



Photo courtesy of IMC Companies

# Container Tracking Innovations: 3PL Adoptions and Implementations

One of the challenges for North America's intermodal industry over the years is the ability to accurately track and report a container's status while it is in transit.

And while that has traditionally left third-party logistics companies at a disadvantage compared with other modes of transport that utilize GPS-enabled cargo and equipment-tracking sensors, intermodal has taken steps in recent years to catch up.

3PLs in particular have been able to greatly improve their operations and shipment visibility thanks in part to cloud-based software and database platforms, as well as the emergence of web-enabled devices that collect, send and act on data they acquire from their surrounding environments using embedded sensors, processors and communication hardware, technology commonly known as the Internet of Things, or IoT.

"Intermodal industry adoption of tracking technology has come a long way in the last five years," Joel Tracy, chief information officer with Memphis-based trucking firm IMC Companies told In-

termodal Insights. "With IoT, the amount of data being generated at ports, terminals, and now via in-cab technology [such as electronic logging devices and smartphones], along with chassis/trailer GPS devices, continues to provide more transparency into the supply chain."

"Additionally, we are seeing more ports, terminals and depots provide access to event data via API [application program interface] technology," he said, referring to software intermediaries that allow two applications to communicate with one another.

"This eliminates the need to screen scrape websites or manually re-key data into disconnected supply chain applications," he explained. "And of course, there are several promising blockchain technology initiatives that are being worked on in the international shipping arena. This technology will no doubt take tracking to an

entirely new level of efficiency and transparency about five years from now.”

## Increased Tech Adoption

Don Miller, vice president of global sales and marketing for Globe Tracker, said that intermodal was lagging behind as recently as three years ago, but that there’s been “a drastic push” toward adoption of container tracking technology.

“Refrigerated containers have the most [adoption], tank containers have some large deployments of tracking, such as the Hoyer fleet. Rail cars are increasingly being tracked in larger numbers,” he said. “Dry containers have some announcements and are starting to move [upward].”

Ted Prince, the chief strategy officer and co-founder of Tiger Cool Express, one of the largest refrigerated intermodal carriers in the U.S., said that container tracking has become vital for his company.

“Given that we’re carrying food, we really need to be able to maintain oversight of the refrigeration condition in the box, but we also need to know where they are, what their status is, are the doors open, is the reefer running,” Prince said.

“Chassis and gensets have also increased the level of tracking, so the adoption is happening across all modes of [intermodal] transport and in powered and non-powered equipment alike,” Miller added. “We also strongly believe that in-cargo pallet sensing, where the device acts as a wireless gateway, will be the future for refrigerated cargo at the very least, and could — depending on price — extend right down to dry cargo as the cost of sensors drops.”

So how exactly does the adoption and implementation of tracking technology make 3PLs more productive? Tracy said it boils down to knowledge being power.

“Lack of visibility creates internal and external inefficiencies in warehousing, fleet, yard and transportation operations both inbound and outbound, and leads to an increase in transportation costs [such as] dry runs, carrier waiting times and customer fines,” he explained. “At IMC Companies we facilitate thousands of container moves each day with our 1,800-plus trucks, so tracking technology is critical for us to efficiently operate our fleet.”

Miller added that visibility in ocean freight is what the 3PLs are lacking, and that if they had real time information on location and condition of goods through the supply chain, it would increase efficiency for their customers.

“This would result in more accurate estimated time of arrivals, real time proof of delivery, and of course giving their customers peace of mind that their shipments are being monitored the whole way,” he explained. “A 3PLs ability to better manage exceptions will give them a clear market advantage.”

## Tracking Technology Options

Regarding which container tracking technologies seem to be the more widely accepted and/or adopted within the intermodal industry, Miller said that the tech most widely used for wireless sensors in pallets are LoRa — a long range, low power wireless chipset that’s used in many IoT networks — and Bluetooth Low Energy, aka BLE, a wireless personal area network technology.

“Cellular technology is the most widely accepted due to the fact that it is global and logistics assets can transit to most areas in the world and still provide the critical data,” he explained. “But still-emerging technologies like LoRa, Sigfox and even Wi-Fi networks in some areas are seeing some uptake.”

Tracy said that although many intermodal carriers use a transportation management system that includes container tracking features, his company primarily uses an internally developed application to track containers for ETA, actual arrival, customs status and availability at ports and rail.

“We provide visibility to these events along with our inland/road events via our customer website. However, we are seeing a trend over the last 18 months where many of our commercial customers are adopting real-time transportation visibility platforms [RTTVPs] that consolidate data from multiple motor carriers and track container movement during the road portion of transportation,” he said.

“In the past, it was difficult for commercial customers to obtain transparency into the movement of their container once it left the port, terminal or their warehouse,” he remarked. “Now with the availability of data from in-cab ELDs, smart phones and GPS devices on chassis/trailers customers have more transparency of their shipments with RTTVPs.”

IMC regularly receives requests from customers to send data to their RTTVP, Tracy said.

## Meeting Key Needs

When it comes to key needs for customers in tracking solutions and how to best meet those needs, Miller said that for containers in general, GPS and g-force/accelerometer information are key.

“Knowing where a container is, when a container moves or when it gets damaged [is very important],” he said. “After that, refrigerated containers require interface to the microcontrollers for the various reefer brands.”

“Tank containers will need sensors either wired or wireless such as temperature, pressure and liquid level,” he added. “Dry containers might need temperature and humidity sensors as well.”

Also important: special devices such as cargo level sensors that detect how much cargo is inside a container; sensors that detect when a door is opened or closed; and barometric pressure, CO2 and O2 sensors for perishable goods such as avocados, Miller said.

Tracy said that his company’s customers’ key needs typically are wanting to know what containers are available for dispatch; when the container has left the port or terminal; the ETA and arrival at their distribution center; the last free day; and the date/time the container arrived back at its termination location.

“To accomplish this, shippers/customers need to choose motor carriers with in-cab technology to provide the data for these events,” he advised.

Prince added that one thing that the intermodal industry needs to do to catch up with the rest of the world is develop more technological cohesion, so that hardware and software doesn’t vary from company to company.

"It all needs to work together," he said.

But while it's clear that there's still progress to be made, and although it's still arguable as whether intermodal tracking of containers has fully caught up with that of other modes of transport, such as over-the-road trucking, it's clear that in recent years, the technology used by 3PLs has grown, thanks to forward-thinking companies.