SMARTER SEAPORTS

AAPA Port Technology Seminar May 15, 2013

Technology Trends and Implications

KEY CIO PRIORITIES

	2011	2014
Increasing enterprise growth	1	1
Attracting and retaining new customers	2	3
Reducing enterprise costs	3	6
Creating new products or services (innovation)	4	4
Improving business processes	5	13
Implementing and updating business applications	6	12
Improving the technical infrastructure	7	7
Improving enterprise efficiency	8	10
Improving operations	9	2
Improving business continuity, risk and security	10	23
Expanding into new markets and geographies	11	5
Attracting and retaining the workforce	12	8
Introducing and improving business channels	15	9

TOP 10 CIO STRATEGIC TECHNOLOGIES

	2011	2010	2009
Cloud computing	1	2	16
Virtualization	2	1	3
Mobile technologies	3	6	12
IT management	4	10	7
Business intelligence (BI)	5	5	1
Networking, voice and data communications	6	4	6
Enterprise applications	7	8	9
Collaboration technologies	8	*	*
Infrastructure	9	*	*
Web 2.0	10	3	15

Business priorities for Transportation Industry

Rank	2010	2013
1	Improving business processes	Attracting and retaining new customers
2	Cutting enterprise costs	Managing enterprise change initiatives
3	Attracting and retaining new customers	Improving business processes
4	Improving enterprise workforce effectiveness	Expanding into new markets and territories
5	Consolidating business operations	Managing environmental impact (green IT)

Note: Survey respondents chose their top five priorities (not in any order). These priorities are ordered based on the percentage of respondents who included each priority in their top five.

Top five business priorities for the transportation industry have changed from the cost-cutting, survival mode mentality of 2008 and 2009 to a focus on business growth and new customer attraction.

TOP OF MIND ISSUES FOR LEADERSHIP

Seaports under pressure to improve services with less $

Technology's role is increasingly becoming a key solution to address customer issues

OPPERATIONAL EFFICIENCY	Pressure to reduce costs in competitive environment
INTEROPERABILITY	Remains Top of Mind – in Data as Well as Voice
INCREASED TRAFFIC	Impacting all markets from ports to roadways
BUDGET CUTS	Causing Layoffs or Force Reduction Via Attrition for the First Time
RAPID TECHNOLOGY CHANGE	Presenting challenges and opportunities
SECURE OPERATIONS	Critical to nation points of entry and transit operations

PRESSURE: IMPROVE PRODUCTIVITY AND COMPETITIVENESS

YOUR GOAL:

YOUR CHALLENGES:

- ACCESSING INFO IS TIME INTENSIVE
- DIFFICULTY MAINTAINING COMPLETE AWARENESS OF ALL CONTAINERS
- IT SYSTEM INCONSISTENCIES AND INTERRUPTIONS
- DOWNTIME DUE TO EQUIPMENT REPAIRS

ACHIEVE HIGHER PRODUCTIVITY IN OPERATIONS

ACCELERATE WORKFLOW	**INFO WHEN AND WHERE YOU NEED IT**	Access the full capabilities of terminal operating systems from anywhere	Improve decision making with faster communication
	REAL-TIME ASSET TRACKING	Take full advantage of GPS technology to track cargo and assets in real time	Reduce inventory loss and its high cost **1box=approx. $1M**
REDUCE INTERRUPTIONS	**A DATA AND VOICE NETWORK ALWAYS-ON AND AVAILABLE**	Effortlessly meet bandwidth demand for complex applications	Improve operational efficiency with untethered voice, video and data communications
	AUTOMATED EQUIPMENT TELEMETRY	Increase uptime with automated equipment maintenance alerts	Improve customer service with minimized interruptions

PRESSURE: SOPHISTICATED SECURITY THREATS

YOUR GOAL:

YOUR CHALLENGES:

- DIFFICULTY DETECTING A THREAT AND SOURCING CRITICAL INTELLIGENCE
- DIFFICULTY MONITORING ALL AREAS
- DIFFICULTY RESPONDING RAPIDLY AND WITH APPROPRIATE FORCE
- DIFFICULTY QUICKLY RECOVERING

TIGHTEN SECURITY WITHOUT IMPEDING OPERATIONS

INSTANLY KNOW

REAL-TIME SECURITY INFO

Receive automatic alerts to suspicious persons or activity

Assess the situation remotely

KEEP WATCH EVERYWHERE

INTELLIGENT SURVEILLANCE

Gather information on perimeter sensors

Benefit from video management by multiple entities

RESPOND FASTER

INTEROPERABLE COMMUNICATIONS

Coordinate with public safety personnel during and after an incident.

Respond as one cohesive team

RECOVER QUICKER

15 min outage = 8hrs. commerce delay

SURVIVABLE NETWORK

Rely on self-forming robust networks for automatic, survivable communications

Get reliability regardless of obstruction, movement or RF conditions

Role of Wireless Technology……..

Improve:
VISIBLITY
and
VELOCITY
And
MORE


VISIBILITY
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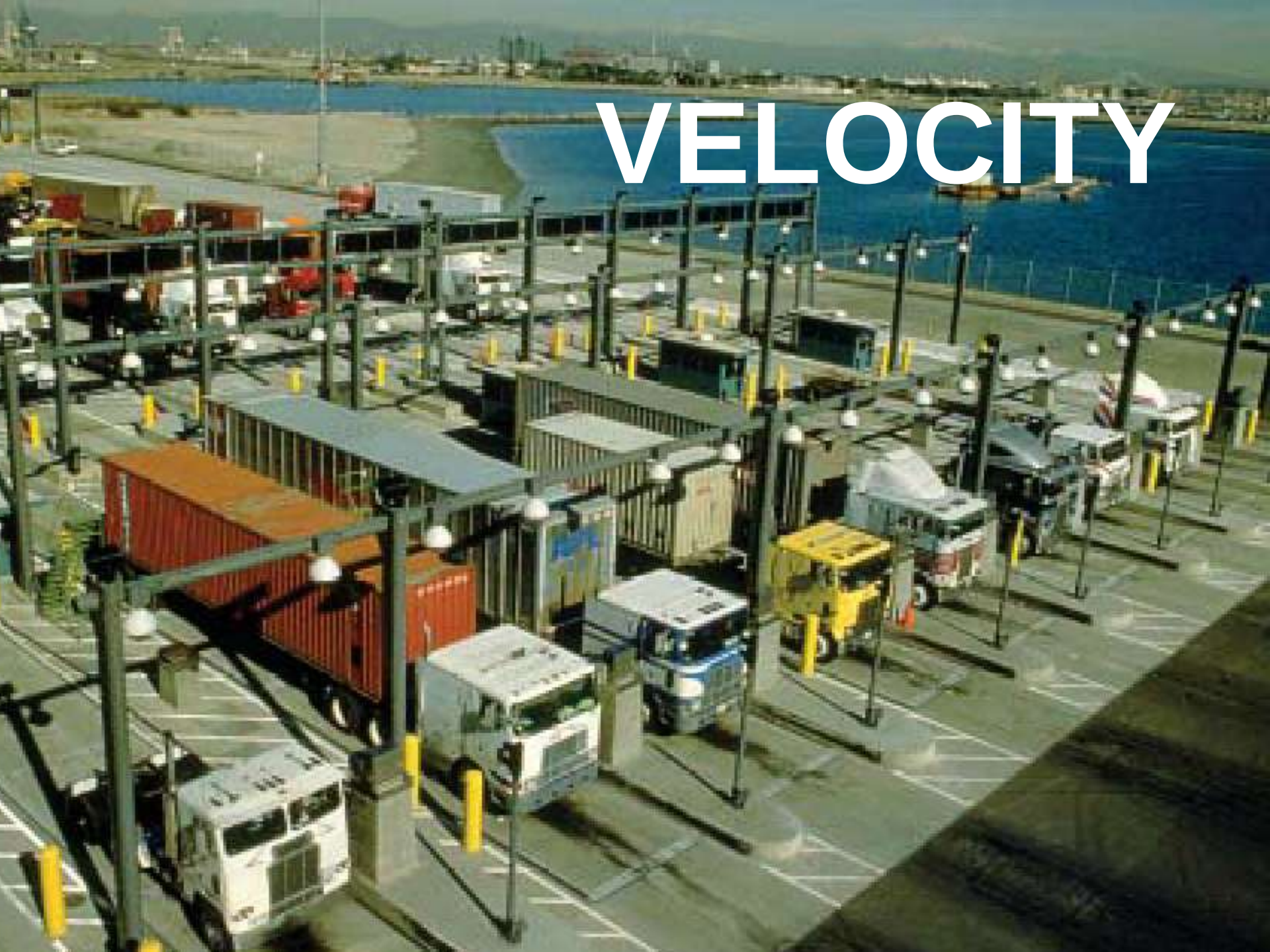

VELOCITY

MORE

Wireless Enables real-time access to:

- **Container handling software**
- **GPS data**
- **OCR data**
- **E-seals**
- **Diagnostics data from cranes**
- **Dead reckoning data**
- **Gyro data**
- **Entry data satellite gates**
- **Shock data**
- **Work activity……more**

Use Cases

Upgrading Port Communications in Rotterdam

Problem	Euromax, a new port in Rotterdam, wanted to provide advanced communication and automation capabilities. The port needed to control Automated Guided Vehicles in an environment with high levels of radio interference. AGVs require instructions be sent multiple times each second in order for the vehicles to continue operating and not come to a halt.
Motorola Solution	The wireless network consists of 100 mesh Solo devices (40 infrastructure nodes and 60 vehicle mounted modems) providing complete coverage of the facility. Each AGV is equipped with a vehicular modem providing communications to the guidance system.
Motorola Solution Value	MEA's highly reliable communications can easily handle the simultaneous operation of dozens of AGVs unloading large vessels. The RF interference mitigation capability ensures the AGVs remain operational at all times. Plus MEA's channel agility ensures that ship-based WiFi networks do not interfere with port operations.




Overcoming Interferences Issues in Nanjing, China

Problem	Nanjing Ports deployed Wi-Fi for wireless communications, but discovered many interference issues that the technology could not overcome. The port needed reliable communications throughout the multi-acre facility.
Motorola Solution	The wireless network consists of 52 mesh Solo devices (12 infrastructure nodes and 40 vehicle mounted modems) and the capacity to expand the network with 30 or more vehicular modems.
Motorola Solution Value	With MEA, Solo was able to overcome multi-path issues and support its most important application, automatic dispatching. The success of this project has encouraged the Shanghai Ports Authority to plan a similar wireless network for their operations.

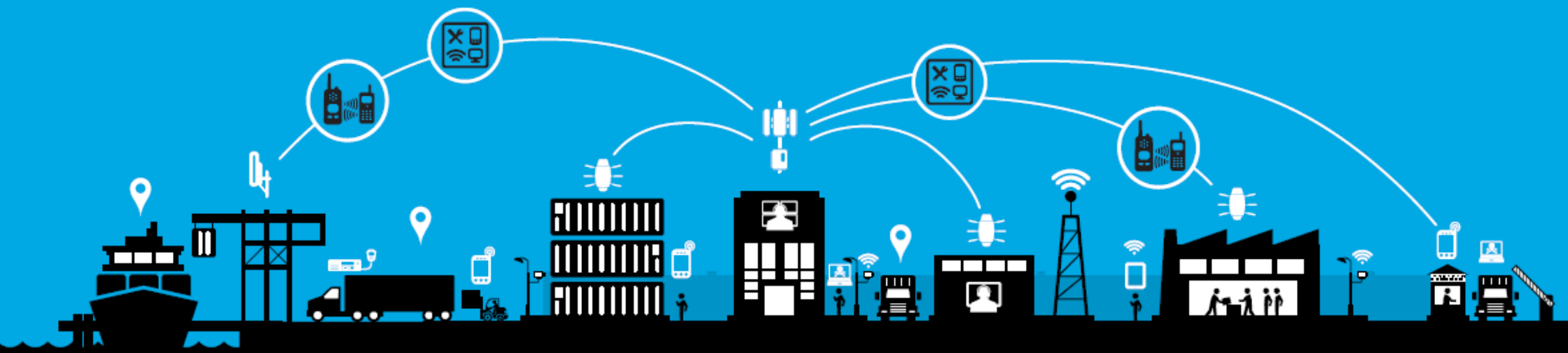
Competitive Advantage at Georgia Ports

Problem	A narrowband network could not meet the needs to backhaul RFID and the Sattel Positioning Detection System (PDS). Also the difficult RF environment was posing a challenge to the 2.4 WiFi network.
Motorola Solution	This large port required a solution consisting of several different 7300 series products, including nine IAPs, 42 MWRs and 134 VMMs. In addition, six IAPs, and 71 MWRs from the Duo (4300 series) product line were deployed.
Motorola Solution Value	The mesh solutions were able to provide the necessary broadband coverage as well as overcome interference issues with the multi-path capability of the MEA technology.

SUCCESS STORIES CONT.

PORT	CHALLENGE	SOLUTION	BENEFITS
NORTHEAST	• **Difficulty keeping pace with increased container shipments** • **Delays in processing inventory** • **Errors in recording cargo have increased customer complaints**	35 MC75A rugged, lightweight handheld mobile computers Inventory application software Alternate application to track maintenance records of quay cranes	**Significantly reduced turn-around time** **Boosted efficiency** **ROI achieved in 4 ½ months** **Raised customer satisfaction at all-time high**
NORTHWEST	• **Coastguard requirement to screen all terminal workers** • **TWIC compliant readers** • **Wireless Broadband for real time credential verification**	Mobile TWIC solution provided by partner based on MC 75A Handheld Computer Designed and implemented MotoMesh network	**Enhanced security** **Improved security screening** **Met Federal mandate** **Improved customer service**
MID-ATLANTIC	• **Improve wireless coverage and security for multiple ports** • **Make ports more efficient and competitive** • **Reduce operating expense of T1 lines**	Mesh Wide Area Network within ports Wireless cameras installed on moveable cranes instead of fixed-height poles	**Scalable installation and expansion** **Real-time video surveillance and complete site coverage** **Broadband access to analytics and network data** **Annual cost savings of $400,000**

PORT AND INTERMODAL SOLUTIONS



TIGHTEN SECURITY

- Instantly know with real-time identification.
- Keep watch everywhere with intelligent surveillance.
- Respond faster with interoperable communications with local and federal agencies.
- Coordinate response with a next-generation command center
- Recover quicker with a survivable network.

ACCELERATE WORKFLOW

- Get anytime, anywhere info from mobile devices.
- Track cargo in real time using GPS technology.
- Experience an always on, always available network.
- Increase uptime with automatic equipment alerts.

SIMPLIFY MANAGEMENT

- Steer clear of mobility difficulties.
- Focus on the port not the network.
- Monitor it all from one seamless user interface
- Secure your data, network and devices.

IMPROVE SAFETY

- Fully reconstruct accidents to avoid them in the future.
- Avoid terminal congestion with accurate asset tracking.
- Provide workers a safety net with built-in safety features.

THANK YOU