AAPA 2019
VIRGINIA
REVOLUTIONIZING AMERICA’S FIRST PORT
Revolutionizing the Working Waterfront
(Communications)

Mike Kemp
Sales Director
Rajant Corp.
mkemp@rajant.com
(908) 963-8002
An introduction to Rajant

What We Do
Exclusive provider of peer-to-peer, private Kinetic Mesh® networks consisting of BreadCrumb® wireless nodes powered by Rajant’s patented InstaMesh® networking software.

Founded

Type
Privately held

Headquarters
Malvern, Pennsylvania, USA; additional offices in Alabama, Arizona and Kentucky.

Patents
Multiple patents including InstaMesh® (U.S. Patent 8,341,289 B2).

Industries
Mining, ports, oil and gas, petrochemical, transportation, manufacturing, agriculture, utilities, municipalities, public safety, service providers, military, federal and state government. Worldwide.

Area Served
Worldwide.

Installations
Thousands of satisfied customers.

Who Is Rajant?
Private, secure wireless network technology for mission critical industries and government.

BANDWIDTH
High Speed & Low Latency

MOBILITY / RESILIENCY
Seamless and Instantaneous Joining, Leaving & Moving of Network Assets

SMART
Higher Performance from Greater Scale. Mitigate the affects of range, Non-Line-of-Sight and Network Traffic.
OPERATIONAL REALITIES:
Port Communications Challenges

- Complex, massive, aging infrastructure.
- Multiple, disparate networks meeting different security and operational needs.
- Enormous volume of large, constantly moving containers that create obstructions and restrict signal range.
- Security concerns, with terrorists knowing that striking a port facility can significantly impair a nation’s economy.
- Port environments are often exposed to extreme weather and temperature fluctuation.
- Need for real-time information to direct the flow of goods, personnel, and vehicles.
- Outgrown wired infrastructure – wired build-outs and laying cable are not feasible in commissioned ports.
- Meeting tenants’ varied needs to safely and efficiently move cargo on and off ships, repair vessels, and adequately supply ship.
- Diverse community of users involved in operations require secure, anytime-anywhere access to data, voice, and video.
OPERATIONAL REALITIES
Top 5 Challenges in Achieving Mobile Port Connectivity

1. **Aging Mobile-Limited Infrastructure**
   Over time, static networks are expanded beyond capacity, especially with increased data volume demands.

2. **Signal Interference**
   An increasing number of ground vehicles, quay cranes, forklifts, and people.

3. **Security Factors & Concerns**
   Ports have become high risk targets for terrorism and other malicious breaches.

4. **Lack of Redundancy**
   Wireless equipment more likely to fail when exposed to harsh coastal environments.

5. **Real Time Data Disruptions**
   Customers, tenants, international agencies, and numerous moving parts.
Mitigating Signal and Range Obstructions

Large mental containers and their subsequent movement can impede signal range for many wireless communication systems.

Using a multi-transceiver, multi-frequency, mesh network can dynamically redirect information packets around this interference providing the fastest possible throughput.
ADVANCING PORT OPERATIONS:

Video Surveillance
High bandwidth to stream video from remote cameras to dispatchers, first responders, etc.

Remote Access
Enable first responders and security officials to retrieve critical information while on the move.

Improved Situational Awareness
Allow dispatchers to instantly view incident details, analyze alerts, and get responders on-scene fast.

Enhanced Evidence Gathering
Capture and disseminate IP-based video evidence for investigation and prosecution.

Drone Communications
Our drone BreadCrumb module can be supported on the mesh for surveying and other monitoring functions.
ADVANCING PORT OPERATIONS:
Fleet Management

Globally, seaports must manage thousands of quay cranes, trucks, and other fleets of automotive vehicles.

- With mesh wireless nodes deployed on a variety of vehicles, a mesh network can help you maintain communications with and control of UGVs, and AGVs (Automated Guided Vehicles), forklifts, and trucks as they roam among cranes and containers.

- A mesh network supports next-gen applications for:
  - Asset management / tracking
  - Vehicle / truck health monitoring
  - GPS location tracking
  - Automatic truck identification
  - Vehicle automation
ADVANCING PORT OPERATIONS: The Real ROI.

What can a Kinetic Mesh® network help your port achieve?

**Improved Productivity**
Maximize efficiency through mobile access to data, decision-making information, etc.

At peak efficiency, a single crane can move about 40 shipping containers per hour.

**Decreased Downtime**
Access real-time maintenance information to proactively address issues, especially for 24/7 equipment.

A condition-based monitoring system can save as much as 20% in decreased spare parts.

**Strengthened Security**
Reduce losses and damage with better situational awareness and first responder collaboration.

When ports on the west coast closed, it cost the U.S. $1 billion dollars a day.

**Increased Revenue**
Increase capacity to support new service offerings and handle larger volumes.

Adoption of automation is expected to increase productivity in ports by about 30%.
Thank you!
PORT OF ANTWERP

Innovation, Digital Transformation & Global Port Connectivity

Revolutionizing the Working Waterfront

AAPA Conference – Norfolk, Virginia – October 15, 2019
Agenda

• Intro – the new Vision & Mission statement from Port of Antwerp

• Digital Transition & Innovation strategy
  …building the “Port of the Future”

• Data Sharing platform: NxtPort
  …building the Highway for the Digital Supply Chain

• Global Port Connectivity through IPCSA’s Network of Trusted Networks
A lever for a sustainable future
Europe’s second largest port

- 235 Million tonnes of freight
- 12,068 hectares
- 15 million TEU capacity
- 143,058 jobs
- 900 companies
- 4.8% GDP
- 20.3 billion € added value
Reliable supply chain
Unique maritime connectivity

Direct services to 1024 ports worldwide
a home port vital for a sustainable future

The port of the future is smart, sustainable, innovative, accessible and safe.
5 strategic priorities for 2020

Sustainable growth
Mobility
Transition
Safety and Security
Operational efficiency
Sustainable growth
2018-2019: 5 billion euro New Investments strengthen our Chemical Cluster

- 3 Billion €
  - Cracker
  - Poly-propylene plant
- 1 Billion €
  - PDH propane dehydrogenation
- 1 Billion €
  - PDH propane dehydrogenation
- 100 M €
  - Expansion Silica Plant
- 400 M €
  - Tank Storage Terminal
- 300 M €
  - Aniline
- 25 M €
  - Expansion Plant
- 500 M €
  - Expansion Plant
- 315 M €
  - SAP, acryl acid
- 80 M €
  - Expansion Silica Plant
- 25 M €
  - Expansion Plant
- 100 M €
  - Cracker
- 315 M €
  - SAP, acryl acid
- 80 M €
  - Expansion Silica Plant
- 25 M €
  - Expansion Plant
- 500 M €
  - Expansion Plant
Port of the Future: An insight on the innovation strategy and pilot projects
Build a digital nervous system across the port

Enable innovation in and around the port
Our innovation strategy

**OUTSIDE IN**
POC/POV new tech

**INTERNAL**
Experiment  Culture

**TECHNOLOGY**
INNOVATIE PLATFORMs
The port as an open innovation platform
- drones
- Autonomous vessels
- Air quality

**EXTERNAL**
COMMUNITY BUILDING
Accelerate innovation

**FACILITATOR**

**OPERATOR**
STIMULATE INTERNAL INNOVATION

[Images and icons related to the above points]
SMART SHIPS
Echodrone
Autonomous monitoring sedimentation
2. SAFIR

- BVLOS Oil spill detection Antwerp Port Area
- Parcel delivery from Wijnegem Shopping Mall
- Simulated parcel delivery Antwerp Port Border
- Medical parcel delivery
- High tension line inspection/mapping
- Overhead line incident intervention and pylon inspection
- Port inspection of criminal offenses
- Inspection container terminal for Port Authorities
- Monitoring cooperative and non-cooperative drones
Machine Vision
(Image object recognition)
Digital Twin

BOUDEWIJN SLUIS

SLUIZEN M
- Berendrechtsluis
- BOUDEWIJN SLUIS
- Kallosluis
- Kattendijksluis
- Kieldrechtsluis
- Royerssluis
- Van Cauwelaertsuis
- Zandvlietsluis
Build a digital nervous system across the port

Enable innovation in and around the port
NxtPort’s Mission

Make our ports and the related transport & logistics chain better, safer, more efficient and more profitable

COLLECT DATA TO CREATE GROWTH
Public and private sector hand in hand. Together!
Trust

To overcome this challenge requires

Collaboration.

A coalition of the willing.

Community facilitator through co-creation.
With Golden Principles:

- Everybody is welcome as data provider or as data user.
- NxtPort platform is a low entry barrier initiative (cost+) – benefits or “value at stake” falls within the industry.
- Data providers always stay owner of the data and decide in what context their data can be used.
- Strict divide between data layer and applications layer. NxtPort runs the data platform, app creation is left to “the market”.
- Data users “share” profit as and when added value is created on the data. Monetization of data.
Visibility as an enabler to increase cargo handling capacity

- E2E full visibility
- Planning and execution
- Shift from maritime only to freight payer (shipper/consignee) or community
- Import – Export flows / Re-use
- Water as a virtual warehouse/terminal
Data users “share” efficiency gains when added value is created on the data
International Port Community Systems Association

“to promote the electronic exchange of information to enable seamless, efficient trade logistics processes through a single submission of data connecting transport logistics”.
Where IPCSA is now

- Formed in 2011 by 6 leading European PCS
- 42 members operating in 41 Countries.
- 1 million + users within our members around the world
- Estimated 20 bn + electronic messages a year
- Members currently handle the exchange of information
  - over 250 air and sea ports,
  - over 500m TEU and 8bn tonnes of cargo.
  - Up to 50% world maritime trade going through members systems
- 5 Regions matching those of UN Regional Commissions
- IPCSA membership is open to:
  - Air and Sea Port Community System Operators
  - Air and Sea Port Authorities
  - Single Window Operators
  - International and Regional Organisations
Global Port Connectivity
Thank you!

Nico De Cauwer

Business Architect Digitalisation & Port Community Projects
nico.decauwer@portofantwerp.com

AAPA Conference
Virginia – October 15, 2019
Revolutionizing the Working Waterfront
Driving Productivity, Efficiency, & Predictability through Truck Reservation Systems

Mark Higgins, Director Motor Carrier Experience
Leveraging TRS Data
Turn Time Breakdown – Oct 2018 vs Aug 2019

**Oct 2018**

- **NIT**: 1,608
- **VIG**: 5,202
- **PMT**: 378

**Aug 2019**

- **NIT**: 281
- **VIG**: 205
- **PMT**: 3

**Graphs**

- **30 Min or Less**
  - NIT: 16.51%  
  - VIG: 25.00%  
  - PMT: 18.82%

- **30 to 60 min**
  - NIT: 44.04%  
  - VIG: 30.47%  
  - PMT: 47.17%

- **1 to 2 Hours**
  - NIT: 34.34%  
  - VIG: 28.73%  
  - PMT: 27.66%

- **2 to 4 Hours**
  - NIT: 4.97%  
  - VIG: 14.13%  
  - PMT: 5.86%

- **4 to 6 Hours**
  - NIT: 0.11%  
  - VIG: 1.55%  
  - PMT: 0.43%

- **Over 6 Hours**
  - NIT: 0.03%  
  - VIG: 0.11%  
  - PMT: 0.05%
TURNING THE TIDE: TRUCK RESERVATION SYSTEM IS DRIVING EFFICIENCY
Digitizing the Working Waterfront: A waterside perspective

Matthew Prumm, CPEng: Global Lead – Business Development
Thank you