ROTTERDAM SCHOOL OF MANAGEMENT
ERASMUS UNIVERSITY

DEPARTMENT OF TECHNOLOGY AND OPERATIONS MANAGEMENT

Standardisation Strategy for the Port of Rotterdam

Dr. Ir. Henk J. de Vries
Associate Professor of Standardisation

Smart Port Seminar
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The business school that thinks
and lives in the future

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AGENDA

- **Introduction**
- Study on multi-modal transport
- Study on standards for supply chain visibility

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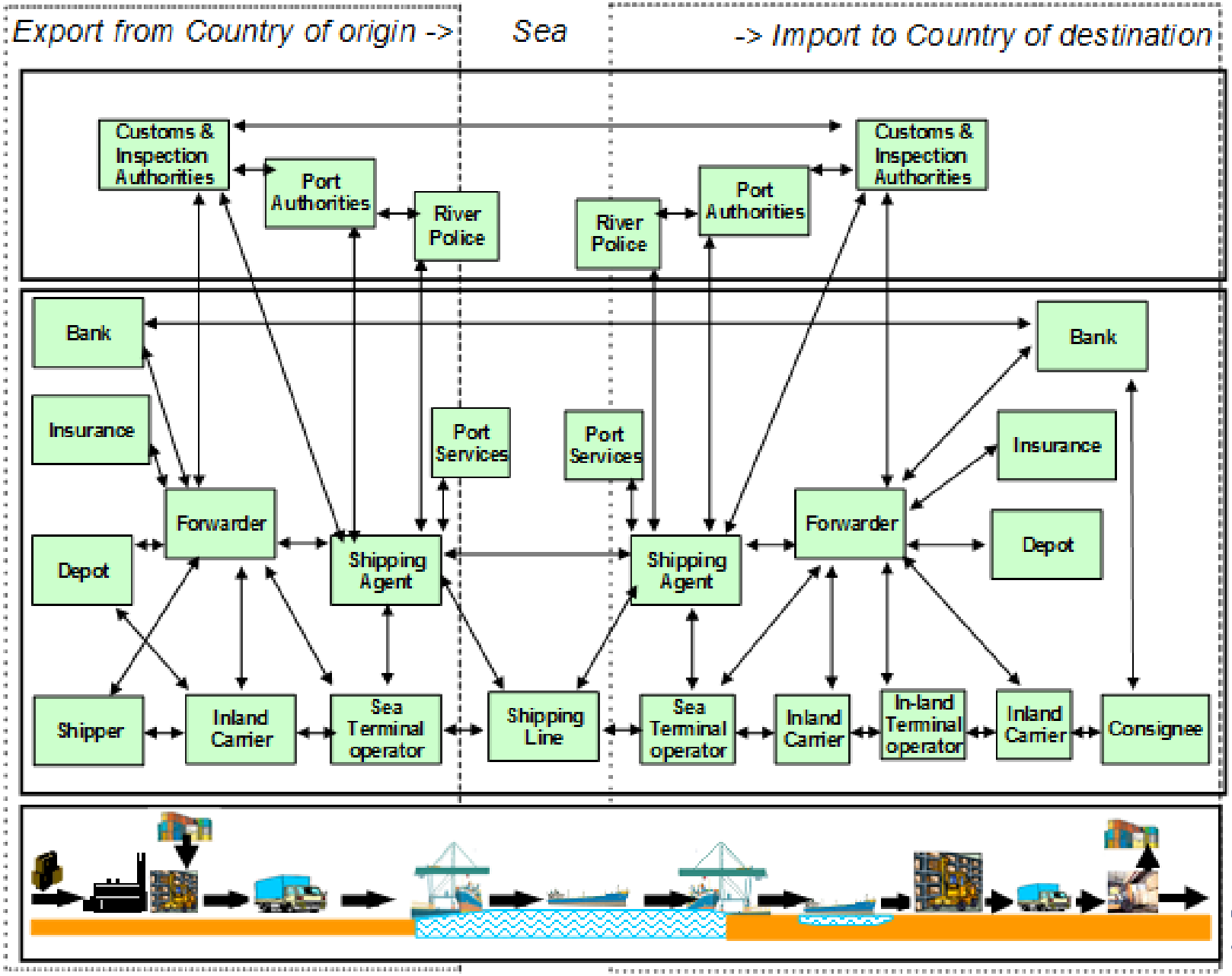
PORT SUPPLY CHAINS



STANDARD

Approved specification of a limited set of solutions
to actual or potential matching problems,
prepared for the benefits of the party or parties involved,
balancing their needs,
and intended and expected to be used
repeatedly or continuously,
during a certain period,
by a substantial number of the parties
for whom they are meant (de Vries, 1997).

GS1

NEN

ISO International Organization for Standardization

cen European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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LITERATURE (1)

- Literature suggests a positive impact of standardisation on transport performance
  - Example: loading units (Tomlinson 2009, Egyedi 1996 and 2001).

- Many scholars opt for further standardisation to different transport modes, in order to improve the quality of intermodal transport
  - Bontekoning & Priemus (2004): "*Innovations in technological and organizational aspects are necessary if the market share of intermodal transport is to expand*."

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LITERATURE (2)

Area:	Standards for:	Authors:
Infrastructure	Lay-out, planning & design	Silborn (2013) & Motraghi (2013)
	Technical: Signalling & power systems	Sakalys & Palsaitis (2006), Reis et al. (2013)
Data and information	Information exchange	Bask et al (2001), Dullaert et al. (2009), Reis et al. (2013), Sys & Vanelslander (2011), Stölzle et al. (2009), Silborn (2013)
	Documents	Motraghi (2013) & Marinov (2009)
	Tracking units	Motraghi (2013)
Equipment	Vehicles / rolling-stock	Janic (2001), Bontekoning & Priemus (2004), Tsamboulas et al. (2007), Marinov (2009)
	Loading units	Bask et al. (2001), Janic (2001), Van de Lande & Henriques (2006), Tsamboulas et al. (2007), Konings (2008), Marinov (2009), Silborn (2013)
	Packaging	Bask et al. (2001)
Security and safety	Security, safety	Silbern (2013), Sakalys & Palsaitis (2006), Marinov (2009), Reis et al. (2013)
Services	Overall reliability and transit times	Silborn (2013), Sakalys & Palsaitis (2006)
Terminals	Planning, design, processes, services, systems, equipment	Van de Lande & Henriques (2006), Silborn (2013)
Contracts	Common contracts	Reis et al. (2013)
	Liability rules	Marinov (2009), Van de Lande & Henriques (2006)
Pricing	Infrastructure duties / taxes	Stölzle et al. (2009)
Labour	Working conditions	Stölzle et al. (2009)
	Routines	Bask et al. (2001)
	Training	Van de Lande & Henriques (2006)
Environment	Noise	Reis et al. (2013)

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LEVEL OF STANDARDISATION?

- **European level** because European (intermodal) transport is significantly different from intermodal transport in the rest of the world (Marinov, 2009; Janic, 2001; Van de Lande & Henriques, 2006).

- **International and European level** because of the long-distance, border-crossing nature of intermodal transportation (Silborn, 2013).

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STAKEHOLDERS PER ‘POT’ DOMAIN (EGYEDI, 1996)

- **Political**: national governments, standardisation organisations, railway unions etc.;
- **Operational**: the operators as shown by Caris et al. (2008):
  - **Drayage operators** plan and schedule trucks between terminals and shippers and receivers. Drayage refers to the pre- and post-haulage part of the transport process;
  - **Terminal operators** manage transhipment operations from road to rail or barge;
  - **Network operators** plan infrastructure and organise rail/barge transport;
  - **Intermodal operators** use the intermodal infrastructure and services, they select the most appropriate route for shipments through the whole intermodal network.
- **Technical**: producers of containers, container handling equipment, infrastructure etc.

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STANDARDISATION – STRATEGIC CHOICES

- Variety
- Standard
  - Internal standard
  - External standard
    - Existing standard
    - Involvement in standard development

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EMPIRICAL STUDY

1. Pre-study:
   - Desk research
   - Interview (intermodal rail industry)
   - Visits to terminals
2. Semi-structured interviews:
   - Rail carriers (TX Logistik, ERS Railways, DB Schenker Rail)
   - Barge operators (Danser Containerline, Contargo Waterway Logistics)
   - Intermodal operators (Hupac Intermodal , Jan de Rijk Logistics)
   - Terminal operators (ECT trimodal terminal)
   - Logistic service providers (Ewals Intermodal, Bas Logistics)
   - Transport research organization (TNO)
   - Trade association of shipping and transport companies (EVO)

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EMPIRICAL RESULTS

Distinguish between:

- **Maritime intermodal transportation**:

  between deep-sea terminals and the European hinterland

- **Continental intermodal transportation**:

  between European consignor and consignee, so transport within Europe

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MAIN AREAS FOR STANDARDISATION

1. Infrastructure
2. Loading units
3. Information exchange

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1. INFRASTRUCTURE

- **Problem**
  - Deviating national rail infrastructures
- **Stakes**
  - Avoid investments
  - Single European rail market
  - Rail links to Asia
- **Level of standardisation**
  - Currently: European
    - Insufficiently used
  - Future: International

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2. LOADING UNITS (1)

- No problems in maritime transport
  - Standard ISO 20ft and 40ft containers are common
  - These fit perfectly on barges and trains

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2. LOADING UNITS (2)

- Diverse set of loading units in continental intermodal transport
  - Preferences
    - Road /Shippers: Semi-trailers
    - Rail: Swap bodies and ISO containers
    - Barge: ISO containers
- Level of standardisation
  - Currently: European
    - European Intermodal Loading Units (CEN)
    - European swap bodies (CEN)
  - Future: More international
    - Swap bodies for rail connections to Asia

3. INFORMATION EXCHANGE (1)

Problems:

- **Double information**: Information systems differ per actor (communication language, software, structure) →
  - Inefficiency
  - Mistakes;
- **Timely information**: Often information is not exchanged in time;
- **Unknown demand for information**: Often organisations do not know which information they need to exchange;
- **Difficulties in exchanging information**: Why fill in information you do not need yourself?

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INFORMATION EXCHANGE (2)

- **Stakes**
  - Companies:
    - When all information is available for each organisation some organisations will have to rethink their core business
    - Global players prefer to deliver the same set of information to all ports in one format
  - Port:
    - Efficient transport of cargo into and out of the port
- **Type of standards**
  - Standard communication platforms
    - Preference for a national de-facto standard which could later on be used for formal European or world-wide standardisation
  - Standard communication languages like EDI, XML, etc.

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LIMITATIONS

- Relies on perceptions of interviewees
  - Though triangulated with written sources
- Most respondents active in the operational domain of intermodal transportation
  - They see potential for information exchange
  - Hardly any attention for other standards:
    - Quality
    - Safety
    - Environment

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- **Study on standards for supply chain visibility** (Robert van Wessel, Rob Zuidwijk, Rommert Dekker, Henk de Vries, Marcel van Oosterhout, Jaco van Meijeren)

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OVERVIEW

- Quick Scan on standards to support supply chain visibility (SCV)
  - Desk research: academic and professional literature.
  - Research model and corresponding questionnaire.
  - Seven interviews (Port of Rotterdam Authority, GS1, logistic service providers, shippers and freight forwarders).
  - Two case studies (sea side handling of vessels; hinterland rail transport).

BENEFITS OF SUPPLY CHAIN VISIBILITY

- Easier communication and integration
- Integral logistics flow based on unique identifiers of products, packages, pallets, containers, ships/barges/trains/trucks
- Better estimation of times of departure and arrival
- More efficient handling of cargo between modes of transport
- Facilitation of customs procedures
- Options for new services
- More flexibility

CURRENT STANDARDS

- Many standards available.
- GS1 is the main provider of standards for trade
  - Neutral not-for-profit organization
  - Established 1973 by manufacturers and retailers
  - 110 member organisations worldwide
- The current set of standards is incomplete
- These standards are increasingly used
- A strength of GS1 is in the identification of physical objects, nesting is possible
- Most GS1 standards have not been adopted by the International Organization for Standardization ISO nor by the Comité Européen de Normalisation CEN, which hinders their use in the case of public procurement
- Influence on ISO and CEN via ‘mirror committees’ of the Netherlands Standardisation Institute (NEN).

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TRUSTED THIRD PARTIES

"Trusted Third Parties" needed to accommodate a truly intermodal approach.

- Issues include:
  - ownership of information hub
  - set of core (non-commercial) services
  - positioning as information selling business
  - impact of data protection laws.
- Opportunity and challenge:
  - determine forecasts
  - provide information to individual supply chain actors

DISCUSSION

- Who takes the lead in developing and implementing standards?
  - Freight forwarders?
  - Transport companies?
  - Buyers?
  - IMO?
  - GS1?
  - Outsider, e.g. Google?
  - Port of Rotterdam and/or Deltalinqs?
- Can the Rotterdam Port be the party that is prepared to handle physical flows, transactions and information flows in a smooth way?

Dr. Ir. Henk J. de Vries
Rotterdam School of Management, Erasmus University
Department of Technology & Operations Management
Section Innovation Management
010-4082002
hvries@rsm.nl