Application of GIS Technologies in Port Facilities and Operations Management

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Asset Management- Drivers and Imperatives

• Drivers:
  – GASB
  – Government Directives

• Operational Imperatives:
  – Resource Constraints
  – Return on Investment for Competitive Advantage
Challenges in Port Asset Management:

- Must develop an accurate inventory and assign capital replacement values - a complex effort.
- Staffing: Ports are driven to minimize staff overhead and operate in a resource constrained setting.
- Conflicting Priorities: Ports must prioritize ongoing maintenance with new construction, environmental regulations.
- Highly competitive global shipping market.
Port Facility Data is Spatial

- Geographic Information Systems (GIS) provides an organizing framework for data.
- GIS makes Data comprehensible and actionable.
- GIS Software is now widely available, more user friendly and interoperable.
- Hardware costs have dropped while the computing power is increasing. Storage is cheap!
- Linkages to CMMS can drive efficiencies throughout operations, maintenance
- Supports investment decisions, port marketing.
Advance Planning is CRITICAL

- Data organized in a planned framework offers a rational mechanism for informed decisions.
- Best allocation of limited resources.
- Actionable Information gives a competitive advantage to a port.
- Maintaining revenue generating infrastructure maximizes return on investment.
- Advanced Asset Management systems can improve bottom-line profitability of the port.
Where GIS is an Asset Management Tool

- JAXPORT
- Port of Los Angeles
- Port of Seattle
- US Navy
- US Air Force- Geobase
Functional Capabilities

• Catalogue and rationalize as-built drawings and CADD Files.
• Asset condition data- pilings, decks, piers, paving, roofing
• Integrated Maintenance Operations with automatic updates (CMMS)
• Soils Boring library
• Environmental Management- NPDES, etc
• Dredging Management and Navigation Updates
• Emergency Management and First Responder assistance- Spill Prevention and Control Planning, HAZMAT, Fire, Police
• Physical Security
Benefits of an Integrated Approach

• Advance planning and careful data mining of existing data can produce effective and useful systems.
• Revised and updated processes offer immediate return on funding and staff effort invested.
• Ending DRIP- Data Rich, Information Poor means Better Decisions
• WORM- Write Once, Read Many Times- maximize the return on investment!
• **Bottom Line**: GIS is an essential tool for Port Engineers and Operators