Foto: Volker Emersleben

Innovation Strategy @ DB Cargo

Automation, Digitization and Energy Efficiency in European Rail Freight Business

DB Cargo AG | Dr. Miroslav Obrenovic | European Assetmanagement & Technology | 13.10.2016

Technology Innovation @DB Cargo

DB

FIELDS OF ACTION

- **Rolling Stock Intelligence**
  Generate and utilize status information of vehicles

- **Life-Cycle-Cost**
  Reduce total vehicle and component costs

- **Technical Interoperability**
  Enable international transports and reduce migration costs

- **Longer & Heavier Trains**
  Extend dimension and ensure framework for activities

- **Technical Staff**
  Working environment and set-up of employee profile

- **Energy & CO$_2$ Efficiency**
  Reduce energy consumption and change energy sources

- **Automated Train Operations**
  Support and relieve operational staff

- **Noise & Emission Reduction**
  Reduce and avoid emissions

DIGITIZATION

- **Information about the vehicle, its technical condition** and **the cargo** offer additional **value to the customer** and enable an efficient **fleet management**
- **Equip freight wagons and locomotives** with telematics, **sensor technology** and
- **Linking information** and **integration in production** processes

AUTOMATION

- The **automation** of previously manually executed tasks contains significant optimization **potentials in both mainline and shunting operations**
- Automation enables **increased efficiency** by higher **capacity utilization availability of resources** and **less energy** consumption

ENERGY SAVING

- **Modernization** of the fleet like **Start&Stopp or Driver Advisory Systems** reduces significantly the CO2 and energy consumption
- **Further development** of technologies and the cooperation with suppliers **is required** to achieve a more extensive validation of technological approaches and measures

DB Cargo is forerunner in Technology & Innovation Push for the european rail freight sector

⌖ DIGITIZATION

is an important core element of the competitiveness of DB Cargo

Customer benefits

Planning and dispatching

Fleet steering 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*

vision: test area automated train composition (Munich)

AUTOMATION

- Planning
- Customer information
- Disposition
- **Train compo-sition**
- Check & Handling
- Shunting
- Coupling

Concept test area automatic train composition

A diesel locomotive of the 290 series pushes a freight train across the hump and thus compiles new trains for the respective relation

Project
fully automtated shunting loco **Munich**

290 625-3

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ENERGY SAVING

is the key both for the role as an environmental pioneer and for optimizing costs
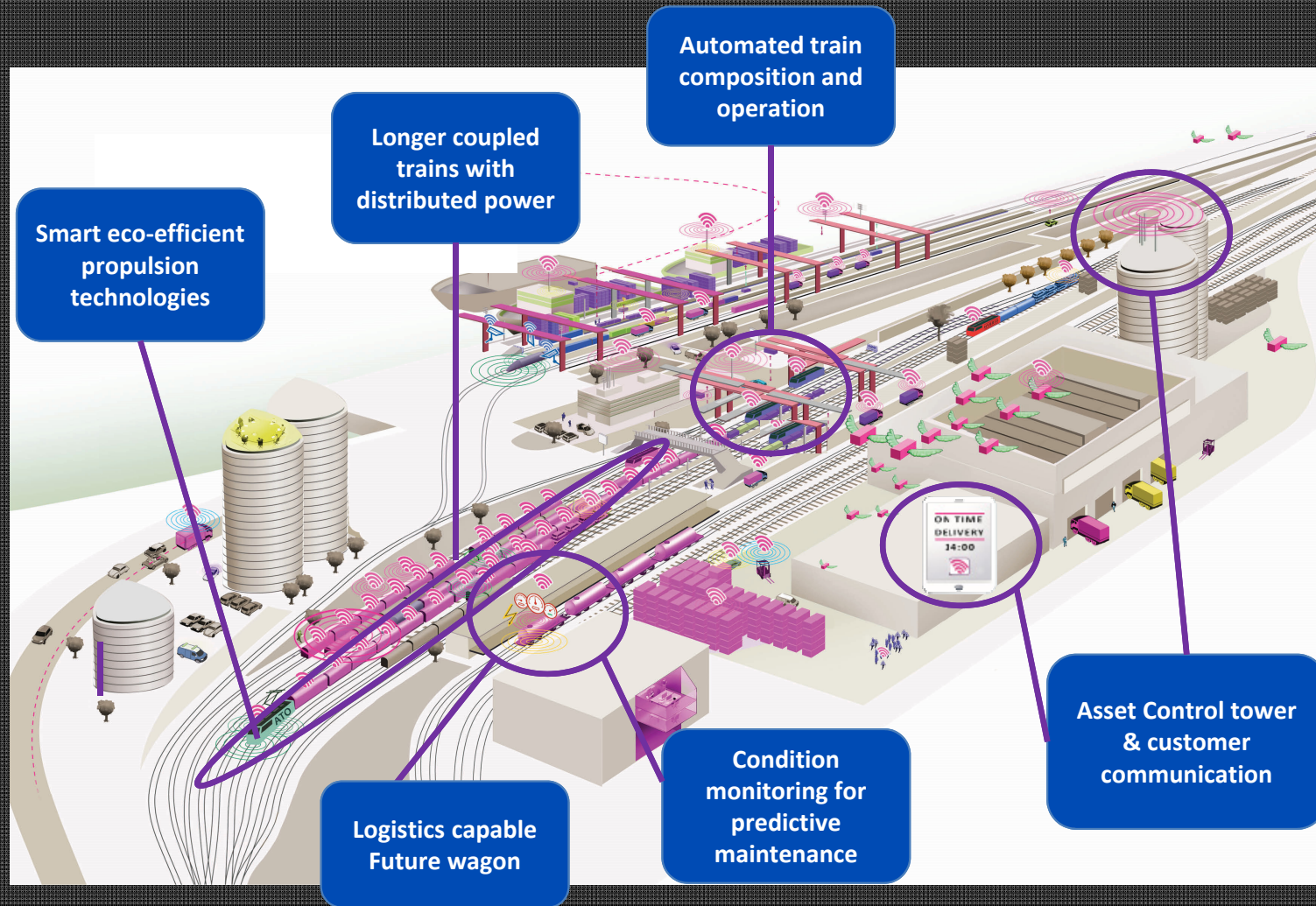
21% reduction of energy consumption

Over 10% cost reduction

Technological leadership

- *Driver assistance for main line operation* helps the driver to run 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*

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

Vision of the Innovation Programme 5 „Freight"

Automated train composition and operation

Longer coupled trains with distributed power

Smart eco-efficient propulsion technologies

Asset Control tower & customer communication

Logistics capable Future wagon

Condition monitoring for predictive maintenance

Efficiency

Costs

Benefit

SHAPING THE FUTURE!