

1 Executive summary

Ports must respond to the demand for sophisticated data communication solutions, both to drive efficiencies in the exchange of information within the terminal and between all involved parties and to assist in the security of global trade. It is no longer enough to just handle cargo in the most efficient manner; the market increasingly expects ports to be sophisticated at handling data.

Allowing all parties to communicate transparently and efficiently, modern port community systems are essential to maintaining competitiveness in a global market. Currently under development, the Indian Port Association identified the necessity for an integrated community system for India's major ports, adopting the model of electronic information interchange (EDI) combined with a centralised database that it found has been most effective in the world's largest ports.

The Internet has been a key enabling technology, allowing smaller companies to communicate electronically without the need for expensive IT investment. The most successful web-based applications have been those pursuing business-to-business models, for example Intra provides a standard EDI interface to manage transportation of cargo using multiple carriers and has recently integrated with Hamburg's Dakosy network.

At the Port of Rotterdam several new services aim to eliminate the use of paper documentation from operations such as mandatory notifications of vessel and cargo declarations; already 2.1 million TEU of import containers are using the system. An EDI link with customs planned for the near future will make paper declarations obsolete.

There are continuing improvements in technologies for terminal operations, with the trend continuing to be towards greater integration between systems, for example combining vessel track and port management systems. With trade volumes continuing to rise, many terminals are facing problems of congestion and the need to utilise equipment and space as efficiently as possible.

Hutchison-Whampoa, owners of 19 of the largest ports and terminals in the world, including Hong Kong International Terminals (HIT), Felixstowe, Thamesport (UK), Europe Combined Terminals (Rotterdam), Freeport (Bahamas) and Westport (Malaysia), has developed a "next generation" terminal management package called nGen.

nGen, which is being steadily rolled out to Hutchison ports, was developed jointly by Yantian International Container Terminal and Hong Kong International Terminal. It was nominated for a ComputerWorld award, and will help to streamline operations and provide a common platform for the Group's ports.

Meanwhile, Maritime Cargo Processing in the UK has updated its cargo processing system (FCPS), used in several UK ports, with a new product "Destin8". This will provide a better interface between all parties involved using EDI, is based on a web browser interface for maximum ease of use and compatibility, and will run on any type of system including portable devices.

For small to medium sized terminals, a wider range of off the shelf software and solutions requiring low investment in implementation and training is increasingly available. Global Transportation Solution, a joint venture between Maersk Data and Eurogate, has launched eTerm, a terminal management system that is entirely web-based with the software maintained by the company on a centralised server, and ports paying to use the solution on a fee per transaction basis.

At the same time, terminal-wide communications have benefited from advances in wireless technology that allow each piece of equipment to be connected to the terminal management system via high-speed data access. Operational staff can also be integrated into the communications system using a “palm-top” style device, and need not be constricted as they move about the terminal.

One of the most wide-reaching developments is the requirement on ports to participate in US-led measures that seek to ensure the security of container shipping. This affects not only the port’s physical security to intruders, but also its information systems that must analyse and distribute all the necessary data to monitor containers coming into and out of the port.

Since 1st July 2004 all ports have had to meet the requirements of the ISPS Code (International Ship and Port Security Code), and to submit a port security assessment to be approved. The most recent data confirms that almost 94% of the Contracting Governments to the SOLAS Convention have approved security plans for 97% of the declared port facilities, which in total number in excess of 9,600 worldwide.

There are still open questions about how the security requirements will impact terminal productivity – will a security alert over a single container disrupt thousands of others? Ports must also be concerned over how the investment in scanning and alerting systems can be paid for – will it be possible to gain a return on the investment in the short term?

RFID technology, which uses passive radio frequency ID tags that allow items to be tracked through the supply chain, looks set to dominate efforts to control cargo security. So far Walmart and the US Department of Defence have used the technology to track shipments on a large scale; the DoD will require all its suppliers to use RFID tags by 2007.

One scheme that makes use of the technology is BorderPass, a pre-integrated security package from a group of major technology providers including EMS Technologies, RF Code, Avery Dennison, Greenline Systems and LXE Inc. It is a set of real-time, “end-to-end” supply chain risk mitigation solutions to track, monitor, and assess the risks associated with the movement of containerised goods through the supply chain.

The current issues of security, managing record container shipments and the problems of congestion, and maintaining a competitive advantage in a global market can only be solved in conjunction with the intelligent use of information and communications technology.

Many ports have been pro-actively working on these problems for years, and it is now clear that without investment in IT infrastructure, smaller terminals will be unable to cope with the demands of a global economy where instant information is the key asset.