

# TURMS

ELECTRONICS DIVISION

## Tank Universal Reconfigurable Modular System



 **LEONARDO**

# TURMS

TURMS is a completely digital system, designed in compliance with the most modern NVGA architecture that puts it at the forefront in the production of suites dedicated to the multiple vehicle platforms existing on the market.

TURMS is latest and the most advanced architecture designed on the basis of this experience. Leonardo has developed custom vehicle architectures and a complete range of system solutions and services in the field of terrestrial applications. Our product offering incorporates the latest technologies in the fields of optics, mechatronics and mission computer (HW&SW).

Key technologies in optronics, mechatronics and ballistic algorithms are modular, scalable and based on common core elements. They allow future systems growth and tailored levels of capability, whilst maintaining commonality of parts and a reduced logistics footprint. The great versatility of the architecture of our systems and the strong integration make our suite of solutions, spendable both on the market of new platforms and convenient as upgrades of existing platforms, thus able to achieve performance standards equal to the most modern current platforms both on wheels and tracked.

Although the asymmetric threat will simultaneously be fought on many fronts, our modular design of the highly reconfigurable system (TURMS) is able to meet customer requirements and integrate with existing functionalities on a wide variety of AFV and MBT.

However, fire power remains the main factor for MBTs and AFVs. The TURMS FCS family is the best answer to this requirement, giving the best results in:

- Rapid deployment on the battlefield
- Fire function in motion
- Day and night operations
- Short reaction time.

# APPLICATION

Leonardo offers customised support packages that are tailored to the specific needs and requirements of customers and their platforms. With more than 40 years of experience in terrestrial applications, Leonardo has designed and integrated Gunner Sights, Panoramic Sights, complete fire control systems and world-class upgrade and modernization solutions tailored for various platforms, such as the MBT (such as former tanks of the Soviet T-Soviet, Italian AFV Centauro and Ariete MBT, M60, M48s and others), armored vehicles (multi-role): VBCI, VBM Freccia, Lince, BMP2, BMP1, etc

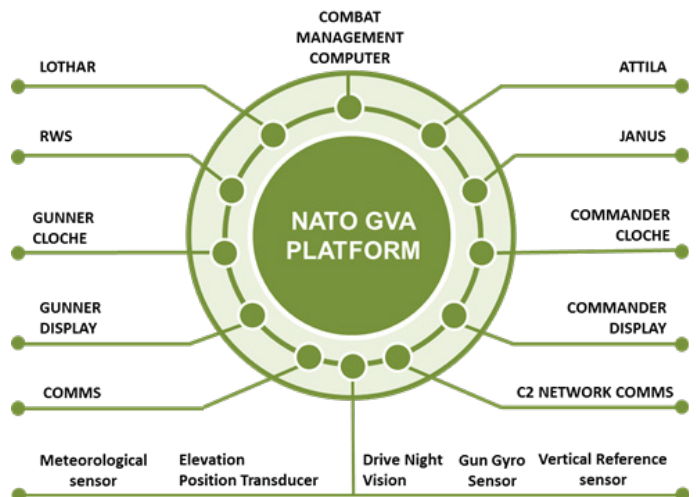
# MAIN FEATURES

## TURMS ISTAR SYSTEM

- Local and total situational awareness
- Capacity ISTAR (Intelligence, Surveillance, Target Acquisition, Reconnaissance)
- Ability of ISTAR on the move
- All weather conditions day and night operating functionality
- Wide range of sensors installed as thermo-camera (LWIR, MWIR), TV and laser (RangeFinder, Designator, Pointer, Illuminator)
- Complete interface set C4I oriented

## TURMS DIGITAL FIRE CONTROL SYSTEM

- Increased first hit probability, provided by the new FCS Sight, Sensors and Ballistic calculation algorithms
- Increased armour penetration
- Increased range of effectiveness
- Shooting on the move, against standing or moving target
- Multi-Weapon engage against different target
- Increased range of threats detection, recognition and identification, thanks to the latest Day and Night 3rd Generation Thermal mager sensors together with Image Enhancement and video processing
- Hunter/Killer Capability
- Reduced reaction time on engagement, thanks to Video Tracking for aiming and shooting assistance and more persistency in the firing window
- Increased systems Robustness provided by the Gunner and Commander interchangeability for the main Gun
- Multi-Weapon against different target engage
- Capability to manage and interface a wide typology of weapon: from 12.7mm calibre use on RWS at 20mm up to 30mm for medium turret at the 105 or 120mm for heavy turret



# SYSTEM CHARACTERISTICS

## MODULAR, SCALABLE-OPEN ARCHITECTURE AND CONFIGURATION

- Flexible for specific needs
- Oriented to future sensor technology
- Open to future needs: fusion of advanced sensors and sensors
- Fully digital system.
- Sensor interchangeability
- Mechanical adaptation

## SYSTEM ROBUSTNESS

Interchangeability of gunner and commander roles, which can both control and fire from the two different sights as an emergency solution.

## INCREASED PROBABILITY OF FIRST IMPACT

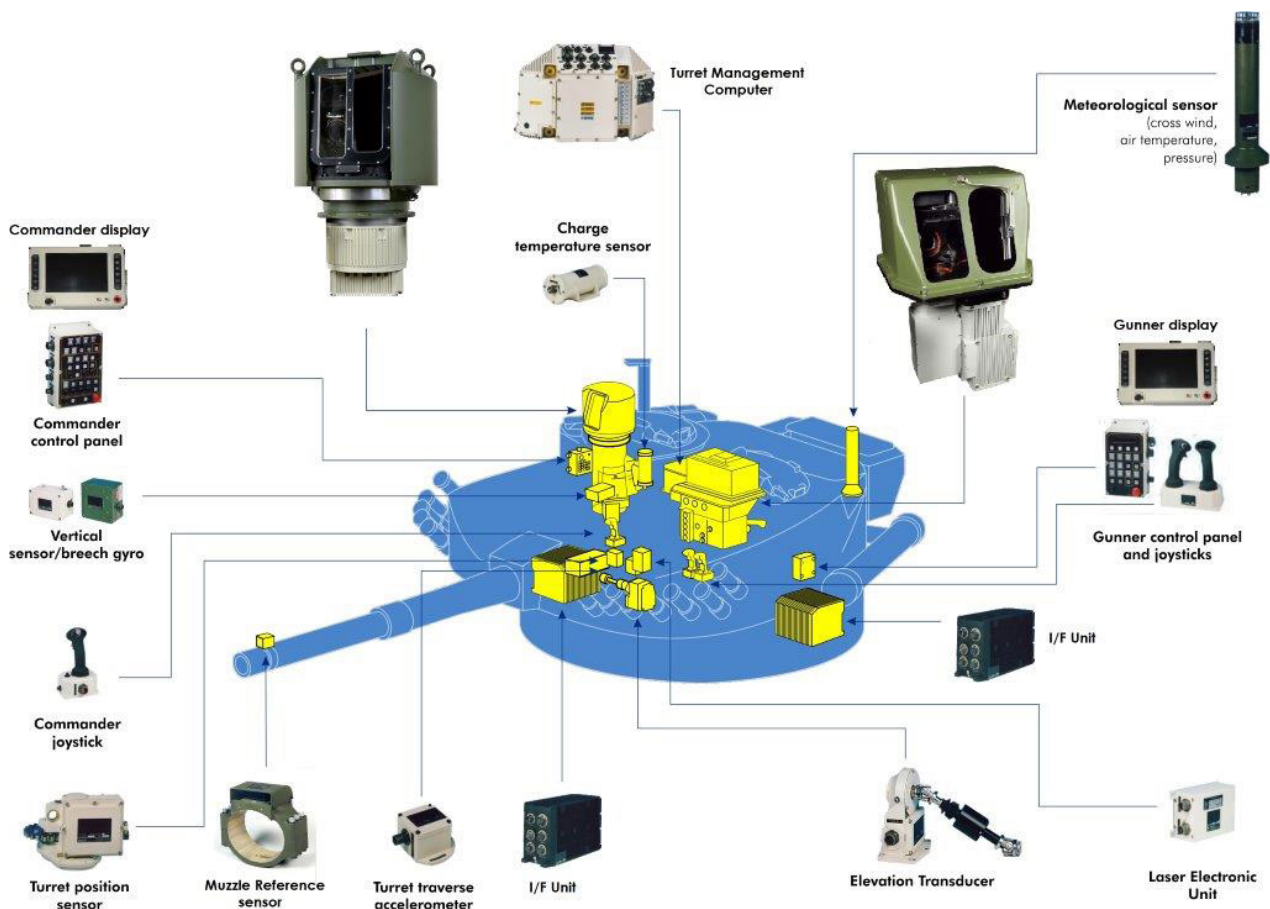
This performance is increased by the new and more sophisticated FCS digital instruments, sensors, transducers and ballistic calculation algorithms processed in real time by the on-board computer.

## VERY SHORT REACTION TIME

- The primary stabilized panoramic commander sight allows the gunner to quickly locate the target and the automatic designation
- Possibility of engaging a second target with the sight commander during the tracking of the first by the gunner
- Immediate firing by the commander in case of very close targets.

## HUNTER-KILLING FUNCTIONALITY

- The commander uses the dedicated panoramic sight with Hunter-Killing's ability to control the scenario in order to find a dangerous target.
- The commander can, by his designation command, place the LoF in the same position as the viewfinder LoS and at the same time, the gunner is aiming at the target.
- The gunner man can fire and, similarly, the commander can start again for the panoramic ability to kill hunters.





## FULLY AUTOMATIC CALCULATION

- The laser rangefinder, the meteo and attitude ballistic sensor and a state of-the-art ballistic computer allow a very accurate calculation of the ballistic solution.
- Special algorithms enable fire when the probability of hitting the target is maximum, taking into account the movement of your vehicle and the target, and compensating for the effects due to time delays and non-linearities in the artillery.

## SIMPLE SYSTEM OPERATION

Fully automatic calculation and high performance stabilization reduce training difficulties.

## NETWORKING

- Integrated system thanks to the internal digital data bus and the digital video bus
- All devices are networked
- Complete sharing of information within the vehicle
- Integration in the external environment of battlespace C4I
- Easy to assemble and simplified maintenance thanks to the bus structure
- Low weight, low energy consumption, small size.

## SYSTEM COMPOSITION

- Observation unit (COMMANDER SIGHT)
- Aim and shoot units (GUNNER SIGHT)
- Remote weapon station (Commander / Gunner)
- Ballistic computer
- Meteorological sensor
- Gun Gyro and Vertical Reference sensors.
- Elevation Transducer
- Ancillary elements

## TECHNOLOGICAL ADVANTAGES

- Simplified mechanical interface to the platform: no need for greater turret processing
- Cutting-edge technology - proven field
- Cutting-edge sensor technology: increasing the operating distance of the system
- Easy to use interface: few hours of training allow you to achieve optimal results even for an inexperienced operator
- Stabilized line of sight
- Stabilized line of fire
- Latest generation IR viewfinder: high performance night fire capacity
- Measurement laser
- All devices are designed, developed and produced internally
- All technology is internally owned.
- ITAR free



Janus



Attila



Lothar

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