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Digital Area for Networking
Teachers and Educators



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ICT in transport and logistics



ICT

- Information and Communication Technologies (ICT) and geolocation technologies are more and more universally used in every field of life and increasingly strongly affect all its aspects.
- We have been witnessing (in particular in the last two decades) an extremely dynamic progress in the ICT development in each area of life.



ICT

- „...**the knowledge-based economies** are such, which are based on direct use of knowledge and information for more effective functioning and improvement to the quality of life..” (OECD)
- The EU documents more and more often refer to **data-driven economies or data economies**, as a foundation of knowledge economies in the future.



ICT

- Data economies are such, in which **all market participants cooperate to ensure access to the information and data**, from the used IT systems, which are to improve the quality of life via **more effective use of resources, processes and decisions optimisation**, as well as **to accelerate the innovation** and to support the forecasting processes (EU).



Relations between ICT features and changes in transport and global economy

ICT attributes	Type of phenomenon/process	Influence on the global economy
Extensibility	Extension of range (time and space) of influence, concerning both consumers and business entities, as well as replacement of physical activities with remote ones	Global markets, changes in organization of work and location of manufacturing (Banister and Stead, 2004)
Interactivity	Changes in the actual perception of time and space, as well as control of space-time, real-time dynamic information (Black and Geenhuizen, 2006)	Twenty-four-hour economy (Banister and Stead, 2004), „heads-down society”, new trends in the global economy like the Collaborative Commons Economy
Intelligence	Unlimited possibilities of data storage and processing (Kenney and Curry, 2001)	Increasing dependence of economies on IT (data-centered economies), increasing importance of the service sector, as well as development of IT-provided cities and zones, growing disproportions within countries (van Dijk, 2006)



The influence of ICT on transport and logistics

- Cashless payments, electronic tickets
- Electronic document exchange (EDI),
- Shared mobility: car-sharing, bike-sharing, carpooling, ridesharing, on-demand ride services
- GPS, journey planners,
- Fleet management and traffic management
- ITS
- Autonomous vehicles
- Big data.....
- E-everything.....



Transport and Logistics

- Logistics and packaging labels – labeling in Logistics – to mark logistics units, electronic readable labels that are attached to logistics unit and provide information (origin, destination, type of goods, billing information)
- In logistics this technology facilitates the identification, tracking, processing and delivery of raw materials and goods.

OCR technology (optical character recognition): bar codes and QR codes –



Transport and Logistics

- RFID (radiofrequency identification) – technology enables a wide range of products and objects to be tracked and manager
- RFID uses small radio tags or transponders and readers (encoders) that are linked to an information system, thus enabling the reading of the info contained in the tags at a distance. The tag, with a chip and integrated antenna, is activated by a radio signal and sends a return signal.



Transport and Logistics

- GPS, EDI

Hardware and software:

- ERP systems (enterprise resource planning)
- CRM (customer relationship management)
- MRP (manufacturing resource planning)
- WMS (warehouse management systems)



WMS

- Crucial for JIT inventory processes
- Most warehousing is underlain by IT system that is used to track goods as they enter, are handled, and removed from storage.
- Linking barcodes, RFID and in some cases GPS = advanced WMS
- Real time identification and tracking (vehicles+all places at storage)



ITS

- Intelligent transportation systems are a complex of interrelated ICT that are applied to transportation infrastructure and vehicles.



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