The integration of freight transport ICT

Dieter Wild

ICT in Transport Logistics, 3-5 November 2008, Luzern
Integration and interoperability (I)

> ICT applications with high ROI and with rather limited external dependencies were most successful in the past
  > Navigation, routing, order management, warehouse management, vehicle control, material handling, etc.

> Interrelated applications with external relations are built (only) by reducing uncertainties
  > Standardisation
  > Intranet solutions or extended control ("own-world solutions")
  > Contractual safeguarding

> Research and innovation is targeting at more and more complex scenarios
  > Vehicles --- goods, consignments --- infrastructure --- authorities

> But how to motivate private investment?
Integration and interoperability (II)

**Bottom up approach**

- Parallel non-compatible developments
- Slow or even no progress
- High market uncertainty → little entrepreneurial risk
- Survival of the fittest
- Hesitation of the SMEs

- Example: fleet telematics
Example: Fleet telematics

> Tracking and tracing, order management, transport control, fleet management, ...
> Innovation and exploration phase in the 90th
> Technical problems were solved
> The remaining problem(s) at that time: high communication costs
  .... and missing interoperability

> Attempt to establish a neutral interface between on-board client and server applications (FLEETMAP project) → Failed

Still today, 10 years later:
> Various non-interoperable solutions
> Customer hesitation to choose the right product
> Problems with mixed fleets and fleet renewal
Integration and interoperability (III)

Top down approach

> Early common understanding
> Standardisation
  > Agreed processes, interfaces, technologies, ...
> Reference architecture
> Market leader initiative or public support
> Early commitment
> Solution constriction
> Hesitation of the SMEs to contribute in the beginning, but full engagement when direction is clear

> Look at communication standards
  > GSM, UMTS, CAN-bus, etc.
SW products and integration

> Self standing products
  > No integration needed or easy integration by customers

> Products with external interfaces
  > Integration effort by vendor or customer
  > Prepared interfaces for major environments and based on standard workflows

> Customized products to be integrated
  > High development effort (costs)

> No product development when system counterparts are not available or committed
  > Example GOODROUTE: Who takes the overall implementation decision?
ICT locations (I)

> ICT within cargo
  > ?? (status, condition and location measurement data logging)

> C2I – Cargo to Infrastructure communication
  > RFID, (identification), cargo handling, transhipment, tracking and tracing, safety, condition monitoring, etc.

> ICT within vehicles
  > ADAS for safety, efficiency and comfort, energy efficiency, navigation, map and POI support

> V2V – Vehicle to Vehicle communication (Cooperative systems)
  > Safety, traffic efficiency, etc.
  > Transport logistics oriented applications ??
ICT locations (II)

- **V2I – Vehicle to Infrastructure communication (Cooperative systems)**
  - Safety, traffic efficiency, access control, reservation/scheduling (e.g. delivery space, ramps, resting areas, transhipment facilities), ETA, etc.

- **Dispatch centre to vehicle fleet communication**
  - Fleet management and monitoring, on-line dispatching, transport efficiency, SCEM, etc.

- **Dispatch centre to infrastructure communication**
  - Transport planning and execution, time tables, reservations, ETA, etc.

- **ICT within the dispatch centre**
  - Transport planning, transport efficiency

- **B2B and B2C**
  - efulfillment, order processing, supply chain planning/execution/control, SCEM, cooperation and freight consolidation, city logistics, etc.

- **... other (e.g. modelling and simulation)**
Conclusions

> We have to move from “own-world solutions” to an open framework for mobility services for goods
> Enabling complex solutions with different new parties in short time
> Transferring advanced SW technologies into the transport logistics domain (e.g. SOA, SaaS)
> Establishing conditions for reliable and trustful relationships

> Public funding of ICT research and innovation focusing on complex deep interoperable intelligent cargo solutions is appreciated, but

attention and effort supporting or even enabling the commercialisation is becoming more and more important
PTV – Solutions for Sustainable Mobility