

Port community systems – the Finnish case

Securing effective information exchange

The management of port-related supply chains is challenging due to the complexity of operations and heterogeneous actors in the ports. The aspect of ports' efficiency has become even more important than before due to the growth in world trade and freight traffic.

The significance of information sharing is emphasised in the ports where multiple transport modes, shipments and actors are present. The information exchange between different port-related actors is often cumbersome and it still involves a lot of manual work and paper. Even though major ports and port-related actors usually have advanced information systems in daily use, these systems are seldom interoperable with each other, thereby preventing economies of scale to be reached. Smaller ports and companies might not be equipped with electronic data transmission at all.

Table 1. Examples of PCS around the world

PCS	Port(s) where the system is in use
ADEMAR	Le Havre
BHT	Bremen
DAKOSY	Hamburg
Destin8	Felixstowe, Harwich, Ipswich, Immingham, Hull, Teesport, Tyne, Grangemouth, Aberdeen, Glasgow, Liverpool, Bristol, Thamesport, the Medway Ports, Tilbury, Greenock, Great Yarmouth and approximately 70 inside customs places
Easyport	Yantai
EDI	Kobe
eModal	Many ports and logistics terminals in the US
FIRST	New York and New Jersey
GASYNET	National system in Madagascar
Harbour View	e.g. Melbourne, Tanzania and several Belgian ports
Indian Port Community System	National system in India
KleinPort	Several ports in America, Australia and Europe
Nanghai Port Community System	Nanghai
PACE	London
PLUS	Gothenburg, Johor, Mombasa and Muscat
Port Klang Community System	Klang
Portbase	Amsterdam and Rotterdam
PortBIS	National system in Australia
PortIC	Barcelona
Port-MIS	National system in Korea
PORTNET	Seattle and Singapore
PortXcs	Zeeland
PROTIS	Marseille
Seagha	Antwerp
SPIN	Southampton
Tradelink	Hong Kong
TradeNet	National system in several countries (e.g. Ivory Coast, Mauritius and Singapore)
TradeXchange	Singapore
Valenciaportpcs.net	Valencia

In order to improve information exchange of port-related supply chains, many ports around the world (see Table 1) have developed port community systems (PCS) to serve comprehensively information exchange within the port community. The existing PCS are designed specifically for large container ports. The question remains, is it possible to apply these systems in smaller ports as well? This article, based on a study carried out in Finland in 2010 by the University of Turku's Centre for Maritime Studies, describes what kind of PCS would be suitable for the Finnish port operating environment.

A port community system in general

A PCS system can be defined as a holistic information hub that seamlessly integrates a heterogeneous collective of port-related actors electronically into a global transportation network in order to enable the efficient exchange of relevant logistics information and hence to ensure the smooth flow of shipments from cargo origin to destination. When using a port community system, there is no need for bilateral communication and multiple communication methods between different parties because every port-related actor sends its information to the central system, which can be accessed by other parties to get the information needed. PCS systems offer the users a Single Window based solution for information exchange, which makes it possible to lodge standardised information and documents with a single entry point so that individual data elements only need to be submitted once. The potential benefits of PCS systems are manifold: decreased clerical and paperwork, improved information quality and integrity, enhanced efficiency and customer satisfaction, reduced costs and delivery times, etc. For example, it has been reported that with the national Port-MIS system used in Korea it has been possible to reach logistics cost savings of USD 100 mln mainly due to reducing personnel and paperwork, harmonization and automation of the port-related systems.

The present situation

The information systems and services used in Finnish ports can be considered quite advanced and comprehensive. Examples are the nationwide vessel traffic information system PortNet for company-authority information exchange, the mandatory ship reporting system GOFREP, the traffic information system IBNet for icebreaking purposes, the enterprise resource planning system Port Data System for port authorities and Visy Gate - an automated access and area control system used in several Finnish ports. In addition, port-related actors (e.g. port authorities, port operators, shipping companies, and forwarding companies) use different kinds of commercial information systems that are usually tailored to meet the needs of each company. Despite the above, information sharing in a typical Finnish port-related supply chain has several bottlenecks that cause delays in shipments and result in wasting resources. The main reasons behind these bottlenecks are extensive use of

traditional bilateral communication methods (e.g. paper documents, telephone, fax and email), a large number and diversity of documents/messages (the same data must be entered many times into several places) and incompatibility of information systems of different port-related actors. The practices and requirements also vary between different actors, ports and states, which cause problems in information exchange. Further, the information systems and services used in Finnish ports are quite scattered from a user's point of view. They are also more or less orientated to serve the needs of the authorities in the maritime environment while less attention is paid to land-side transportations and the business needs of companies.

Promoting information exchange

PCS around the world appear to be concentrating on container ports with an annual handling volume of 1 mln TEU or more. Compared to these numbers, the Finnish ports are relatively small. In 2009, the total container volume of foreign traffic in Finnish seaports was approximately 1.1 mln TEU, in 2010 the figure increased to 1,24 mln TEU. Besides container ports, PCS can certainly be applied in those handling other kinds of freight (e.g. dry and liquid bulk, ro-ro traffic). However, even if the smallest Finnish ports and port-related actors are to be included as part of a port community system, then the establishment of a national PCS might be the most suitable solution.

Authorities and the largest companies operating in Finnish ports have already established practices for data exchange. A port community system can be used to solve the information flow problems that have not yet been resolved in other ways, e.g. electrification of the data exchange between the small companies and other port actors.

The user groups of the Finnish PCS are to be port authorities and companies operating in the ports as producers of the information, and their customers - as the receivers. The PCS should also have interfaces with other maritime and port-related information systems, for example PortNet. Its core would consist of the exchange of event and exception information (especially focused towards land-based transport customers) as well as instructions concerning the ports and other similar port-related information, and the support services required by the use of the system. The transmission of data would be based on the message traffic (e.g. EDI and XML messages) between different information systems, and manual solutions would only be utilised when a message-based alternative is not available.

In order to make funding of the Finnish PCS possible, its costs should be kept as small as possible, and therefore, the open source code solutions would be worth considering

when purchasing the software for the system. Incorporation of the PCS' functions into the existing service centre would be the most reasonable solution since it involves less economic risk and needs less own staff compared to a separate service centre.

The promotion of the Finnish port community system would need a broad-based development community to which ports and port-related companies would commit themselves and which would make decisions on what services to be implemented, find the necessary financing for the investments, act as a commissioner of development projects, and further on take responsibility for the operating costs of the technical environment.

Implementation of the Finnish PCS is planned to be phased in by using a modular implementation approach in which each module has clear objectives and concrete benefits for all parties involved. During 2011, a mini-scale port community system is going to be built in the new Hamina-Kotka port and the ideas developed during this project can be tested. If the system proves a useful tool, it could be extended in the form of a national port community system. ■

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