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Challenges for modern logistics and the role of next logistics technologies

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COMMUNICATION FROM THE COMMISSION

Communication on a European Ports Policy

The European Commission launched its new European ports policy on 18th October 2007.

"Ports are Europe's windows to the world. European ports play a key role for our growth and jobs strategy and we must make sure that ports can handle the expected growth in maritime traffic. It is essential to promote investment and employment in the sector"

Jacques Barrot, European Commissioner for Transport

Germany: National Port Strategy

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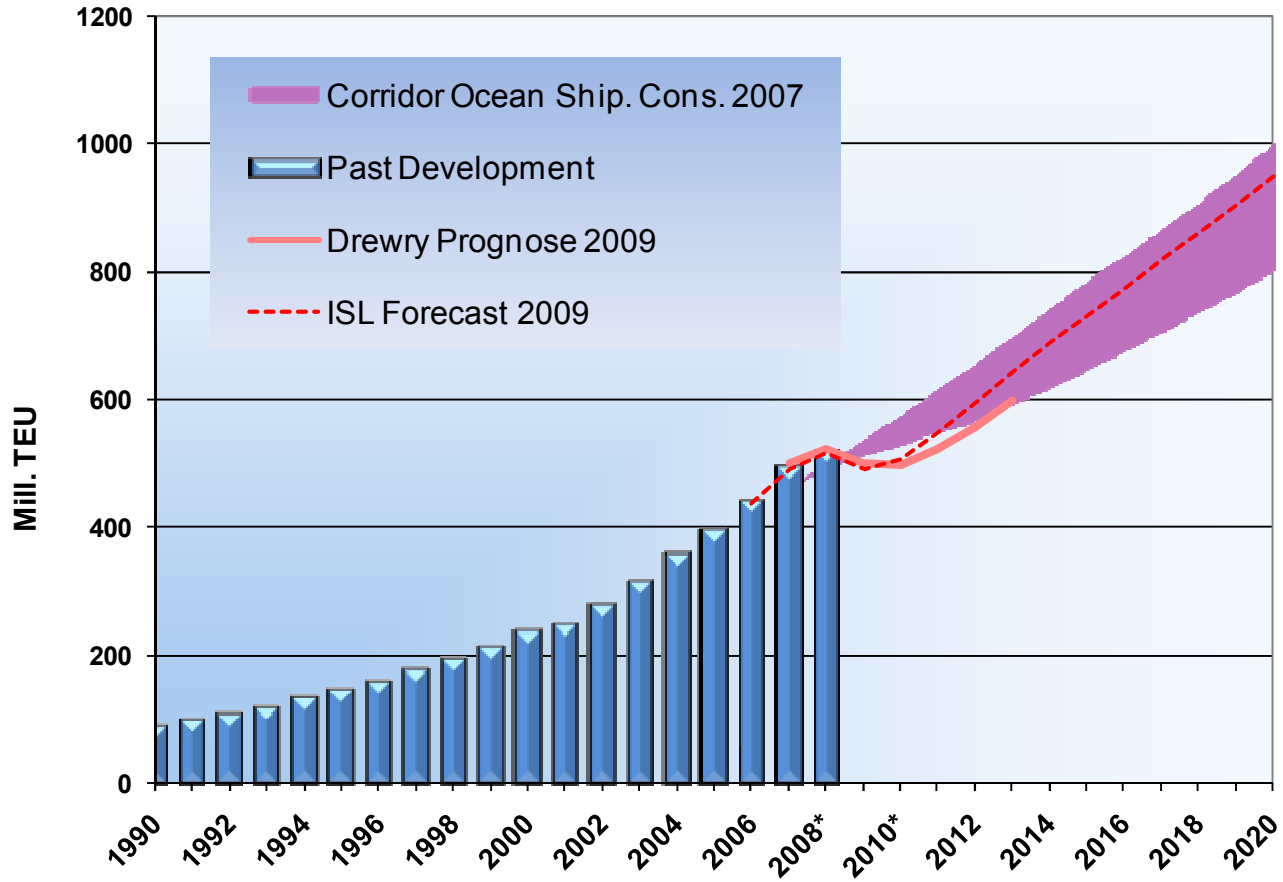
Synopsis of Recent Forecasts of World Container Port Throughput up-to 2020



•* 2008 prelimanary estimate; from 2009 forecast
Source: ISL April 2009

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Six fields of action are introduced into the European Ports Policy:

- **port performance and hinterland connections,**
- **expanding capacity while respecting the environment,**
- **a level playing field with clarity for investors, operators and users,**
- **structured dialogue between ports and cities, and**
- **work in ports.**

"The positive difference with previous attempts to formulate a European ports policy is that Commissioner Barrot has chosen a broader perspective which is based on stakeholder dialogue" said ESPO Secretary General Patrick Verhoeven. "Issues such as capacity expansion and city-port relations were never really addressed in the past although they are of critical importance to many ports in Europe."

ESPO welcomes the communication from the European Commission on a European Ports Policy as it generally reflects the balanced picture that emerged from the stakeholder consultation.

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Challenges for modern logistics are related to cooperation and to communication between value chain partners and stakeholders of dynamic supply chain networks on a regional and on a global level.

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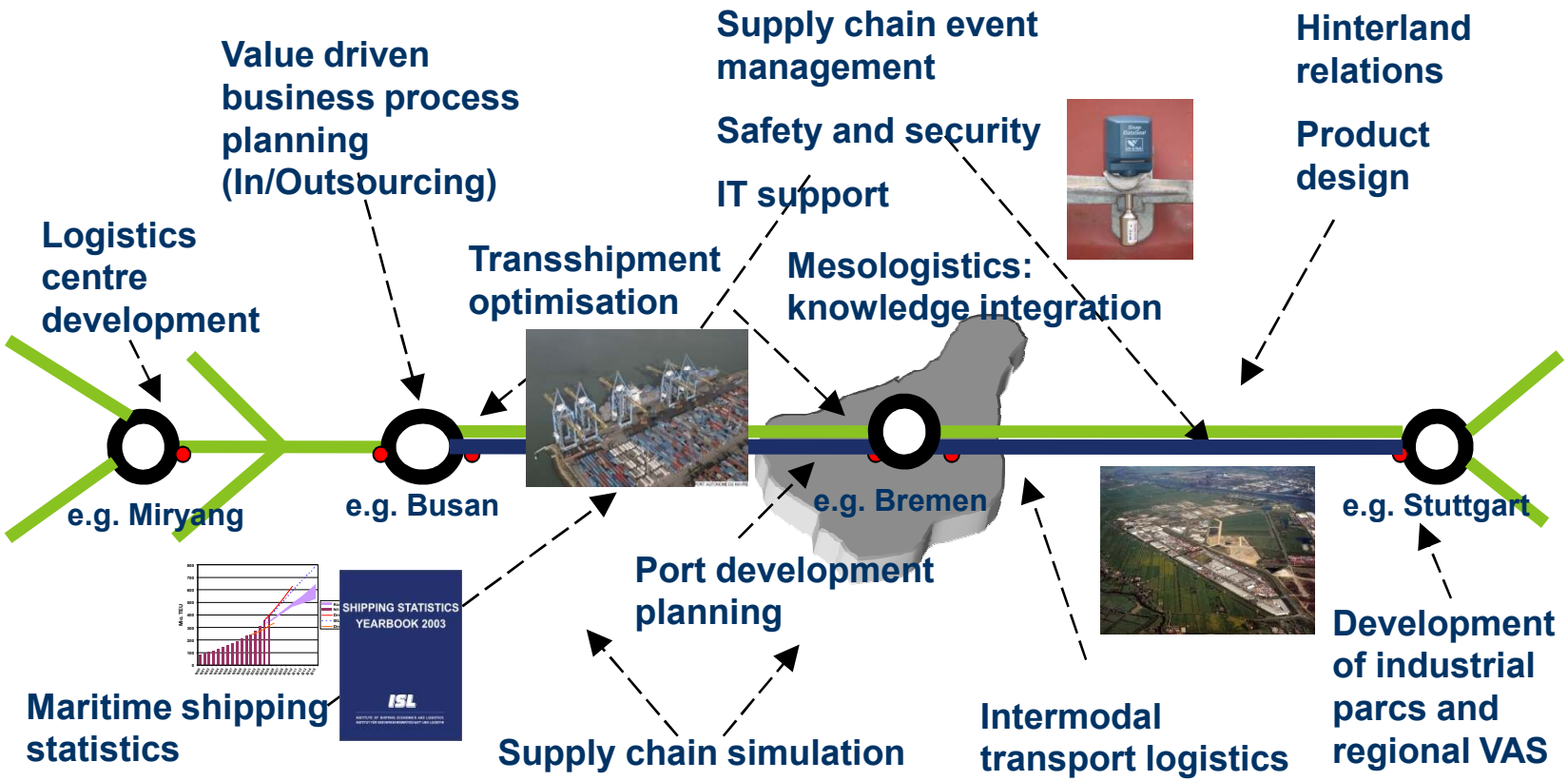

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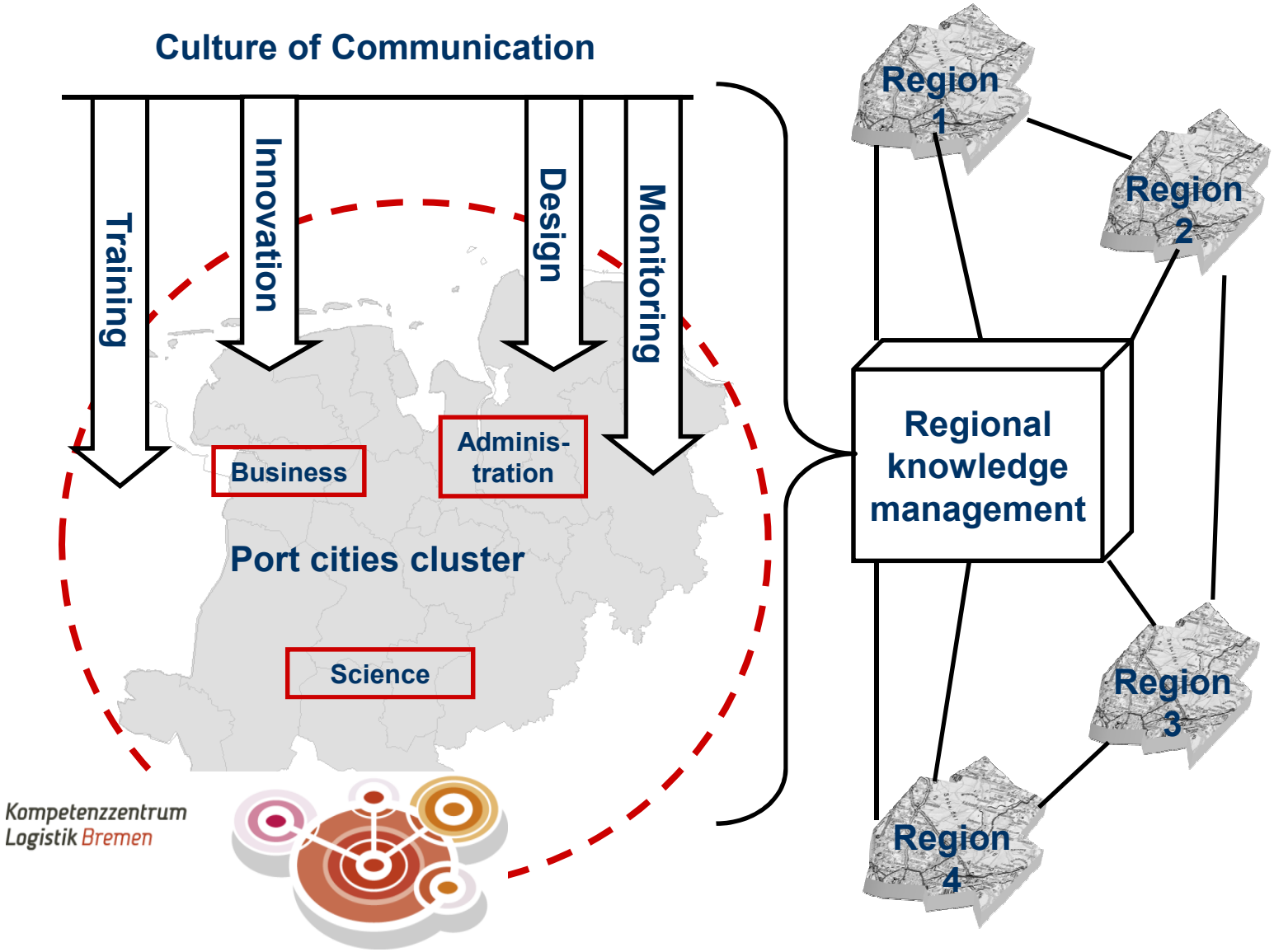

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Modern logistics have to deal with economic and technological requirements on

- **strategic and operational flexibility,**
- **climate change,**
- **energy efficiency, and**
- **international security aspects.**

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In line with this, the role of next logistics technologies increases, from the viewpoint

- of research and development,
- of industrial application as well as
- of knowledge improvement and training.

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A three-layer-approach is used:

Next logistics technologies

- **on a physical level,**
- **on a control and optimization level as well as**
- **on a business communication and learning level**

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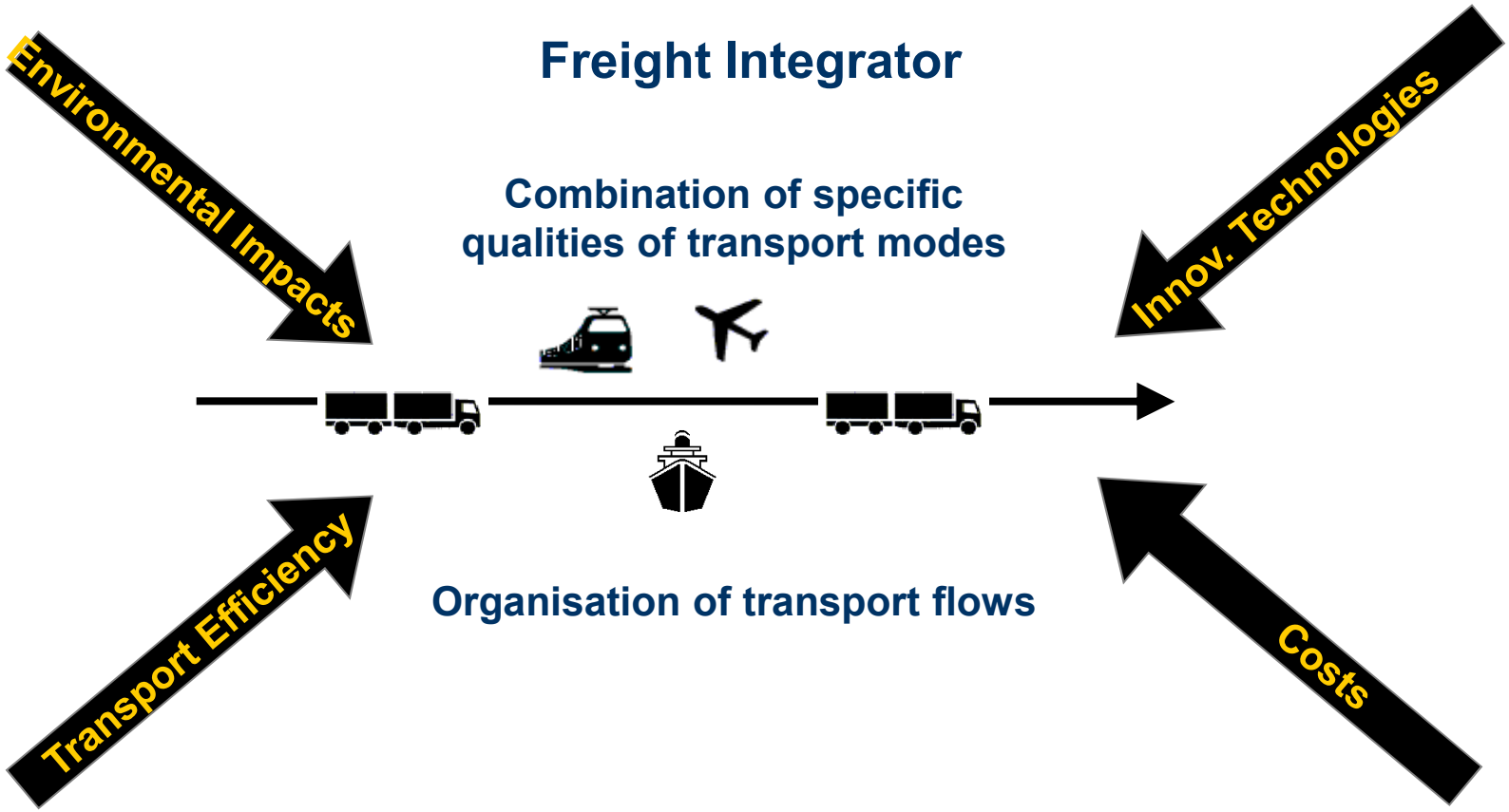
Next logistics technologies on a physical level



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Intermodal cargo transport system: www.CargoBeamer.com

Parallel, automated, without cranes, profitable, …

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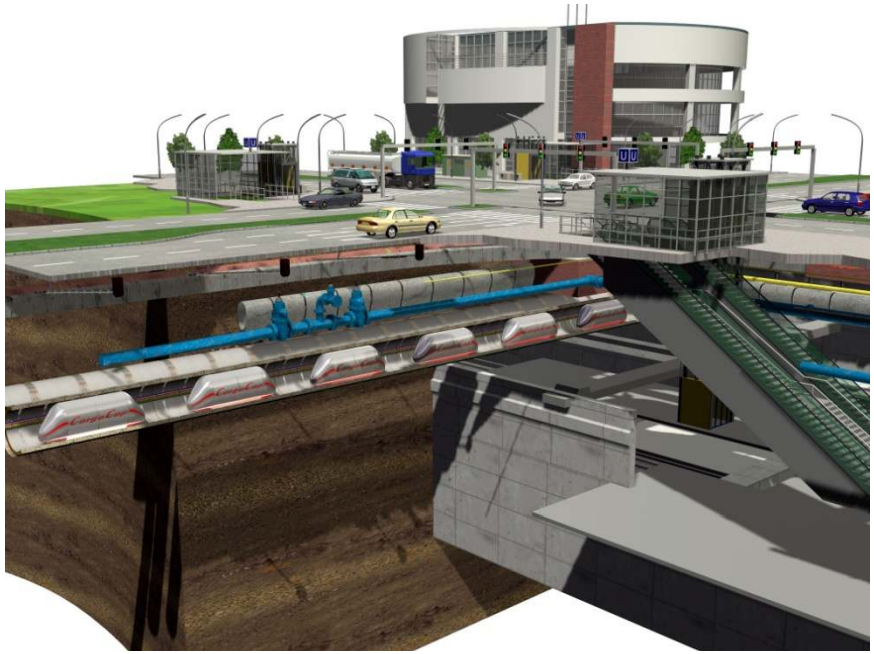
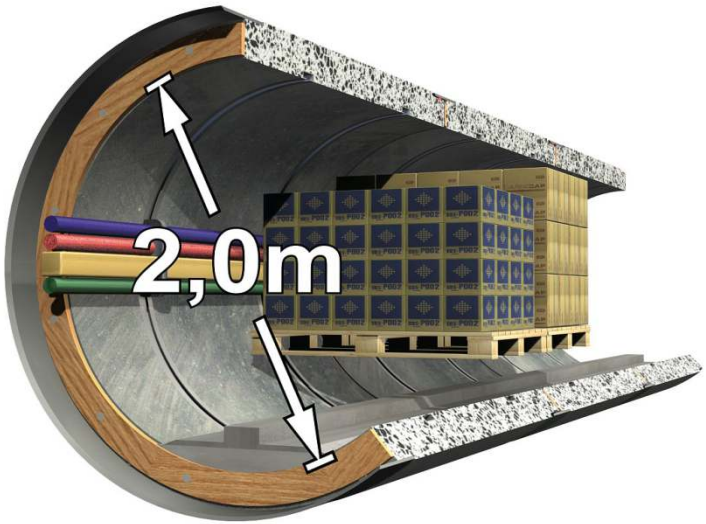
www.cargocap.com





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Next logistics technologies on a control and optimization level

- Shared intermodal container information system
- Simulation tools for terminal planning and optimisation
- Autonomous control and multi-agent systems
- …

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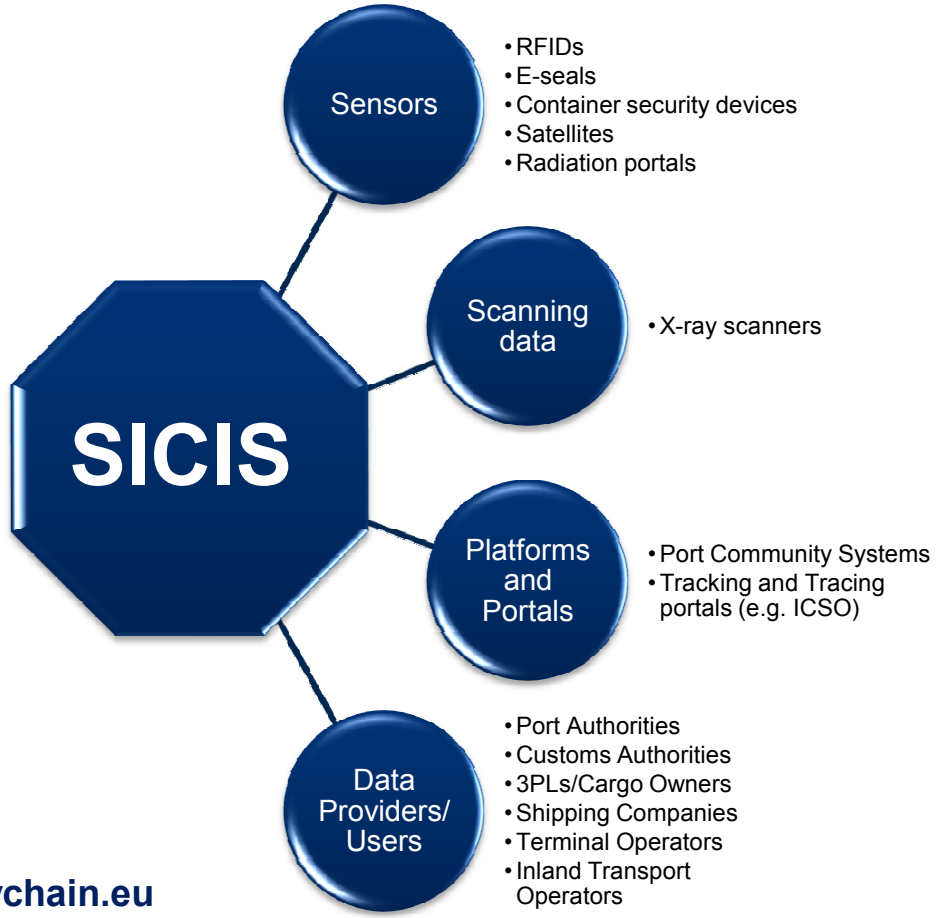
SICIS Shared Intermodal Container Information System



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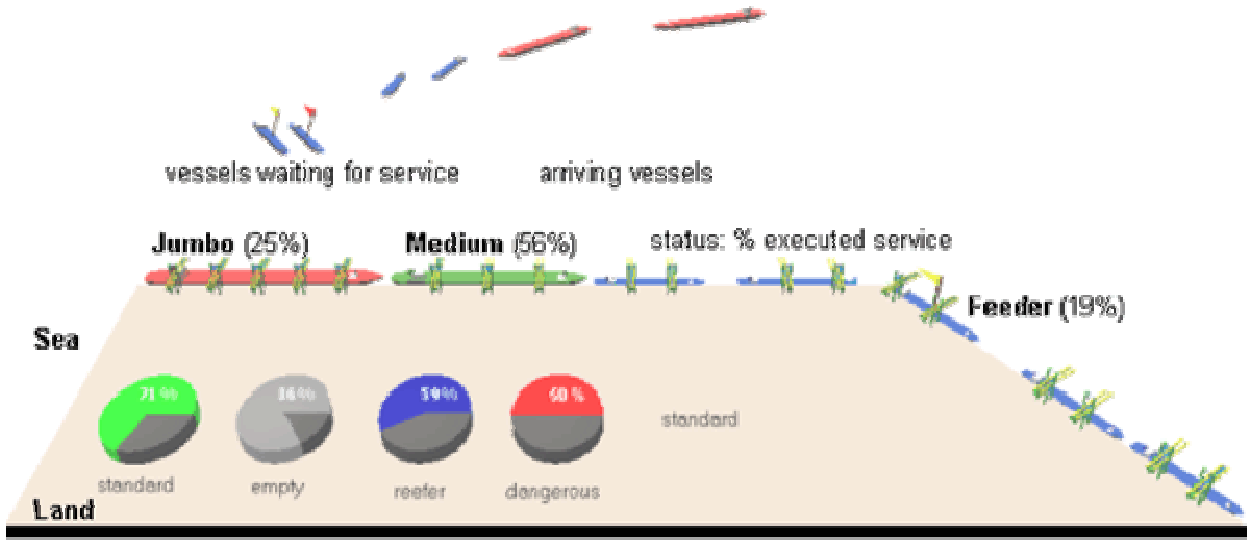

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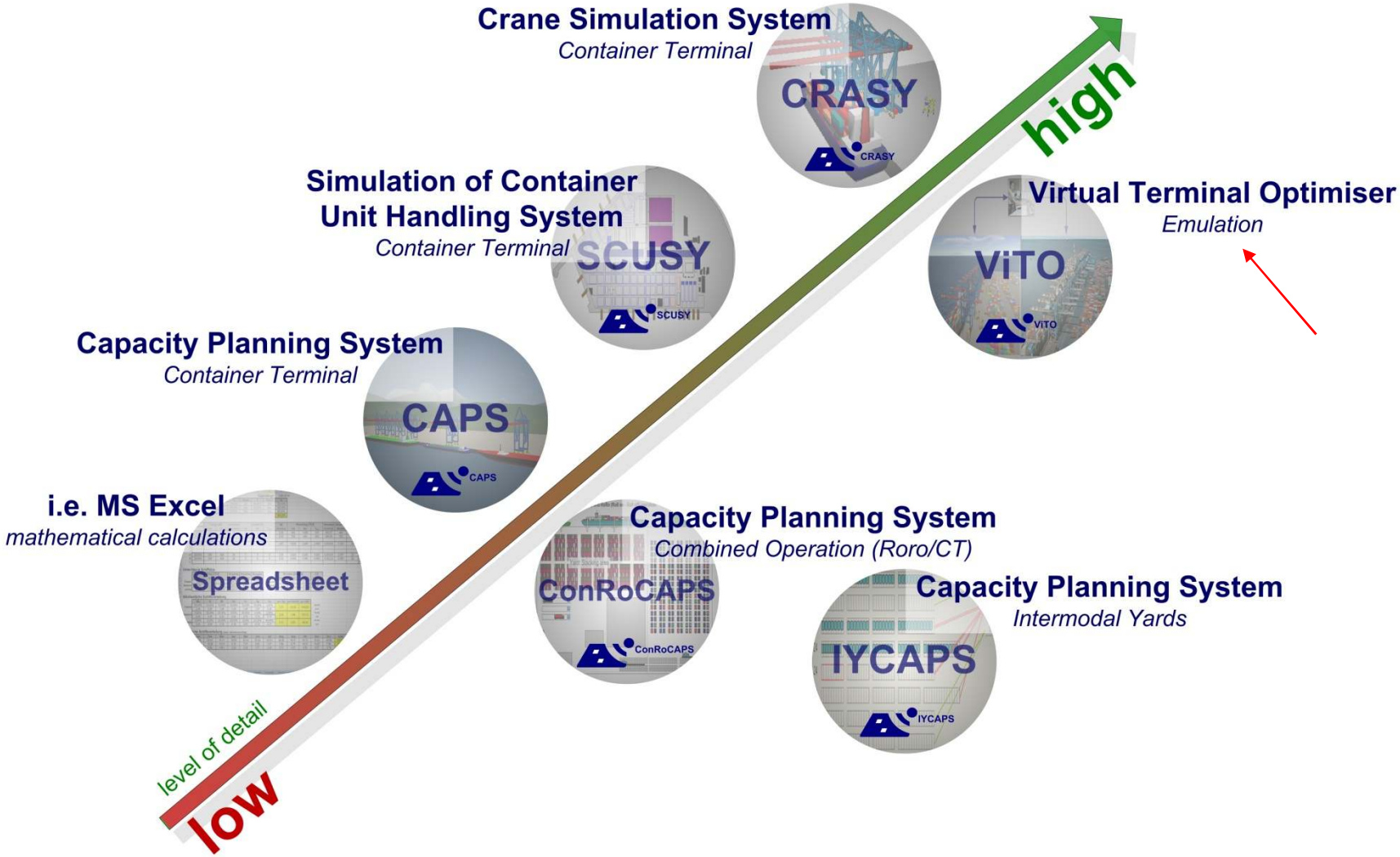
Simulation tools for terminal planning and optimisation



Development funded by European Union Land Bremen Bremerhavener Gesellschaft für Investitionsförderung und Stadtentwicklung mbH bis

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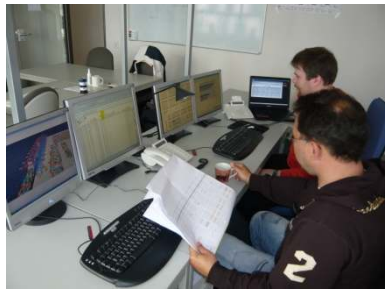
Emulation definition:

A model that accepts the same inputs and produces the same outputs as a given system IEEE 610.3-1989

Emulation main concept:

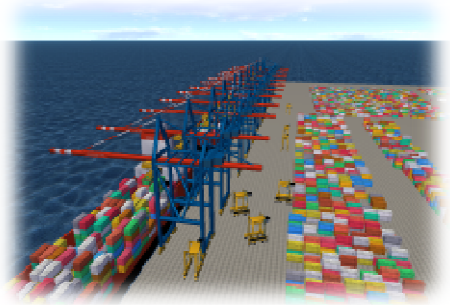
Use the same TOS and switch between real or virtual terminal



TOS
Terminal Operating System

switch

Real



Virtual

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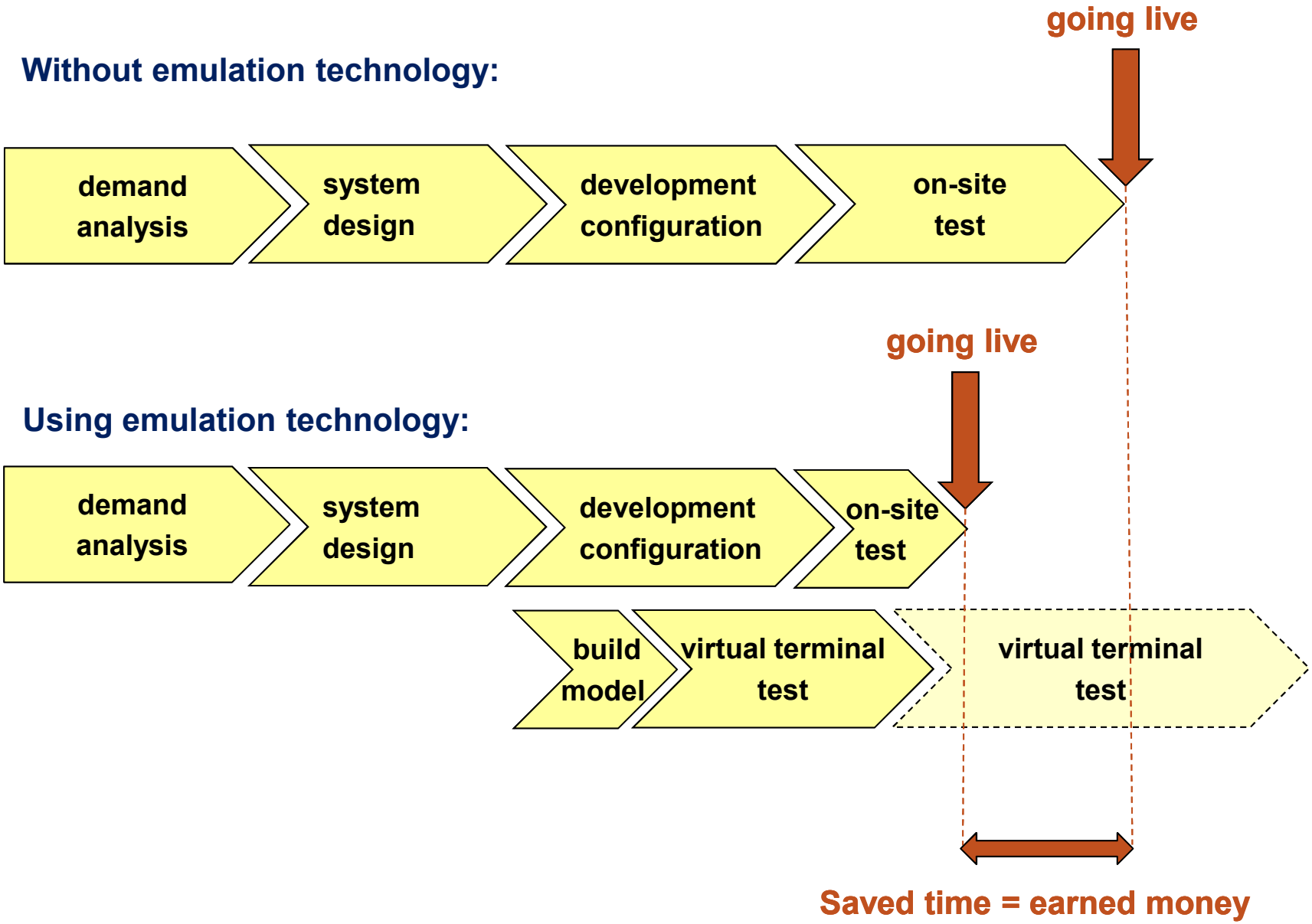

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Become a grandmaster in terminal control

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Benefits using emulators

- Failures in the TOS are recognized before terminal implementation
- Increasing the availability and stability of terminal‘s modules
- Bottlenecks and design errors are discovered in an early phase
- Analyzing and evaluation of alternative strategies
- Check TOS updates without interrupting the operation
- Checks may be realized in wear-free and energy-saving manner
- Testing can be much faster (up to 100 times faster as in reality)
- 3D animation may be used for demonstration and training issues
- Cost efficient solution over time

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ISL-AMATRAK: Stute Verkehrs-GmbH/Kühne & Nagel
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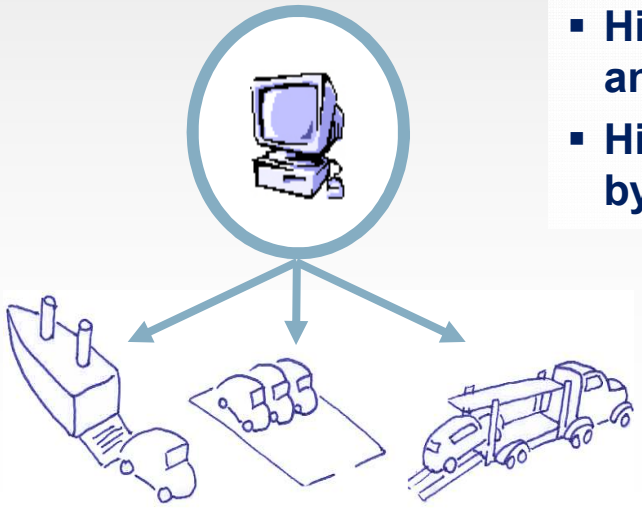
Conventional control

- Hierarchical structure
- Global information
- Central planning and control



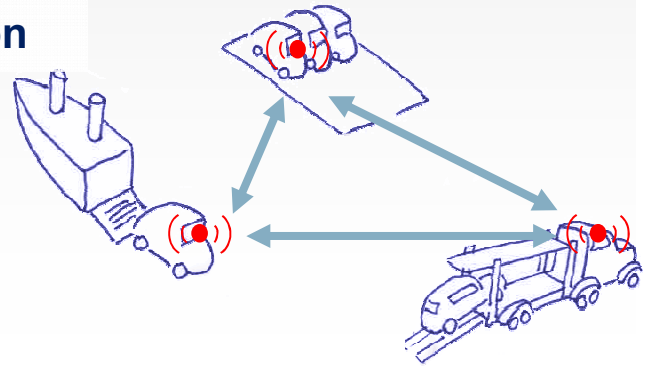
Multi Agent Technology

Advantages / Benefits

- Higher flexibility by higher and faster adaptability
- Higher robustness and fault tolerance
- Higher performance by self-optimisation

Autonomous control

- Heterarchical structure
- Local information
- Decentralised control
- Intelligent objects



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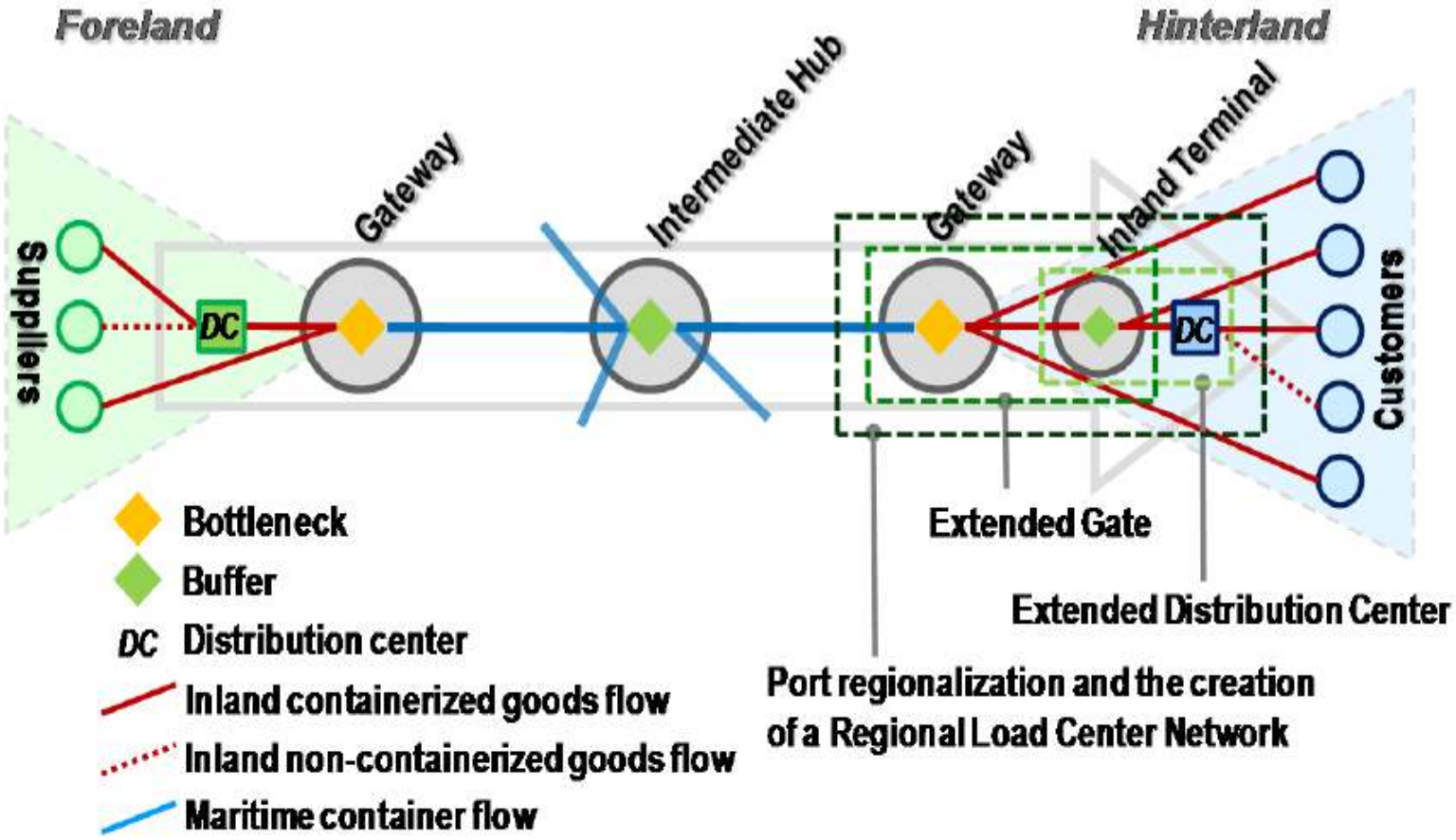
Extended Gate Concepts …



Source: Notteboom, Rodriguez, 2008

… focussing on selected services

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Source: bremenports GmbH & Co. KG

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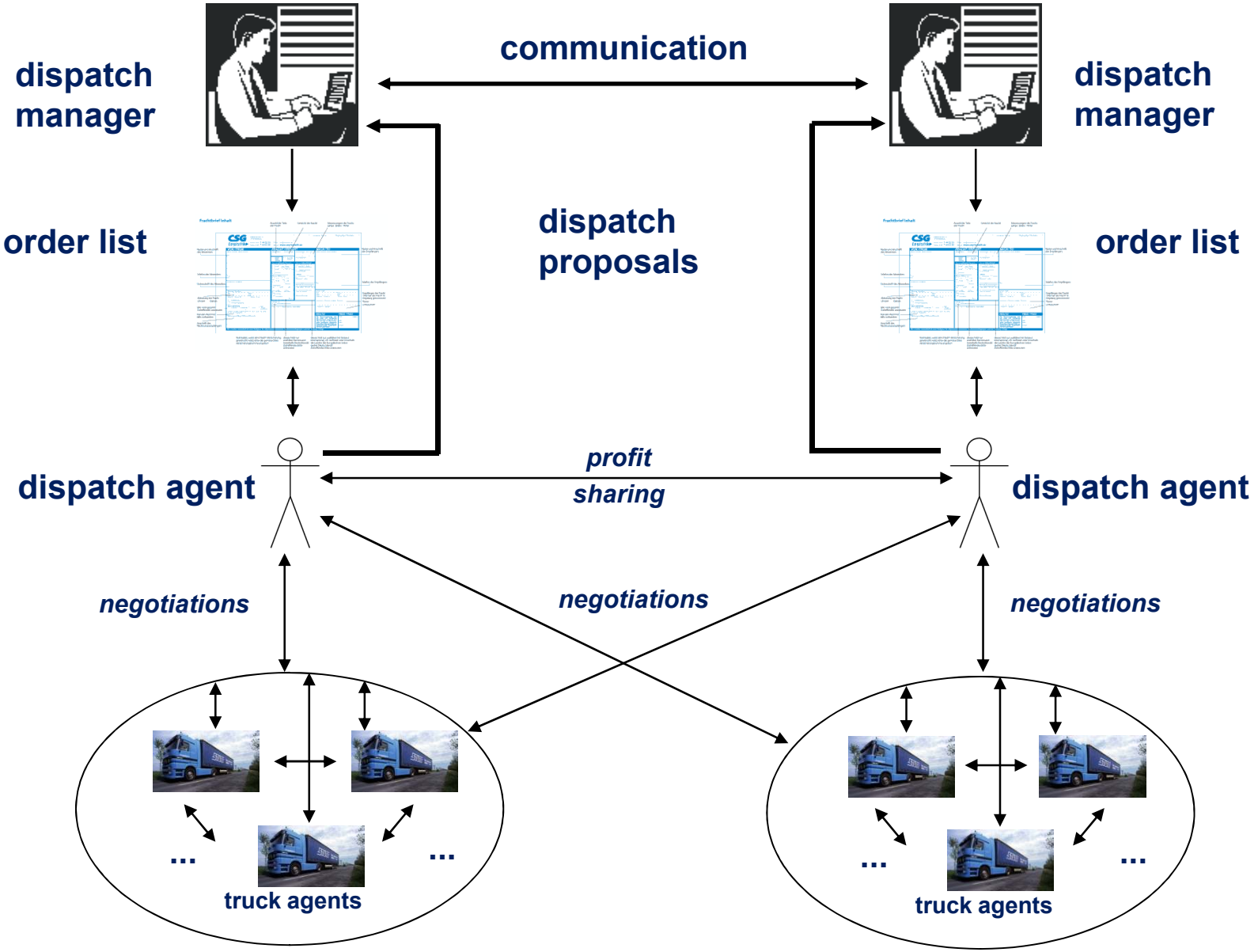

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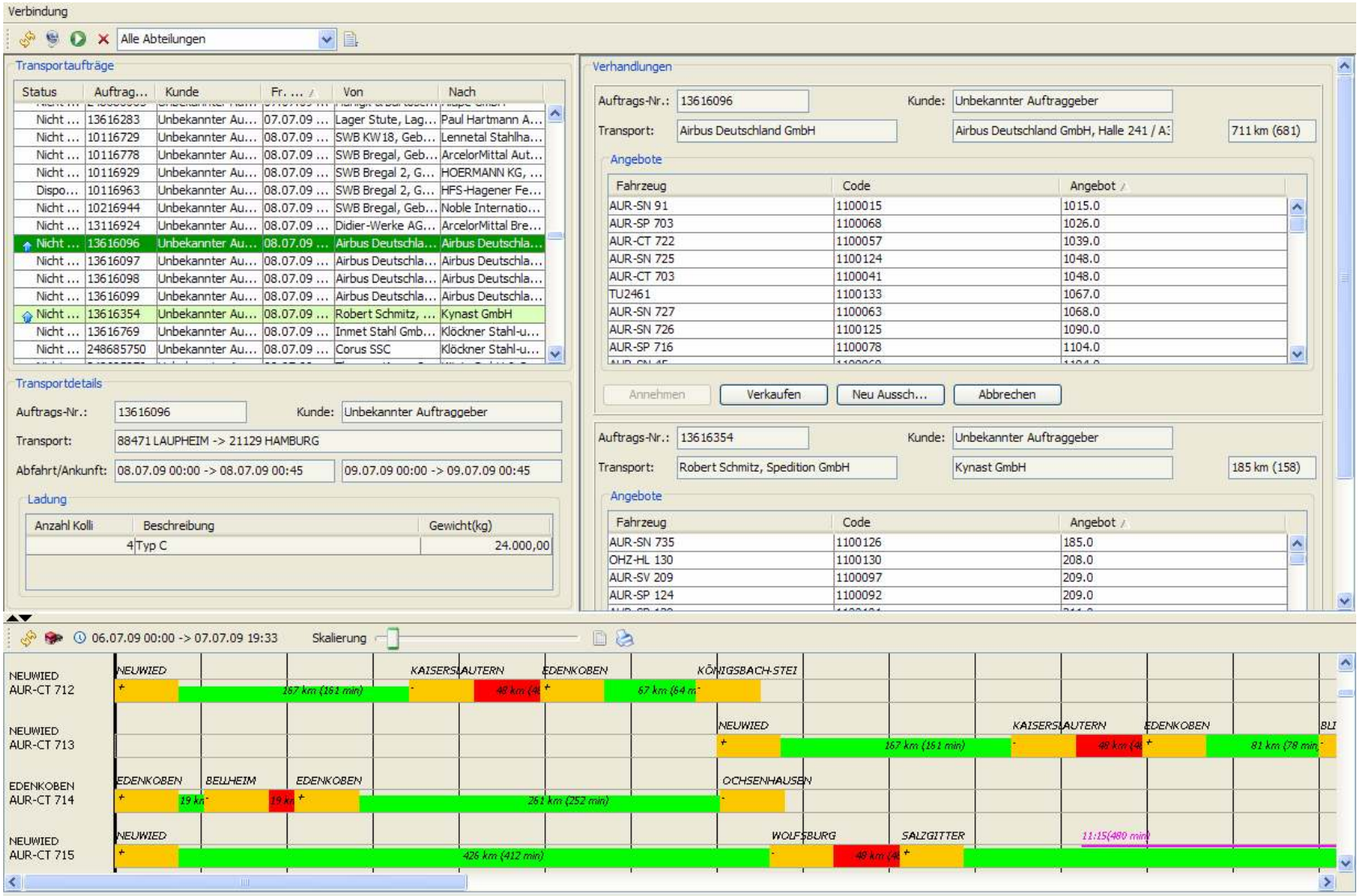
Screen shot



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Results of simulation experiments

Data base: 1 day, 70 trucks, 160 orders

- **Savings in total km:** **10 %**
- **Increase in load usage rate:** **12 %**
- **Calculation time:** **35 orders per minute**

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Quelle: Invest in Germany

Next logistics technologies on a business communication and learning level

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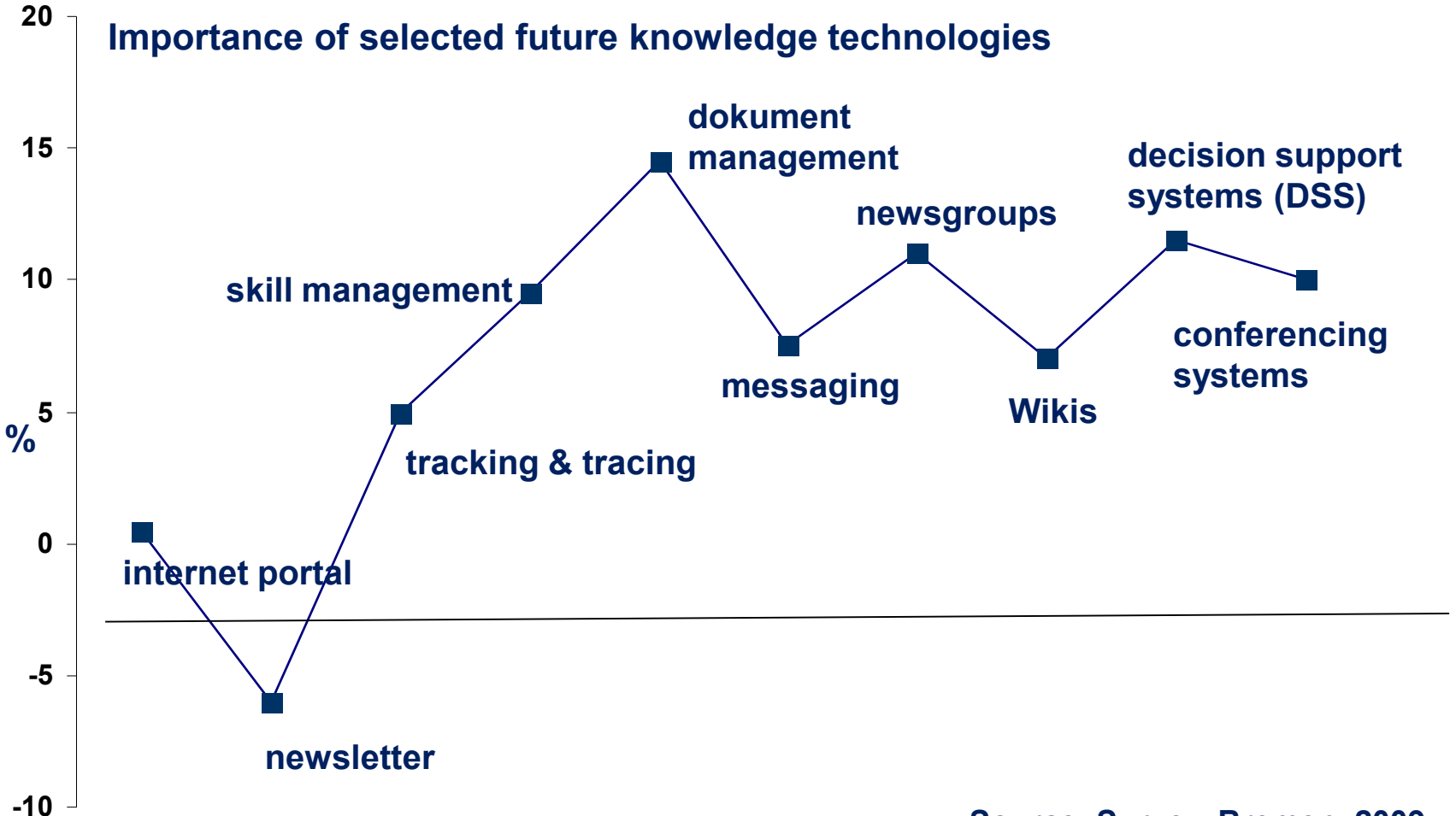
Joint use of technologies for communication, cooperation and learning



Source: Survey, Bremen, 2009

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Security Event Management supports staff of transport organisers

- **Geofencing: Generating events using mobile phone & GPS**
  - Coordinates & radius for important locations in database
  - Mobile phone sends current position to server
  - Server compares current position & location coordinates & radius
  - Server generates event

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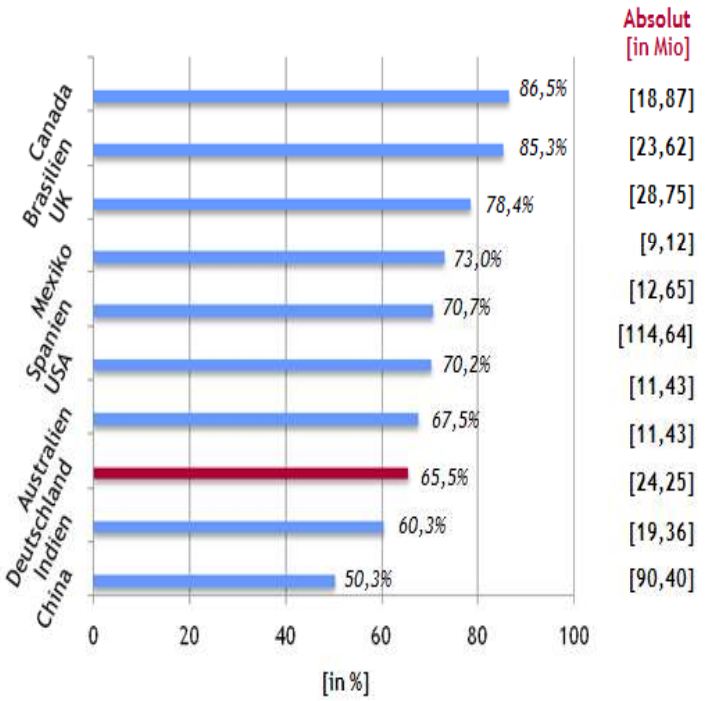
Interest and importance of Online Social Networks (OSN), like Facebook, Twitter, Xing, increases constantly

Up to 86,5 % internet users apply OSN



Quelle: ComScore (2009)

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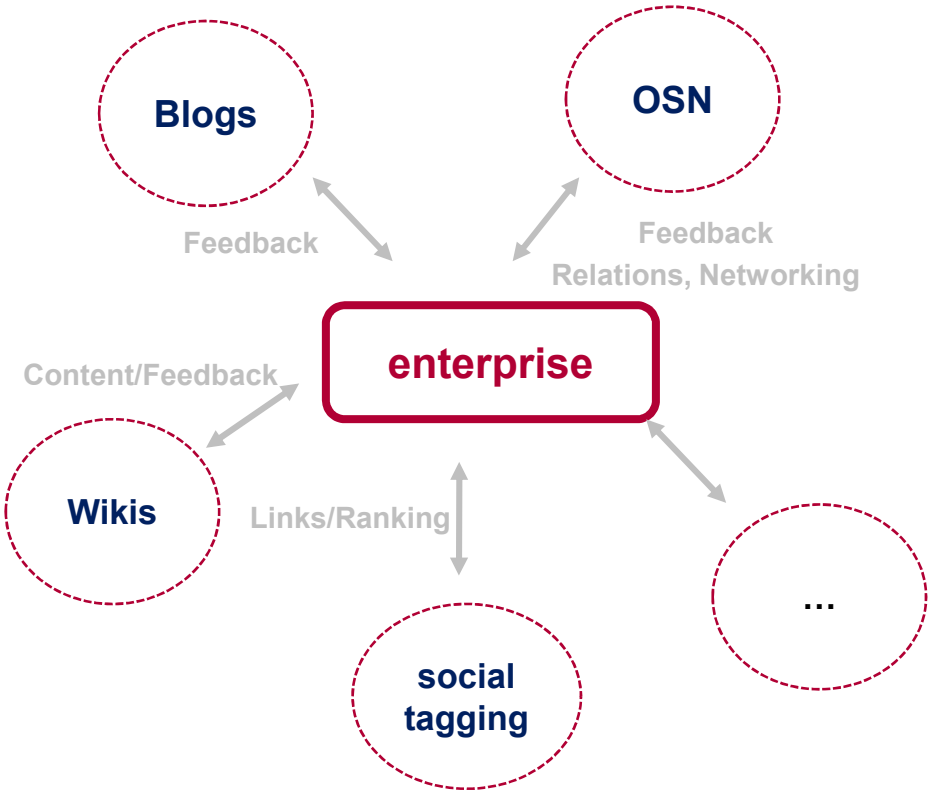
Selected Web 2.0 communication channels



OSN and other Web 2.0 applications are going to change the communication outside and inside an enterprise.

By this, new opportunities and challenges will result.

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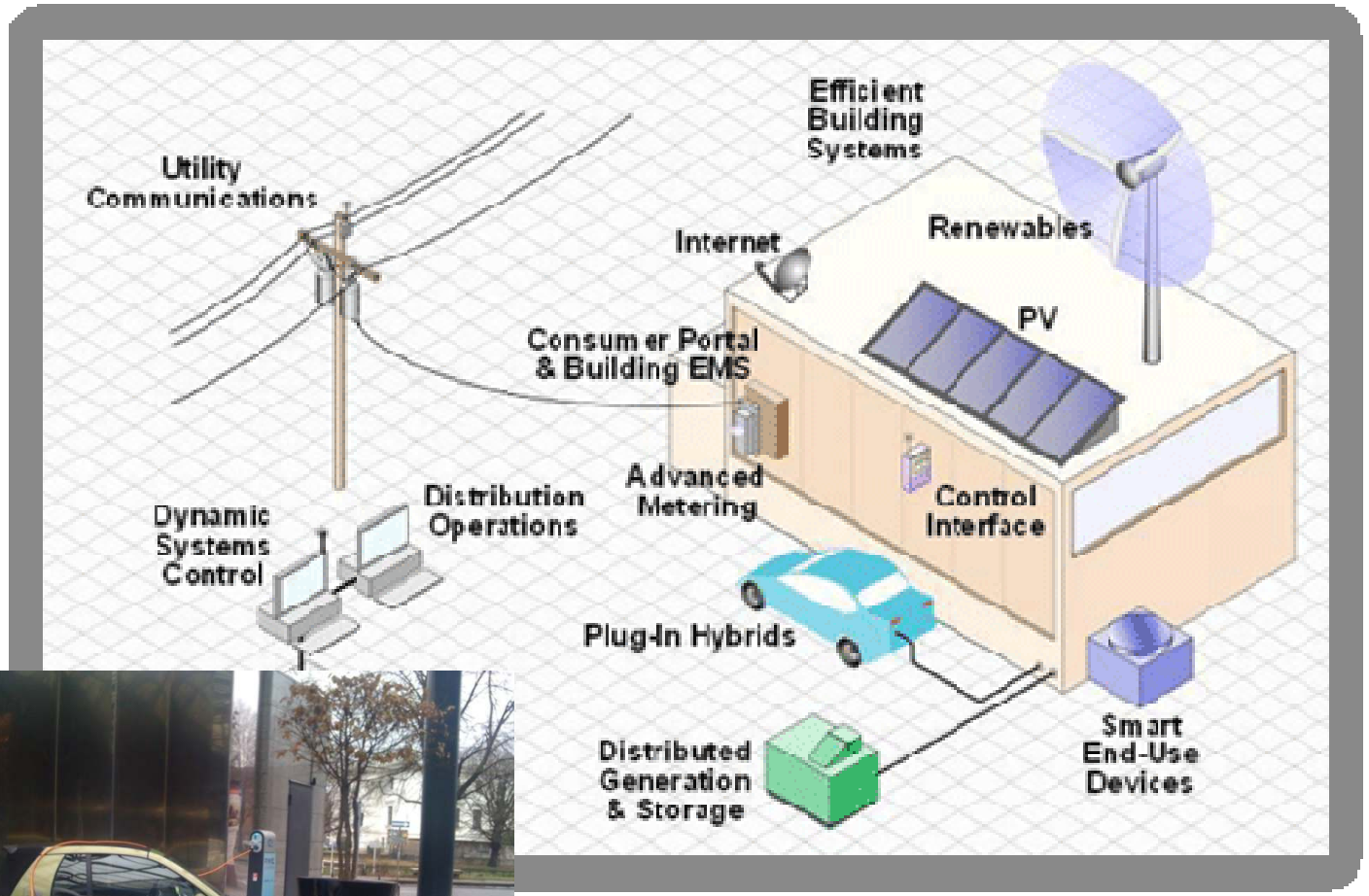

Smart Grid

eCargoMobility?

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