South Carolina
State Ports Authority

Wireless in the CY

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Goal
Create a system to increase productivity and communicate events in realtime... 24x7.

How?
Install a wireless infrastructure and a mobile application utilizing a “store and forward” architecture.
’01 YMS at Columbus Street

- **Technology**
  - Intermec OpenAir wireless
    - <1Mbps vs. typical desktop ~10Mbps
  - Pole height: 25’
  - Windows 95 clients, 24MB RAM
'01 RF Issues at Columbus St

- Slow
- Unpredictable
- Metal (the train has left the station…)
- “Snowball” outages
- Query tuning
- Data overload
- Equipment handlers differences
’01 Lessons Learned

• Antennae on RTGs performed best under the cab
• Application performance is paramount for success
• Reports from users in the field have to be investigated
‘03 YMS at North Charleston

Technology

– Cisco access points 802.11b
– Pole height: 25’
– Windows XP, 256MB RAM or more, fast processors
’03 RF Issues at North Charleston

- Larger footprint
- Overlapping coverage
- Continued metal issues
- Windows XP wireless features
'03 Lessons Learned

- Greater success determining connectivity independently
- Dedicated IP addresses
- Software distribution is costly
- User behavior
- Hold on tightly (to that connection)...
- Less data, more quickly
- Survey!
‘05 YMS at Wando Terminal

• Technology
  – 7 Vivato panels
  – Pole height: vary from 100’ to 135’
  – Traditional access points in the lanes
  – Same advanced handheld clients
’05 Other Infrastructure Changes

• Employed a Metropolitan Area Network
• Centralized on Sun V1280
'05 Wando Welch Terminal

Vivato

Omni-directional

Lanes
Vivato Panels
Vivato Panels

Vivato Panel Power Switch, Network and Console connections.

Wando Vivato Pole 2 Base
’05 Issues at Wando Terminal

- Terminal shape
- Impossible for traditional access points
- 135ft poles
- Panel pitch and direction
- User interaction
- “Black hole”
’05 Lessons Learned

- “Shining down” = good stack coverage
- Software distribution costs can be mitigated
- Panels weren’t effective for chassis fields
- Connect only as needed
- Manufacturer viability
Gains!

- Increased gate throughout by 40%.
- Decreased turn times by 70%.
- Open architecture allows for better operations with our customers.
- More accurate/timely billing.
- Increased vessel productivity by 15-20%.
- All of this was done while increasing volumes by 40% and maintaining current staffing levels.
And then…

- Retrofitted North Charleston terminal with Vivato panel
- Later replaced Vivato panel with Comtech
Directional

Omni-directional

Vivato
Consider this…

- Understand your application and user behavior
- Provide the Best You Can at the Edge
- Survey
- Footprint
- Find Stable Vendors
- Interoperability (security, for example)
- Develop internal expertise
Thank You.