Digitalization in Transport and Logistics Services: A Case for Data Flows

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Digitalization in Transport and Logistics Services

- While transport services require physical delivery, digitalization is transforming the sector along the transport supply chain:
  - Vehicle/ship design;
  - Infrastructure: road, bridges, tunnels, rail, ports, terminals;
  - Transport operation (e.g. capacity allocation, cargo management, shipment tracking and tracing, customer services, etc.)
  - Intermediary services;
  - Supporting services: warehousing, monitoring and inspection;
  - Maintenance and repair of transport equipment;
  - Information and documents transmission among multi-players (shippers, shipping lines, port authority, the Customs, terminal operators, etc.)
Common features of digital trends

• Higher level of automation;
• Better and broader connectivity;
• Main digital technologies and solutions: Internet of Things, cloud computing, big data analytics, automation and robotics, artificial intelligence;
• Digital platforms become a new business model, which enable innovative transport services or more efficient supply of services and increase tradability of services;
• Data-driven approach become dominant for both businesses and regulators;
• Digital synergies between transport/logistics services and other service sectors: digital transformation of transport and logistics services relies on the support of other services, but also boosts the latter’s advances, such as: telecom, CRS, construction and engineering, energy, environment, and other business services.
Digitalization in road transport

• Higher levels of automation: platooning, autonomous vehicles
• Intelligent Transport System (ITS): wide deployment of road-side and in-vehicle sensors combined with Big Data analytics allows real-time and fine-grained tracking so as to enable better management of vehicles and loads.
• Digital freight brokerage services: Load-matching platforms, e.g. Uber freight
Uber freight, a digital load-matching platform connecting carriers and shippers
Digitalization in maritime transport

- Online booking and online cargo management
- Tracking and tracing of shipments
- Routes optimization
- Autonomous vessels
EXHIBIT 2 | Seven Digital Trends Will Transform Container Shipping

- E-PLATFORMS
- ADVANCED ANALYTICS
- INTERNET OF THINGS
- AI
- AUTONOMOUS VESSELS AND ROBOTICS
- BLOCKCHAIN
- CYBERSECURITY

MAJOR IMPACT AREAS

PLANNING
- Online booking
- Network optimization
- Vessel machinery monitoring
- E-service centers (for example, customer call centers)
- Automated vessel navigation
- E-bill of lading
- Payment automation
- Security assurance for customer data

OPERATIONS
- Online cargo management
- Lead generation
- Reefer container conditions monitoring
- Dynamic capacity reallocation
- Automated port calls
- Cargo insurance
- Security assurance for automated operations

COMMERCIAL
- Customer personalization
- Demand forecasting
- Empty-container repositioning
- Predictive maintenance

SUPPORT FUNCTIONS
- Dynamic pricing
- Dynamic pricing
- Dynamic pricing
TradeLens, a blockchain-enabled digital container logistics platform jointly launched by Maersk and IBM
Digitalization in rail transport

• Autonomous trains
• Signalling and traffic management
• Digital train control
• Digital platforms for predictive maintenance and reparation
• E-ticketing
A Pit Stop for Rail Vehicles

The data streams from locomotives, high-speed trains, and local trains from Europe and other, non-European countries converge at the Siemens Mobility Data Services Center (MDS). By drawing upon this data, the organization’s twenty programmers, database experts, and implementation managers have developed a data-driven service offering in the rail sector that is unrivalled in terms of real-time train monitoring, forecasting of wear and failure of components, and analysis of complex vehicle problems.

1. MDS algorithms predict when potential breakdowns may occur.

2. Repairs can be planned while the train is still in service.

3. Maintenance measures are prepared before the train reaches the Service Center, resulting in improved availability.
Digitalization in urban transport

• Digital technologies (e.g. AI, IoT, automation, Big Data Analytics, etc.) provides possibility to address chronical urban transport problems, e.g. traffic jams; lack of choice for consumers; inefficient utilization of vehicles and space; pollution; etc.
  
  o Data collection and data analytics help better identify causes of problems and find solutions;
  
  o Data-driven new public transport services: e.g. Via Van, US-German joint venture, on-demand, dynamic, data-driven public mobility – global reach, distinguished from ride-hailing and on-demand transit, relying on public-private partnership;
  
  o Digital platform enabled innovations, e.g. ride-hailing and car-sharing: Uber, Didi; bike/scooter sharing
Mobility as a Service (MaaS)
Digitalization in logistics services
Data at the centre of transport and logistics services

The digitization of transport is about creating new paradigms in the visualization and capitalization of data, of a given system and to use that knowledge to build a more optimized and maintainable infrastructures.”
- McKinsey
Digital transformation in transport and logistics: Policy implications

• Data is crucial not only for the operation of business, but also for governance and policy-making in the age of digitalization;

• Some other issues also become prominent: interoperability between different systems, harmonization of individual digitalization initiatives, standardization, safety, cybersecurity, etc.

• Synergies with other sectors require a holistic digital strategy to build a supportive ecosystem;

• Disruptive effects of digitalization on incumbent services and service suppliers require balancing policies and regulations;

• Policies and regulatory framework should foster innovations which are not only sources of competitiveness, but also beneficial to public good.
THANK YOU

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