



citylog

sustainability and efficiency
of city logistics

User needs workshop

Telematic solutions for urban logistics

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A need to understand city logistics activities

Usually recognised for its *unsustainable* impacts on

the planet

- pollution
 - global; e.g. CO₂ emissions
 - local; e.g. PM10

the people

- consequences on public health
- nuisance
 - e.g. noise, visual intrusion, vibration
- traffic safety
- reduction quality of life

the profit

- inefficiency
- congestion and decreased city accessibility

But...

urban freight transport is essential

- Economic vitality
- Livability
- Trade
- Leisure time activities

And it supports our urbanized society



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A need to understand city logistics activities

- ✓ Transport activities in urban areas regulated mainly by LOCAL rules
- ✓ Sometimes city planning makes logistics less efficient
- ✓ Lack of harmonization
 - costly for the society and for the main stakeholders
- ✓ Different logistical operations: LTL (parcel, others) and FTL
- ✓ Logistics possibilities dependant on many regulations or limitations
 - lack of storage capacity for shops, social rules, cost of real estate,...
 - decision centers, political bodies not at the scale of the « urban logistic map »





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Citylog Telematic Solutions

- ✓ The following info mobility services will be implemented:
 - Pre-trip planner → optimized sorting of the delivery destinations (“milk run” problem)
 - Ad hoc map attributes → enhanced maps with attributes for commercial vehicles
 - Dynamic navigation → mission rerouting to avoid traffic congestions
 - Last mile parcel tracking → short term delivery notification (e.g.: 15 minutes before)

- ✓ These solutions shall be integrated: **CITYLOG LOGISTICS PLANNER**



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Pre-trip planner

Problem

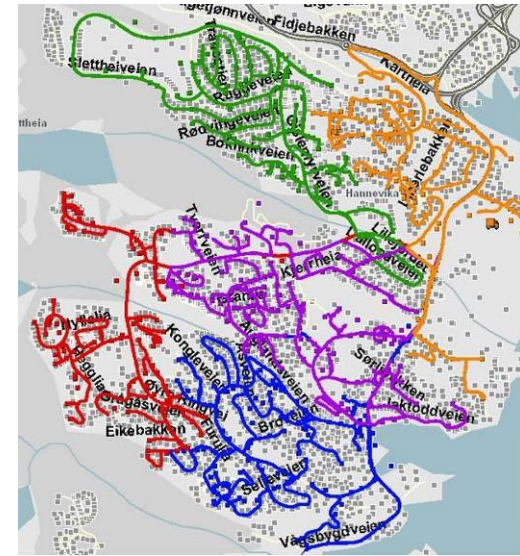
- ✓ Forecast and actual information not (enough) considered during initial planning exercise
- ✓ Static and dynamic restrictions not included in planning
- ✓ Costs and extra kilometers due to not realistic plans

Solution (proposed)

- ✓ Existing pre-trip planning tools will be extended to consider forecasted and actual traffic conditions and static and dynamic restrictions

Challenges

- ✓ Information availability
- ✓ Integration of different issues





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Ad-hoc map attributes

Problem

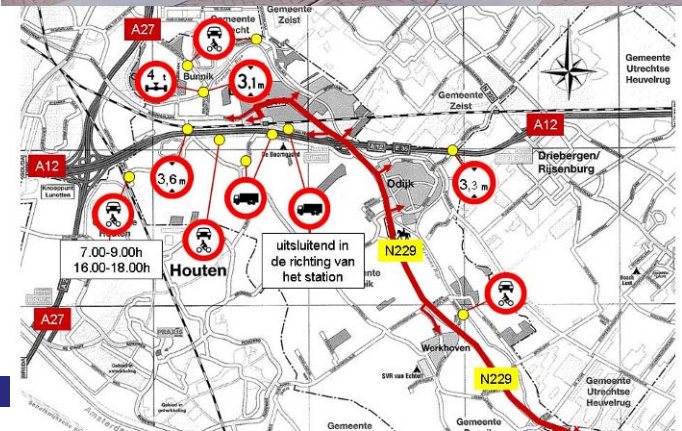
- ✓ Many different restrictions (per city / street)
 - Time-windows, vehicle restrictions, environmental zones, etc..
- ✓ Many physical constrains (temporarily / permanent)
 - Pedestrian areas, construction sites, etc.
- ✓ No harmonization

Solution (proposed)

- ✓ A map that includes all restrictions and constraints

Challenges

- ✓ Update and include attributes
- ✓ Communicate with planner
- ✓ ...





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Dynamic navigation

Problem

- ✓ Traffic congestion
- ✓ Other events
- ✓ Detours and congestion environmentally unfriendly

Solution (proposed)

- ✓ An on-board navigation system sends to a remote server a simplified format of the calculated route. In case of traffic events, the route is re-arranged and downloaded (in a simplified format) to the vehicles

Challenges

- ✓ Update and include actual information
- ✓ Communicate with planner and driver
- ✓ ...





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Last mile parcel tracking

Problem

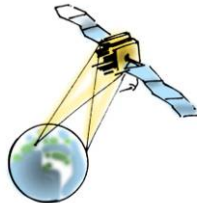
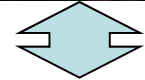
- ✓ Receivers are not at home, so the delivery fails and has to be done another time
- ✓ Receivers need information in case drop boxes are used

Solution (proposed)

- ✓ Vehicle position information to inform final addressees about expected delivery time
- ✓ Monitor and inform in case of deviations

Challenges

- ✓ User information
- ✓ ...

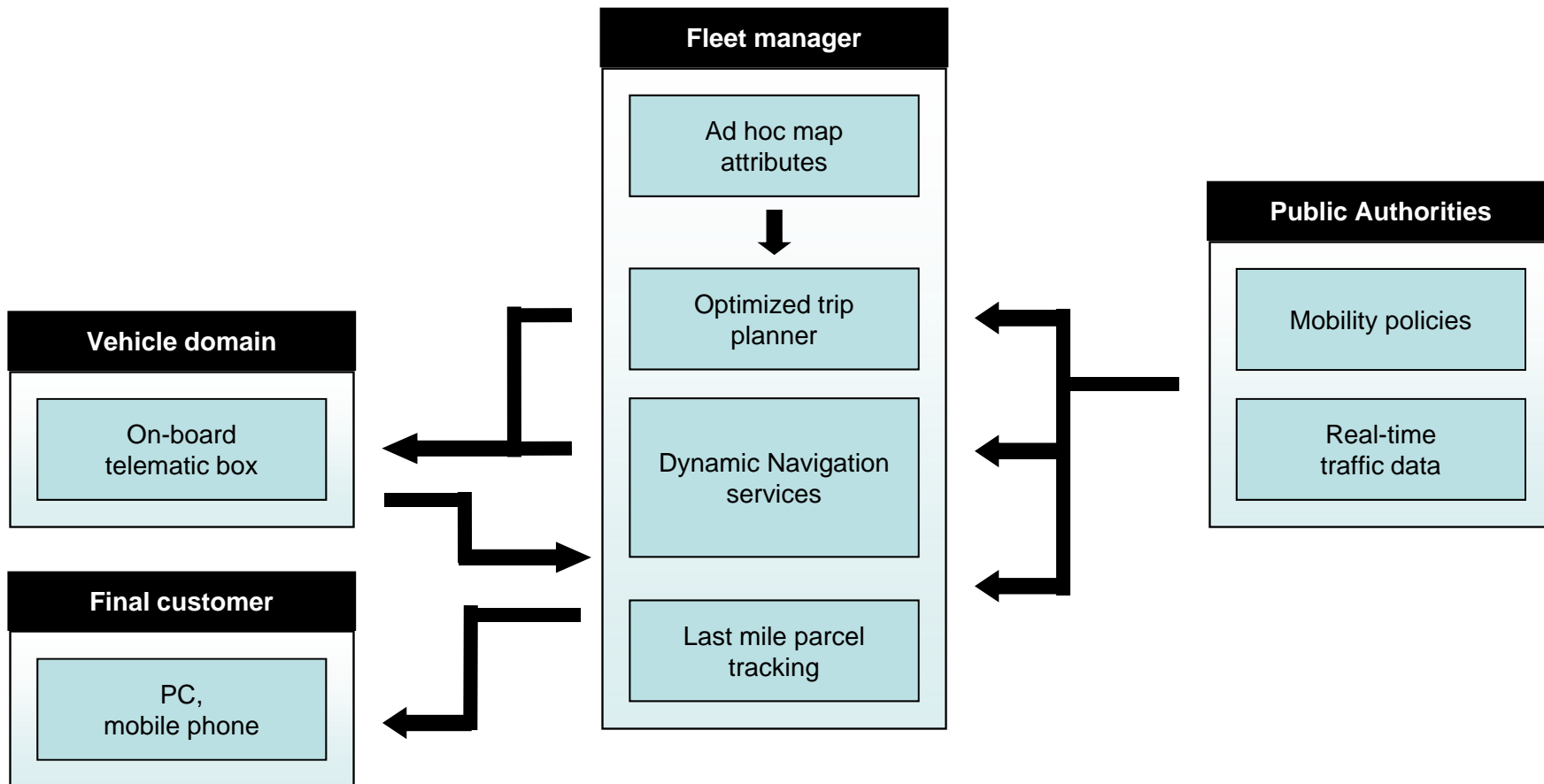




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CITYLOG Logistics Planner





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Questionnaire





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The User Needs Questionnaire Stakeholder Groups

DEMAND

SHIPPERS

- Wholesalers
- Small Retailers
- Large Chain Retailers
- Manufacturers

RESIDENTS

- (Inner) city residents
- (Inner) city users
- Shop owners not retailers
- City interest groups

PLAN & EXECUTION

FREIGHT CARRIERS

- Professional (third party) road transport operators
- Private carriers
- Distribution companies
- Logistics service providers
- Urban Delivery Center Managers

ADMINISTRATORS

- Local authorities
- Municipalities
- Chamber of Commerce
- Infrastructure Managers
- Policy makers
- Urban planners
- Associations of municipalities

TRUCK/VEHICLE MANUFACTURERS

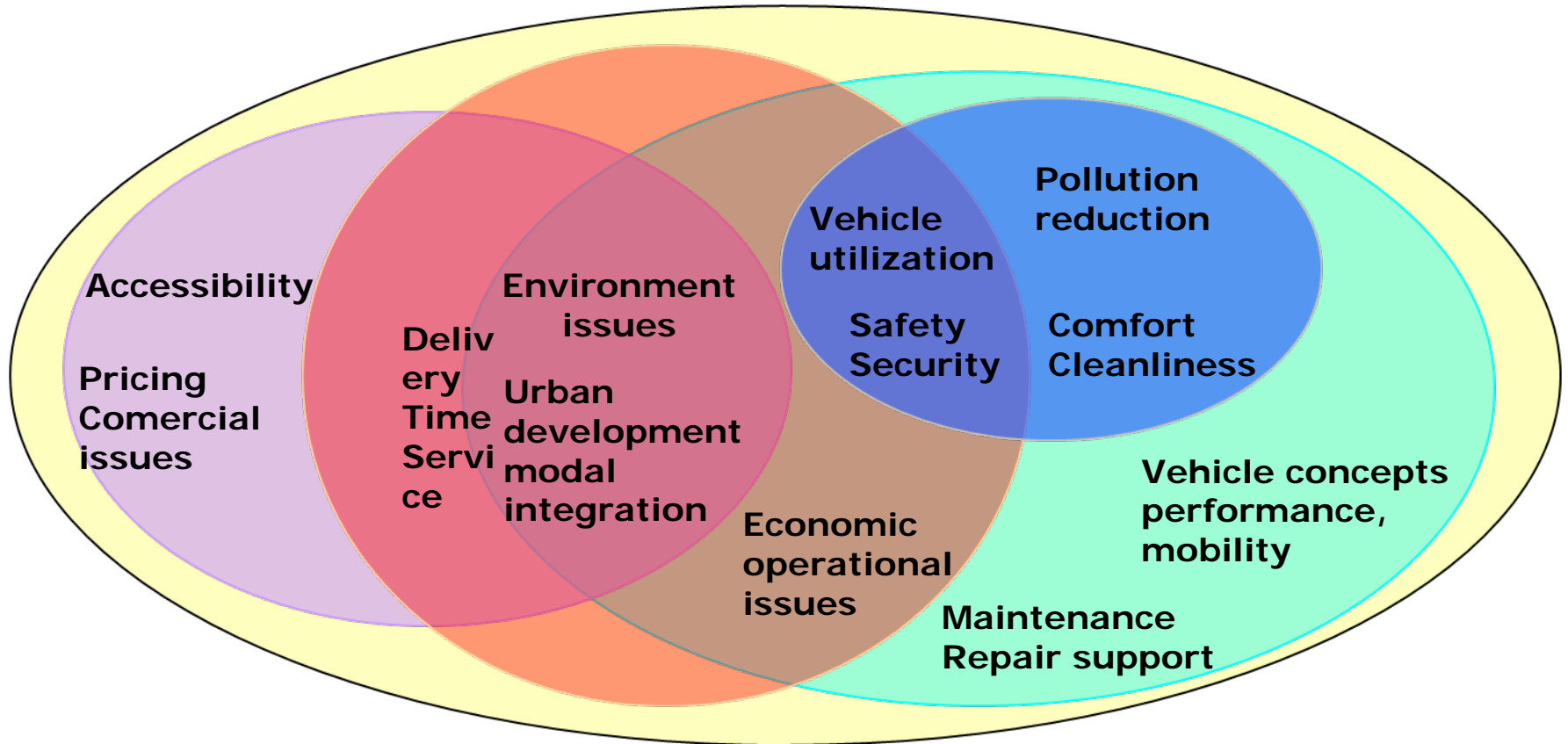
- Truck & trailer manufacturers and sub suppliers
- Assemblers, Producer, Sellers, Designers



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Stakeholders - Domains



Residents

Administrators

Shippers

Trucks Manufacturers

Freight Carriers



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Administrators

- Safety and security
- Vehicle utilization
- Economic and operational issues
- Service reliability
- Accessibility to vehicle, to services and to infrastructure
- Environment issues
- Urban development, modal integration and quality of life



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Residents

- ✓ Reduction of nuisance
- ✓ Service reliability (delivery time)
- ✓ Accessibility to vehicles, to services and to infrastructures
- ✓ Environmental issues (social and regulation)
- ✓ Urban development, modal integration and quality of life
- ✓ Quality feeling/perception (delivery services) / customers
- ✓ Pricing and commercial policies



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Shippers

- Efficient and reliable urban freight transport
- Safety and security
- Comfort and cleanliness
- Vehicle utilization
- Consumption, pollution and noise reduction



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Truck Manufacturers

- ✓ Vehicle concepts, lifetime and durability, performance, mobility
- ✓ Consumption, pollution and noise reduction
- ✓ Safety and security
- ✓ Maintenance and repair support and guidance
- ✓ Comfort and cleanliness (inside/outside cab for the holder and driver)
- ✓ Vehicle utilization (load factor, time of operation)
- ✓ Economic and operational issues (cost effectiveness / efficiency / cost reduction)
- ✓ Environmental issues (social and regulation)



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Freight Carriers

- ✓ **Vehicle concepts:**
 - Lifetime and durability,
 - Performance, mobility,
 - Consumption, pollution reduction
 - Safety and security
 - Maintenance and repair support
- ✓ **Comfort and cleanness**
- ✓ (inside / outside cab for the holder & driver)
- ✓ **Vehicle utilization**
(load factor, operation time)
- ✓ **Service reliability** (delivery time)
- ✓ **Flexibility** & trip rationalisation
- ✓ **Accessibility** to vehicles, services & infrastructures
- ✓ **Environmental issues**
(social & regulation)
- ✓ **Urban development**, Modal integration and quality of life
- ✓ **Quality feeling/perception** (delivery services) / customers
- ✓ **Economic & operational issues** Cost effectiveness / efficiency / cost reduction)
- ✓ **Pricing and commercial policies**



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Thank you for your attention

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TNO



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Questions for discussion

- 1. For which logistics cases could these telematics solutions be suited?**

- 2. What are the conditions to fulfil and to make these telematics solutions interesting and working in practice?**
 - Attractiveness of city
 - Regulations
 - Information
 - ...

- 3. How does city logistic in the future look like?**
 - Which IT functions ideally enable this future development?