

# Port Community System: A Key Component of the Future Vision for Cargo and Port Security

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## What is a Port Community System?

A Port Community System (PCS) responds to the need to focus on maximizing physical infrastructure and managing the efficiency of the port operation as a whole. The system exists in an environment where each individual enterprise intersecting in a port is concerned about its particular role and the part it plays in the activity chain of shipping a container.

With an info-structure or information technology (IT) based infrastructure, a PCS allows the entities doing business around the port to exchange information and perform business transactions in a unified, secure and structured way.

## What does a PCS do?

A PCS is an IT-based platform aimed at streamlining a port's administrative procedures. For instance, it may enable a shipping line to electronically send a call request to the port authority asking for authorization for berthing a container ship and receive the authorization back electronically. It may also allow freight forwarders to electronically book space in a ship, arrange land transport to pick up empty containers or send the cargo manifest to customs and

receive an electronic customs clearance. Briefly, the PCS is a "single administrative window" where all electronic shipment transactions can be performed and the many actors in the cargo network are easily accessible.

The PCS stores the business rules governing each transaction and also the electronic "roles" that each agent plays on each information transaction. This ensures that all parties involved receive timely and accurate information on each transaction and, moreover, that the transaction is performed correctly.

## What are the benefits of a PCS?

The benefits of a PCS are based on a network effect and are exponential according to the number and role of the logistic agents that are connected to the system. The information is entered into the system only once and is managed from then on electronically, which prevents errors and dramatically reduces paperwork. In turn, this makes the port more efficient and easier to work with. From an information transaction point of view, working with different companies is easy because they all share a common "front-end" to send and receive structured information and business rules, data quality and overall "port procedures" are enforced and followed by all participants.

In terms of visibility, having a PCS in place drastically reduces the opaqueness of the port. Each new information transaction that is performed in the system provides an updated view on the location of the cargo. If you interpret each transaction as a “track and trace” event, each relevant agent in the logistic chain can safely deduce the location and status of the shipment. For example, a freight forwarder or importer could know if a container has cleared customs or if it is waiting for physical inspection, or if it has not been loaded onto the ship on which it was supposed to be loaded. Additionally, the authorities get the information from different parties at different stages from different viewpoints. Therefore, if a party has incorrectly declared any detail of a shipment (such as failing to declare hazardous materials), it is easy to detect any data inconsistencies.

### How do you manage the political and procedural agreements required to build a PCS?

The key word is “community.” The critical need is to achieve an understanding between the different parties in the port community, each having divergent roles and different interests, whereby they agree on the procedures to be followed by all for the benefit of the overall port performance.

An advanced landlord port authority is uniquely positioned to take a leadership role in building a port community and setting the basis to successfully implement a PCS. The port authority is a neutral participant in the logistics business and is not benefited by the cargo being moved by one agent or the other, but by the cargo being handled by the port in general. The agents perceive the port authority as the provider of the infrastructure and, therefore, it is easy for them to assume that they are providing the info-structure.

Ports that are able to build a sense of community and collaborative mechanism with the companies operating at the port will be rewarded not only by being capable of successfully launching systems and procedures that will make the port more competitive, but also benefiting from a great wealth of ideas to improve the overall performance of the port.

### What are the technology considerations and implications for the future?

Implementing and running a PCS is relatively straightforward. An open framework is provided where users and company systems can interact with each other in an asynchronous way and where the transactions are monitored and distributed by a rule-based message brokering system according to predefined roles and profiles tied to the business transaction context. Today, this functionality is delivered by deploying a service-oriented architecture (SOA) based on collections of web services that allow any authorized party to make use of a transaction, a group of transactions or a subset of the transactions, extend them and integrate them into their internal systems.

Globally, the PCS solution is evolving with technology advancements, particularly in edge technology and visualization. Edge technologies, such as radio-frequency identification (RFID), global positioning systems (GPS) and real-time location systems (RTLS), enable the interaction of the physical and information flow of cargo passing through the supply chain. Visualization enables the dramatic display of disparate data in a virtual operating center (VOC) or command and control environment.

### What is the breakthrough for the future vision in cargo and port security?

The value-adding combination of higher quality, original source data from a PCS SOA and the data aggregation and display capabilities of a VOC provide real-time visibility of transport shipments, assets, personnel and events. This enables efficient and effective response and recovery to security, emergency, natural disaster and daily operating incidents. ■