

Wireless – Paramount in Cargo Security

Cargo crime is steadily on the rise. An industry estimate states that losses from cargo, in storage or in transit surpasses \$ 30- 50 billion per year, globally. Law enforcement officials in the US state that \$ 12 million plus worth of goods are stolen from factory floors, warehouse shelves or in transit, each year (1998). With all this and more, is the cargo transportation industry turning a deaf ear to combat cargo crime? Well, it's not just an initiative to be taken from the cargo industry *per se*, but it calls for a unified effort involving government agencies, law enforcement, insurance companies, transportation providers, shippers, carriers etc., in maintaining and controlling cargoes and assets.

This article outlines the cargo security scenario, the current and future wireless transportation technologies and its benefits, the challenges purporting to this industry, and the need to look at a broader perspective to transform cargo transportation into the ideal state of total asset visibility.

The Scenario

Communication-intensive Transportation and Cargo industry is in for drastic changes thanks to Technology Transformation. Since the September 11 catastrophe, Security has become a major concern, wherein, requests to more proactively track the whereabouts of gasoline trucks, hazardous chemical trucks and other assets have been overwhelming. Prime importance is shown in areas of cargo being tampered with or dangerous packages being implanted on to transporting vehicles.

Qualcomm, the wireless communications technology major, provides all of the US trucking carriers with wireless systems for messaging, position location reporting and incident response management to transport ammunition for the Department of Defense. Recently, the company demonstrated its security technology truck, an 18-wheeler truck equipped with satellite-based mobile communications and position-tracking systems along with safety and security technologies.

Key Players

As such, the **Government** and the **transportation industry** play a complementary role in promoting cargo security. In the recently introduced Customs – Trade Partnership Against Terrorism (C-TPAT) - a joint initiative between US Government and the industry, importers take prominent steps to assess, evolve and communicate tighter security practices for cargo and the entire supply chain. This allows importers' goods to receive expedited processing across US borders.

Cargo security managers are facing a Herculean task of incorporating wireless security systems with their existing enterprise resource planning systems, which optimizes the security department's role in supply chain management, directly impacting on the bottom line.

Shippers, carriers, logistics providers, and freight forwarders are entering into cyberspace providing real-time cargo tracking information, positioning of fleets etc. However, this holds the risk of inadequately protected electronic systems revealing critical information that comes in handy for cargo criminals.

On the other hand, *Law Enforcement* 's leniency in prosecution and sentencing entitles cargo criminals to make high profits and less worried about the repercussions of cargo theft and fraud.

Let us take a quick view into some of the current wireless technologies in use in this industry.

Technology Viewpoint

From the technology point of view, cargo security professionals need to look at strategic and innovative solutions to integrate the emerging transportation security technologies into their supply chain, distribution management, and logistics systems. In order to bring in security and improve efficiency, supply chain professionals suggest a close network between shippers and carriers in developing and deploying a fitting system that takes care of an enterprise business needs.

A few of the Cargo Security applications in use are:

- **Alarm Systems and Alerts** – Secures the contents of trailers/fleets – right from source to destination. Local alarm systems serve as theft deterrent by sending tamper detection alerts. An attempt to tamper the doors of trailers result in the system sending an alarm to a pager carried by the drivers (allows detection only with a specific range). The system also tracks events history such as door openings, refer fault etc. Widespread usage of alarm systems is seen among small and medium sized fleets.
- **Asset/cargo tracking system** – The alarm and alert systems are used in conjunction with satellite-based vehicle tracking system (using Global Positioning System (GPS) with satellite communications, geofencing and cellular communication technologies), which allows fleet managers to remotely monitor, track and communicate with their drivers in real-time.

This system provides updates on vehicle location, speed, mapping directions, security etc. – right on to fleet manager's desktop. It also helps in archiving of vital fleet data, track stolen cargoes etc.

The tracking system also provides remote disabling of the truck in the event of a security breach due to on-board tamper detection or invalid driver log-in.

While Automatic Vehicle Location (AVL) system is an effective asset recovery tool, the Asset Tracking System has the theft deterrent value. Currently, a

comprehensive solution has come into existence that combines mapping, directions and geofencing technologies, thereby, providing access for trucking companies to a turnkey AVL mapping application that can be extended to routing, geofencing and alerts. This solution also notifies dispatchers when vehicles are out-of-route, or approaching sensitive areas.

Alerts in Yards: When alarm systems are attached to trailers/containers, they protect the loaded goods parked in yards. In the dispatch/security office, a computer station will be in constant interrogation with systems in the yard. An attempt to break-in will trigger the system to send an alarm that alerts yard personnel.

- **Electronic seals and Radio Frequency Identification (RFID)** - RFID technology is effectively utilized in the shipping and railroad industries alike. Electronic tracking tags and seals attached to a rail or ship creates a wireless local area network (WLAN) that automatically informs the driver or a central control station of a broken seal. These tags can also send vital information about the shipments such as the current status, whether tampered prior destination etc.
- **Non-intrusive Inspection and detection devices** – Advanced imaging systems and non-intrusive inspection technologies such as X-ray, gamma ray etc. can be used to inspect goods and detect weapons of mass destruction stored in a containers or train cars.
- **Access Control & ID Authentication** – Involves technologies including smart cards, picture badges, biometrics, radio frequency (RF) etc. that identify and authenticate individuals or vehicles within a restricted area, or people assigned to perform tasks, for example, loading of goods into a container.
- **Geofencing:** Allows fleets to ply within set boundaries. This technology alerts trucking companies when the vehicle enters restricted areas or leaves its designated route.

Benefits

The benefits accrued using wireless technologies in cargo transportation include:

- Lowered insurance premiums
- Instant notification of security breach
- Flexible and secure handling of high security cargo by authenticated personnel
- Property loss and are curtailed or prevented
- Peace of mind while cargo is in storage or in transit
- Verify contents in a non-intrusive manner at the point of entry
- “Assured” and timely delivery of goods result in improved customer satisfaction
- Data access possible through a wide range of devices including pagers, laptops and PDAs

- Improved fleet security effects increased productivity

Challenges to Cargo Security

Nevertheless, the cargo transportation industry is plagued by challenges that deter security due to reasons including:

- Need for an industry-standard cargo tracking/reporting system
- High cost and lack of proprietary platforms
- Sophisticated cargo thefts and frauds (with increased eCommerce transactions)
- Need to seamlessly integrate new security systems into the existing cargo handling and SCM systems
- Lack of regulations to standardize and address transportation crime
- Require strict crime laws and prosecution of cargo theft
- Governments' better understanding of the economic threat of cargo
- Dearth of dedicated and trained professional law enforcement teams in place
- Corruption among port and border officials

Conclusion

In short, the cargo transportation industry is advancing significantly adopting wireless technologies to secure its assets (goods) and improve services. While there is a rush to globalizing trade with new technologies and security systems, all the value chain players - law enforcement and security professionals alike, should have an eagle's eye on the latest developments in cargo security, the untoward happenings enveloping this space and means to anticipate and dissipate cargo theft.

Deploy the right cargo security technology ... Be Secure and Stay on Schedule!

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