



## *During Peace and War, Seaports Play a Vital Role*

**Jerry Haar**

The U.S.-Iran conflict, with its on again/off again blockage of the Strait of Hormuz, highlights the vitally important role played by seaports. In our own backyard—the Americas—our trading partners are rapidly adopting state-of-the-art technology, especially AI, to increase their productivity and overall performance.

Four Latin American/Caribbean ports stand out today for deploying advanced digital and AI-enabled solutions with measurable impacts: Santos (Brazil), Chancay (Peru), Callao (Peru, APM/DP World), and Kingston/Jamaica’s port ecosystem; their results are broadly comparable to what we see at PortMiami, which has focused more on terminal operating systems, security/traffic analytics and cruise-terminal process efficiency than on full AI-driven “smart port” automation.

A cursory view of the top Western Hemisphere ports is illuminating.

### **Port of Santos (Brazil).**

The Port of Santos is being positioned by Brazil’s federal government as a flagship “**smart port**”, centered on private 5G, digital twins and data-driven operations. Among key technological elements are a private 5G network across the port complex to enable real-time data from vessels, cranes, trucks and sensors, supporting AI/analytics at scale.

### **Chancay Port (Peru – “intelligent” Greenfield Port)**

Chancay, developed with Chinese partners, is often described as South America’s first fully “intelligent” smart port and is being built from the ground up around automation, AI and 5G connectivity. Its main technological features include 5G communication networks throughout the terminal to support high-bandwidth, low-latency connectivity for equipment, sensors and drones. The port employs electric autonomous trucks that reduce energy consumption by more than 25% relative to diesel-powered vehicles, directly lowering operating costs and emissions.

### **Port of Callao (Peru – APM/DP World terminals)**

Callao, Peru’s main container gateway, has not reached Chancay’s greenfield sophistication but has implemented specific digital and AI-enabling systems that materially improve performance.

Notably, APM Terminals launched Peru's first digital customer platform at Callao, providing a unified interface to log, coordinate and monitor general-cargo operations with graphical real-time views of movements in port, warehouses and onboard vessels.

### **Jamaica/Kingston port ecosystem (PCS + Kingston Freeport Terminal)**

Jamaica provides a useful example at the ecosystem level, combining a national Port Community System (PCS) with terminal-level automation at Kingston Freeport Terminal Limited (KFTL). Jamaica's PCS, financed and led by the Port Authority of Jamaica, integrates Jamaica Customs Agency, terminal and warehouse operators and holds detailed data on manifests and cargo movements.

### **PortMiami's technological profile and comparison**

How does our own PortMiami stack up when it comes to technological advancement? Interestingly, PortMiami has pursued a different trajectory from some of the Latin American "lighthouse" smart ports. Most notably, deep dredging and acquisition of four Super-Post-Panamax cranes capable of efficiently handling vessels above 10,000 TEU, with upgraded speed and efficiency, allow Miami to serve larger ships more productively.

PortMiami also maintains a Terminal Operating System (TOS) that enables complete visibility of all containers, plus GateVision chassis cameras for automated gate transaction processing. The port also utilizes radiation portal monitors and advanced inspection tech that scan cargo without stopping flows, along with integrated waterside radar and video surveillance tied to AIS and GPS to monitor vessels and enhance security and incident response.

As for AI, recent county announcements highlight AI-powered platforms such as GridMatrix to analyze traffic flow for improved cargo and passenger movement, and robotics (WorkWise robotic cleaning) to optimize terminal maintenance operations.

Presently, equipment and TOS upgrades have increased container-handling efficiency and allowed Miami to remain competitive as a major cargo gateway for the Americas; however, publicly available sources describe capabilities and capacities more than hard quantified gains in percentage terms.

The crucible of port technology—like all technology—is its dependence on the aptitude, skill and motivation of the workers who employ it in their work. Today, roughly 54% of dock workers hold a high school diploma, while about 15% hold an associate degree and 14% a bachelor's degree. On the other hand, on the job training and industry specific certifications are on an upward trajectory. Overall, job opportunities are largely driven by the need to replace retiring workers, offering steady openings in specialized areas despite concerns over automation.

A skilled workforce in the maritime trades is essential for all nations to boost their competitiveness, especially in international commerce. This is one area where business, organized labor and vocational-technical workers can surely agree.

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