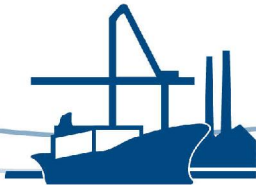


# ICT services for safety and environmental management at sea and port



*Ulla Tapaninen*  
*professor*

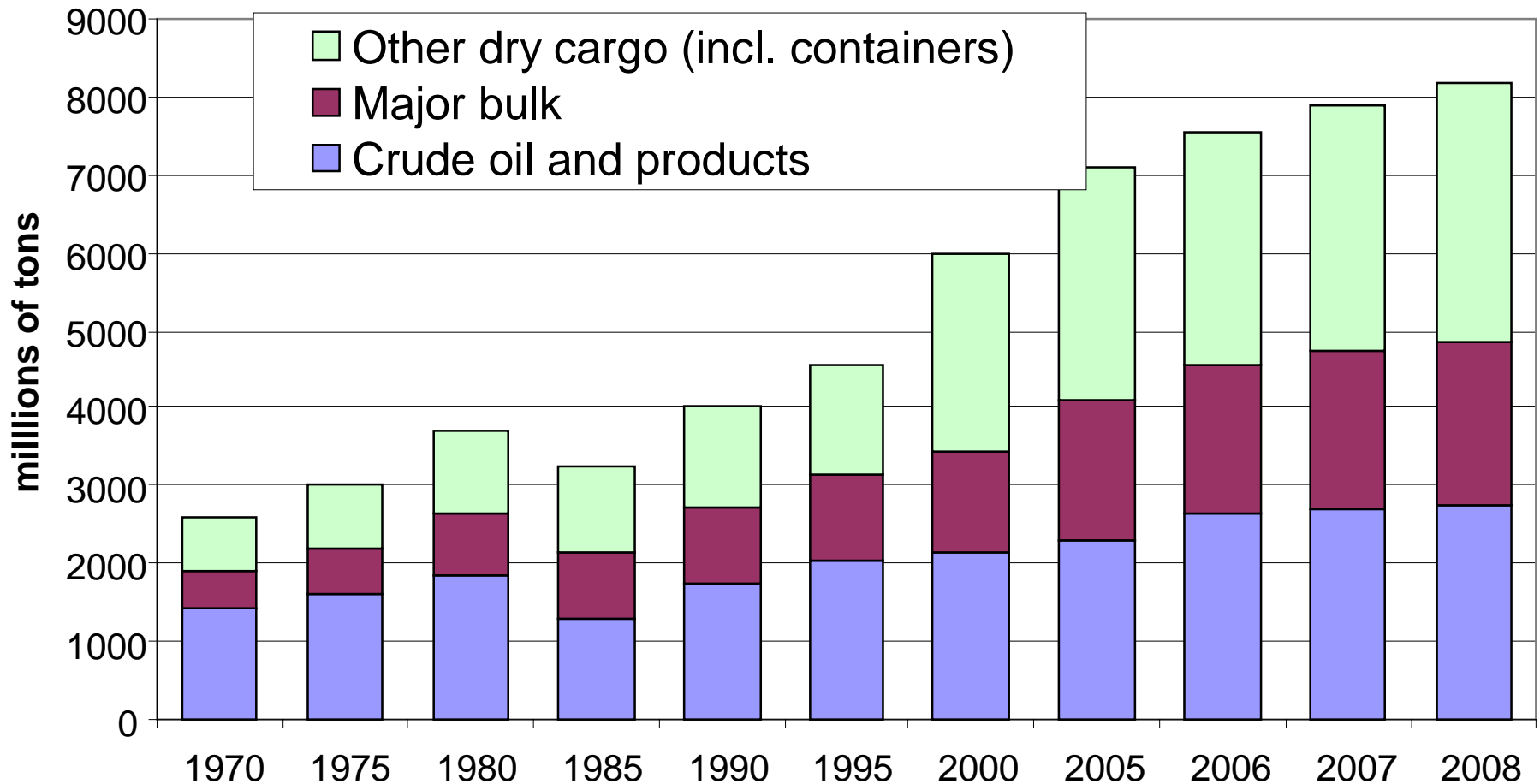
University of Turku  
Centre for Maritime Studies  
Kotka Maritime Research Centre

# Contents

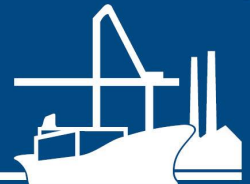
1. Case 1: Accidents at the Baltic sea  
=> Changes in shipping in the Baltic Sea
2. Case 2: Information exchange at ports  
=> Changes in port operations in the Baltic Sea
3. EU initiative: e-maritime



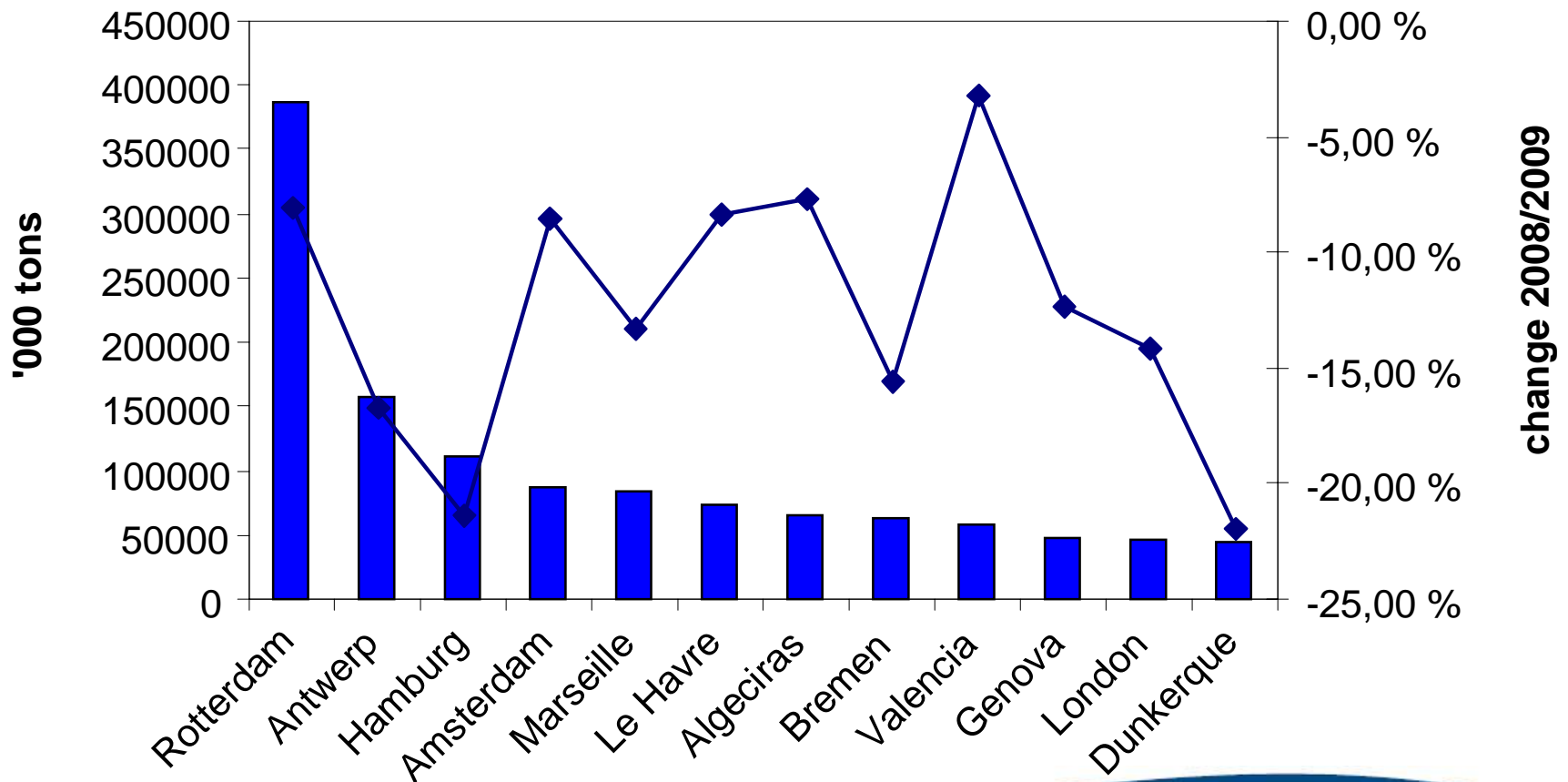
# International seaborne trade



Source: UN Review of Maritime Transport, 2009



# Total throughput of selected European ports 2009/2008



Source: European Sea Ports Organisation. 2010



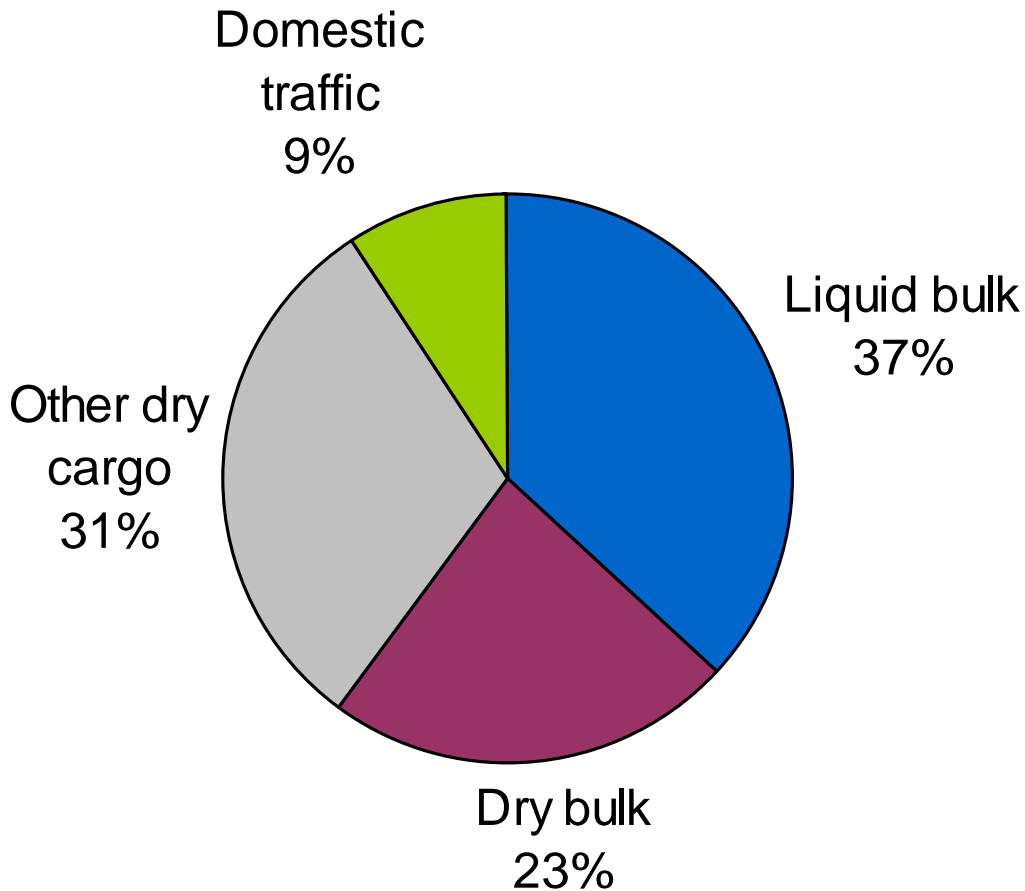
# The amount of maritime transportation in the Baltic Sea in 2008

**Total 822 M tonnes**

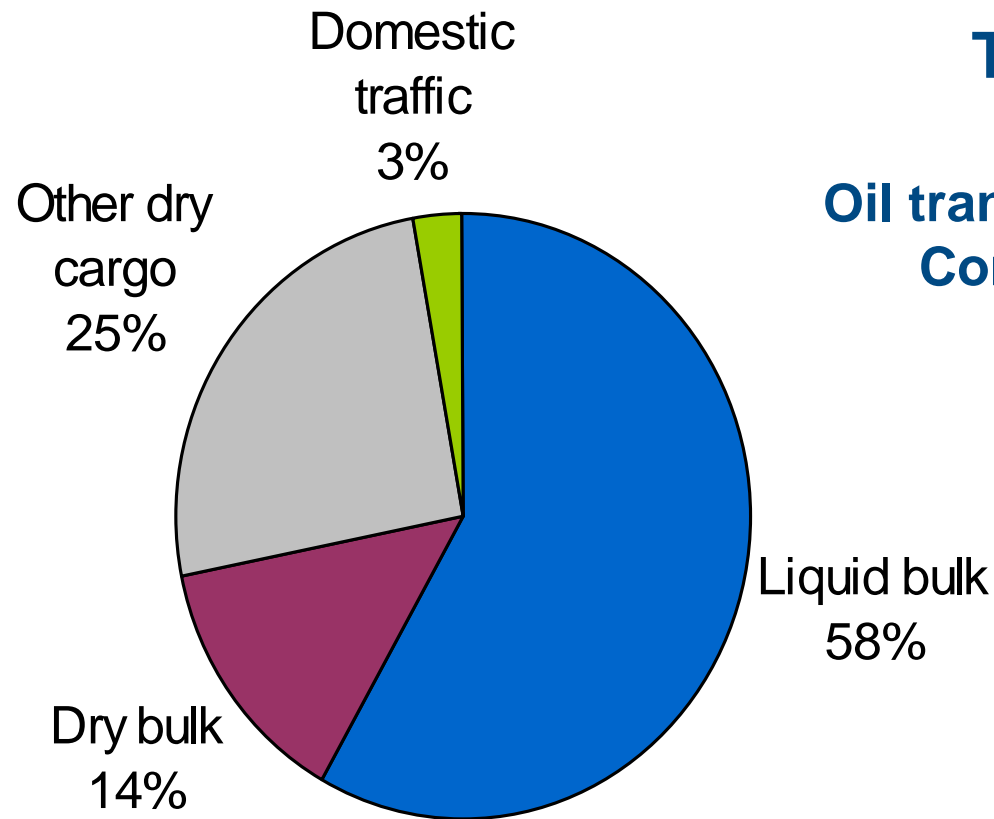
**The largest ports:**  
Primorsk (75,6 M t)  
St. Petersburg (60 M t)  
Gothenburg ( 43,2 M t)  
Klaipeda (29,9 M t)  
Riga (29,6)

**Container traffic 7,8 M TEU**  
**Ship calls 380 000**

Source: Baltic Port List 2008



# Maritime transportation in the Gulf of Finland in 2008



**Total 253 M tonnes**

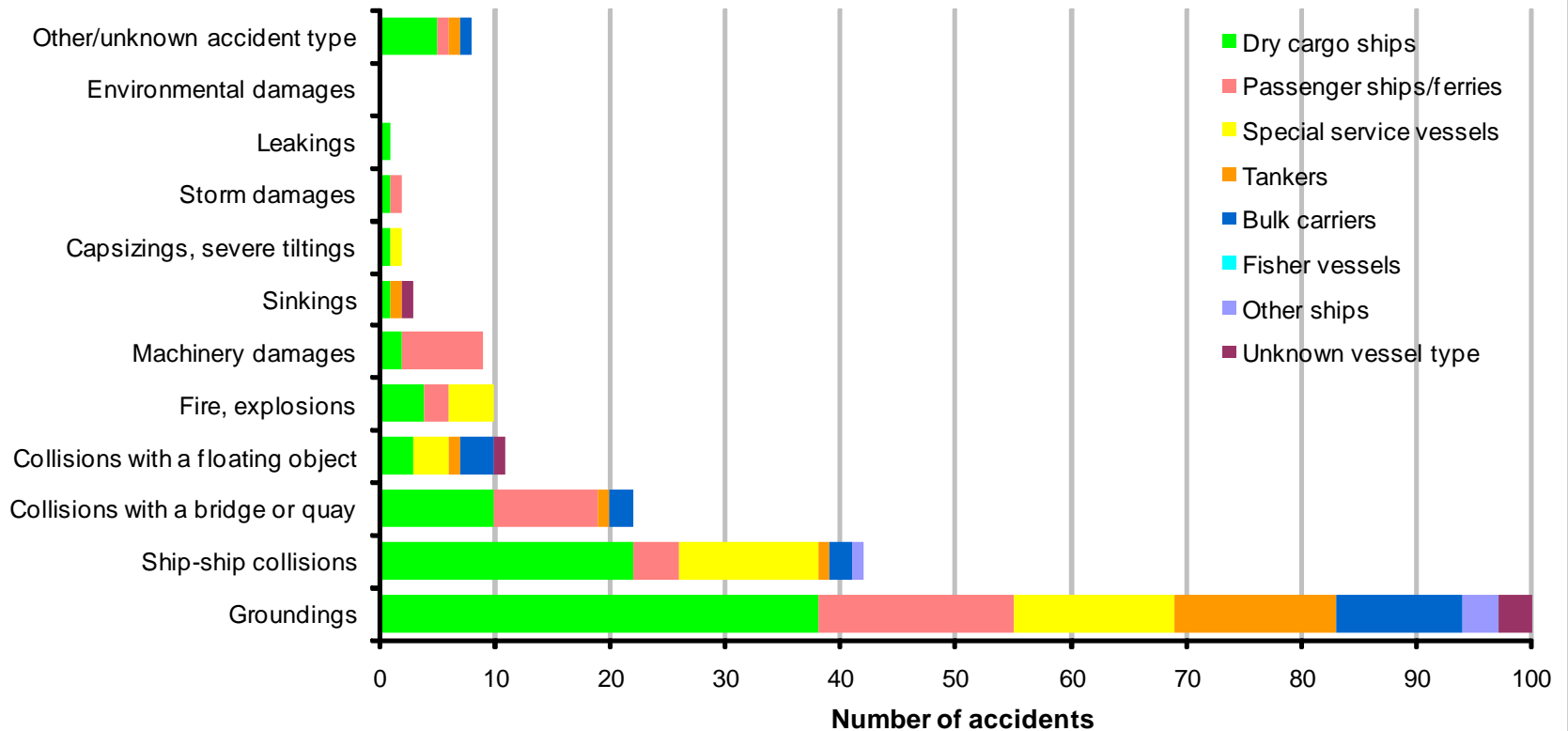
**Oil transports 143 M tonnes (56 %)**  
**Container traffic 3,4 M TEU**

**Ship calls 46 000**

Source: Baltic Port List 2008



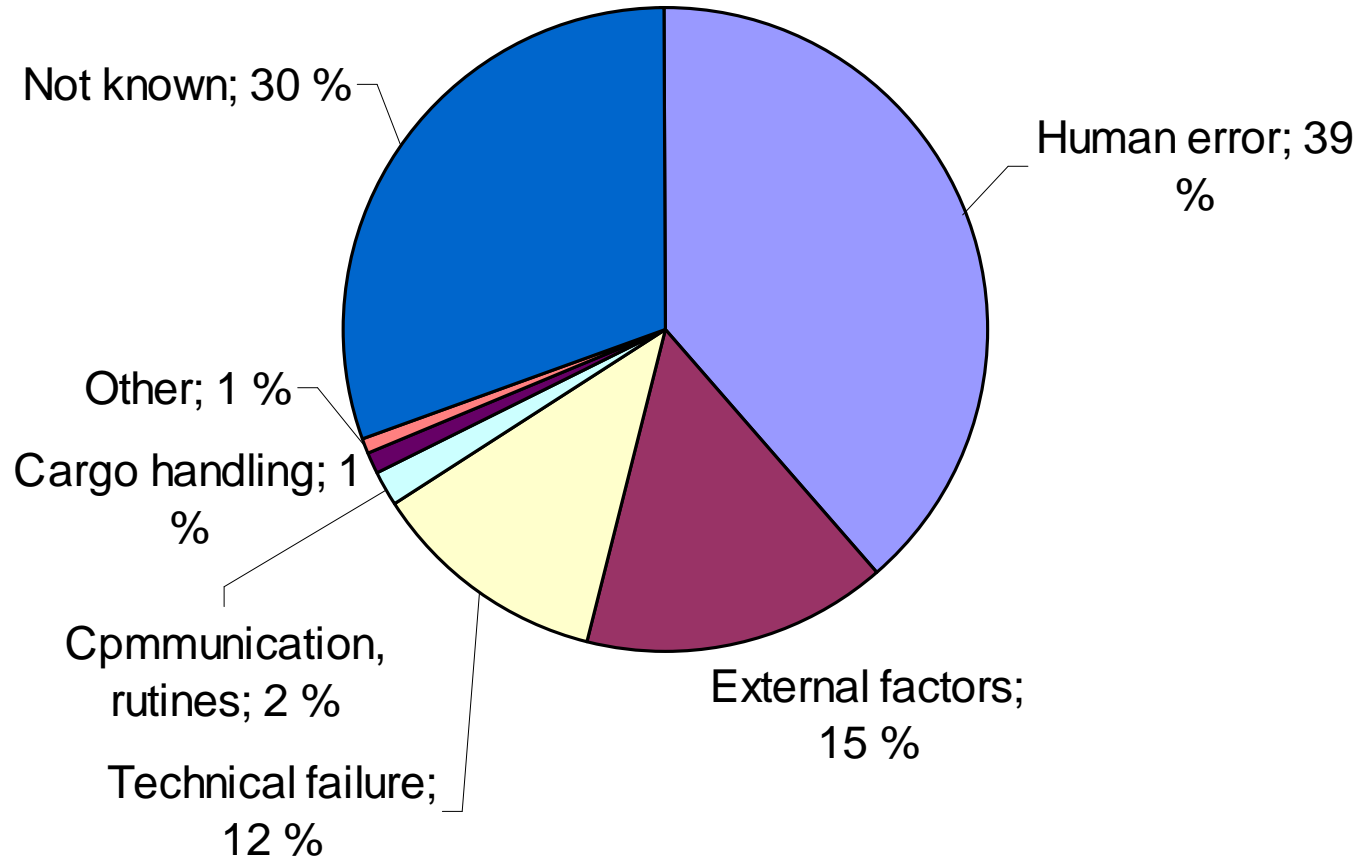
## Number of accidents in the Gulf of Finland



Source: Kujala P, Hänninen M, Arola T, Ylitalo J. 2009. Analysis of the marine traffic safety in the Gulf of Finland. Reliability Engineering and System Safety 94(8): 1349-1357.



# Reasons for accidents



Source: Kujala P, Hänninen M, Arola T, Ylitalo J. 2009. Analysis of the marine traffic safety in the Gulf of Finland. Reliability Engineering and System Safety 94(8): 1349-1357.



# Case Propontis



Photo: Jtashipphoto.dk

- Tanker Propontis with 100 000 tons of oil was grounded near Suursaari in February 2007.
- It was off the route in ice conditions.
- VTS center did not react.
- Accident was avoided, due to double-hull

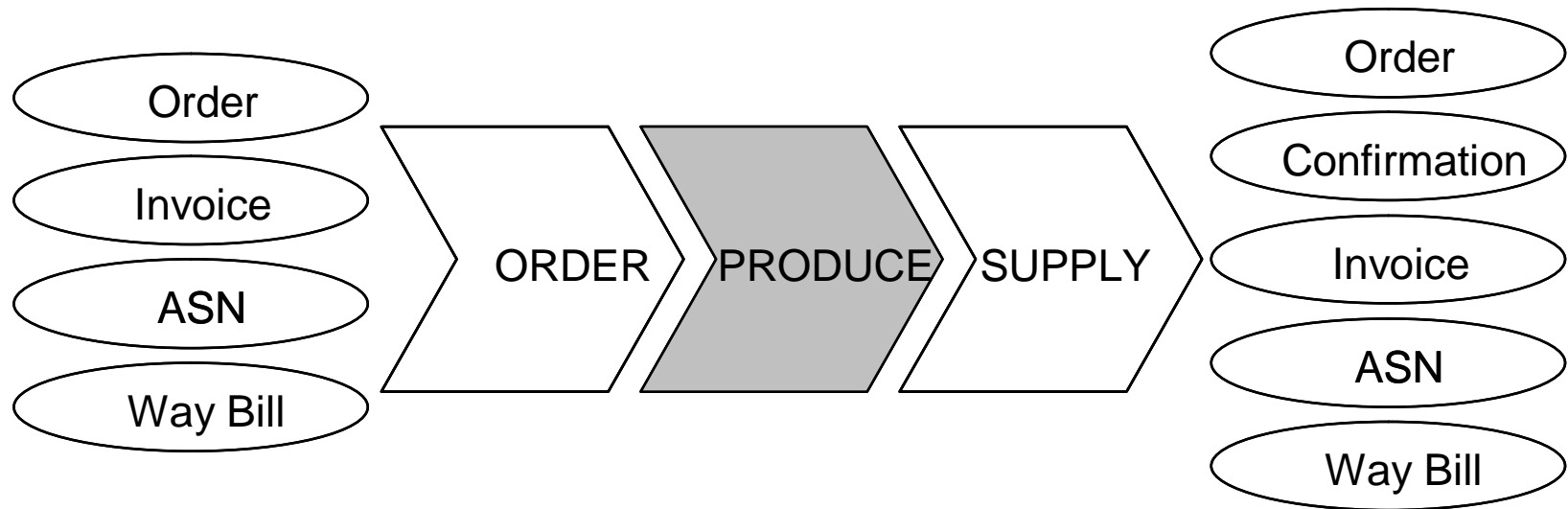


# Changes in shipping at the Baltic Sea

- Growing volumes
  - Oil
  - Containers
- Intermodalism and Short Sea Shipping
- Raising energy prices, stress on ship traffic
- Warming climate
  - Alien species
  - Stormy weather
- International crews and ice conditions
- New IMO regulations in air pollution and waste handling systems
- New technology
  - Electronic Traffic Monitoring: VTS, AIS, eNavigation, GOFREP
  - Cargo tracking



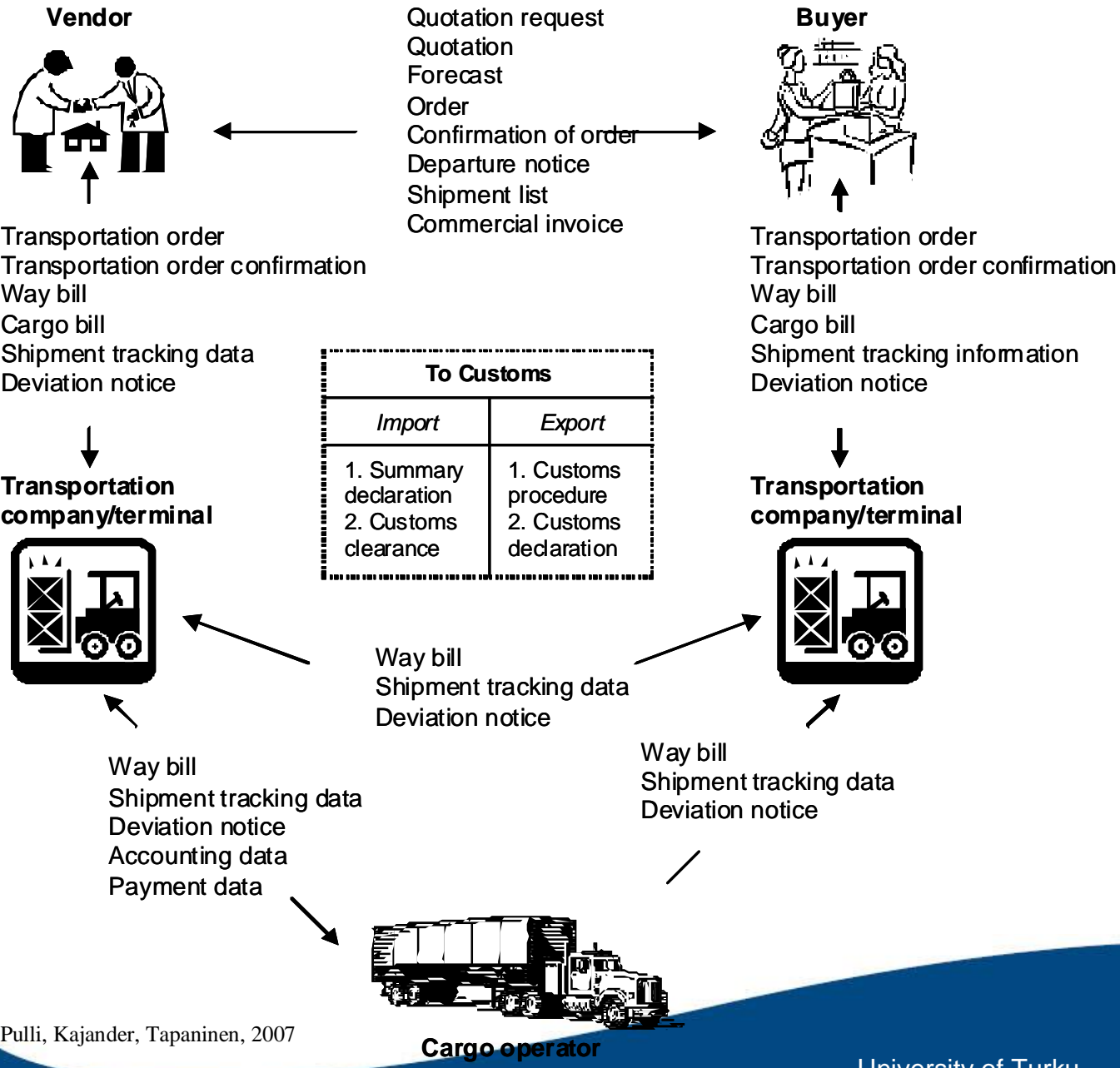
# Framework for logistics operations



ASN = Advance Shipping Notice

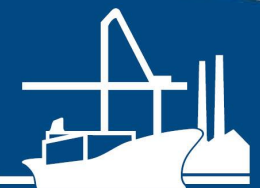
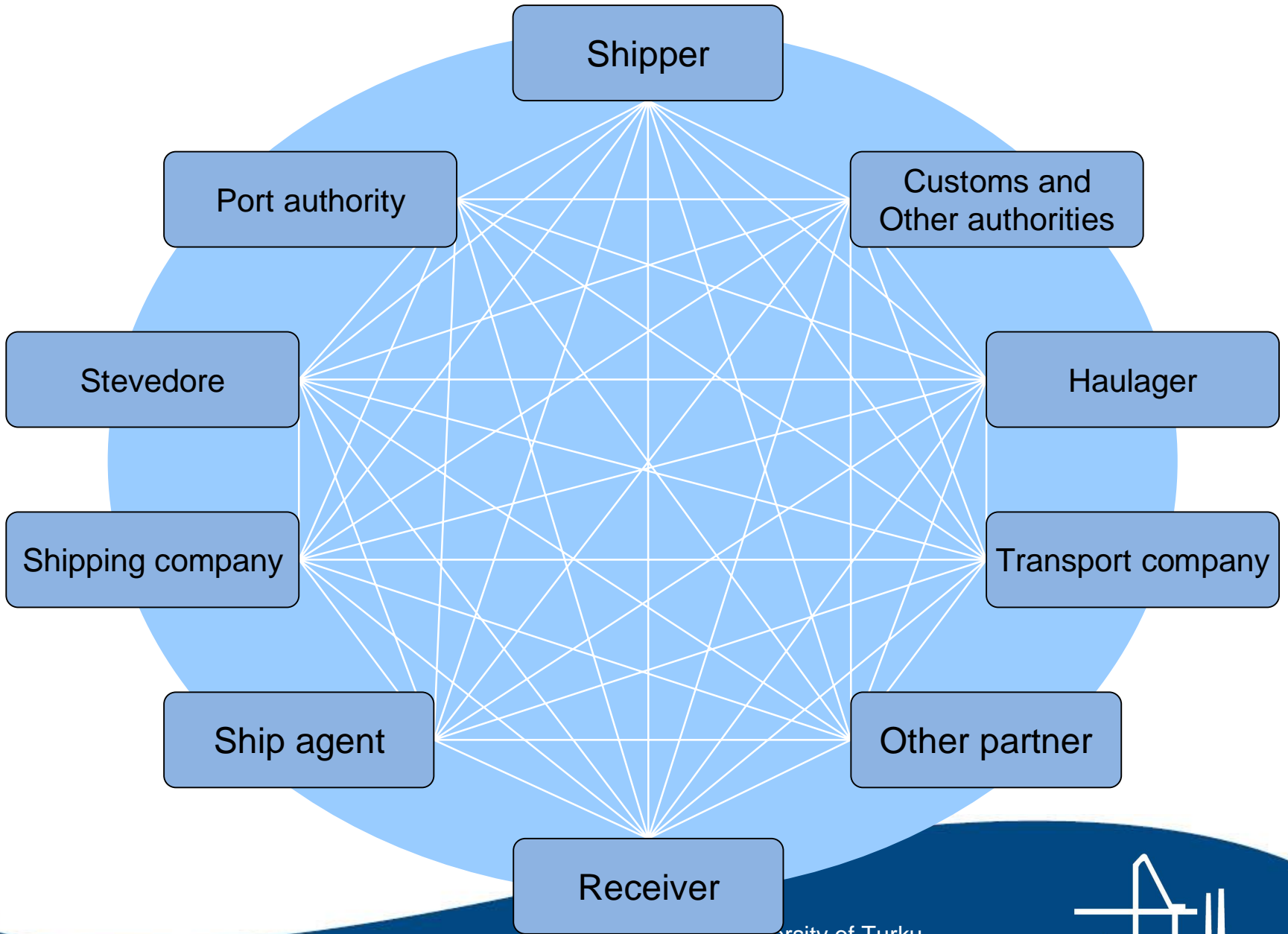
Source: Kauremaa, J., 2004





Information flow in transport





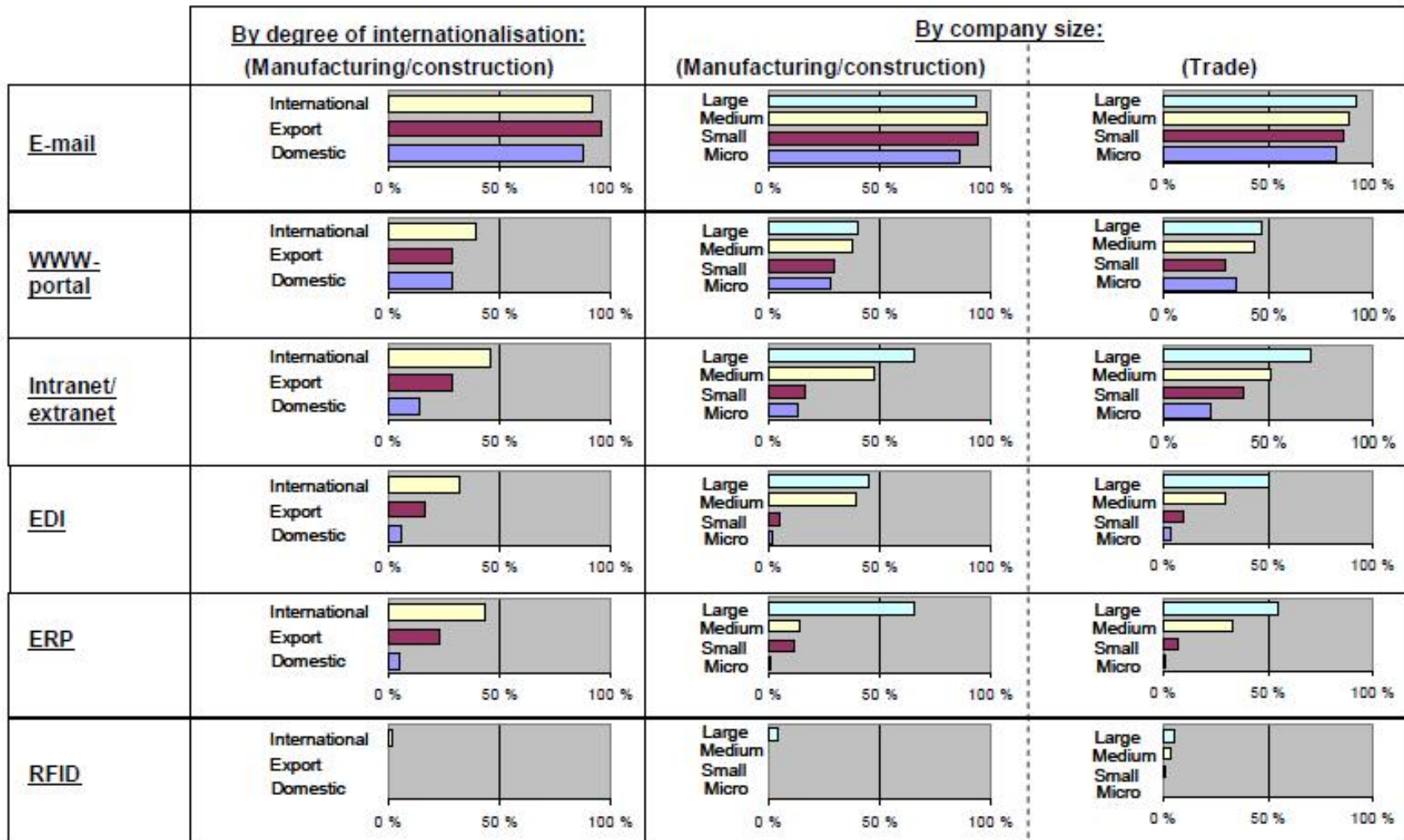
# Use (%) of ICT systems in Finnish companies in 2007

2007	All	Const- ruction	Hotels and restau- rants	<b>Trans- port</b>	Retail- ing	Indus- -try	Post and telecom	Whole- sale
Comput er	97	95	89	<b>87</b>	97	99	100	100
Internet	96	93	87	<b>86</b>	96	99	100	100
www- site(s)	69	48	69	<b>46</b>	56	84	88	87
Broad- band	86	80	76	<b>78</b>	84	91	94	93
Intranet	30	16	20	<b>21</b>	27	31	61	35
Extranet	21	11	12	<b>13</b>	36	19	42	22
EDI (2006)	13	7	4	<b>10</b>	23	15	18	20

Source: Statistics Finland, 2008



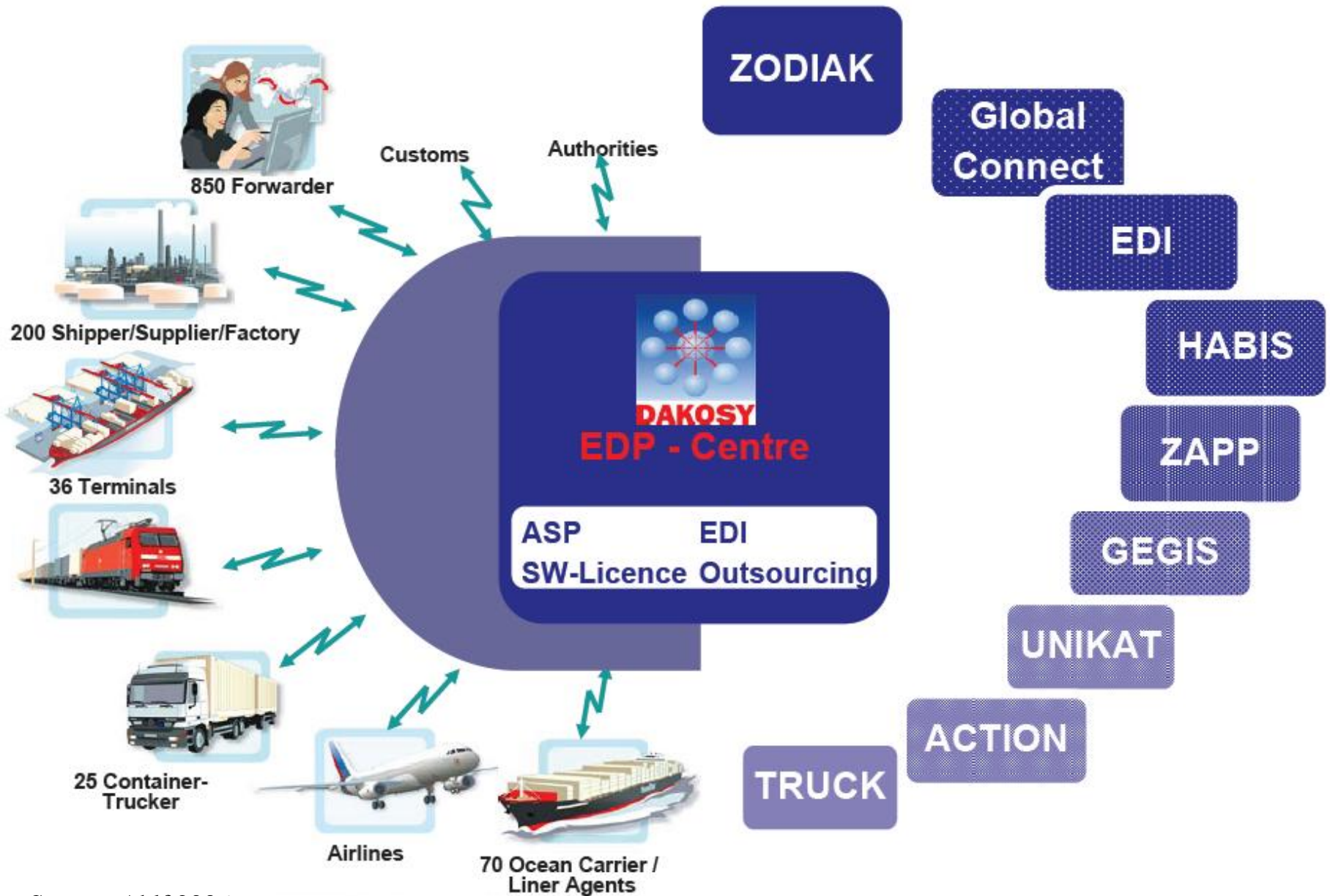
# Use (%) of technology at logistics



Source: Finland State of Logistics 2006



# DAKOSY at Hamburg





# Changes in port operations at Baltic Sea

- Increasing security and safety systems
  - ISPS
  - 24-hour rule
  - CSI, C-TPAT
- 24 / 7 service
- New technology
  - Automatic port systems
  - Port community systems
  - Customs
  - Cargo tracking



# Summary: EU eMaritime initiative

- Administration Domain Applications
  - Reporting using Single Windows,
  - eCustoms
- Improved Shipping Operations
  - eNavigation
  - Ship reporting, e.g. CO2 operational index
  - VTS
- Improved Port Operations;
  - Port Community systems
  - Integration of authorities, Port@Net, SafeSeaNet
- Integration into Logistic chains;
  - Short Sea Shipping and intermodalism
  - eFreight
- Promote seafaring profession and sea-shipping
  - eHealth at Sea
  - Improving image of EU Shipping



Thank you!

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