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# Vehicle related constraints, problems and trends in urban freight distribution



**Peter Sonnabend**

**Deutsche Post AG, Headquarters**

**53105 Bonn, Germany**



## Deutsche Post World Net

- Multinational corporation for one-stop-shopping services in distribution and logistics   



**MAIL**

basic mail products, customised solutions for direct marketing, transport of press products

**EXPRESS**

domestic and international parcel deliveries and cross-border mail services

**LOGISTICS**

standard and customised solutions for worldwide logistics and freight forwarding services through DANZAS Group

**FINANCE**

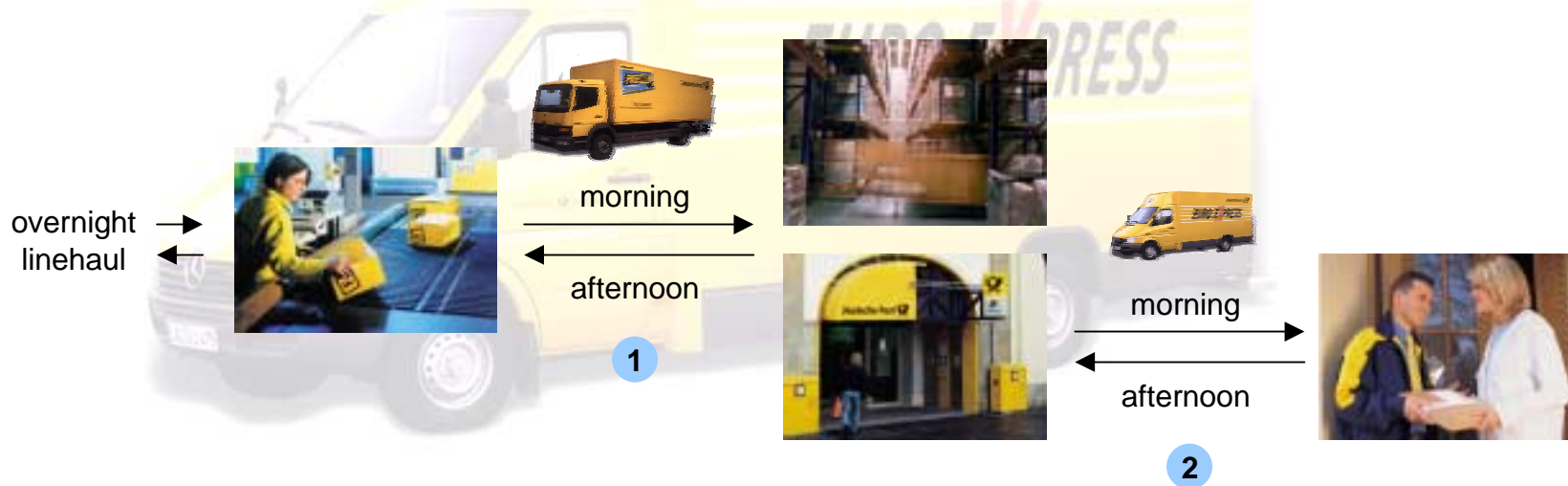
portfolio of financial services offered through Deutsche Postbank AG

- International Public Offer on 20 November, 2000



# Vehicle use in urban logistics

- Transport operations in urban areas
  - transfer of bulk loads between regional sorting center and local depots respectively large customers (1)
  - pick-up and delivery of small loads (2)



- Vehicle use driven by mixture of product, legal, and operational constraints



## Product constraints

- Weight and volume constraints differ by product; e.g. parcels = volume, letter mail = weight; shipment = both
- Steady increase of total transport volumes in past years
- Non-conveiable parcels grow in size and relative numbers
- E-business inducing new trends and constraints for logistics
  - smaller orders at higher frequency, i.e. more drop-off stops
  - reduced transit times for B2B and B2C products
  - demand for online status information
- Customer demand for late pick-up and early delivery at fixed times





## Regulatory constraints

- New drivers require special license (C1) for vehicles from 3.5 to 7.5 tons, different from old class 3 license
- Freight operator license required for vehicles from 3.5 tons, includes necessity for generation of freight documents
- Tour recorders required for all vehicles from 2.8 tons, postal services yet exempted for vehicles up to 7.5 tons
- Curfew for vehicles from 7.5 tons on Sundays, public holidays, and during vacation periods except when in combined transport
- Universal access time windows for commercial traffic in inner cities
- Local movement restrictions or bans mainly for larger vehicles





## Operational constraints

- Movement of larger vehicles in urban areas impaired by narrow roads, low bridges, weight limits etc.
- Limited accessibility of buildings and lack of suitable parking opportunities in close vicinity especially for larger vehicles
- Use of rolltainers and taillift presently restricted to larger vehicles
- Increasing congestion in cities affects both smaller and larger vehicles, in rush hours simultaneous peak demand for logistics and commuting
- Potential limitation of tour length, i.e. number of stops and thus payload, due to delays from road congestion and lack of parking opportunities
- Relative costs of larger vehicles lower than for smaller vehicles when used at full payload capacity





## Use of clean fuels

- Pilots conducted with natural gas and electric drives
  - NGT Sprinter in Regensburg and Hannover
  - Vito-Electric in Bremen and Hannover
  - tests with clean fuels in other small and medium vehicles
- Performance and emission characteristics satisfactory for both pilots
- Economy constrained for natural gas and extremely bad for electric mode
- Immediate problem is lack of product maturity and support by manufacturers
- Key strategic problem is lack of tangible regulatory support, i.e. operational and/or financial benefits, for clean fuels to offset economic disadvantages against conventional fuels under prevailing market conditions





## Vehicle trends - past to present

- Conflicting requirements for urban delivery vehicles
  - access constraints favor smaller vehicles
  - traffic constraints favor smaller vehicles
  - e-business favors smaller vehicles
  - legislation favors smaller vehicles
  - item size and weight favors larger vehicles
  - cost constraints favor larger vehicles
- Trend towards increased payload capacity of medium-sized vehicles with modified superstructure on standard frame (see right: evolution of MB 308 D medium van)





## Outlook to future developments

- Ongoing trend towards increased payload capacity in medium-sized delivery vehicles up to 3.5 tons see right: aluminum Sprinter concept van)
- Potential use of small containers for major customers
- Integration of mobile communications, information processing, and positioning devices as standard features for on-board equipment
- Use of clean fuels subject to adequate economic framework for operations
- Impact of new urban logistics concepts on vehicle design yet to be determined: last-mile logistics, e-fulfillment, B2B marketplace logistics, information chain
- Future of fleet procurements: outsourcing vs. partner store concept
- Dedicated urban delivery vehicle potentially useful but only as derivate from versatile standard vehicle, i.e. unrelated purpose-built design likely too costly

