Smart Freight
– past, current and future research

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Presentation structure

• Past project
  – Case study
  – Solution prototype

• Current & planned projects
  – Collaborations
  – Contributions
Background

- Increased number of actors in transportation setups
- Increased complexity
- Demands for Just-in-Time, Just-in-Sequence and Make-to-Order
- New technologies (Goods identification, Internet, vehicle communication, EDI/XML etc.) enable fast and easy data transfer
Would you like to join me for a trip to SKF, gate 4 arriving 15.52 next week Friday?

Sorry but I am supposed to be there tomorrow at 18.45. I will have to take an over-night truck!

Wouldn’t it be nice if your packages just knew the best way to go and the fastest way to get there?
Cassandra – completed in 2007

Chalmers (Logistics & GIS), Volvo Technology, Volvo Logistics and Ericsson Microwave Systems
Method

• Literature study
• Case study - Washer fluid liquid from Hindås (Sweden) to Ghent (Belgium)
• Over 50 people interviewed, at all involved parties
• Travels and observations of both the physical and the information flow, all the way from supplier to goods receiver (9 months)
• Smart freight prototype development
Case study - Requirements Analysis

• What information is necessary to support efficient transport operations?
  – Information need
  – Need of documentation
  – Data/information exchange
  – Technology
  – Other needs / demands
The case study

- Aspen Petroleum
- LBC Borås
- Volvo Logistics
- Volvo Cars
- DFDS
- Port of Gothenburg
- Merkatordock
- GHD
- Trailer Operator
- Belgian trailer puller
- Swedish trailer puller
Execution hurdles

- Data manually entered multiple times
- Low information quality
- Missing visibility
- No synchronization of processes
Solution – Smart Freight Prototype

• Improved information accessibility and collaboration:
  – Service-based architecture (SOA)
  – Actors integrated
  – Communication platform
  – Smart Truck/Trailer
  – RFID
Volvo, Ericsson & Chalmers Technology Test center
Test Center - Virtual Reality
Decentralized Paradigm

To-be state in Bottom-Up concept

Central (could be reduced)

Freight + Info.

DB = Data bank (Data storage)

Vertical information

Information flow and Physical flow
Current & Planned Projects

- Goods focus: ITS-Support for combined transports – *running*
- Foliated Transport Networks - *running*
- ERP focus: Smart Freight to ERP – *running*
- Security focus: MASSIP – *pre-study running*
- Infrastructure: IIFEG – pre-study carried out, *awaiting go for full-scale project*
A selection of partners & collaborators

• Research companies/institutes:
  – Volvo Technology
  – Viktoria Institute, WSP

• Logistics Service Providers
  – Schenker
  – Volvo Logistics
  – NYK Logistics
  – DSV

• Various goods owners, carriers and other actors, i.e. Swedish Road Administration, Stora Enso and Volvo cars.
Some of our work currently...

- Designing the handling and interaction of Smart Freight based on Schenker & Storel case
- Manuscript for demonstration theater, Stockholm ITS World 2009
- Work on SFS (Smart Freight Security)
- Collecting input data for a Multi-Agent Based Simulation
Q&A

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