"SAFETY IN THE SEA PORTS "

.

Paper prepared for 22nd Engineers International Conference

At Intercontinental Hotel, Nairobi, Kenya.

From 13th - 15TH May, 2015.

MS. MARYAM MOHAMED KIDERE

KENYA PORTS AUTHORITY

P.O.BOX 95009, 80104.

MOMBASA, KENYA.

Introduction.

Managing a major container Seaport is the ultimate test in logistical planning involving a large footprint, a myriad of activities, a host of workers, enormous cargo ships, numerous containers and a wide array of equipment and vehicles, port activities must be tightly synchronized to speed the flow of goods into and out of a country. These goods are the backbone of national and global markets, and seaport play a crucial role in enabling the economies of virtually every country in the world to grow and prosper. Today, however, safety and security concerns—including growing incidences of container theft and the pervasive threat posed by the potential of a terrorist attack—are threatening to disrupt this crucial synchronization and control.

Seaport as Targets

Seaport is highly attractive targets for malicious intrusive intent; two of the most dangerous are accidents and crimes. It's easy to see why they are so tempting a target. 80 percent of all world trade is shipped via cargo containers. These containers circulate among the world's major seaports more than 200 million times a year. That translates to a lot of merchandise that can be stolen and a lot of opportunity for dangerous disruption to port operations. It's no wonder that port safety and security has become such a high priority for governments around the world.

The challenges at the Seaport:

The Port is a vital part of commerce, handling 99% of overseas cargo imports / exports. Today, it is faced with growing demand to:

- Enhancing security
- Improving operational productivity
- And optimizing safety.

Increased competition, shipping volume and crime risks has placed the Port at extreme pressure to stay on a demanding schedule.

The question is what to do about it?

How do you safeguard personnel, protect port facilities against dangers of a complex new world while maintaining the crucial efficiencies so important to port operations?

<u>Objectives of the Paper.</u>

This paper seeks to:

- Outline safety demands in the Kenya Port,

- Give guidance on protecting personnel and property in Port facility,

- Give modalities for complete accountability of cargo flow

- Outline the nature/ technologies of future Ports and Port success.

Outline safety demands in the Kenya Port,

Managing a major container port is the ultimate test in logistical planning involving a large footprint, a myriad of activities, a host of workers, enormous cargo ships, numerous containers and a wide array of equipment and vehicles, port activities must be tightly synchronized to speed the flow of goods into and out of a country.

Protecting personnel and property in Port facility,

Personnel need to work faster, smart and safer. It starts at the gates where hundreds of clients, vendors and trucks come and go every day (24 hours). Demanding schedules, fatigue issues and compliances issues contributes to related safety hazards that may cause fatal accidents. Further, security agents needs to stay vigilant at all times, detect threats, rapidly respond and recover in an event of emergency. The key to all initiatives would be to minimize the ever existing risk of injuries to port personnel, shipping crews and other stake holders/users.

Complete accountability of cargo flow

Lack of proper inventories that can account for every cargo that enters and leaves the port facility is a crucial issue that can leads to loss of customers and revenue flow. Desired ability to relate a container number to the sea-to-shore crane, operator identification number, the tag master operator unique identification, the shift supervisor and all other stake holders (revenue authority, logistic agents) down to the time and truck number that the container left the port gates is the ultimate accountability test.

TECHNOLOGY IS THE ANSWER

And these technologies are illustrated in the figure below.

Technology provides the solutions making Port to work *Smarter, Safer and Faster*.

Its starts at the Gates, Cargo Terminals and Commanding Centers. Hundreds of clients, vendors and trucks come and go from the Port every day. Hence security needs to stay vigilant at all times, detects threats, and event of emergency.

Most of these Technologies are installed at the Gates: integrated via wireless connection to a Commanding and Control Center.

- Optical Character Readers (OCRs).
- Automated License Plate Recognition (ALPR).
- Biometric Access Card
- Asset Tracking and Controlled Movements
- Video Security and Management.
- Real-time Mobile Communications.
- Integrated Command and Control Centers.

Automated License Plate Recognition.

Automated license plate recognition (ALPR) solution continuously scans license plates on vehicles entering or leaving the Port gates. The ALPR system reads plates under even the toughest lighting and weather conditions, matching them to databases to quickly identify and confront suspicious vehicles. Fixed ALPR cameras are placed on nearby access entry /exit used by vehicles in the port, recording each vehicle, citing the time and location.

With this real-time intelligence, port security personnel can determine that certain vehicles that frequently enter / exit the facility may actually have no business with the port.

Access Control Reader (Biometric Access Card);

The ACR is a massive effort involving biometrics-enabled smart ID cards-featuring leading-edge technologies such as fingerprint scanning. These devices with reader attachments verify workers, and ports users' credentials. Biometric cards provide improved ports users access control, as well as permit unescorted access to secure areas of the port, reducing manpower needs and increasing productivity. ACRs are already in use, and are proving their worth in providing both increased

security and improved operational efficiency. Wireless access and integration to existing port security systems will improve both security and safety operations.

Asset Tracking and Controlled Movements.

Keeping track of port assets and containers is essential to ensuring security, guarding against theft and ensuring smooth port logistics. Tracking can be looked at on two levels: the physical containers themselves and the movements they make. RFID (Radio Frequency Identification), bar coding and Optical Character Readers (OCRs). Optical Scanning help identify each container and asset; movements of the containers can be remotely controlled using driverless meshing technology, reducing human intervention and keeping container areas secured.

Video Security and Management

As important as it is to port security, video surveillance is essentially a passive technology. A new paradigm known as video security is adding intelligence-driven capabilities that are making video more active and proactive. Besides monitoring, video security solutions generally include advanced video analytics for interpreting what cameras are seeing, video automation to help make split-second decisions based on analytics data and pre-determined criteria, and correlation of video with other input- such as 9-1-1 calls and Global Positioning System (GPS) location technologies to provide responders with all available information on an incident.

Real-time Mobile Communications.

Demand for collaborative working methods and systems will drive the convergence of various devices on dedicated Internet Protocol (IP) networks to enable individuals and groups to communicate and analyze data in more uniform manners. The High-Speed Mobile Communications such as real-time streaming video and correlated audio and sensory data from other sources are used to provide more actionable intelligence to security teams and first-responders.

Integrated Command and Control Centers.

The constantly moving flow of goods, vehicles and workers in a port environment fuels the need for a centralized command and control center that essentially functions as a conductor of every aspect of port operations 24 hours a day. The center is where information from all security technology and operational applications is collected, consolidated, coordinated, stored, managed

and distributed. Utilizing automated IP-based wireless systems and Computer Aided Dispatch (CAD) technologies, command center personnel can analyze problem detection alerts and data, then distribute it to the nearest team of first responders, providing them with real-time situational awareness that helps generate safer, more appropriate, more effective responses.

<u>Benefit of using these Technologies.</u>

<u>Improved Operational Efficiency:</u>
– The ability to locate and track containers with greater accuracy and with the most relevant data keep operations consistently moving forward with minimized work stoppage due to lost or misplaced containers.
-Operational downtime is significantly minimized through safe, secure, mobile handoff of data communications. For example, a 'low fuel' alert on a straddle carrier can help Operations make sure a replacement is sent to that location to keep the containers moving forward without skipping a beat. Because the system automatically selects the best available channel and route on the network, future automated guided vehicles can receive the necessary information to go to the proper location. Installed technologies allows the Port Authority to deploy cameras onto movable cranes, which can stand over 150 feet tall, cameras have the height to monitor the entire port area as well as the dock, shoreline, ships, and out into the water without obstruction. As the cranes move, the cameras and multipoint architecture of the system accommodates the movement by forming alternative routes while remaining connected with the network. As a result, security is significantly increased because each port has full, shared access to surveillance data for faster response and greater situational awareness.

<u>Increased Security:</u>
– Video analytics act as a force multiplier, enabling a few trained staff to manage hundreds of cameras, providing situational awareness and proactive response to port police and security personnel.
– Data available wirelessly by port security command, gate and personnel can quickly detect unauthorized access, ensuring compliance with the ACR. ACR mandates that workers requiring unescorted access to secure areas are issued tamper resistant biometric credentials

Enhanced Safety:

- On the operations side, cameras mounted on the back and underneath the cranes can help prevent accidents by providing greater visibility as operators move containers to and from the ship.

– The video also provides a record of evidence and liability by recording all activity in the event that an accident does happen; a measure that potentially reduces insurance costs.

Cost Reduction:

– With one wireless, redundant, optimized solution running both 2.4 and 4.9 GHz, fewer access points are required, reducing the cost of installation, maintenance, and lowering the Total Cost of Ownership (TCO). Estimates that it will save hundreds of thousands of dollars by eliminating service fees while increasing reliability.

- With a communications system that was unreliable and quickly reaching end of life, the Port Authority needed a cost effective solution and needed it quickly. Wireless solutions help the port to keep containers moving, increasing location accuracy, and providing the telemetry bandwidth that improved operational efficiency. Prior to this implementation, each of the Port Authority's terminals tended to operate remotely with costly and unreliable communications support as individual ports.

With the new Point-to-Point (PTP) solution, the ports operate more connected as one with equal access to data, including video surveillance which provides port police and other security personnel with situational awareness and speeds their collective response to the situation.

-Like any investment should be, the PTP wireless solution not only addressed the port's current and unique challenges, but will continue to provide value into the future. For example, the port is now looking into using the flexible technology towards its expanding rail system operations and, providing similar capabilities with its inland port hundreds of miles away.

<u>Conclusion</u>

Port activities must be tightly synchronized to speed the flow of goods into and out of a country. Shipping companies will favor a port they know will get them in and out quickly and smoothly. This requires the Port Authority to ensure high levels of operational efficiency, which in turn is dependent upon consistent, reliable communications throughout and between each of its ports. The wireless solution overcomes communications gaps, ensuring constant connectivity with improved port operation capabilities.

With the new Point-to-Point solution, the ports operate more connected as one with equal access to data, including video surveillance which provides port police and other security personnel with situational awareness and speeds their collective response to the situation.

Like any investment should be, these wireless solutions not only address the port's current and unique challenges, but will continue to provide value into the future.

Keeping track of port assets and containers is essential to ensuring security, guarding against theft and ensuring smooth port logistics. Suggested technologies can be utilized to track on two levels; both the container and movement they make.