CASE STUDY

# Building the foundation for a smart port

## Compania Națională Administrația Porturilor Maritime S.A. Constanța | *Romania*

### Industry

- Transportation

### Solutions

- Octave Alto Enterprise, Octave GeoMedia, Octave Alto

### Challenges

- Fragmented infrastructure data
- High operational complexity
- Lack of real-time visibility

### Results

- Enhanced accuracy, consistency, compliance
- Improved usability and robust security
- Increased transparency and traceability

Romania is situated on the coast of the Black Sea, oftentimes described as the maritime gateway connecting the Mediterranean Sea regions and Eastern European nations with the rest of the world. Of the 65 ports on the Black Sea, Constanța is the largest, and one of the main distribution centers for Central and Eastern Europe. The port plays a key role in regional logistics, energy security and international trade corridors.

**The Compania Națională Administrația Porturilor Maritime (National Company Maritime Ports Administration S.A. (CN APM) Constanța)** is the Romanian national authority that manages the maritime ports of Constanța and is responsible for port development, infrastructure management and maritime safety.

CN APM Constanța is undergoing a comprehensive digital transformation to modernize its operations and align with key strategic objectives. This initiative brings advanced data management, compliance with European Union (EU) directives, integration with national maritime systems and support for sustainability and resilience goals.

As part of the transformation, CN APM Constanța, with Octave partner Intergraph Computer Services (ICS) Romania, has deployed an advanced GIS solution built on Octave Alto Enterprise (formerly M.App Enterprise), Octave GeoMedia (formerly GeoMedia) and Octave Alto (formerly Luciad) technologies. This implementation serves as the foundation for future smart port initiatives.

## Foundational need

CN APM Constanța faced fragmented infrastructure data, high operational complexity and a lack of real-time visibility. It primarily relied on traditional computer-aided drafting (CAD) tools to manually draw and manage port infrastructure geometries. While CAD was useful for static design work, it lacked the spatial intelligence, real-time data integration and analytical capabilities required for modern infrastructure management. It also relied on spreadsheets for contract tracking, which limited data consistency, traceability and operational coordination. And the absence of a centralized geospatial platform limited collaboration, hindered operational efficiency and made it difficult to support dynamic decision-making processes.

**Iustin Obreja**
Head of Communication & IT and GIS Project Manager
CN APM Constanța

*"The solution has transitioned from fragmented legacy workflows to a fully integrated, role-based GIS environment, ensuring end-to-end data integrity, regulatory compliance and operational transparency. By centralizing spatial and nonspatial datasets within a unified platform, the system enhances data governance, supports informed decision-making and strengthens the organization's digital infrastructure."*

The port authority needed to ensure compliance with EU regulations, including the INSPIRE Directive, which requires public authorities to make maritime domain data accessible to the public and shareable with other authorities. It also sets standards for interoperability, ensuring that spatial data from different countries can be integrated and used across Europe to support decision-making.

## Comprehensive GIS solution

CN APM Constanța implemented a comprehensive GIS solution built with Alto Enterprise, GeoMedia and Alto technologies. This combination provided a powerful framework for dynamic mapping, spatial analysis, real-time data integration and advanced visualization, tailored to the complex operational needs of a major maritime port authority.

"We greatly valued Octave's capability to deliver an integrated, scalable and interoperable geospatial platform powered by advanced analytics and real-time data integration," said Iustin Obreja, from CN APM Constanța. "The solution has been deployed across multiple departments, establishing a unified digital framework that replaces previously fragmented legacy processes. Through this role-based GIS environment, we now ensure data integrity, regulatory compliance and full operational transparency — strengthening our capacity for data-driven decision-making and long-term digital resilience. One of the key challenges we have faced, and continue to address, is resistance to change — a natural response when introducing transformative digital technologies. However, through continuous training, stakeholder engagement and clear demonstration of value, we are successfully fostering a culture that embraces innovation and continuous improvement."

## Platform in action

One example of how CN APM Constanța uses the platform is to manage and maintain an accurate inventory of systematized land areas and leasable parcels within the port perimeter. This process supports strategic land-use planning, contract administration and asset management.

The integrated workflow ensures that all land assets are accurately represented, with complete and validated information on usage rights, contractual obligations and infrastructure status, replacing fragmented records and manual coordination.

## Measurable benefits

CN APM Constanța has realized measurable benefits across multiple levels of operations.

Centralized data access has enhanced accuracy and consistency and provided end users with significant time savings. Streamlined workflows across departments have enabled faster decision-making, while improved usability and robust security — supported by role-based access controls — ensure a seamless and protected user experience.

Automation has significantly boosted the organization's operational efficiency, leading to increased transparency and traceability in land use and contractual obligations. The implementation of structured data and version control has enhanced compliance with regulatory and audit requirements. Additionally, the use of spatial analysis and reporting tools has facilitated more strategic planning.

For port tenants and investors, lease agreement processing and contract modifications are expedited, and they have better visibility of available parcels and infrastructure conditions. Service quality has improved due to more responsive and data-informed interactions with port administration.

## Looking forward

"We expect the geospatial system to continue evolving as a strategic digital asset, unlocking a wide range of future capabilities," said the CN APM Constanța management team. "Among these, the development of a real-time digital twin of the Port of Constanța stands out as a major innovation — enabling 3D visualization, dynamic monitoring and data-driven insights for enhanced operational efficiency and strategic planning. While this represents a significant technical and organizational challenge for CN APM Constanța, we are fully committed to achieving excellence. The maritime industry is rapidly transforming, and by investing in advanced digital technologies, we ensure that our port evolves in step with global innovation — and continues to lead by example in the region."

## About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property and assets – for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.

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