

19^{ème} GS1 Forum Suisse de Logistique, 7 novembre 2019

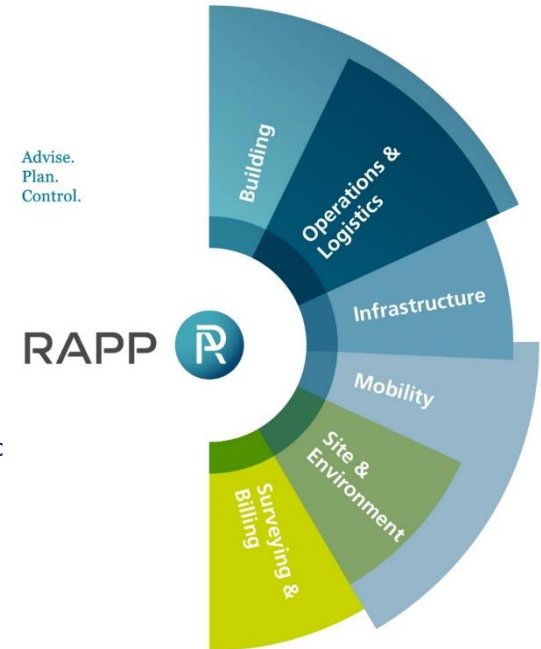
Urban Logistics: Challenges and Innovative Approaches

Martin Ruesch, Member of Management Board/Partner, Rapp Trans Ltd., Zurich



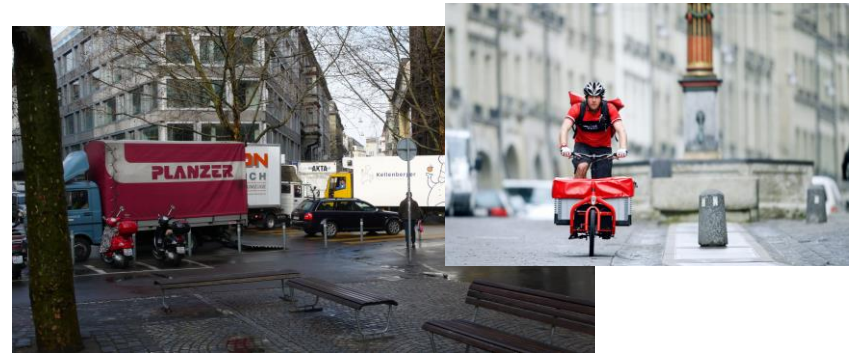
Rapp Group and Rapp Trans

- The Rapp Group: **Engineering, planning and consulting company** in the fields of mobility, operations and logistics, infrastructure, buildings and sites/environment with the head office in Basle.
- **Rapp Trans AG:** part of the Rapp Group, offers **planning and consulting services in the areas of mobility, transport and intelligent transport systems**. Company locations in Basel, Zurich, Freiburg (DE) and Berlin (DE).
- Core competencies include **freight transport consulting for the public sector and logistics consulting for shippers, logistics and transport service providers**.
- **Services areas for the public sector** include
 - Freight traffic surveys and forecasts, volumes and potential analyses, freight traffic concepts / strategies, location planning, evaluations of governmental measures
- **Services areas for the private sector** include
 - Strategy development and implementation, market analyses, goods flow analyses, route analyses, logistics site planning and evaluation, network planning, strategic route planning, transport process optimization, controlling, measuring and evaluation systems, logistics site development and planning
- More Information: **www.rapp.ch**



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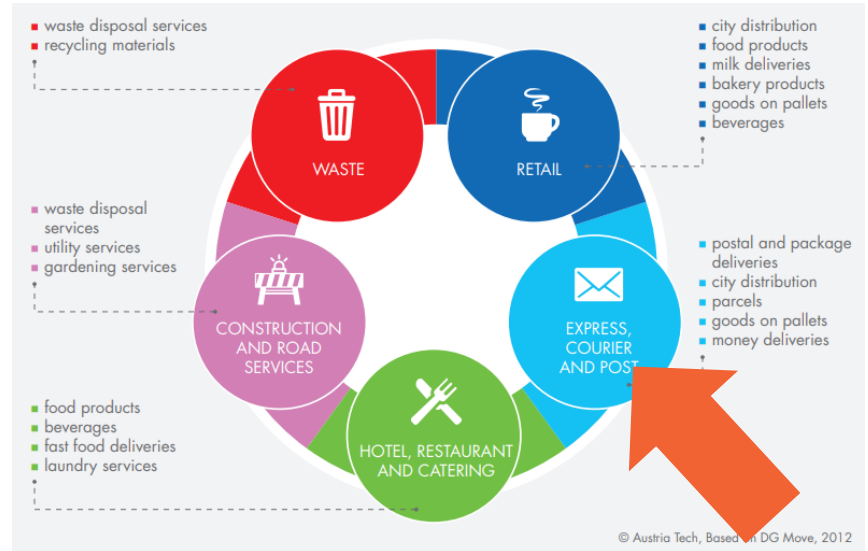
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1. Trends and Key Challenges

Relevant urban logistics segments

- **Daily retail deliveries** – highly fragmented - many movements – low payloads
- **Construction** – high volumes on heavy vehicles – craftsmen with delivery vans – deliveries focused on construction process
- **Hotel, restaurant and catering** – deliveries are required frequently and in small quantities – unpredictability
- **Waste management** – regular and recurring collection tours and trips
- **Express/courier and post parcel services** – high urgency – requires consolidation and efficient routing for varying delivery tours

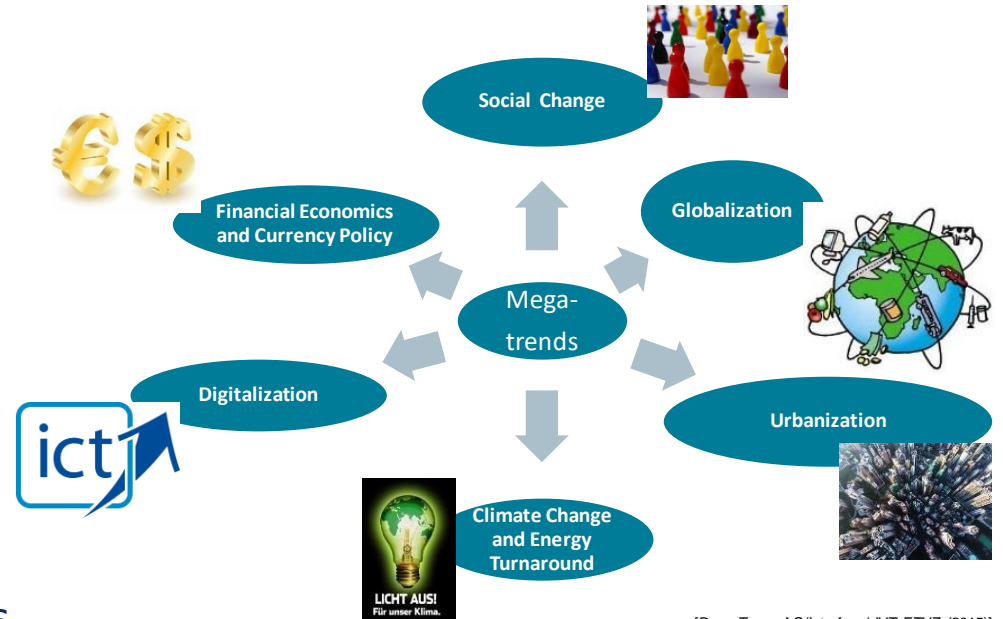


Important and fast growing segment in urban logistics

1. Trends and Key Challenges

Megatrends

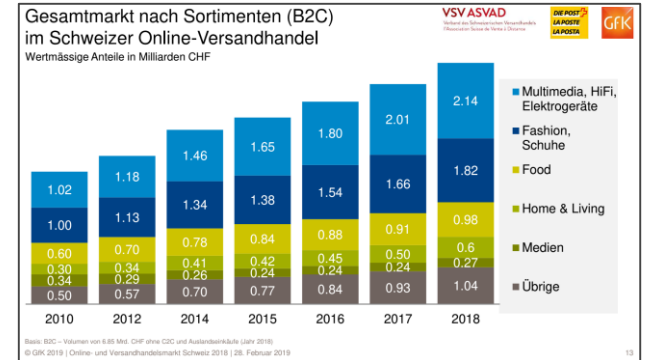
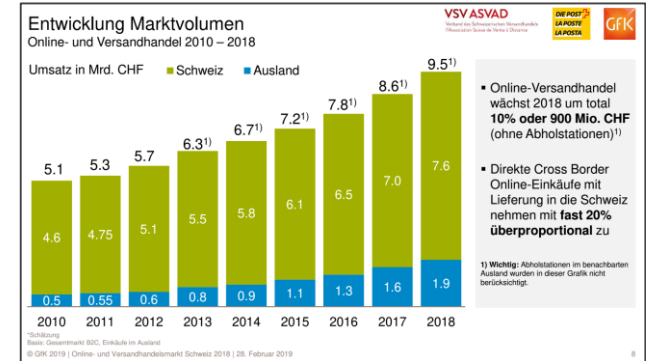
- **Particularly important mega trends for urban logistics**
 - Social change
 - Urbanisation
 - Digitalization
- **Selected Impacts**
 - Changing shopping behaviour
 - Increasing number of trips and pressure on urban space
 - New business models and changing procurement strategies



[Rapp Trans AG/Interface/ IVT ETHZ (2015)]










1. Trends and Key Challenges: Megatrends/Example E-Commerce

- **Transfer from stationary to online trade**
- Share of online trade: **approx. 10% today, increasing to 50/60% (??)**
- **Strong growth of market volumes** of KEP-Services and postal parcel services
- **Radical changes** in logistics chains (especially B2B → B2C)
- **Delivery requirements** are increasing (spatial and temporal)
- Need for service providers to get **closer to the client**



1. Trends and Key Challenges

Logistics Trends

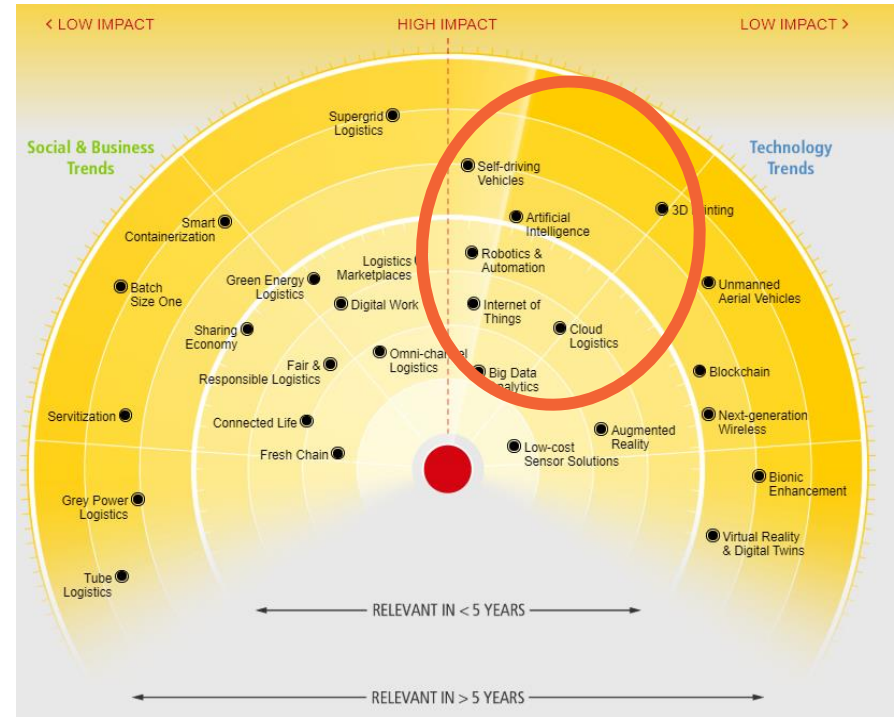
Logistics Trends			Traffic Volumes	Traffic Performance	Logistics Space Demand	Energy Consumpt.	CO2-Emissions
1	Specialisation, Freight Structure Effects		↗	↗	↗	↗	↗
2	Outsourcing by Shippers Reduction of Inventory		↗	↗	↗	↗	↗
3	Concentration of Logistics Sites, Bundling and Networks		↘	↘	↗	↘	↘
4	Concentration/ Increasing Utilisation intensity		⇒	⇒	↘	↘	↘
5	New Last Mile Delivery Services		⇒	↘	↗	↘	↘
6	Green Logistics / Energy Efficiency		↘	↘	↘	↘	↘
7	Individualization / Client Solutions		↗	↗	↗	↗	↗
8	Automation / Informatisation		↘	↘	↘	⇒	⇒
9	Redundant Systems		⇒	⇒	↗	↘	↘

[Rapp Trans / Interface / ETH IVT 2015]

1. Trends and Key Challenges: Logistics Trends

Logistics Trends / Example Automation/Informatization

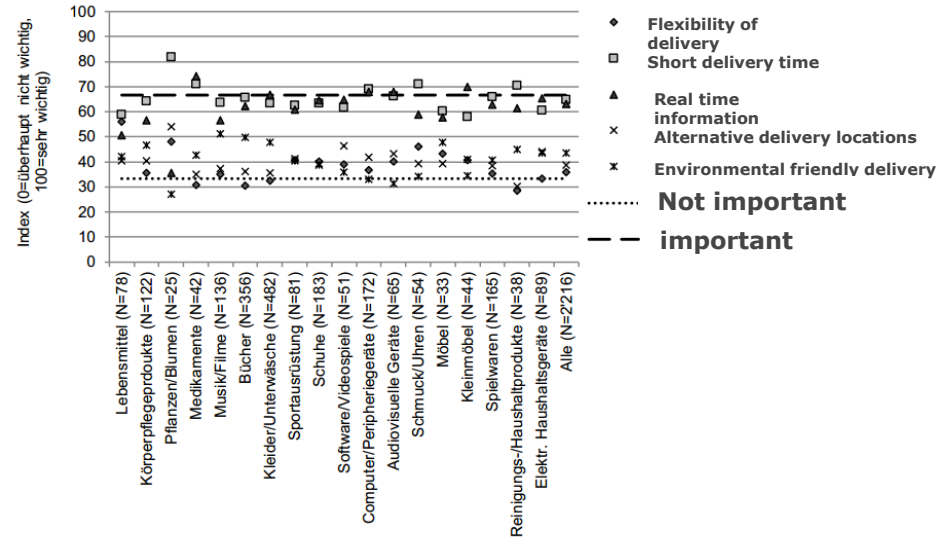
- Automation started in the 1950's
- **Technology trends with game changing potential**
 - Robotics/Automation, Artificial Intelligence
 - Self Driving Vehicles, 3 D-Printing
 - Big Data, Cloud logistics, Internet of Things
- **Impacts on logistics**
 - Better predictive abilities
 - New business models
 - Outsourcing of manufacturing processes
 - Optimisation of processes, higher utilisation degrees of vehicles, equipment and infrastructure



1. Trends and Key Challenges: Logistics Trends

Importance of delivery criteria by product

- **SVI-Study** on impacts of E-Commerce on traffic and transport
- Relevance of **short delivery times**, **flexibility of delivery**, **real time information** and **alternative delivery locations**
- **Short delivery times** especially important for flowers, medications, jewelry/watches, cleaning/household products
- **Environmental aspects not yet very relevant**



Frage: Welches dieser Kriterien ist für Sie bei der Lieferung / Zustellung von Online-Einkäufen aus der Produktgruppe xy am wichtigsten, und welches am wenigsten wichtig? Bitte geben Sie also pro Spalte genau eine Antwort.

Quelle: Konsumentenbefragung (LINK/B.S.S., 2017).

[SVI 2019, Auswirkungen des wachsenden Versandhandels auf das Verkehrsaufkommen, draft]

1. Trends and Key Challenges

Key Challenges from different perspectives

From public perspective

- Increasing freight trips and use of public space
- Stronger use of space for logistics facilities
- Energy consumption and GHG-emissions
- Pollution and noise
- Conflicts with other road users
- Limited multi-user ability of facilities
- Traffic safety of non-motorised transport

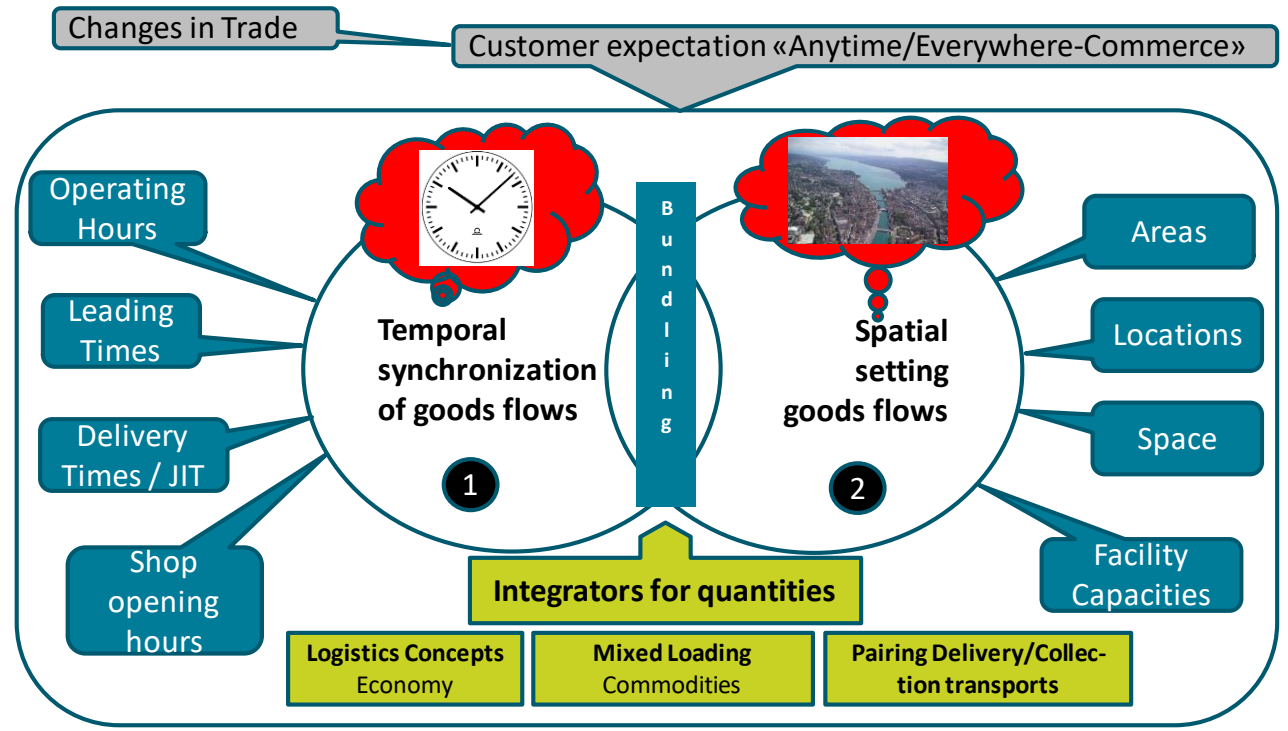
From private perspective

- Increasing delivery requirements
- Road capacity limitations and impacts on reliability
- City access restrictions and their variety
- Lack of space for loading / unloading
- Lack of space for logistics facilities
- High costs of last mile deliveries (incl. return consignments)
- Restricted approval of new vehicles

1. Trends and Key Challenges

Key Challenge: Bundling Dilemma

Bundling not only spatial but also temporal!



[Rapp Trans AG, 2018, ILMA+ ,
Metropolitankonferenz Zürich]

2. Innovative Approaches *Delivery Services*

Focus on Delivery Service

**Self
Collection**



**Operated Transfer
Points**



**Box Systems
company / open**



**Delivery to
workplace**



**Delivery at home
right away / time window**



**Delivery to
trunk**

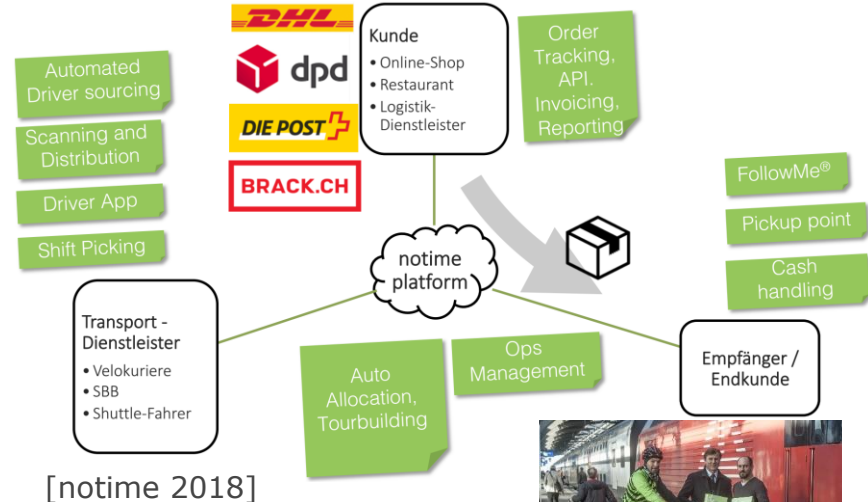


Increasing variety and complexity of delivery services!

2. Innovative Approaches

notime AG

- **Notime: crowd-based logistics platform** optimized for automated route formation, bundling and real time allocation of parcels
 - same-day
 - time-frame delivery
 - instant (within 90 minutes)
- Use of **freight bikes** also in combination with **rail transport**
- The **platform technology** can basically be used in all urban areas (currently 11 Swiss cities online)

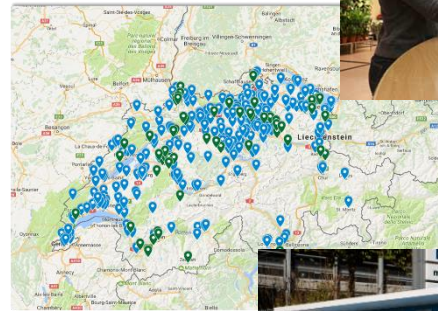


2. Innovative Approaches

PickMup



- **PickMup:** pick-up service from the Migros Group → Online orders can be picked up conveniently at a PickMup location of your choice
- **Web-based parcel information system;** system must be able to show all restrictions for a certain location (access times, holidays, etc.)
- **Online order** from Digitec, Micasa, LeShop, brack.ch, ...and collect purchases from a selected Migros, migrolino or Ex Libris store
- **Order picking and delivery** to PickMup location until 3 PM: Collection by client the same day



[Quelle: MGB]

2. Innovative Approaches

PARCELLOCK



- **“Open Multiuser” Pick up stations solution** in Germany for 7/24
- Established in **2015** by DPD, GLS and Hermes
- ParcelLock: **open system that enables all parcel service providers** to successfully deliver first parcels to
 - Public pick up stations
 - Pick up station for multiple dwellings
 - Personal single pick up station
- **Minimizing pick up facilities**
- Avoiding unnecessary multiple journeys
- Currently 20 to 25 stations, further extension



<https://www.parcellock.de/>

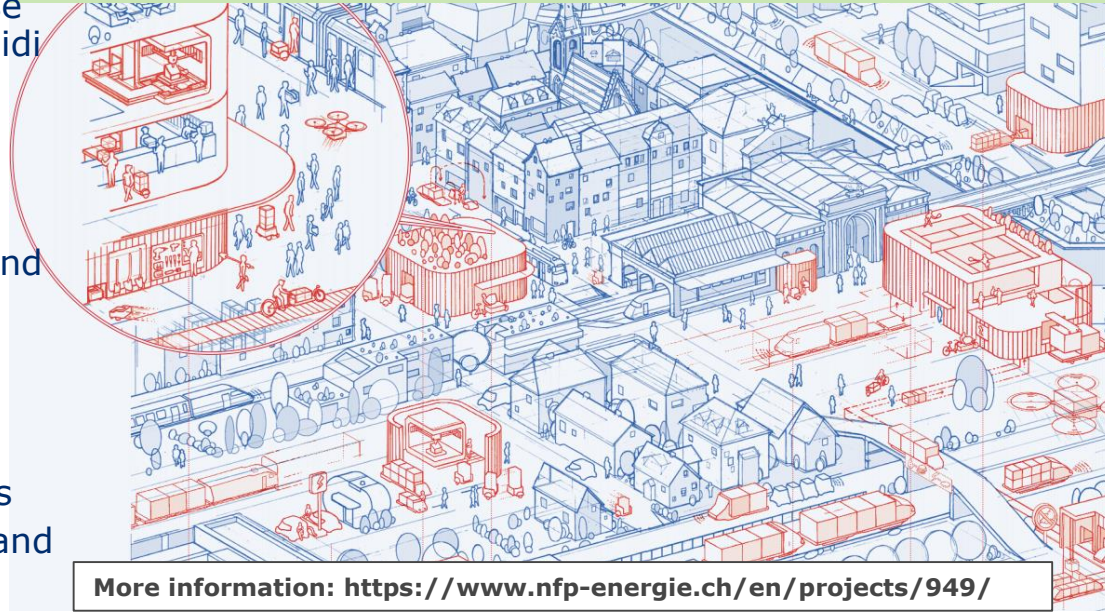
3. Smart Urban Freight Vision 2050

Results from Swiss NRP Project

Vision elements regarding last mile solutions

- Rail based city hubs with multi-purpose transshipment facilities connected to midi and micro hubs
- Open and automatic pick points
- 3D-Printing as part of midi and micro hubs
- Vehicles with batteries and fuel cells and cargo-bikes
- Sharing economy
- Automated freight vehicles
- Secured space for logistics locations
- Underground freight transport systems
- Behavioural change based on energy and CO2-declaration (sufficiency)

«Urban logistics in 2050 is carbon free and highly energy efficient, on levels which were unanticipated in the beginning of the 21st century»

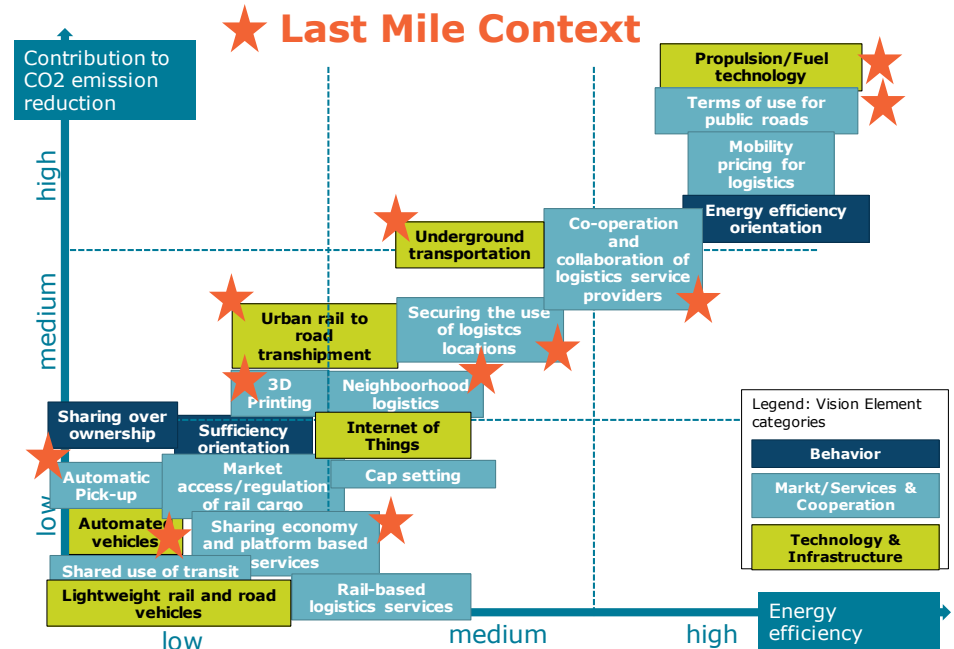


More information: <https://www.nfp-energie.ch/en/projects/949/>

3. Smart Urban Freight Vision 2050

Results from Swiss NRP 71 Project

- Last mile elements play an important role in the vision
- Substantial contribution to reduction of CO2-emission and energy consumption (share of 7 to 9% of the reduction needed)
- Other elements play also an important role (pricing, regulation, cooperation etc.)
- Mix of different elements needed to reach the ambitious goals

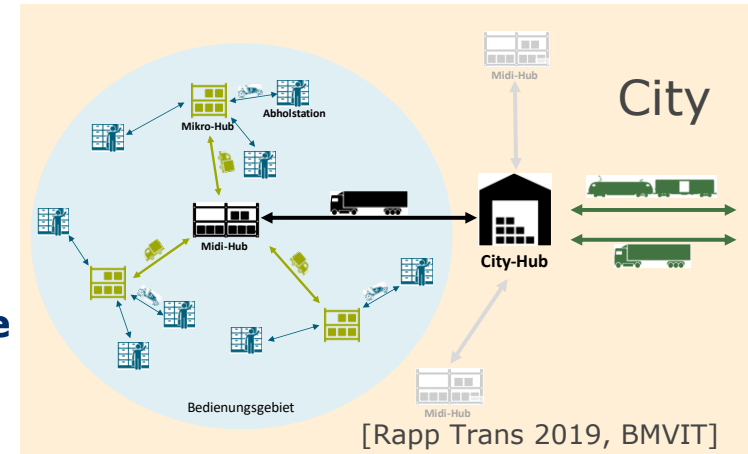
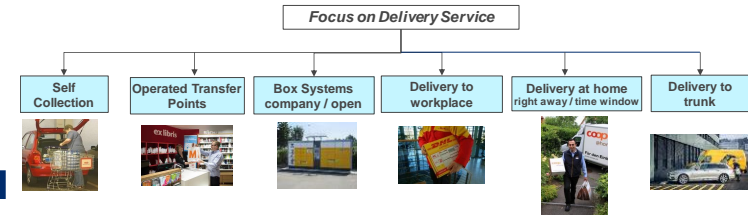


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4. Conclusions

General Conclusions

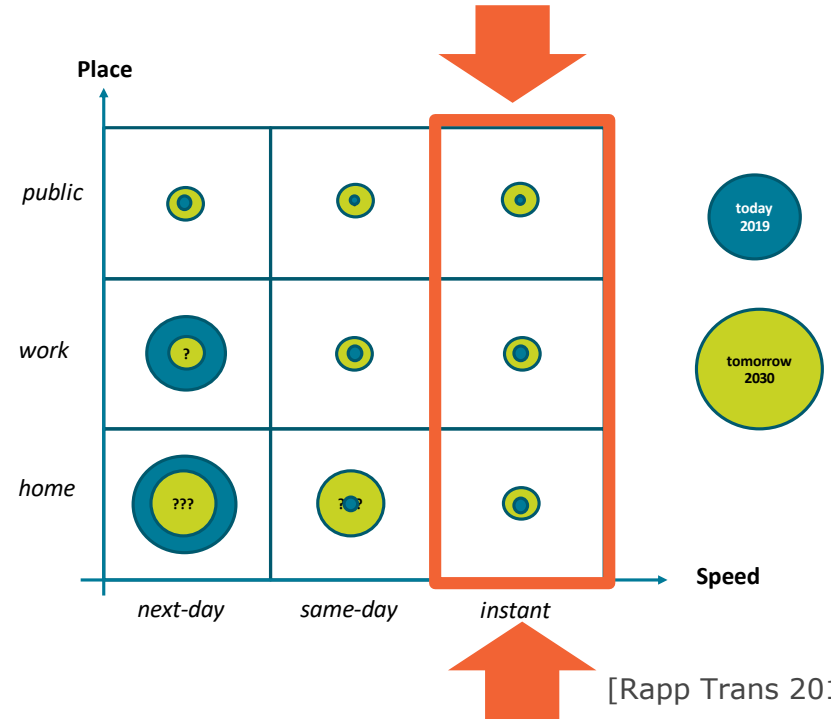
- **Delivery time → important customer requirement** and differentiating factor of delivery services
- Delivery chains are getting **more sophisticated and IT-driven**, but also more sensitive
- **Various delivery concepts will be operated in parallel**
- **Proximity to customers will become more important again** → need for logistics space for distribution hubs, city hubs, midi-hubs, micro-hubs, pick up stations
- **Standardized interfaces and data exchange** play an important role
- **Various barriers** to new last mile services



4. Conclusions

E-commerce – Delivery in 2 hours? Fiction or reality?

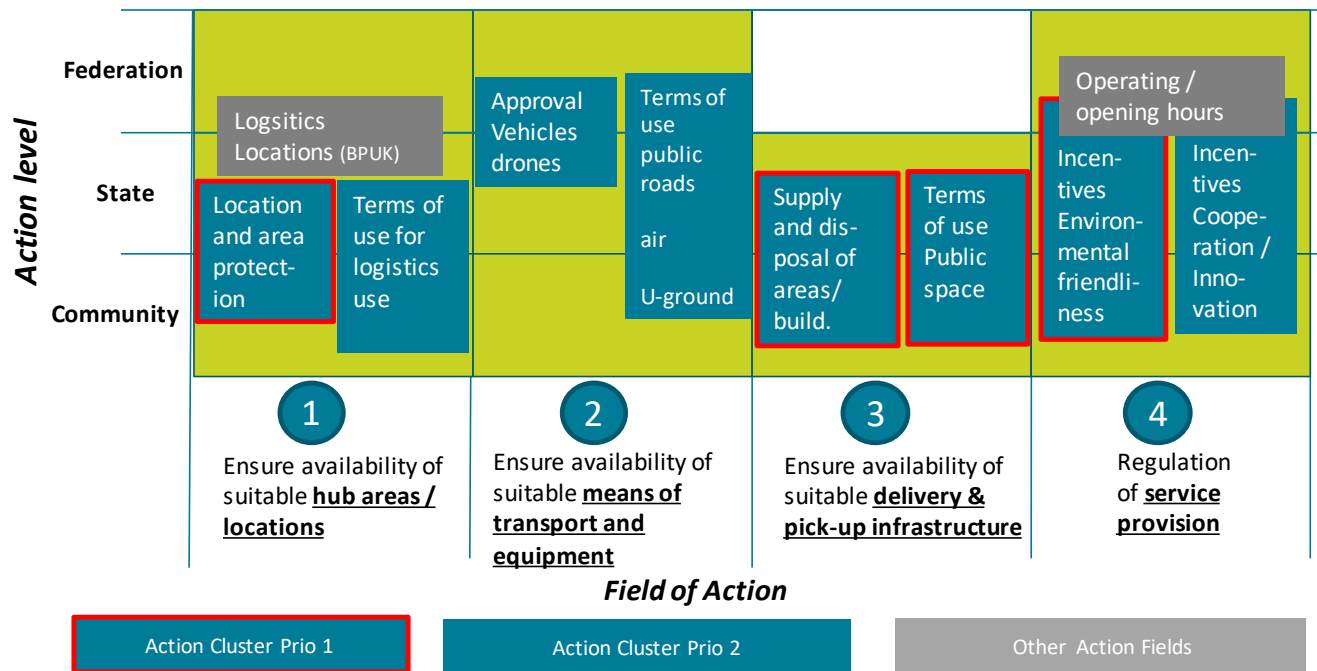
- **Not a fiction, but already a reality**, further growth to be expected
- **Can deliveries < 2h be sustainable?** → environmental friendly vehicles,
- **Influencing online shopping behaviour probably needed** (delivery requirements, returns) via **pricing, CO2-and energy consumption declaration**, etc.



4. Conclusions

Fields of action to support innovative last mile solutions

- **Four fields of action** for public authorities to reduce barriers
- Management of single action clusters is a **joint task, especially of states and communities**



[Rapp Trans, 2018, ILMA+ , Metropolitankonferenz Zürich]

5. More Information

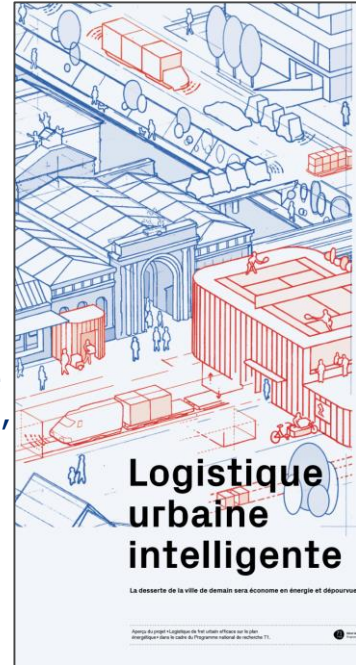
Contact:

- Martin Ruesch
martin.ruesch@rapp.ch
Tel. 058 595 72 43
- Rapp Trans AG,
Max-Högger-Strasse 6,
8048 Zürich
- www.rapp.ch



Selected Publications:

- Intelligent Urban Logistics, Brochure, Rapp/Interface /IVT ETHZ, NRP71 «Managing Energy Consumption», 2018 (german and french)
- Innovative Last Mile Solutions: ILMA+, Brochure, Rapp/GS1, Metropolitantkonferenz Zürich, 2017 (german)
- Urban fields of action in urban logistics, Rapp, Union des villes suisses, 2019 (to be published, german and french)



<https://www.nfp-energie.ch/en/projects/949/>



<https://www.metropolitanraum-zuerich.ch/themen/kooperationsprogramm/ilma-innovative-letzte-meile-angebote.html>