Port of Amsterdam

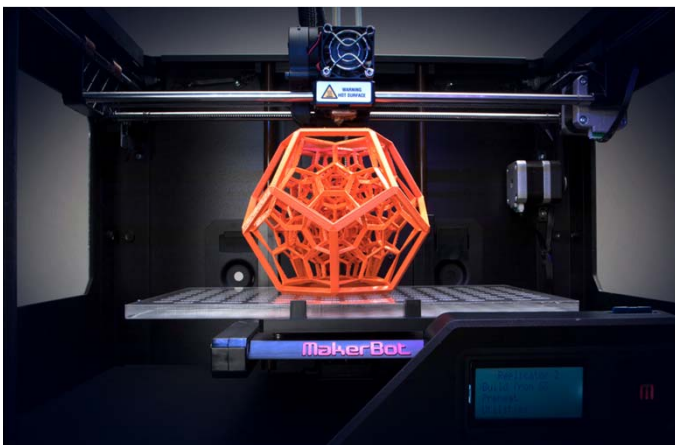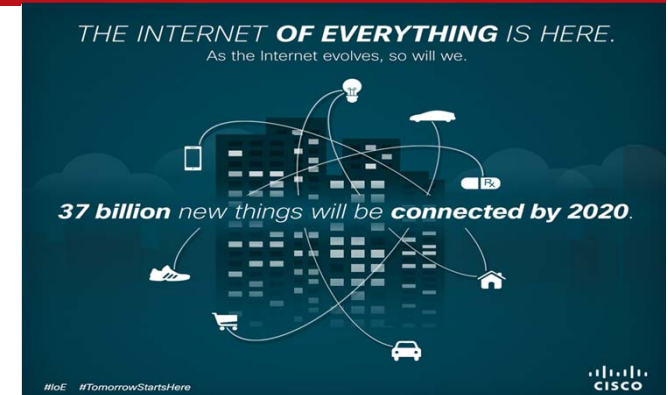# Smart Ports and smart infrastructure
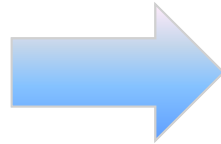# Big data and simulations

Jan Egbertsen, 18.11.2016, Delft

Game changers in logistics

Port of Amsterdam

The world of logistics is changing

- Internationals hubs

- Individual transports

- Optimizing on individual company level

- Logistics as supporting act

- Cost

- International networks

- Logistical operations

- Optimizing logistical chain (door to door), supply chain management

- Logistics as strategic USP

- Sustainable / PPP

Reliable, flexible, € efficiency

Port of Amsterdam

Port model is changing

Traditional port model:
- Land lord port
- City owned department
- City financed
- City oriented
- Land lease & harbour dues
- Competition
- Local harbour baron
- Economic development instrument
- Licence to operate
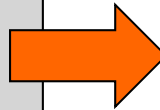
New port model:
- Port development Ltd
- City owned Company
- Market financed
- City and region oriented
- New business models
- Investing in hinterland
- Cooperation
- Multinationals as customers
- International logistical network
- Economic development & dividend
- EU port governance & transparancy
- Licence to grow

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Big data, predictive analytics, simulations

Dimensions big data:

- Volume
- Velocity (speed retrieve and process)
- Variety (sources)
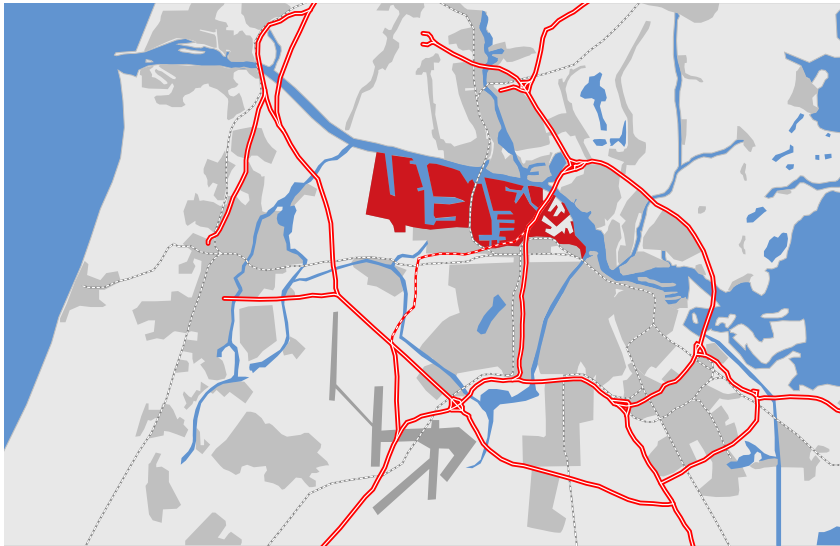- Veracity (quality)
- Value

More value from data (proces):

1. Identification data opportunities
2. Data analytics (history and future)
3. Realise business value

Data opportunities:

- Customer or market driven
- Context driven (technological and social developments)
- Business activity driven (operational excellence)
- Data driven

Port of Amsterdam

- 4th port in Europe; 98 mln tons, 125 mln tons 2030

- Good hinterland connections rail, inland waterways and road

- 2.600 Ha, 2.000 companies, 55.000 employees

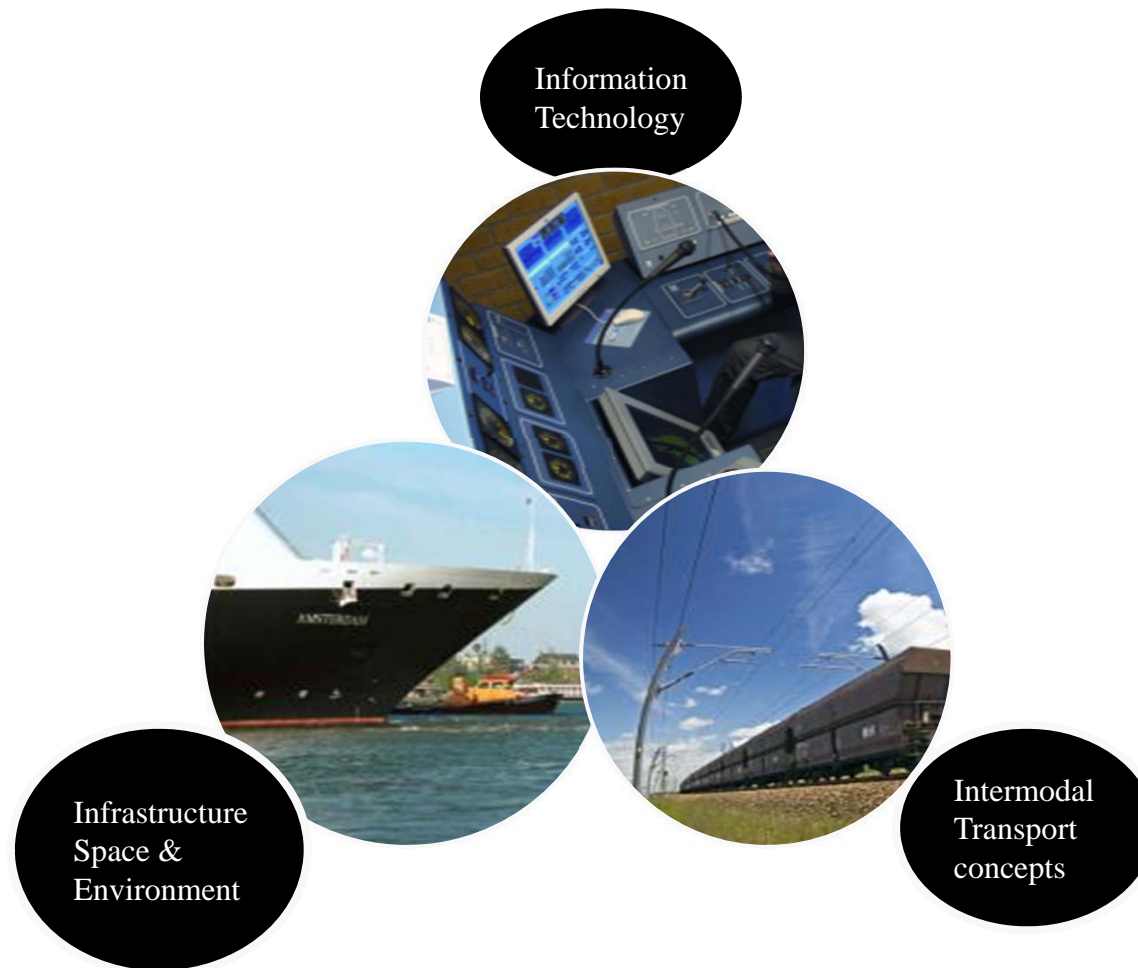- Smart Metropolitan Hub Amsterdam (airport, green port, science, creative industry, finance)

Port of Amsterdam N.V.

- Tasks:

  – Port development, innovation and management

  – Infrastructure

  – New companies and cargo flows

  – Nautical command

- 360 employees

- Operating income € 140 mln / year

- Investment € 10 - 20 mln / year

Port of Amsterdam

Port model

Port Authority

Market master	Match maker	Co-creator
to reinforce	*to connect*	*to realize*
	demand · *supply*	

- Provide location and conditions for business
- Facilitate transport and transhipment
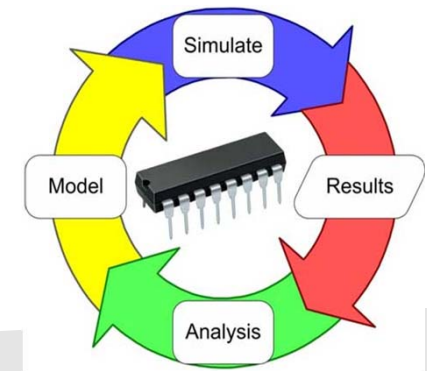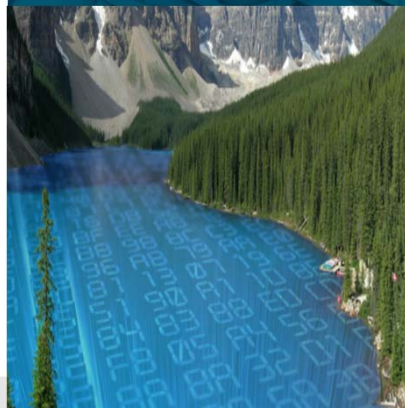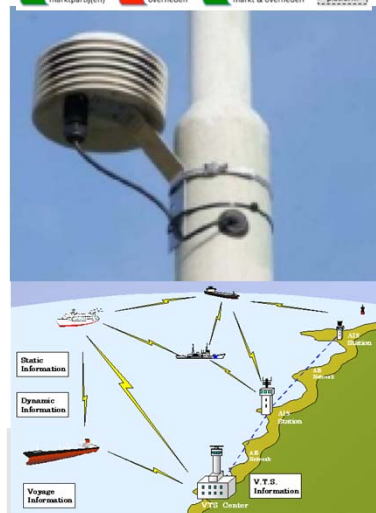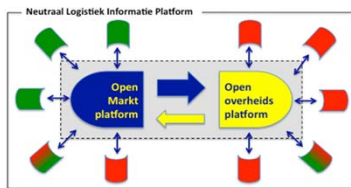- Provide network infrastructure

- Organize business community
- Promote clustering for plug & play environment
- Fill in white spots (intermodal and IT)

- Provide incubator, small scale and flexible area
- Participate and invest, (MIF II)
- New Business (4 topics)

Retrieving data – combining data – smart infrastructure

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Locks complex IJmuiden: new large sea lock
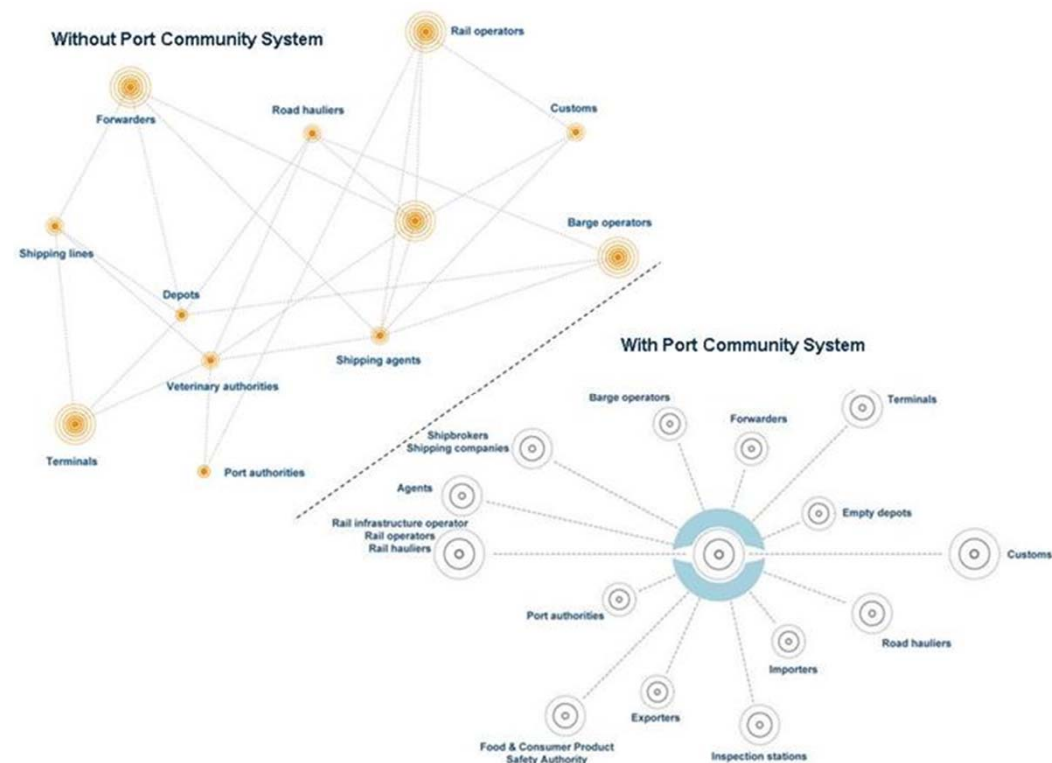
Second large lock
500m x 65m x 18m

Operational
Expected 2019

Simulation, Monte Carlo,
Ship movements through sealocks
Present: max. capacity 95 mln tons
New: max. capacity 125 mln tons

Portbase

- Port Community System ports of Rotterdam and Amsterdam
- Simple and efficient information exchange, BtoG and BtoB
- Real-time insight into the status of cargo
- Arrival => departure
- Sea, barge, road and rail
- Synchro modal transport
- Single window

portbase®
home of logistics intelligence

Without Port Community System

Rail operators
Forwarders
Road hauliers
Customs
Shipping lines
Barge operators
Depots
Shipping agents
Veterinary authorities
Terminals
Port authorities

With Port Community System

Barge operators
Forwarders
Terminals
Shipbrokers
Shipping companies
Agents
Empty depots
Rail infrastructure operator
Rail operators
Rail hauliers
Customs
Port authorities
Road hauliers
Importers
Exporters
Food & Consumer Product Safety Authority
Inspection stations

Port of Amsterdam

App IamPort

Sensors IJ-Palen

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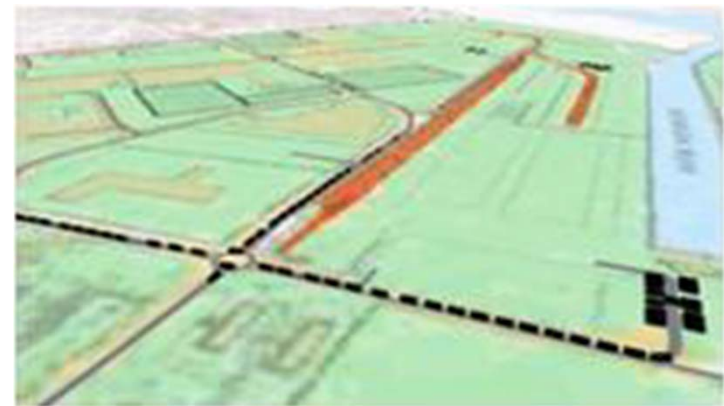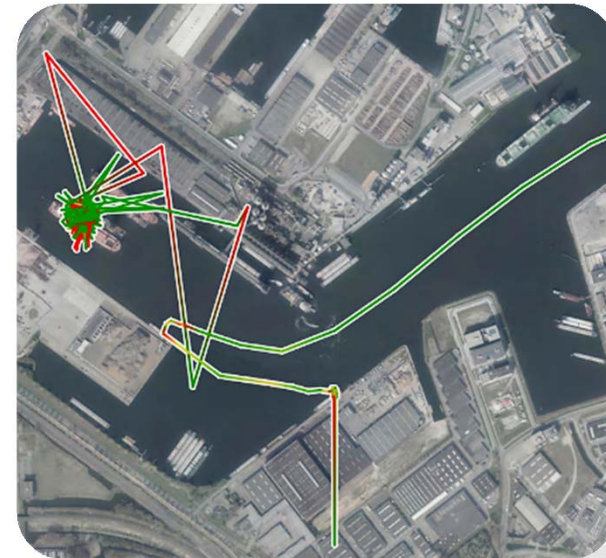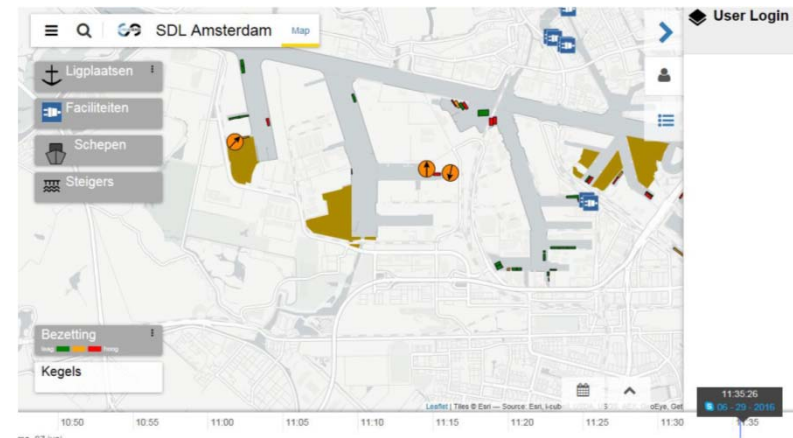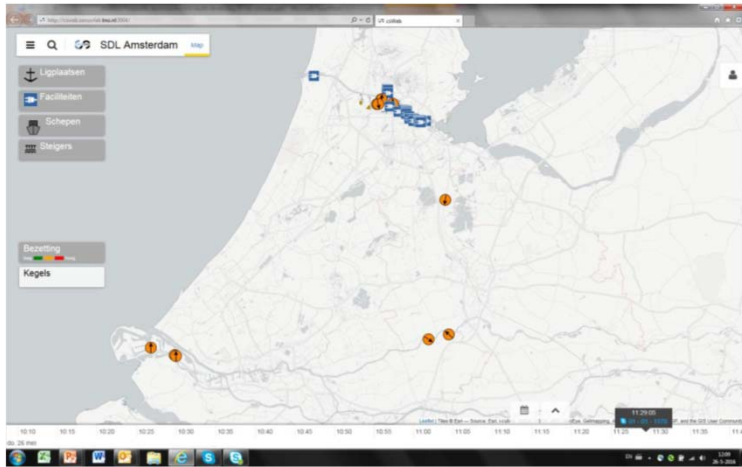
Trucking

Siemens and Duisburger Hafen AG enter into strategic cooperation, Munich, 2015-May-04

- The objective is development of innovative concepts for optimizing traffic
- Automation and digitization enhance efficiency in logistics
- First pilot project is being implemented in the port of Duisburg

Port of Amsterdam

AIS data and port planning

We4Sea

Performance monitoring platform: cargo, fleet and ship owners to follow performance of ships / cargo.
Location, speed data of ship, combined with meteo / seastate data => the instantaneous performance of ship and components simulated and displayed.
Fuel consumption / emissions presented calibrated with actual on-board measurements.
Performance monitoring tool insight actual usage of fleet, relative performance of fleet compared to similarly vessels
Overview well-performing components and "efficiency killers".

Performance monitoring tool first step towards efficiency improvement.

Serious gaming

To conclude

Smart Infrastructure and simulations in Seaports:

- Optimize use of possibilities: big data, IoT, sensors and machine learning, predictive analytics, simulations.
- For all modalities: rail, road and water.
- Focus on: terminal, supply chain, port as a hub in a network
- Sensors in infrastructure (for maintance planning)
- Optimize day to day operations in ports and terminals / warehouses (ETA / ETD, etc.).
- Historical data analyses use of port infrastructure and hinterland infrastructure. Efficiency use existing infrastructure
- Cargo flow analyses 2020 – 2030 => simulations use of infrastructure in 2020 and 2030 => input for investments new infrastructure.

Port of Amsterdam

Port of Amsterdam Port of partnerships

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