Rail Freight 4.0

Intelligent Assets for Competitive Rail Freight Services

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Shift 2 Rail: shaping forward-looking and market-oriented developments throughout Europe's rail industry

- Increased flexibility through train coupling/sharing
- Increased train length for growth on European corridors
- Competitive strength

- Maximizing service quality, productivity, resource utilization and network capacity
- Pan-European rail freight as key enabler

Automated train composition and operation

Asset Control tower & customer communication

- Boosting productivity/punctuality
- Competitive cost structures
- Stimulating growth in Europe

- Longer coupled trains with distributed power

- Condition monitoring for predictive maintenance

Smart eco-efficient propulsion technologies

- Driver assistance, hybridization and advanced propulsion technologies
- Significantly reducing energy consumption and emissions

- LCC cost and customers benefit
- Cost-efficiency in maintenance and operations
- Based on smart freight assets
higher **quality**, better **cost structures** and satisfied **customers**

**Our Vision**
**Best choice on European tracks**

**DIGITIZATION**

**AUTOMATION**

**SAVING ENERGY**
DIGITIZATION is an important core element of the competitiveness of DB Cargo

- Customer benefits
- Planning and dispatching
- Fleet control and maintenance

- **Intelligent locomotives** report their location and the condition of their main components
- **Intelligent cars** report their location, load and customer-relevant parameters
- **Assets are condition-based and predictively maintained**
**AUTOMATION**
will raise productivity to a new level and improve the cost structures of rail freight transport

- **Autopilot**
- **Obstacle detection**
- **Remote diagnostics**

- On March 17, 2016 we introduced the first **ATO Demonstrator at DB Cargo**
- Sensors for **detecting obstacles at a distance of 1000 m and a speed of 120 km/h are currently under trial**
- **Pilot fully automated hump locomotives** will be introduced during the next 12 months
ENERGY EFFICIENCY

is the key both for the role as an environmental pioneer and for optimizing costs

- 21% reduction of energy consumption
- Over 10% cost reduction
- Technological leadership

- **Driver assistance for main line operation** helps the driver to move off at the optimal speed
- **Automated starting and stopping** reduces the diesel consumption of shunting locomotives
- **Hybridization of shunting locomotives** as a "green midlife upgrade" for the fleet
SHAPING THE FUTURE!
BACK UP
Rolling Stock Intelligence

Technical Interoperability

Technical Staff

Automated Train Operations

Life-Cycle-Cost

Longer & Heavier Trains

Energy & CO₂ Efficiency

Noise & Emission Reduction