

Green Logistics –Technical Aspects

Working group discussion at the Logistics for LIFE plenary, Bremen, 2010-11-02

Technical concepts identified:

- **Intelligent Cargo:** cargo that holds information about itself and is able to process and communicate that information to stakeholders across the supply chain. Used in conjunction with agent technology, which representing the cargo and acting upon changes in its environment. Sensors are important here.
 - Performance: High processing and memory with low energy consumption – and at a low price, is needed.
- **Cooperative Systems:** systems that exchange information in coordination for efficient, safe and environmental friendly solutions.
 - Communication scenarios: cargo-to-vehicle (C2V), cargo-to-infrastructure (C2I), cargo-to-cargo (C2C), vehicle-to vehicle (V2V), vehicle-to-infrastructure (V2I), and infrastructure-to-infrastructure (I2I).
- **Transparency:** information and communication technology (ICT) to enable transparency for the transport users, i.e. cargo owners, transport buyers, forwarders, etc. to better control cargo movement for energy efficiency:
 - Monitoring: **control of cargo** independent on different levels and relations (e.g. a package on a pallet inside a container on a ship).
 - Mode of transport: **visibility of transport mode** used. May influence and choose environmental friendly modes (given standardized KPIs) in the transport order.

Important enablers for realizing the above mentioned concepts include:

- **Standards:** will enable the sender and receiver of information to both being able to both connect to and understand each other.
 - Information standards: defines required information for **understanding** between two or more parties – both in terms of syntax and semantics.
 - Communication standards: defines protocols to enable **communication** between two or more parties.
- **Identification:** cargo must be identified independent of their relations and packaging. This means that the identification must handle cargo at item level, package level, pallet level, container level, and transport means level.
- **Security:** includes important elements to enable communication between stakeholders. This includes authentication, authorization, and privacy.