delivery vehicles
- Legislation: Settlement areas fixed - densification of urban areas is a must; construction mandatory
  - Decreased infrastructure availability for freight transport
- **Growth to be managed on existing infrastructure**

# Growing freight and delivery traffic leads to challenges in urban areas

Economic challenges			Environmental challenges			Social challenges		
	Logistics costs for last mile (53% of total shipping costs)	↑		CO <sub>2</sub> and particulate matter emissions due to increased demand in goods and e-commerce	↑		Quality of life decrease due to air pollution, noise, congested streets	↓
	Congestion costs due to drivers waiting in traffic jam	↑		Flexibility increase through smaller delivery vans causes more traffic and subsequently, more emissions	↑		Increased risk of accidents due to more traffic, blocked sidewalks and bicycle paths	↑
	Delivery effort (not only stores but also private households to be delivered)	↑		Raw material consumption due to production of more, but smaller delivery vehicles	↑			
	Bundling possibilities due to short lead time expectations from customers	↓						
	Reliability of LSP	↓						



# Infrastructure will become a scarce resource



# What shall we do?





# Systemic approach: Coopetition





# Systemic approach: Multimodality

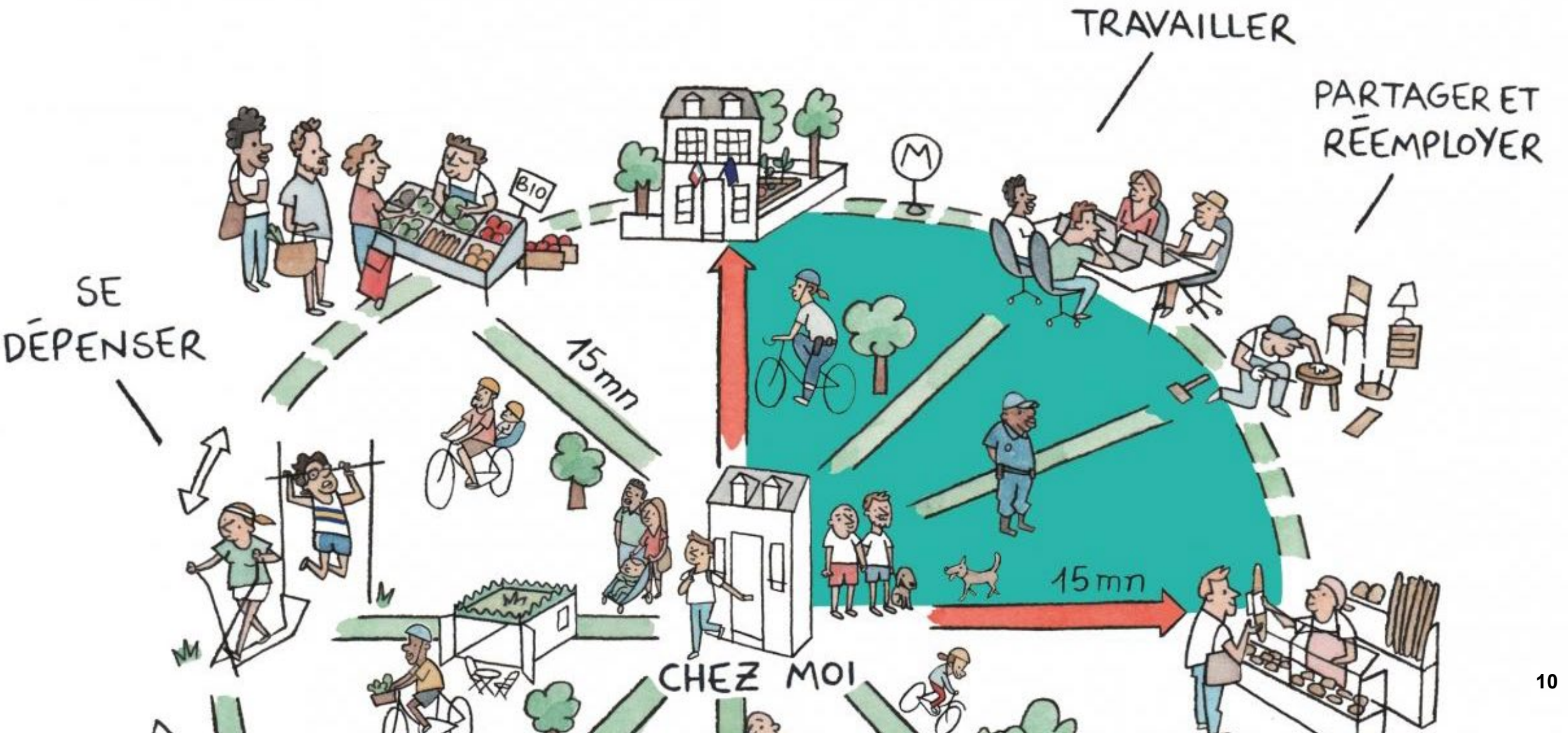


# Systemic approach: Integrating customers into the process

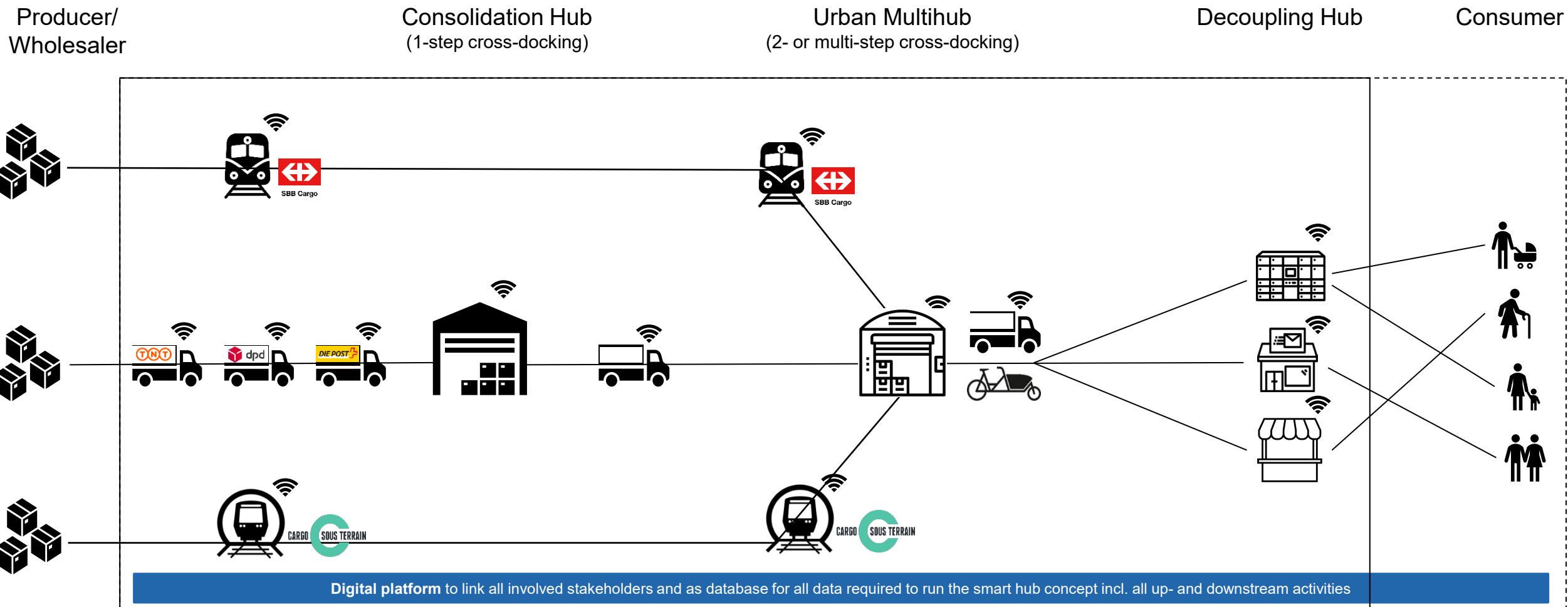




# Systemic approach: City of short distances in goods delivery



# Core concept of research project: Smart urban multihub





# Project work packages

## (1) Dev. of an urban hub concept

- No. of hubs and hub purpose based on city's circumstances
- Optimal location of hubs to serve city sustainable, reliable, and resilient
- Provision and disposal of deliveries
- Optimisation for sustainable city logistics

## (2) Design of urban multihub

- Evaluation of stakeholder requirements and expectations (incl. logistics providers, retailers, customers, neighbourhood, authorities)
- Evaluation of multi-purpose requirements
- (Automated) multi-stage cross-docking
- Facility requirements to serve as UMH
- Development of Business model for UMH

## (3) White-label logistics

- Development of a collaboration model
- Combination possibilities for white-label logistics
- Organisation of last mile delivery
- Economic, Social and Sustainability impacts of a white-label solution
- Development of Business model for white-label logistics

## Digitisation as backbone of solution

- Tour planning for low km routes / delivery speed
- Route optimisation / Last mile planning
- Impacts on sustainability
- Customer interaction (incl. customized mailing)
- Shared IT infrastructure as an enabling technology
- Prediction of future orders

## (4) Decoupling customer/supplier

- Customer needs and preferences
- Receiver's motivation to take active role in solution
- Decision model for decoupling hub location
- Size of decoupling hub
- Mobile / fix decoupling hubs
- Business model for decoupling hub

## (5) Incentive model

- Regulatory conditions for sustainable urban logistics
- Incentives for sustainable urban logistics
- Incentives to foster coopetition
- Development of incentive model for coopetition and use of urban hub concept
- Integration of incentive model into ICT

## (6) Impacts of an urban hub concept

- Impacts on ecological, social, and economic sustainability
  - Advantages for the inhabitants of Zurich
  - Potential sustainability gains (CO<sub>2</sub>e emissions savings, noise level reduction, ...)
  - Reduction potential of congestion
  - Impact on costs and cost savings
- Long-term and short-term benefits of an urban multihub

# To achieve sustainable urban goods supply and disposal all stakeholders need to be involved

## Logistics Service Providers

Cooperation with competitors  
(coopetition)

Cooperation with complementary  
service providers for traffic  
reduction

Use of hubs and platforms

White / Multi Label Logistics

Auction platform to offer free  
capacities

Delivery allocation based on  
simulation for energy autonomy

## Cities and politics

Provide support for hubs in urban  
areas

Create positive incentives

Provide shared logistics  
infrastructure

CO2 certificates, sustainability  
certifications

Adjust regulations for delivery  
times / access to city center with  
alternative technologies or modes  
of transport

## People

Willingness to actively engage in  
delivery process

Acceptance of logistics services in  
the urban area

Reasonable expectation of delivery  
times

Sensitivity / demand for sustainable  
delivery options



# Thank you very much for your attention!



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