DIGITALIZATION OF RAIL FREIGHT TRANSPORT – A KEY SUCCESS FACTOR

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DIGITALIZATION OF RAILWAY FREIGHT TRANSPORTATION SOUNDS EASIER THAN IT IS

- **Digitalization** is a broadly used and often misunderstood term
- Digital devices have conquered almost every part of our lives
- Some areas of the economy including freight transportation have remained unimpressed by digitalization
- Digitalization for freight transportation can be achieved by implementing telematic solutions
- Telematic solutions are more than just plotting GPS positions on a map
- You can not optimize the unknown!
DIGITALIZATION IS A BROADLY USED AND OFTEN MISUNDERSTOOD TERM

As compared to Deutsche Bahn:
Revenue 39 000 Mio. Dollar (2014)
Head Count: 300 000
Profit: 2100 Mio. Dollar

Digitalization is not to be confused with the steep development of the internet industry
DIGITAL DEVICES HAVE CONQUERED ALMOST EVERY PART OF OUR LIVES

Source: Internet World Messe, Bayerstraße 16a, 80335 München
ACTUAL CHALLENGES IN RAIL FREIGHT TRANSPORT

- Competition from the road
- Slow transportation
- Decrease in productivity
- Unpredictable stopping times
- Lack of control over wagons abroad
- Increasing cost pressure
- High personnel costs for ensuring safety and maintenance standards
EXAMPLE DATA OF A SELECTED EUROPEAN FORWARDER

- 110 million tons of goods were transported in a year
- 21’750 million ton-km transported in a year
- 990 Locomotives
- 24,000 Wagons
- 45’000’000 Train-Kilometers per Year

At any given time only 3-5% of the wagons were moving. Half of the moving wagons were empty.
WHAT CAN WE LEARN FROM THE COMPETITORS?

Truck Traffic:
- Fast
- Excellent fleet management
- Tracking & tracing: state-of-the-art
- Good management of resources
- Highly efficient

Railway Traffic:
- Little progress since steam-engine was replaced by diesel locomotives
- Slow
- Lack of innovation
- Waste of valuable resources
SOME AREAS OF THE ECONOMY INCLUDING FREIGHT TRANSPORTATION HAVE REMAINED UNIMPRESSIONED BY DIGITALIZATION

This is mainly due to

• The influence of state politics

• Unions initiated regulations are strict

• Diverging interests of the various players in the value chain (wagon renter, forwarder)

• National interests are against data exchange

• Legacy safety regulations require very long certification procedures
IMPLEMENTING TELEMATIC SOLUTIONS IS MORE THAN JUST PLOTTING GPS-POSITIONS ON A MAP

- **Real-time data** / exact locations are available per mouse click
- Transport progress is **monitored**
- Various persons can look at all wagon/container data **simultaneously**
- **Easy access** to position data from smartphones, laptops, etc.
- Connecting **electronic railway bills** with the tracking tools
- Multifunctional and **interactive platforms** for processing the data
- Alternatively **integration** of raw data into individual IT-Systems (SAP)
- **Geofencing**: sms or e-mail when certain areas have been entered or left
- **Utilization rates** of wagons/containers
- **Recording of mileage** per wagon for handling maintenance intervals

**Remember: unknowns cannot be optimised!**
3 STEPS TO HIGHER PRODUCTIVITY
ACQUIRING - TRANSMITTING - USING DIGITAL INFORMATION

**Acquiring data**
- Robust tracking & tracing tools in real-time
- Energy supply / maintenance
- Sensor data (temperature, shocks, door opening, etc.)

**Transmitting data**
- Frequency of sending intervals by GSM/SMS/EDGE/GPRS
- Cloud technologies make data available anywhere
- Encrypted transmission (via https)

**Using data**
- Integration into existing IT-systems (SAP, etc.)
- Real-time position info, geofencing, mileage overview
- Statistics, utilization rates, country distribution, ...
VISUALISATION OF DATA AND ITS INTEGRATION INTO ERP-SYSTEMS (SAP,...) IS CRITICAL IN ORDER TO REACH DECISION MAKING
BENEFITS FOR USERS OF TELEMATIC SYSTEMS STRONGLY DEPEND ON WHO IS TARGETED IN THE VALUE CHAIN

- Effective fleet management due to real-time information of wagons
- Cost reduction due to analysis of stopping times / loading times / unplanned stops (theft)
- Transparency: Valid data and statistics instead of complicated interpretations
- More safety and reduction of maintenance costs due to measurement of mileage and optimisation of maintenance intervals
- Clients are more satisfied owing to Estimated Time of Arrival
- Amortisation in short terms

Remember: unknowns cannot be optimised!
CHECKLIST FOR INTRODUCING TELEMATIC SYSTEMS

**Hardware**
- Power supply: batteries vs. solar power
- RF ID?
- Certified for railways? ATEX required?
- Sensors: temperature, vibration, door alarm

**Software**
- Integration into existing IT-systems (raw data)
- Individual solutions?
- Configuration over the air?
- Encrypted data transfer via https?

**Communication**
- Monthly costs for SIM-cards and data packages
- GSM SMS/GPRS/EDGE
- SMS available for areas with poor internet?
- Extra costs for roaming?
USE OF TELEMATIC SYSTEMS - DONE SMART - GIVES YOU
MORE TRANSPARENCY - MORE EFFICIENCY - MORE PROFIT

Surf the digitalization wave!