GIS in Port Management
SIIG Sines - Portugal

SIIG Project Team
Port of Sines Administration, S.A.
PORTUGAL
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The Port of Sines is an Atlantic seaport, located in Portugal and one of the deepest ports in Europe.
Strategic Location

**Port of Sines** - Great HUB on the South European Atlantic face.
Located on the crossroads of trans-continental routes, with natural rocky sea bottoms, that don’t need dredging, allows it to receive the mother ships that connect Europe to the world’s biggest production and consumption centers, feeding other Ports with smaller ships or via rail and roads to its hinterland.

Sines has a privileged location in the crossroads of the main international maritime routes North-South / East-West
Key Characteristics / Access

First National Port in cargo Handling

- 5 Specialized Terminals
  - Liquid Bulk, Petrochemical, Multipurpose, GNL and Containers
  - Plus 3 Interior Harbours

- Competitive Operations
  - Operating 365d/24h with flat rate for Load & Unload
  - No urban restraint and excellent Industrial and Logistics expansion capacity

- Strong support on IT
  - Electronic Dispatch (ship and cargo)
  - Surveillance and Access Control
  - Vessel Monitoring
  - Spatial enabled planning and operations
Introduction

Port of Sines implemented his enterprise Geographic Information and Identification System (SIIG), fully supported on ArcGIS technology and supporting all the functional areas in the harbour.

The SIIG is mainly WEB based and has seven modular and functional areas to support engineering, environment, safety and security, planning port operations, concessions and domain areas, supporting decisions based on static and dynamic geographical information of all his hinterland and foreland.
SIIG Project Objectives

1. Enable visualization and Interaction with dynamic data
2. Provide visual support to the planning of operations port, allowing real time display of ship movement, incorporation of rules and restrictions related to manouvers, berthing requests and infrastructure availability
3. Support everyday operations (engineering, planning, land sort, security, environment, port lease management and other) with georreferenced information;
4. Facilitate the access to information across the organization and integrate with existing legacy systems
5. Improve effectiveness in existing procedures
6. Increase competitiveness at the Port of Sines
SIIG – Functional Areas

SIIG is a Port Manager System for Port of Sines

SIIG PLATFORM

- Land Sort
- Cadastral & Infrastructures
- Concessions & Domain Areas
- New Functional Areas
- Planning Port Operations
- Safety & Security
- Environment
- New Functional Areas
SIIG Project Modules

1. Base Module
2. Land Sort and Cadastral Module
3. Concessions and Domain Areas Module
4. Planning and Port Operations Module
5. Security Module
6. Environment Module
7. Statistics
**Project Integrations**

**SIIG Project** have 8 integrations with other systems:

- **AIS** – Automatic Identification Vessels System
- **JUP** – One Stop Shop for Electronic Dispatch of Vessels and Cargo
- **PPR** – Planning and Port Operations Room
- **SAP** – Enterprise Management System
- **SSP** – Port Surveillance System
- **CUP** – Port Single Card
- **DW** – Data Warehouse
- **ALOHA** – Modulation Environmental Incidents (EPA/NOAA)
Web SIIG Portal
Web SIIG Portal

- Access to functional Areas
- User identify
- Statistical information
- Map area showing the port
- Additional information
  - Weather information
  - Tidal information
  - Useful Links
1. Base Module

- Web module
- Access for all users in Port
- Basic GIS functionalities such as:
  - viewing
  - inquiry
  - research
  - standard prints
- Vessels and Buildings identify
- Search the locations of buildings address, roads and vessels in harbour
- Ask for plan plot from buildings
- Ask for codification areas
2. Land Sort & Cadastre Module

- Web module
- Access for users with profile
- Basic GIS functionalities from Base Module
- Identify buildings and maintenance management
- Infrastructure management
- Ask for plan plot from buildings
- Confront areas with print reports
- Identify Network connections by interest point with print report
- View and check the land registration records
- Identify and view Projects in archive by location
SIIG Portal – 2. Land Sort & Cadastre
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3. Concessions and Domain Areas Module

- Web module
- Access for users with profile
- Basic GIS functionalities
- Identify Concessions and get report
- Identify buildings and Ask for plan plot from buildings
- Confront concessions with print reports
- Identify Network connections by interest point with print report
- View and query the network infrastructure
- View and query the database of APS equipment
- Define the layout for printing template
SIIG Portal – 3. Concessions & Domain Areas
4. Security Module

- Web module
- Access by users with profile
- Basic GIS functionalities
- Viewing and consulting the areas of security APS
- Viewing and consulting online the total number of people and vehicles in security areas reported by the System CUP - Single Port Card
- View real-time video feeds from the cameras integrated into the SSP - Port Security System
- Display real time and available resources in action on mapping basic land and sea
- Analysis of the quickest route between two points with physical barriers
- Module accidents environment with ALOHA (EPA/NOAA)
SIIG Portal – 4. Security
SIIG Portal – 5. Environment Module

• Web module
• Access by users with profile
• Basic GIS functionalities
• Get meteorological information
• Manage General Environment Port Plan
• Identify and View the points analyses of water, sewers, beach land,
• Viewing and consulting the analyses and get reported
• Module accidents environment with ALOHA (EPA/NOAA)
SIIG Portal – 5. Environment
SIIG Portal – 5. Environment
6. Planning and Port Operations Module

- Web module
- Access by users profile
- Basic GIS functionalities
- Identify vessels
- View, query and analysis of port operations
- Display real time data integration of AIS data kinematics of vessels approaching the port, on port or output port
- Ability to perform scenarios of port operations
- Ability to trigger actions based on scenarios previously defined.
SIIG Portal – 6. Planning & Port Operations
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SIIG Portal – 7. Statistics

- Web module
- Access by users profile
- Display real time statistical data form Data Warehouse for port management
GIS as the Hub for Port Information Systems

GIS is the key tool for the interoperability of all the systems in the harbour and all the cartographic and tabular information that is used to manage the different types of operations made in the harbour every day.

GIS:

• Facilitate the access to information across the organization and integrate with existing legacy systems
• Increases efficiency in port management and supervision
• Optimise port operations while assuring adequate levels of security
• Maximize the use of infrastructures and HR
SIIG Project Team

Partner solution
Future and New Developments

- Consolidate SIIG at Port of Sines
- Develop relations to integrate with others stakeholders
- Extend SAP integration to Concessions and Domain Areas
- Extend SAP integration for Maintenance
- New integrations with DW
- New solutions to monitor maritime infrastructures
- Development of solution for Quarry monitorization in port
Planning and Port Operations Room
Thank You