



Keeping track

Supply chain security is becoming an increasing feature of the container shipping industry. Savi Networks, one of the players in the market, explains to **Martin Dixon** how new technology is shaping the way companies mitigate risk.

Freight security and product integrity concerns have driven the increased interest in constant surveillance technologies and fuelled new developments.

Rising levels of cargo theft and a shift of higher value cargo from airfreight to sea (see *Grounded*, *CI* January issue, pp45-46) has provided added significance to this.

There are no published statistics for cargo theft on global container trades but anecdotal evidence points to rising levels of risk. For instance, Austin (TX)-based security consultant Freight Watchers International estimates that the value of commodities stolen in US truck larceny alone leapt by 67% in 2009 to USD487 million, while recorded cargo thefts rose by 12% to 859 incidents.

Over recent years attempts have been made to reduce the risk of cargo loss and improve the accuracy of container tracking through the application of new technology. The primary focus has been to automate milestone updates and improve traceability, particularly at vulnerable supply chain points, such as ports, customs interfaces, truck stops and rail yards.

Attempts were made to deploy Radio Frequency Identification (RFID) technology at sea ports but it soon became apparent that the infrastructure required to provide a sufficient level of traceability was too cumbersome and costly for, at best, an incremental improvement in supply chain visibility.

A more recent development has been to combine satellite-based global positioning systems (GPS) and cellular phone technology to provide a more practical solution. GPS gives details of the container's location, while the cellular technology provides a cost-effective means of communicating this information back to the user via a central web-based portal.

'So instead of getting half-a-dozen or so RFID reads you get thousands of GPS location fixes in an end-to-end move,' explained Savi Networks' senior vice president Steve Sewall. He likened the process to a breadcrumb trail of continuous updates.

The value of this technology is that it



The Savi container security device

does not require cumbersome and costly infrastructure to function. The device sits around the container doors so any attempt to open or remove the tag sets off an immediate transmission alert (see photo).

The system has obvious security applications for shippers. For example, a Scottish distillery exporting to the US was able to use the technology to identify the responsible party in a theft claim as well as remove costs from its supply chain.

In addition to its security tracking features, tags can monitor the temperature and humidity atmosphere within a container. Thresholds can be set that trigger alerts if readings exceed prescribed tolerances.

For example, UK-based drinks company Highland Spring Water was able to ensure the

EXECUTIVE SUMMARY

- GPS/cellular tracking provides constant surveillance of container location and cargo status
- Presently used in tracking high value, temperature sensitive and/or high risk container shipments
- Uptake of GPS/cellular container tracking technology is expected to increase as its deployment costs reduce

Forwarder case study: Damco

Damco has been deploying GPS and cellular tracking technology supplied by both Savi Networks and Arlington (VA)-based rival System Planning Corporation for several years.

The systems are currently deployed on defence contracts the company has with the US military, including the movement of cargo between Turkey and Iraq.

'We wanted to have this capability for our customers and the military in particular has been pushing for it,' explained its director of government services Carla Rajkowski.

Its application is confined to land-based movements where security risk is perceived to be high, such as cross-border routes and war-torn countries.

Damco has yet to deploy the technology on its sea trades, but the forwarder believes that there is potential with commercial shippers for whom both security and product integrity at container shipping's touch points remains an issue.

Rajkowski elaborated: 'When on the water, cargo is at less risk but we think there is still a lot of potential for ocean container movements. Shippers are still analysing the cost benefits of deployment.'

She expects uptake to increase as the economy improves, but accepted that presently many customers are struggling to identify cost-savings beyond looking at the impact on immediate transport costs.

'Silos thinking is limiting uptake,' opined the executive. 'The true value is not yet being realised.'

temperature integrity of its bottled mineral water in transit to the Middle East using Savi's system. Similarly, Jones Act carrier Horizon Lines has deployed a rival system from Santa Clara (CA)-based Empeva Labs for tracking and temperature monitoring of cargo moving in its reefer containers.

Forwarders, such as AP Moller-Maersk's Damco and Germany's DHL use the technology (see case study example), though thus far only the latter is using it to monitor ocean freight movements.

Its uptake has been stronger amongst secure logistics providers. For instance, Mexican-based Grupo Hermas and Colombia's International Container & Logistics Services have both managed to reduce the need for



armed guards on land-based movements through the deployment of the technology.

GPS container tracking has its roots in military logistics and was used as a means to securing lines of supply following the first Gulf war. Many providers, including Savi, started off life in the defence industry.

But Sewall remains confident that its solution will become more relevant to logistics providers operating in the mainstream trades, citing the value-added service and cost-efficiency opportunities.

He elaborated: 'We've run trials that show how such precise tracking and alerting capabilities can bring about improved on-time delivery performance as problem shipments can be managed on an exception basis.'

However, the take-up of the technology by container shipping has been poor. That might be partly because the location of containers cannot be tracked while at sea as the devices require line of sight to the sky to obtain a GPS fix.

But the risks to cargo whilst on the water are not great enough for this to be an impediment. In any event the electronic seal and temperature-alerting capabilities still function when within reach of a cellular signal.

The true value of the technology is its ability to trace the movement and integrity of cargo in container shipping's black spots.

As Adrian Gonzales of technology consultancy ARC Advisory Group explained: 'These are typically where the box is not attached to a ship, truck or train. Shippers are looking for end-to-end visibility and the black holes have often been the ports, intermodal termi-

nals and customs agencies where there is a lack of transparency and a high variability of dwell time.'

Looking to the future, Savi anticipates particular value coming from the technology's impact on supply chain execution. Sewall elaborated: 'With visibility comes the ability to more effectively manage the supply chain.'

He illustrated this with reference to olive supplier Transmed which expects to reduce inventory stock holding by 50% following the deployment of Savi's tracking solution (see shipper case study).

'It's basically financial value where we are seeing the greatest long term impact of our technology,' enthused Sewall. 'The main goal is to be able to realise cash on delivery more quickly. Integrating GPS/cellular tracking with inventory management capability enables much stronger execution across the supply chain.'

Perhaps the greatest expectation of the technology was that it would enable fast tracking of containers through customs and border security procedures, such as box scanning. While there has been little movement on the latter, Savi is involved in several pilot projects, including two with hard disk drive manufacturer Western Digital in Thailand and South Korea.

Meanwhile, DHL is piloting Savi's tracking system as part of the European Union (EU)-funded INTEGRITY initiative to

improve supply chain visibility and execution, including customs processing. The project is tracking the movement of some 5,000 tagged containers from Yantian in China to Rotterdam, the Netherlands and the UK's port of Felixstowe.

Albert Veenstra, assistant professor in global logistics at the Rotterdam School of Management and scientific advisor to the INTEGRITY project, believes that there is noticeable interest from customs agencies but questions whether shippers will see much benefit.

He explained: 'While the authorities recognise the value in these security devices, any concessions to expedite shipments will only apply to a small proportion of container movements given the deployment cost of the technology.'

Many shippers are in any event already the beneficiary of simplified customs procedures, such as period entries, so any marginal improvement in dwell time may well be small. 'The shipping community should not expect any grand gestures,' added the executive.

Savi Networks, the market leader, claims that over the past three years more than 100,000 containers have been tracked using its technology.

But for many shippers the application is just too costly. Veenstra elaborated: 'Several of the global electronic manufacturers such as Siemens, Philips, General Electric (GE) and IBM jumped on the tracking bandwagon yet few have found a workable commercial model. The technology has just proved too expensive.'

Sewall said that the typical monthly lease cost of one of Savi's security devices is around USD100 per tag depending on the shipment routing as this drives cellular roaming charges.

But many expect prices to fall. 'The price point in the trucking sector has been falling, allowing more truckers to extend tracking from tractor units to trailers as well,' explained Gonzales. 'The ability now to communicate via cellular rather than the more expensive satellite networks will further reduce costs.'

As Transmed director Barry Dixon concluded: 'Like all technologies, the more users you get on board the lower the cost.'

Adoption of the technology remains in its infancy but lower costs and greater value recognition could yet make GPS/cellular tracking systems a regular feature of container shipping.



Savi Networks' Steve Sewall

Shipper case study: Transmed Foods

Transmed Foods, the US distribution arm of France's Crespo Foods, claims that deployment of GPS/cellular devices will enable a 50% reduction in its North American inventories.

The company imports olives from its own production centres in Morocco and Spain to US retail fast food chains, including two of the world's largest convenience pizza and sandwich restaurant franchises.

The Baltimore (MD)-based distributor is in the process of rolling out deployment of Savi's system and plans to have its annual import traffic of about 3,000TEU tracked in this way by the end of 2010.

Its two primary retail customers have agreed that once the deployment is complete, Transmed will be allowed to reduce its safety stock holding from 60 to 30 days.

Savi's solution combines use of its GPS/cellular container tracking capabilities with bar code readers to enable Transmed to track cargo at item level. 'These systems allow us to better manage inventory and customer service, particularly the black hole between port and destination,' explained Transmed director Barry Dixon.

The executive was hopeful that deployment would eventually deliver benefits in fast tracking containers through customs as well as forestalling inspection on the grounds of food safety concerns. He also noted that product recalls would be more expeditiously managed via the system.

Most importantly, Dixon reckons that the system will deliver a return on investment of two to three times cost. This is music to the ears of his finance colleagues.