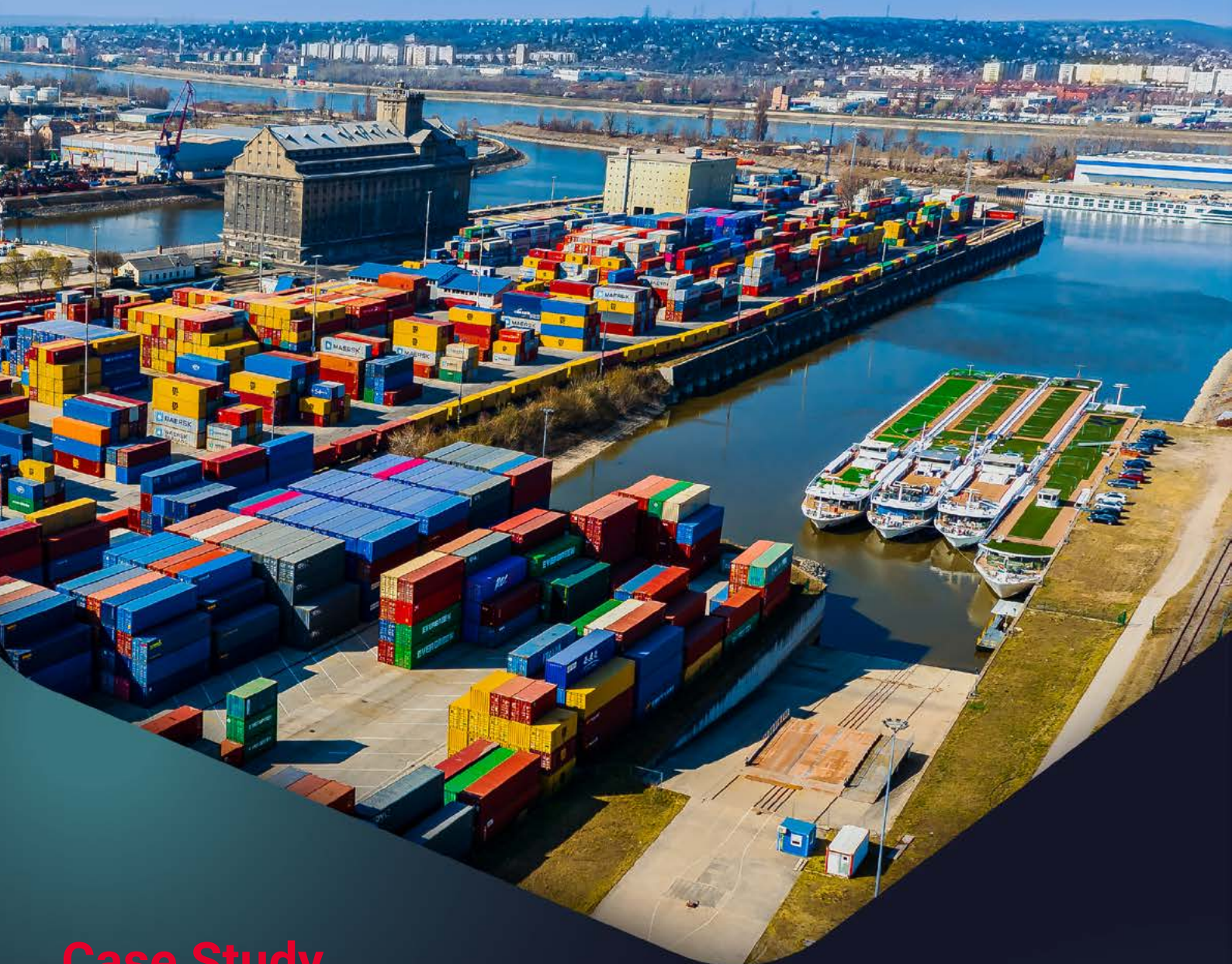




Case Study

Building KIR

Integrated port information system

Customer
Port Authority

Location
Hungary

Industry
Transportation

Modernising inland waterway port operations through digital transformation

The port authority, responsible for overseeing inland waterway port operations and maritime transport information services, needed to modernise their port management processes to improve efficiency and regulatory compliance. With fragmented systems and manual processes hindering operations across multiple ports, they required a unified digital solution that could handle everything from vessel arrivals to cargo tracking and statutory reporting.

The existing approach relied heavily on paper-based processes and disconnected systems, with arrival reports sometimes still handled manually. Individual ports were managing processes independently with weak digital support, often relying on basic tools like Excel. This fragmented approach created inefficiencies, compliance risks, and limited visibility across port operations.

To address these challenges and comply with waterway regulations and RIS requirements, the authority needed a comprehensive Port Information System (KIR) that could centralise operational workflows, standardise data exchange with national services, and embed statutory reporting capabilities.



Understanding the critical requirements

To fully understand the complex operational needs of inland ports, the Zenitech team worked closely with the tender documentation and a dedicated port boss during the discovery phase. This collaboration revealed the intricate workflows spanning vessel and vehicle entry-exit procedures, berth planning, port logging, cargo handling, and OSAP reporting requirements.

The discovery process mapped operational requirements to necessary KIR services, ensuring comprehensive coverage of end-to-end workflows. This analysis identified the diverse user base including vessel operators, port operators, terminal operators, gate staff, truck drivers, and KIR operator staff, each requiring role-specific capabilities and interfaces.

Zenitech recommended building an integrated system that would unify these disparate processes while maintaining compliance with evolving national systems and RIS COMEX standards for standardised messaging.



The creation of the KIR platform

The solution became a comprehensive integrated Port Information System (KIR) built on a robust technical foundation. The system provides a unified platform for managing vessel arrival notifications (BERMAN, AIS ETA/RTA), berth planning, cargo logging, statutory OSAP 1857 reporting, and road vehicle access and routing within ports.

KIR enables users to process electronic arrival and departure reports, manage job scheduling and berth calendars, record waterborne cargo operations, and generate required regulatory reports. The system also handles complex vehicle and rail cargo management while maintaining comprehensive port logs and providing fee support capabilities.

The platform integrates with multiple external systems including PannonRIS IF/VTS, HIR ship registry, Active Directory authentication, license-plate recognition systems, and large display units for routing information.

Technology Highlights:

- .NET-based server architecture with MSSQL database
- RESTful WebAPI over HTTPS for secure data exchange
- Browser-based frontend with responsive design
- Native mobile applications for Android (6.0+) and iOS (11+)
- Integration with license-plate recognition and large display systems
- Complex external system integrations (PannonRIS, HIR, Active Directory)
- Comprehensive audit logging and non-repudiation capabilities
- Development tools included Microsoft Visual Studio and Azure DevOps



KIR in Action

The KIR solution is enabling the port authority to realise the full potential of their inland waterway infrastructure. By providing a unified platform for all port operations, the system has eliminated the fragmented manual processes that previously hindered efficiency and compliance.

The digital transformation has centralised operational workflows and standardised data exchange with national services, ensuring consistent compliance across all ports using the unified system architecture.

The successful delivery was achieved through iterative releases, comprehensive testing phases, and close collaboration with stakeholders throughout the 18-month development cycle.



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