LEONARDO CYBER & SECURITY SOLUTIONS

CITIES4FUTURE SUITE

LEONARDO

Complexity is what characterizes our cities and poses a challenge to those who govern them. Multiple heterogeneous domains have to be taken into account, each of which entails needs that being a function of the territory, are often characterized by interrelations and mutual dependencies that can trigger dangerous domino effects with serious consequences in case of problems.

This requires the cooperation among all the stakeholders who act on the same territory in order to identify the best strategies for its government and managerial bodies. Technology has always played an important role in improving the governance of cities and many of the important sectors are strongly oriented towards digitalization and are already managed by applications and technological solutions.

Integration between these sectors is an important step in building efficient governance.

The overcoming of the concept of independent silo (each domain has its sensors, its data and its applications) leads to a significant improvement of the process that transforms the data into information.

The pooling of information allows the improvement of planning activities, the optimal management of daily and emergency situations and the construction of a complete situational awareness, which is essential to support decision making process.

Integration and sharing is directly linked to cybersecurity. The increase in digitalization increases the frontier of cyber-attack and this must be considered in the design of new systems.

Leonardo has developed a range of technology capabilities to effectively support city administrations in such complex scenarios and provide them with cyber protected, secure by design solutions able to enhance safety, security for citizen and communities and enhance effectiveness of city management. the core of city management solutions is situational awareness platform built according to system-of-system paradigm that, interacting with all existing subsystems, allows to supervise and govern all vital processes (traffic, public transport, energy, safety and security,...) and increase effectiveness and resiliency.

BENEFITS

- Multidisciplinary approach able to take advantage of experiences indifferent key sector for city government

- Vertical solutions availability and possibility to integrate with third party systems

- Strong technological capabilities for the delivery of complex heterogeneous systems.

- Solutions able to address both the strategical planning and the management of events and situations

- Proven cyber security experience for the design and deployment of secure and resilient solutions.

Every day, people and community face potential threats to their own safety and security. Safety and security enforcement require constant awareness of what is happening in the region. Security patrols, surveillance and timely intervention increase the effectiveness of operations and build confidence in Urban Police Forces.

The company's offering fully address these requirements, by means of solutions ranging from sensors, such as plate readers, to coordination and control, situation awareness and intelligence systems.

Physical security solutions	
ANPR	Leonardo product family of ANPR systems includes fixed covert (embedded in street lamps, barrels, speed trailers) and mobile sensors to enforce security or to control access in restricted areas.
Surveillance and Analytics	The company provides systems to manage and control different real-time video technologies. Each video stream can be instantly replayed and recorded for later investigation purposes. Video streams (as well as audio streams) can be processed by company artificial intelligence based video and audio analysis system named Ganimede for enhanced detection of dangerous or abnormal situations. Video surveillance and analysis systems are integrated in company PSIM SC-2 and in coordination and control platform X-2030.
Situational awareness	Data generated by sensors and analytics are collected by Leonardo platforms that provide security operators with tools to enforce situational awareness and perform sophisticated event management.

Mobility and mass transit are amongst the most complex challenges that modern society faces. There is a growing need to balance the increasing propensity for movement with the search for a reduction in the impact on environmental and natural resources.

Digitalization of transport, safety of vehicles and infrastructures, improvement of services are the pillars of the innovative framework **MATRICS (MAss TRansIt Complete Solution)**, the complete Leonardo ecosystem for buses, metro and trains.

MATRICS mobility ecosystem	
MATRICS–AVM	Open, modular and innovative platform, is the ideal solution for center operators and staff to ensure functionality oriented to new service flexibility trends, Mobility on Demand, Safety and Security
MATRICS–eNOBU	Advanced, intelligent, all-in-one on-board unit, standardized for the different modes of transport, which incorporates the most modern technologies (**5G, AI, ITxPT, V2X**) and guarantees the ability to manage the entire on-board ecosystem
MATRICS-MMS	Integrated platform that acts as the brain of the entire transport and mobility system. The fundamental mobility management platform for achieving system-level optimization and transforming data integrated into information that planners can use to better manage transportation systems and the movement of people and goods.
MATRICS–GRS	SCADA application for monitoring, control and automation of all systems and electrical and mechanical systems of the entire transport infrastructure in the railway/metropolitan area. The platform, which supports **S.I.L. (Security Integrity Level)** of the plants is completed by systems for the maintenance and training of resources, guaranteeing a complete, versatile and reliable environment.

The communication networks that connect sensors, systems, people, machines are a fundamental building block of the smart city. The increasing proliferation of broadband capability worldwide is driving the need for mobile enhanced data systems to be used jointly with already installed professional radio networks.

The modern city is based on a new communication concept that combines the traditional, separate communication infrastructures – from sensor networks to information networks and mobile communication

Communications for Cities	
LTE/5G	**LTE infrastructures** support data intensive Law Enforcement 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	The **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 <u>DMR Tier II</u>, with simulcast option and dynamic <u>analogue FM</u>, or <u>DMR Tier III</u> in simulcast or cellular configuration.
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 <u>compliant with 3GPP</u> standards enabling mission critical communications <u>over LTE and 5G</u>. 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.

Urban areas consume 60–80% of the world's energy. In an urban context, buildings are the largest energy consumers. These amenities (considering construction and energy usage) are responsible for approximately three-quarters of total greenhouse-gas emissions in urban areas. Leonardo provides platform for monitoring and optimizing energy consumptions.

Solutions for Energy	
EMODS	ENERGY MONITORING & OPTIMIZATION FOR DECISION SUPPORT is an enterprise system also operating in cloud to reduce consumptions controlling and managing the energy process also allowing to identify interventions to reduce consumptions and energy bills.
GRS	Is a SCADA application for supervision, automation and control of infrastructures, plants and buildings that can be used for transport, energy and utilities and critical infrastructures.

SMART ENVIRONMENT

70% of the world's GHG emissions are generated by cities. GHG emissions come from three major sources in cities: buildings, transportation, and waste. The biggest cause of water waste in many cities is leakage.
Our platform for monitoring of the territory integrating heterogeneous information sources and adopting forecasting algorithms:
• multi-risk management with integration and processing of environmental data
• analysis of heterogeneous information for decision support
• prediction through deterministic and statistical models applied to big data
• automatic alarm generation (early warning)
• warning and emergency communication from central system to handheld devices
• advanced reporting.

CONTROL CENTER PLATFORM

The capability of integrating different vertical systems facilitates the use of the same information for different purposes and therefore allows to optimize investments and interventions in the city.
Leonardo has designed a new model of control room system based on C5I concept (Command, Control, Communications, Computers, Cyber & Intelligence) and system of systems paradigm.

This platform integrates operational procedures, decision support processes, radio communications and leverages technologies for a superior situational awareness and informed decision making. Designed to integrate existing systems (traffic, environment, energy, security, …), it provides

an innovative user interface based on virtual assistant and natural language understanding and allows:
• intelligent, informed and coordinated activities of all the city managers and operators.
• operations management in case of emergency and crisis due to security threats or environmental disasters.
• surveillance and control of the city and its surroundings
• monitoring of environmental status of territory and infrastructures
• available information and efficiency of public services for citizens
• planning, prevention, protection, Management & Recovery due to the high level of IoT and systems integration, Deep Learning and Big Data techniques.

Cyber threats have been on the rise for years, but the last few years have seen an explosion in cyberattacks that target both data and physical assets. Due to the increase of interconnections among different sectors, cyberattacks and vulnerabilities in one area can have a cascading effect on numerous other areas. The consequences could be data loss, financial impact, but also disruption of crucial city services and infrastructure.

Leonardo provides a portfolio of services and solutions to identify, prevent, detect and respond to cyber-attacks that could affect our customers, offering a holistic approach to Cyber Security according to the NIST framework

Cyber security solutions	
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 • **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 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. because of the wide diffusion of ICT technologies in vital processes the law enforcement sector is feeling these needs as any other technologically advanced organization

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

Cyber Training	
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

The objective of a City Administration is often summarized in the concept of "quality of life" that Goethe concept of security to include all services citizen daily use that need to work best and meet expectations.

Leonardo can design and deploy secure and reliable solutions matching the challenging requirements of city administration addressing key citizen lives aspects such as safety, interaction with the "administrative machine", the orderly unfolding of activities (traffic, trade, public transport, etc.); ultimately "the quality of life in the Urban Ecosystem.

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

2023 © Leonardo S.p.a.

MM09147 04-23

LEONARDO