

LEONARDO CYBER & SECURITY SOLUTIONS

MARITIME4FUTURE SUITE





Ports are strategic assets for a territory and for an entire nation. The movement of goods and passengers is constantly increasing and over 90% of traffic takes place by sea, so attracting goods (and passengers) and increasing the receptivity of a port means creating value for operators, companies and cities. Nevertheless, to do this, the port of tomorrow must have three main characteristics: be efficient, secure and sustainable.

Artificial intelligence, advanced analytics, 5G, process digitalization, automation, cyber protection are the key technological drivers to support this new model and guarantee reliability, business improvement and decarbonisation of the future hubs.

COMPLETE SOLUTIONS

Leonardo, as technological leader, systems integrator and with a great experience in transport and logistics at national and international level has developed an ecosystem of solutions for digitalization, automation, communications, physical and cyber security and global monitoring. Advanced systems and platforms integrating new technologies such as AI and 5G, that aim to support this direction of development by creating value and synergy between these three needs.

Our innovative solutions enable us to:

- Propose the right technologies for the specific needs of the context
- Offer resilient, interoperable platforms to improved port KPIs
- Simplifying stakeholder communication and cooperation
- Making Cyber and physical security an added value instead of a bottleneck to improve port reliability
- Safeguard the investments already done integrating external systems and exploiting their data.

Leonardo offers a very wide solutions portfolio in this domain, covering all the different needs of the port community:

- Advanced gate automation for access control and operation management
- Integrated physical security to protect perimeters, areas, building, people
- Video and audio analysis based on AI
- Processes digitalization with implementation of port community systems and supply of vertical solutions for ferry and roro terminal management
- SCADA for plants and building and energy monitoring platform
- Land mobile radio with narrowband critical communications solutions and new broadband frontiers for LTE, 5G
- Cyber protection and resilience.

BENEFITS

Leonardo solution can provide significant advantages for ports and terminals:

- Significant improvements in port efficiency, increasing the just-in-time information and automating procedures.
- Synergic integration of port security with operational processes to improve reliability and effectiveness of port monitoring and controls
- Improvement in cooperation between all the community operators with "one stop shopping" platforms and video/data/messages communication interoperability.
- Exploiting and valorization of data for situational awareness, trend, prevention, prediction related to port activities and security
- Safeguarding of technological investments, energy saving and optimization, enhancing of traffic flow to a better sustainability and the realization of a green port.

Leonardo security platforms are designed to provide a common operational picture for Command & Control, security management, situation awareness and resilience, creating a handling center for port and terminals safety and security.

Leonardo can provide an integrated control centre solution where security authorities can easily supervise the infrastructure, quickly assess, and proactively respond to an alert, with a high level of cooperation between all the involved entities.

Security and Monitoring platform

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| SC2 | A very flexible, scalable and reliable solution to manage security with an high level of configurability. The solution allows complete situational awareness with all info, resources and alarms actionable on a geo-localized map. Heterogeneous systems of can be integrated (safety, security, drones, etc.). Operational communications are supported with geolocated radio and web apps. |
| ViGate | For port and terminals entrances and exits, Leonardo can supply ViGATE solution , a Gate Automation System specifically designed and built for ports and critical infrastructures. ViGate platform provides all the necessary modules for access control of pedestrian, vehicles, trucks and trains. |



GLOBAL MONITORING

Taking advantage of the integration of in-house developed systems with “best-of-breed” technologies, our Integrated Control Center has been designed specifically to address high-grade requirements of performance and security in port environment leveraging technology to multiply operators’ effectiveness, improving efficiency. Exploiting artificial intelligence and heterogeneous systems integration Leonardo global monitoring solutions provide superior situational awareness, complete coordination and control of operations in the management of day by day operational status, activity trend and emergencies.

Global monitoring platforms

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| Ganimede | The Leonardo solution for the audio and video analysis based on AI, instantiable through different frameworks on different HW platforms and applicable on live or recorded streams. Leonardo Artificial Intelligence Labs can develop and train customized solutions. Natively integrated in SC2 or X-2030 platforms, Ganimede provides a set of API for applications in third party systems. |
| X-2030 | <p>X2030 is the new “System of systems” implementing a new “Data & Experience-Centric Operating Model”.</p> <ul style="list-style-type: none"> • Integration of all existing systems and applications. • Collection of information from structured (data bases, archives) and not structured (video, sensors, media) data sources. • Supply of information superiority to operators for effective event monitoring/surveillance/management, also providing operational suggestions. • Optimize logistics and resource management. <p>If “Data is the new oil”, x2030 is the innovative solution tailorable according to the specific domain to support infrastructure operation and events management.</p> |

The trend towards increasing scale of operations is affecting ports worldwide. Efficiency, safety and security has a core element in the communication system that becomes critical to ensure operations and reliability.

Leonardo develops integrated and interoperable cutting-edge telecommunication solutions guaranteeing reliability, security and coordination of all the operations and bodies in this complex scenario.

Leonardo acts as both a technology provider (TETRA, DMR, Broadband Applications, hybrid networks) and system integrator in order to provide turnkey business critical infrastructures.

Critical Communications

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| LTE/5G | LTE infrastructures support data intensive applications. Leonardo has a system integration approach providing third party infrastructure to supply extensive coverage, integration of commercial networks, hot spots (with tactical system or network-in-a-box configuration). |
| TETRA | Adaptanet® is a complete modular, scalable and flexible family of TETRA products, satisfying requirements ranging from single-site to national networks. The system supports technology enhancements with full IP communications, and is complemented by terminals dispatching solutions and service applications. |
| DMR | ECOS DMR solutions are characterized by a high degree of scalability and flexibility that allows selecting the most suitable configuration for Customer's requirements. The same radio base station can operate in DMR Tier II , with simulcast option and dynamic analogue FM , or DMR Tier III in simulcast or cellular configuration. |
| Hybrid networks | Leonardo RIM (Italian acronym for multi-technology hybrid network) is a solution designed for long lasting integrated narrowband-broadband infrastructure supporting professional network evolution. The RIM core network provides coordination and control functions for the integrated network and core network services for TETRA, DMR and MCX components. |
| Push-To-Talk over cellular | Push to talk over cellular is the way to provide professional services over broadband networks. Leonardo CSP MCX platform is a complete solution fully compliant with 3GPP standards enabling mission critical communications over LTE and 5G. Designed to take advantage of broadband mission critical enhancement, MCX can also be deployed as an OTT (Over-the-top) application on an existing commercial network and provides an fully featured android client and a web based dispatcher. |



Energy consumption is an important factor in port operations and port related economic activities and, with energy costs increasing for land-based industries as well, port authorities and terminal operators are looking for ways to reduce their fuel bills. Systems control and consumption monitoring is important to reach emission control target as well as increase effectiveness, safety and efficiency of operations: Leonardo platform and solutions can support these key tasks in port management.

Supervision control and automation platforms

VBrain

A software suite to monitor, manage and control the automation and security systems of buildings, critical infrastructures and heterogeneous and spatially distributed networks. Featuring the characteristics of a powerful SCADA platform, VBrain provides real-time monitoring and control of operations, networks and facilities, ensuring cost effectiveness and timesaving for maintenance and management processes, also preventing system failures, as well as ensure business continuity.

EMODS

ENERGY MONITORING & OPTIMIZATION FOR DECISION SUPPORT is an enterprise system supporting consumption assessment, energy efficiency intervention as well as consumption monitoring and management of buildings and plants.



The complex port ecosystem encompasses a large number of players, which entails heightened coordination effort for all. Digitalization can reduce complexity and connect all relevant players, thus increasing transparency through information exchange. Digitalizing the port ecosystem provides tangible value added for all participants.

Digitalization platforms

Port Community System (PCS)

A **PCS** plays a major role for port processes digitalization to move towards a single point of contact for port users. Leonardo is able to design and build info-telematic platforms to implement the secure interchange of electronic messages, alerts notification and Just-in-time information to all the involved operators. The Leonardo team of experts evaluates the port requirements and, according to the specific needs, customizes the solution to optimize processes and digitalize any procedure.

Ferry and RORO Operating Platform

Slimferry is the solution for Ferry Terminal, passengers and RORO (Roll On-Roll Off) for the optimization of vehicle/pedestrian access procedures to the terminal, the management of multi-company check-in and support for port security controls.



Ports and facilities are becoming increasingly complex and dependent on the extensive use of information and communications technologies (ICT) at all stages. Some of this technology is embedded in the fixed and mobile assets used to operate the port; other elements may be remotely located.

Failure to address security risks could lead to serious injury or fatality, disruption or damage to port systems, loss of use of buildings, impact upon business operations, reputational damage, loss of revenue, financial penalties or litigation. Port owners, operators and port facility occupiers need to understand cyber security and promote awareness of this subject to their stakeholders. It is essential that cyber security be considered as part of a holistic approach for the whole infrastructure. Leonardo can help ports to make changes to their cybersecurity posture and develop stronger, risk-based cybersecurity approaches through a wide offer portfolio.

| Cyber Solutions | |
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| Cyber resilience & Consulting services | Leonardo consulting services are focused on supporting organizations in: governance management, definition of procedures, compliance with standards and regulations, penetration tests and risks management, vulnerability analysis, assets management. |
| Design and build services | Design & Build services are based on a proprietary approach and an established process for designing and building security management infrastructures (SOC, CERT, IOC). |
| Managed security services | Our Security Operation Centers (SOCs) provide a flexible and comprehensive set of management and monitoring services that can be quickly tailored around an organisations' specific needs. |
| Cyber security platforms | Leonardo services (as well as Leonardo projects) take advantage of in house designed platforms helping security operators in their task: <ul style="list-style-type: none"> • Cyber information superiority suite composed by a combination of platforms providing threat intelligence, end point protection and malware analysis is based upon Information Superiority concepts applied to the cyber domain to obtain valuable and actionable information, which can be used to rapidly implement targeted defence and containment actions • Cyber Situational Awareness system is a complete ecosystem specifically designed to keep an organisation's security teams and executive profiles informed of what is happening in terms of Cyber security supporting decision making and security investigation processes. |

CYBER TRAINING

Cyber threats are constantly evolving and becoming more and more pervasive and sophisticated; this is determining the need of a diffused awareness on cyber security among end user population and the necessity of constant training and exercise for cyber security specialists.

Leonardo can support his Customers with both a cyber-training offer and platforms leveraging innovative technologies and learning methodologies.

| Cyber Training | |
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| Cyber & Security Academy | An innovative facility in to promote cyber security awareness increase competencies by means of a complete training portfolio delivered by expert trainers leveraging advanced platforms for hands on exercises. |
| Cyber Trainer | Cloud-based platform to train and keep up to date both security professionals and non-expert users. Managing the whole training process (training needs, formal learning, exercises, certification) |
| Cyber Range | Integrated environment for immersive realistic simulations of cyber attack/defense scenarios and advanced simulation operation to test cyber resilience of system and infrastructures. |



HIGHLIGHTS

Leonardo designs and deploys effective, secure and reliable solutions matching the challenging requirements of port and logistics sector.

Combining in house developed solutions with selected third party products we support our Customers in protection, security, communications, control and automation addressing the whole solution. The Leonardo long experience in the port and maritime domain, the wide solutions portfolio and the leadership in technology and innovation are the elements on which our offer for a more efficient, safe and sustainable port of the future is built.

ABOUT CYBER AND SECURITY SOLUTIONS DIVISION

With experience in information technology, communications, automation, physical and cyber security, Leonardo Cyber and Security Solutions Division generates synergies by joining its expertise to support enterprises, agencies, public safety, security and emergency organizations. Our offer includes solutions for the security and protection of critical infrastructures, transport infrastructures, major events and stadia, cyber security, integrated networks systems and secure communications that enable reliable and efficient information management.



Secure Cloud & Digital



Global Monitoring



Mission Critical Communications



Cyber Security & Resilience

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