

# Global networks in the container terminal operating industry

## Part 2: The future direction of terminal networks

**Dr. Theo Notteboom**, President of ITMMA, University of Antwerp, Antwerp, Belgium, & **Dr. Jean-Paul Rodrigue**, Hofstra University, New York, USA

Part One of this series on 'Global Networks in the Container Terminal Operating Industry' (see edition 49 of *Port Technology International*) discussed the internationalization and consolidation in the container terminal industry, the nature and history of global terminal operators and the extent to which global terminal operators show a truly global presence. In Part Two we focus on strategic issues and the future direction of these terminal networks.

In recent years the container terminal industry has been confronted with several challenges, including economies of scale in maritime shipping and competition from new entrants, in particular from container carriers, logistics companies and investment groups.

The year 2008 was a turning point for the container terminal operators as the final quarter saw unprecedented volume declines due to an emerging world economic and financial crisis. The contraction in global container port throughput in 2009 amounted to approximately 12%. In the recent financial/economic crisis, terminal operators have done better than shipping lines as they faced fewer difficulties in managing their assets during the economic downturn. Also, early entrants like PSA and HPH have performed better than late entrants who have had to pay premiums to be in the game (e.g. DP World). The changed economic situation means that terminal operators have adopted a more cautious assessment of future prospects. In spite of expected future growth, global container terminal operators are involved in a range of rationalization strategies and show a much greater rationality in choosing where to make new investments.

### Changing to a lower gear?

Terminal operators are now more open to consider cancellation or postponement of terminal acquisition or construction projects, which tend to be the most capital intensive and risky decisions. This is the most straightforward strategy as a global terminal operator stops its geographical expansion and portfolio diversification strategy to reassess regional growth potential.

While there is a lack of transparency about global operator plans, as it remains a highly competitive business, press releases make clear that quite a number of capacity expansion projects were being shelved, deferred or cancelled as a result of the economic crisis. For instance, in 2009 the Philadelphia Regional Port Authority postponed the bidding process for the design and construction of a new container terminal in the former Philadelphia Navy Yard. Shanghai International Port Group (SIPG) decided to postpone the taking of a minority shareholding in the APM Terminals facility in the port of Zeebrugge in Belgium.

The economic crisis has also served to delay the second phase expansion of Tanger Med (the proposed TC3 and TC4 terminals) in Morocco. TC3 was planned to be used by Maersk and operated by its sister company APM Terminals, but the group decided to keep it under review. The plan for TC4 is still on track albeit

with a timeline pushed back from initiation in 2012 to 2014 and with some structural changes in terms of management (i.e. PSA International has withdrawn from the project).

The London Gateway deep-sea port and logistics park on the banks of the Thames, which was originally due to open in 2010, is now set for completion in 2014. The construction of the new Jade Weser Port in Wilhelmshaven is proceeding according to a revised plan with a delayed opening date in August 2012. Rotterdam World Gateway, a 4 million-TEU terminal now under way at Maasvlakte 2 and also led by DP World, incurred a small delay of six months for completion expected in 2014. In view of minimizing risks, a growing number of large terminal projects are set to open in phases according to market demand.

The market also witnesses outright divestiture where a holding or terminal operator is forced to relinquish parts or the whole of its assets, mostly because of bankruptcy. Assets are therefore sold to other holdings or operators, particularly those judged to be profitable. For instance, in 2009 the financial holding Babcock and Brown went into receivership. Part of its portfolio included container terminal assets, some of which were acquired by Euroports.

Renegotiation of existing concession agreements has become more common practice as terminal operators seek to renegotiate terms with a port authority in view of traffic expectations failing to materialize. This particularly concerns minimum traffic clauses where a global terminal operator pays a penalty if the terminal fails to handle a specific annual volume. The latest concession agreements try to anticipate to future tensions in this field by including variable throughput guarantees (i.e. the imposed volume guarantees are adjustable subject to a number of factors), or by replacing fixed throughput guarantees with minimum investment levels.

### A rational expansion and consolidation of the terminal portfolio

Terminal operators more than ever pay attention to the careful selection of good locations. Terminal investments are subject to a thorough risk assessment taking into account the characteristics in the regional market (capacity situation, market growth, and so on), tariff uncertainty, fee structure, licenses and permits, and nautical and inland accessibility. Commercial banks remain cautious and have become more demanding on terms and project characteristics. Only very good projects will raise the needed funds. Many of the hot spots are in emerging markets, as these port systems offer a higher growth potential and are further opening up to international interests. Ample examples are found in South America, Africa, India and Southeast Asia.

An increasing number of terminal operators are selling stakes in terminal assets for financial relief, but where the terminal operator keeps its role as an operator. This commonly involves a financial holding seeking an opportunity to acquire terminal assets while leaving the existing terminal operator managing

the terminal. For instance, Citi Infrastructure acquired in 2010 a 75% stake in DPW's Australian portfolio composed of five container terminals.

The terminal market is also witnessing increased consolidation of a regional terminal portfolio, where a global terminal operator may divest from a terminal to consolidate its activities in others. This leads to the opportunity to rationalize a cluster of port terminals. In July 2010, APM Terminals Virginia was leased to Virginia International Terminals (VIT), which is the terminal operating branch of the Virginia Port Authority. The agreement will lead to a rationalization of the terminal facilities with the transfer of container activities from the Portsmouth Terminal to the two major facilities managed by VIT; Norfolk International Terminals and the newly acquired APM Terminals Virginia.

Equity swaps are used, particularly in the case of shipping companies, to rebalance their portfolio to better reflect their shipping network configuration. Instead of divestiture, two terminal operators swap equity within their respective portfolios without the need to provide capital. In July 2010, APM Terminals and CMA-CGM agreed to an equity swap concerning their respective terminals in North America and Europe. In exchange for its 20% stake at the Mobile Container Terminal, CMA-CGM got APMT's 61% stake at Nord France Terminal International, totaling a total of 91% ownership when adding to its existing 30% stake. With this 20% stake APMT took full control of the Mobile terminal since it was already controlling an 80% stake.

The above trends lead to a growing complexity in ownership structures in view of minimizing risk, spreading the investment burden and maximizing commercial potential. Various and complex equity sharing agreements representing different stakes in regional markets are linked with expansion strategies to reinforce a presence in existing markets or to expand into new ones.

Figures 1 and 2 illustrate that these complex arrangements lead to highly complex market structures at a regional level. Even the largest operators commonly have regional stakes in others' assets, such as PSA's 20% stake in HPH. Global finance and global container terminal operations are intractably linked with interdependent leverage; the port holding uses finance to leverage its capital investment opportunities, while financial institutions are using port holdings to leverage their rate of return as well as the book value of their assets.

Yet, terminal operators are quick to cater to growth potential by mitigating future development projects. As the economy recovers and future prospects revised, terminal expansion projects that were shelved will be brought back in the pipeline. Still, it is unlikely that the construction and acquisition boom of 2000-2007 will reoccur.

## Dealing with dynamics in liner shipping networks

Global terminal operators must also contend with the rationalization/reorganization taking place in other parts of the transport chain, with implications on their operations. A salient example concerns slow steaming practices in maritime shipping that are imposing a new operational environment for terminal operators, but also upstream (suppliers) and downstream (inland ports) the supply chain.

Slow steaming ties a greater quantity of containers in transit, involves longer delivery times and does not appear to improve schedule integrity, which are all issues that global terminal operators must contend with. It is expected that the issue of schedule unreliability will become even more important in the future, as liner service networks are becoming more complex. Guaranteeing schedule and transit reliability to global supply chains will have an ever higher price. Low schedule integrity

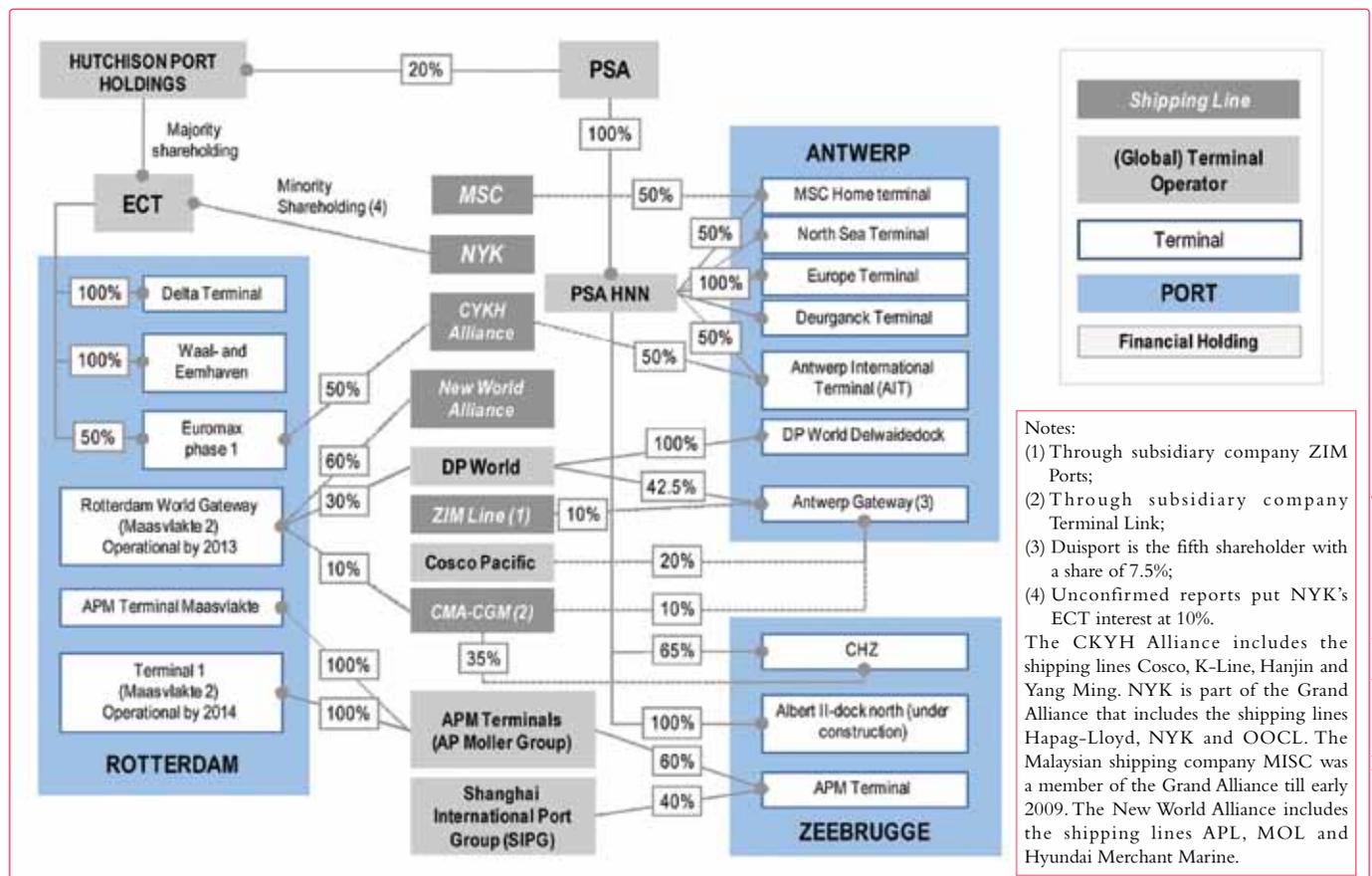
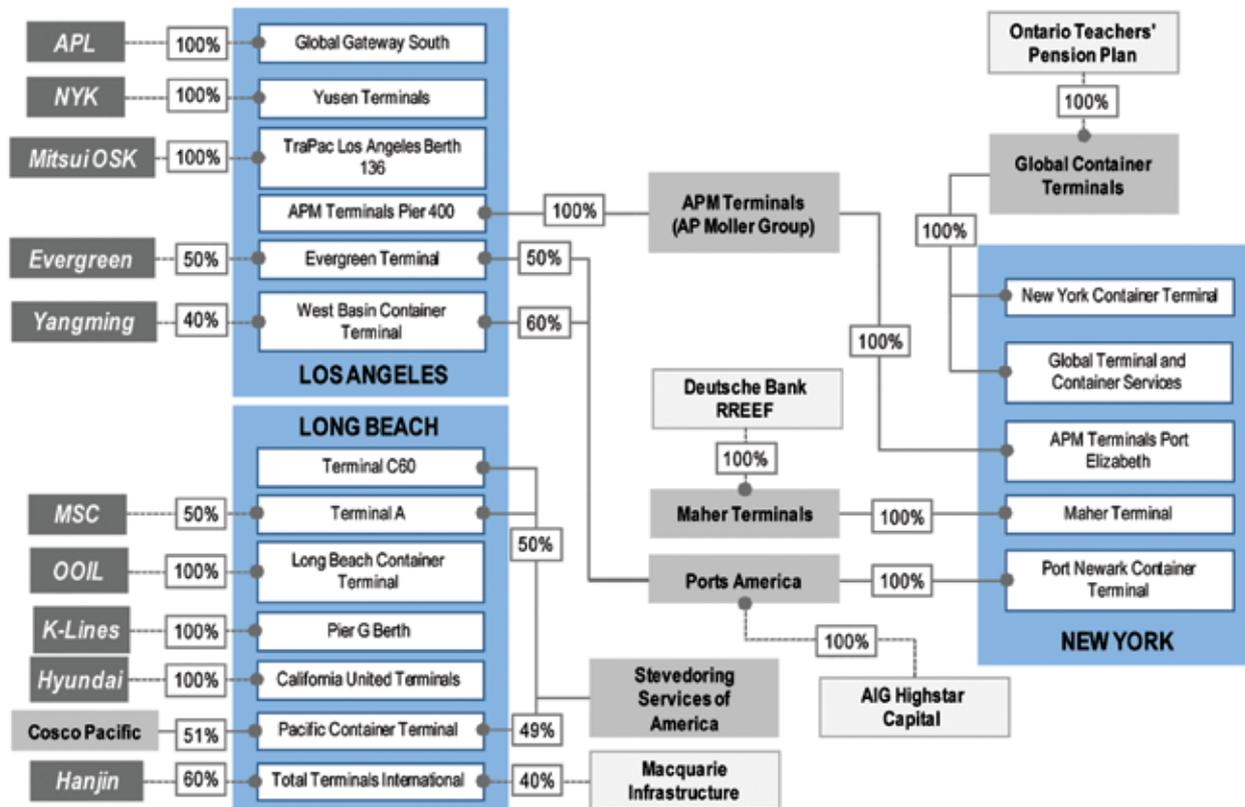


Figure 1. Inter-firm relationships in selected container ports of the Rhine-Scheldt Delta – situation in early 2010.

Source: own elaboration based on company information.



Source: own elaboration based on company information.

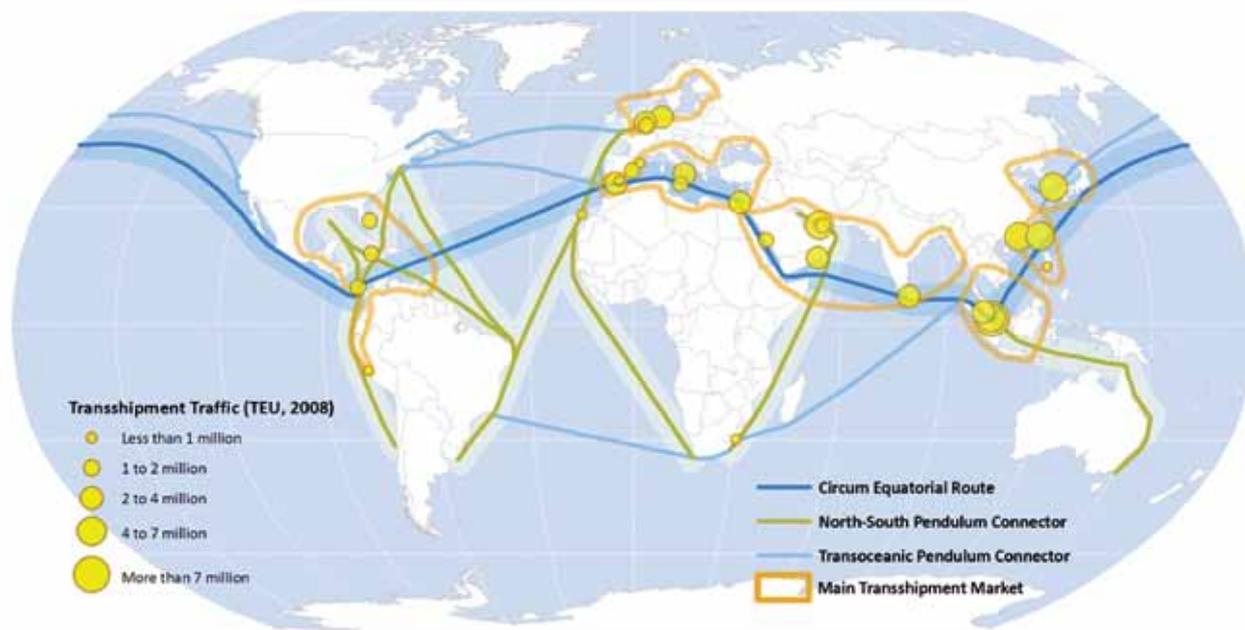
Figure 2. Inter-firm relationships in selected container ports of North America – situation in early 2010.

is a serious challenge for terminal managers as their planning and terminal management tools can only work optimally when the ship arrivals can be forecasted rather accurately (based on allocated slots). Vessel delays compound to delays in inland freight distribution.

A changing economic geography, larger vessels, new liner service configurations and new long-distance trade corridors challenge container terminals in terms of vessel turnaround time, liner service connectivity and synchronization, and efficient

terminal capacity deployment. Global container terminal operators are particularly involved in the setting of hubs servicing main transshipment markets within an emerging global shipping network composed of transoceanic and north-south pendulum connectors (Figure 3). The expansion of the Panama Canal is likely to incite the setting of a circum-equatorial route and renewed transshipment activity.

The performance requirements for a global hub and gateway terminals on mainline vessels are moving to a sustainable



Source: Transshipment data from Drewry Shipping Consultants.

Figure 3. Emerging global shipping network and transshipment markets.

ship output of at least 5,000 moves per 24 hours and a ratio working time to time at berth of 90%. Such volumes pose huge demands on container crane density per vessel, the ship-to-shore gantry crane output productivity (40 moves per gross hour or more), yard equipment and on the required stacking area. The associated peaks make the hinterland transport issue more complex.

## Moving into inland freight distribution?

Next to a booming transshipment and interlining market, the future of containerization will largely depend on the land side, particularly on efficient intermodal and transmodal operations. At a regional scale, the process of integration between maritime and inland transport systems increasingly results in a number of penetration and modal shift strategies where each mode is used in its most cost- and time-effective way. These configurations can ease the pressure on deep-sea container terminals by moving the sorting function inland, thus increasing the efficiency of existing terminal facilities and the overall throughput. As terminal operators are urged towards a better integration of terminals in supply chains and shipping lines are acquiring container terminal assets worldwide, leading terminal operating companies are developing diverging strategies towards the control of larger parts of the supply chain.

The door-to-door philosophy has transformed a number of terminal operators into logistics organizations and/or organizers/operators of inland services. Not every terminal operator is integrating by acquiring or setting up separate companies or business units. In many cases, effective network integration is realized through better co-ordination with third-party transport operators or logistics service providers. The services offered include warehousing, distribution and low-end value-added logistical services (e.g. customizing products for the local markets).

Particularly in Europe, a number of terminal operators have integrated inland terminals in their logistics networks or have a direct involvement in rail and barge operations. Maersk Line wants to push containers into the hinterland supported by its terminal branch APM Terminals and its rail branches.

HPH-owned ECT in Rotterdam has followed an active strategy of acquiring key inland terminals, acting as extended gates to its deep-sea terminals, for example, a barge and rail terminal in Venlo (the Netherlands), DeCeTe terminal in Duisburg (Germany) and TCT Belgium in Willebroek (Belgium).

DP World is following a similar strategy to streamline intermodal operations on the Seine and Rhône axes, while the large terminals of Antwerp Gateway (open since 2005) and London Gateway (future project) are both linked to inland centers in the hinterland. Terminal operators can play an instrumental role in bringing together intermodal volumes of competing lines and as such create a basis for improved or even new intermodal services.

The globalization strategies of terminal operators are accompanied by the regionalization of their hinterlands in areas (e.g. Western Europe) where market situations and opportunities justify such a strategy. In other regions, global operators have been extremely hesitant to vertically integrate. Two main factors hold back full vertical integration of operators. First of all, global terminal operators do not wish to enter business segments in which their own customers have a presence in order not to compromise their business relations. Secondly, particularly in the case of Asian conglomerates, sister firms perform activities in other segments of the supply chain such that when taking a conglomerate perspective, the entire business group has involvement in all aspects of the supply chain.

The setting of global networks in the container terminal operating industry has been a prevalent trend in the last two decades. Global terminal operators reflect well the geographical and functional complexities of global supply chains. While the focus has been at a close integration with global shipping networks either as gateways or transshipment hubs, terminal operators are increasingly looking at the immediate hinterland as a strategy to consolidate their business.

*Part One of this article was published in edition 49 of 'Port Technology International', which can be viewed in our online Journal Archive: [http://www.porttechnology.org/journal\\_archive/edition\\_49](http://www.porttechnology.org/journal_archive/edition_49)*

### ABOUT THE AUTHORS



**Prof. Dr. Theo Notteboom** is president of ITMMA (an institute of the University of Antwerp), professor at the University of Antwerp, a part-time professor at the Antwerp

Maritime Academy and a visiting professor at Dalian Maritime University in China and World Maritime University in Sweden. He published widely on port and maritime economics. He is also President of International Association of Maritime Economists (IAME) and Chairman of the Board of Directors of Belgian Institute of Transport Organizers (BITO), an institute of the Belgian Federal Government.



**Dr. Jean-Paul Rodrigue** is a professor at Hofstra University, New York. His research interests mainly cover the fields of economic and transport geography as they

relate to global freight distribution. Area interests involve North America and East and Southeast Asia, particularly China. Specific topics over which he has published extensively about cover maritime transport systems and logistics, global supply chains and production networks, gateways and transport corridors, international trade and regional development.

### ENQUIRIES

Prof. Dr. Theo Notteboom  
ITMMA – University of Antwerp  
Keizerstraat 64, 2000 Antwerp  
Belgium  
Email: [theo.notteboom@ua.ac.be](mailto:theo.notteboom@ua.ac.be)

Dr. Jean-Paul Rodrigue  
Department of Global Studies & Geography –  
Hofstra University  
Hempstead, New York  
USA  
Email: [jean-paul.rodrigue@hofstra.edu](mailto:jean-paul.rodrigue@hofstra.edu)