New era in container shipping?

ASAF ASHAR

Canada's new Port of Prince Rupert, the first North American port designed almost exclusively for intermodal rail shipments, offers interesting service possibilities that could herald a new era in container shipping.

The British Columbia port serves a trans-Pacific market where major lines and alliances have many parallel services. Cosco and its CKYH alliance partners alone have 14 services covering a wide range of ports on both sides of the Pacific. Each of these services handles a mixture of local containers and intermodal rail shipments to hinterland points.

To take advantage of Prince Rupert's unique setting, Cosco could make one of its services a shuttle between Prince Rupert and one Asian port — say, Shanghai — instead of the more common rotation of six to 10 ports. The two-port shuttle would reduce sailing and port times.

To further advance the "express" motif, and perhaps realizing that it is difficult to fill a 10,000-TEU ship entirely with intermodal containers, the line could employ smaller but faster container ships. Ships with more refined hulls allowing 28-knot speeds shuttling between Shanghai and Prince Rupert could provide a nine-day transit, compared with 11 days for the fastest existing trans-Pacific services. A weekly service would require only three ships, instead of five for a typical multiport service.

An even bolder step would involve ships with design speed of 34 knots, resulting in a transit time of seven days, requiring only two ships (!) for a weekly shuttle. This speed could be achieved by ships with regular but very long and narrow hulls, such as the 33-knot, 1,900-TEU SL-7s that Sea-Land built in the early 1970s, or more novel designs such as Nigel Gee's Pentamarans, based on side pontoons for added stability.

There is no point in using high-speed ships to shorten transit time if the service frequency remains unchanged. Hence, it is quite plausible to enhance the new service's "express" motif by substantially increasing frequency.

The relatively small, fast ships would enjoy reduced port time, since handling of a shuttle is quite simple: you dump the entire ship load in one port. Three cranes, all equipped with a tandem dual (or triple) lift spreader and capable of reaching 50 moves per hour, could handle a 1,500-TEU ship in about 10 hours, versus 50-plus hours for most trans-Pacific ships.

The ship-to-rail transfer is such a "pure rail" service, with all boxes rail-bound. It could be based on the vessel-cycle method, or live transfer. Yard hustlers could travel directly from ship-side to rail-side, loading the box directly onto the railcar, without intermediate storage in the container yard. This could cut one to two days off transfer time, and reduce handling cost by eliminating double handling, yard space and railcars. Total transit-time saving from Asia to the Midwest could be five days, or about one-third of the current time.

The simplicity of a pure-rail terminal may also induce far-reaching automation. An intriguing option is using automated guided straddle carriers. A similar though indirect ship-to-rail transfer system, based on manually operated straddle carriers, is used in Tacoma.

To avoid interruptions at the intermodal yard with frequent switching of railcars, the terminal should have ample rail trackage, perhaps laid out perpendicular to the berth. This would transform the container yard into a railyard, and allow for continuous in/out switching of rail strings.

Marrying pure-rail ocean services, shuttle rotation, smaller and faster ships, daily frequency services, pure-rail terminals and direct ship-to-rail transfer operations could create a *new kind of service* — an entirely new "species" in the evolution of container shipping. While the first specimen may emerge in Prince Rupert, others may follow in other trade lanes.

The principles under this evolution, differentiation and specialization, can be applied to ports, ships and shipping lines, resulting in new kinds of specialized services geared toward specialized market segments. One such service could be a hub-to-hub service calling at specially designed pure transshipment ports based on multiple-box lifting cranes and, perhaps, floating terminals. The hub-hub service would be the core part of a global grid that could follow an equatorial round-the-world rotation employing new Panamax ships, creating the core structure of a global grid (see *www.asafashar.com*, and *http://asafashar.com/Revolution Now.pdf*).

Asaf Ashar is professor-research and co-director of the National Ports and Waterways Institute at the University of New Orleans. He can be contacted at aashar@uno.edu.