



Attorneys at Law

Consortium Standards Bulletin

A ConsortiumInfo.org publication

MAY 2006

Vol V, No. 5

CONSIDER THIS

‡ ‡ ‡ **May 24, 2006**

39 *Thinking About Standards Inside of the Box*

One of the most interesting things about standards is their power to change the world. If that seems like an impossible statement to substantiate, consider this: fifty years ago, one man launched a de facto standard that within a few decades became universally adopted, made many of the largest ports in the world obsolete while elevating others to the first rank, decimated the ranks of a powerful union, dramatically increased the speed, economy and handling of cargo, allowed ships to triple (or more) in size, and completely transformed virtually every other aspect of global trade as well. And all of this was accomplished without any governmental action, through voluntary adoption of that standard.

Intrigued? Here's the story.

From time immemorial, bulk cargos have been shipped in barrels, boxes and other containers of a size that could be manhandled into position below decks on ships. Divers today still regularly discover wrecks of Phoenician, Greek and Roman ships laden with amphorae that once held olive oil, wine and other commodities.

Such "break bulk" cargo containers had many shortcomings: they were heavy, required individual handling, and were subject to tampering and accidental damage. But up until 1956, they remained the state of the art for moving hundreds of millions of tons of cargo around the world each year.

That began to change fifty years ago last month, when Malcolm McLean loaded 58 huge metal containers in Newark, New Jersey on a ship bound for Houston, Texas. With that first shipment, the age of containerized shipping began, and little about global cargo transport has been the same again. Here are some representative facts to back that statement up, taken from a recent article in the [San Francisco Chronicle](#):

- In 1959, the industry average for loading and unloading cargo was just over a half ton per man-hour. By 1976, it had risen to 4,234 tons per man hour
- During the same period, the average turn around time for a ship in port decreased from three weeks to 18 hours
- In 1950, the average cargo vessel carried 10,000 tons at a speed of 16 knots. After container shipping enabled the efficient handling of larger cargoes, the average had risen to 40,000 tons at a speed of 23 knots. Today, the average container ship carries 6,600 20-foot containers, and delivers 77,000 tons at a speed of up to 24.8 knots

Ports that embraced the new concept flourished, while many that didn't failed. For example, San Francisco virtually ceased to be a port, while across the bay Oakland became one of the busiest ports in the world. New York suffered the same fate, as the Port of New Jersey, endowed with the ample room for expansion that Manhattan lacked, embraced the technology required for fast loading and unloading of containers.

Today, virtually all cargoes are shipped in containers, except for those that are susceptible to one of the other modern techniques that provide equally rapid loading and unloading: pumping, in the case of liquid

cargoes like oil and natural gas, and mechanical conveyance, in the case of loose materials, such as gypsum and cement.

One of the beauties of the containerization concept is that it provides something for nearly everyone in the value chain: manufacturers can load containers securely, packing them to their liking to prevent damage in shipment; rail owners can load them quickly and securely on flat bed rolling stock; ship owners can reduce expensive dockage expenses and down-time in port by orders of magnitude; and customs officials can seal containers at point of departure and confirm that those seals are unbroken at point of arrival.

Of course, as with any transformation, there have been a few losers in addition to the many winners: the ranks of longshoreman have plummeted, as *mano-a-barrel* cargo handlers gave way to highly trained technicians perched high in the spidery gantries that now dot huge waterfront container facilities. And the age of the "tramp steamer" also came to an end: no longer could retired college professors and other budget-conscious travelers book one of a handful of rooms on a cargo ship bound to exotic ports, reclining in deck chairs between stops, and knocking about bazaars during the lengthy loading and unloading process. Today, ships are far too large to bother with such incidental cargo, and in any case, with time in port reduced to only a few hours, there is too little payoff for travelers after spending so much time at sea.

So complete has been the conversion to containerization that even the standard of measurement for cargoes has changed - from the ton to the TEU, an acronym derived from "20 foot equivalent unit" - which is to say a container box 20 feet long, 8 feet wide, and 8 ½ feet high. The fixing of these dimensions and the other elements of the specification for the standard shipping container is at the heart of the transformation of global shipping, because without these necessary elements the end-to-end shipping system that utilizes containers could not have come into existence. The beauty of the container, after all, is to dramatically increase the size and weight of the unit that requires handling, and such handling must therefore necessarily be mechanical. Once mechanical, it should also be as rapid as possible, in order to maximize the potential benefit.

The result is that a number of sophisticated and expensive mechanical handling mechanisms are required to move these massive shipping units, one for each point in the shipment process, from factory, to truck, to ship, to rail, and so on. Such mechanisms would be cheaper to build and faster to operate if containers became standardized in every respect – not just dimensionally, but in points of attachment, maximum weight and ability to withstand abuse. Once these and other attributes became fixed, then the handling devices could in turn be standardized, and mated to the same elements. The result was the rapid development and deployment of interoperable shipping systems, all based upon these same standardized elements.

All in all, a powerful concept indeed, and one that swept the world with astonishing rapidity, notwithstanding the very substantial capital investments required to convert to container handling. Two years after McLean commenced containerized shipping in the Atlantic, the Matson Navigation Co. launched similar operations in the Pacific. The rest, as they say, is history – enough history, in fact, to fill no less than three new books occasioned by the fiftieth anniversary of the shipping container: one by Marc Levinson, an economist, called [The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger](#), one by Joseph Bonney (editor of the shipping industry Journal of Commerce) and Arthur Donovan, a maritime historian, called [The Box that Changed the World](#), and yet another by Brian J. Cudahy, with a similarly breathless title: [Box Boats: How Container Ships Changed the World](#).

In short, a dramatic example of the power of standards to incentivize competitors in diverse industries around the world to abruptly change the way they do business, to their benefit and to ours – all by voluntarily agreeing, in their own self-interest, to think inside the same standardized box.

Comments? updegrove@consortiuminfo.org

Read more **Consider This...** entries at: <http://www.consortiuminfo.org/blog/>

Copyright 2006 Andrew Updegrove

