



TLVS

TAKTISCHES LUFTVERTEIDIGUNGSSYSTEM



TLVS is a highly mobile ground-based air and missile defence system for protection against the current and future threat spectrum in the lower tier. TLVS is based on the technology and development results of the trinational MEADS air and missile defence system (US, Germany, Italy). The development of this latest generation air defence system was proven by the system demonstration in 2014.

TLVS will be employed in the context of national and collective defence as well as for the protection of deployed troops, facilities and areas against all kinds of aerial threats including the interception of the latest generation of ballistic missiles. The individual components of the system are mounted on protected vehicles, offering high tactical mobility for the protection of mobile land forces. The TLVS weapon system can be relocated with any national mode of transport.

The sensor package of the TLVS system consists of four sensors:

- A state-of-the-art long-range radar, as a search and surveillance sensor with an active phased-array antenna with digital beam forming for the detection of very small targets within 360° and depiction of the local air picture. The long-range radar is optimized to detect future airborne threats, including ballistic missiles, cruise missiles, manned and unmanned aerial vehicles, and helicopters. A multifunction fire control radar (MFCR) detects and tracks targets within 360°, and also classifies, discriminates and identifies targets down to the platform level. The phased-array antenna of the MFCR also guides the PAC-3 MSE missiles to their targets. At that point, the seeker head of the missile locks onto the target and the guided missile destroys the target with a direct hit.

- As part of the resource-optimised approach, TLVS will include a medium range sensor which can be used specifically as a search and fire-control system in connection with the IRIS-T SL missile. All three radar sensors are also equipped with a state-of-the-art Mode 5/Mode S capable IFF device.
- The integration of an optronic sensor adds a visual identification capability to the TLVS sensor mix. This sensor is used specifically for maintaining combat capability under electronic warfare conditions. TLVS can also initiate an engagement using external target tracking data. This enables the direct system use of remote allied reconnaissance resources.
- The Mission Command and Control, Communications, Computing Intelligence System (MC4IS) Battle Manager is the controlling hub of the network-based TLVS system. All of the weapon system functionalities are managed in the TLVS Battle Manager, to include target engagement, mission planning and support, as well as capabilities for system support/administration and training. Uniform Battle Manager software is used at all command levels for this purpose. Due to the capabilities and functionalities of this Battle Manager software and the integrated standardised interfaces for data exchange with allies and partners, the TLVS Battle Manager enables the German Armed Forces to assume operational responsibility as the lead NATO framework nation. TLVS has an autonomous communication system which forms the backbone of its flexible, networked and extendable weapon system architecture, combining short- and long-range communication with state-of-the-art IT security mechanisms and secured network gateways.

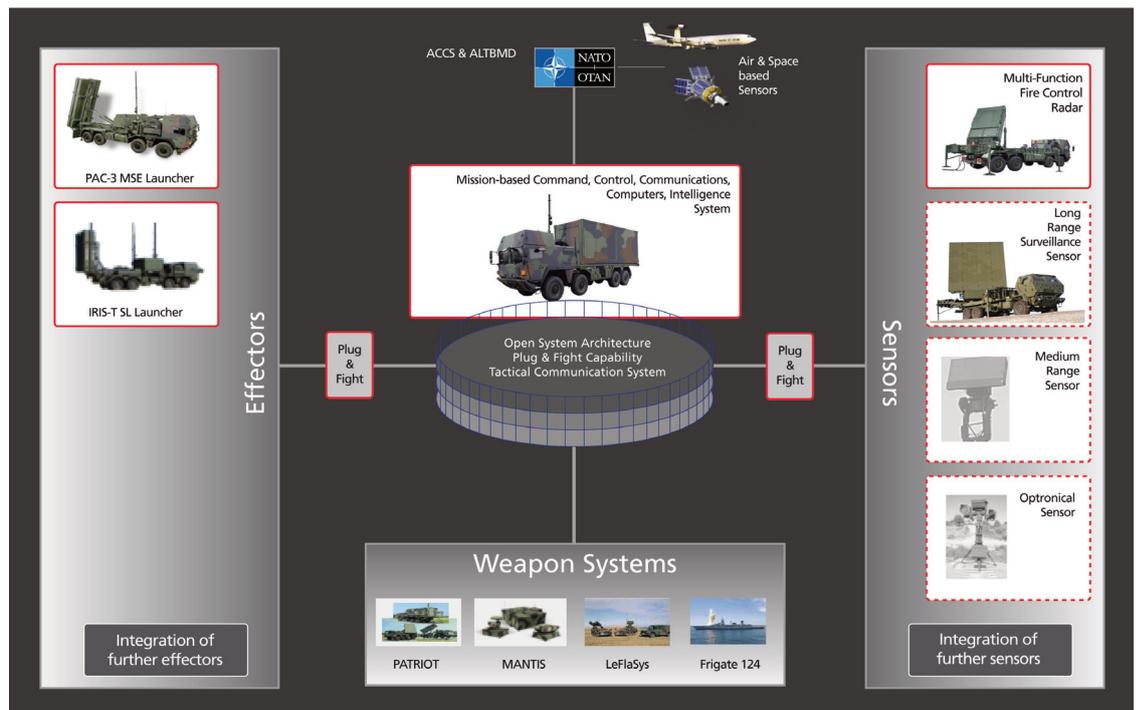
GROUND BASED AIR DEFENCE

360° Medium Range Radar	360° Surveillance Radar	360° Fire Control MFCR	Battle Manager MC4IS TOC	PAC-3 MSE Launcher & PAC-3 MSE Missile	IRIS-T SL Launcher & IRIS-T SL Missile
					
<ul style="list-style-type: none"> - 360° Surveillance and Fire Control for IRIS-T SL - State-of-the-art Technology - Rotating and staring Mode - Most modern Friend/Foe Identification - Plug & Fight 	<ul style="list-style-type: none"> - 360° Surveillance and Cueing - State-of-the-art Technology - Rotating and staring Mode - Most modern Friend/Foe Identification - Plug & Fight 	<ul style="list-style-type: none"> - 360° Engagements against all Threats - State-of-the-art Technology - Rotating and staring Mode - Most modern Friend/Foe Identification - Plug & Fight 	<ul style="list-style-type: none"> - Sustainable open System Architecture - Netted Distributed Software Capability - Plug & Fight - Interoperability with NATO Forces as well as to existing & future Systems 	<ul style="list-style-type: none"> - 360° Engagements - Plug & Fight - Loading: 8 ready to fire missiles - Full and partial Reload Capability 	<ul style="list-style-type: none"> - Hit-to-Kill Capability - RF-Seeker - In Production
					<ul style="list-style-type: none"> - 360° Engagements - Vertical Launch - Plug & Fight - Loading: 8 ready to fire missiles
					<ul style="list-style-type: none"> - Secondary Missile - Based on IRIS-T Air-to-Air missile - Improved Range - IR-Seeker - Datalink / LOAL

MEADS-based Items New TLVS Items

The TLVS's primary missile is the PAC-3 MSE (Missile Segment Enhancement). This effector is optimised for combatting ballistic missiles, and its direct hit capability (hit-to-kill technology) negates or minimises lethal effects on the ground that typically occur when weapons of mass destruction warheads are intercepted.

The missiles are mounted on mobile launchers, each of which has a platform system that accommodates eight palletised PAC-3 MSE. The launch command is sent from the battle manager to the launcher, firing the missile at an angle of 70 degrees.



Netted Command and Control functionalities providing 'tailored to the mission' capability

The IRIS-T SL guided missile is a secondary effector integrated into the TLVS. In general, any targets not requiring direct hit capability, fall within the effects spectrum of this missile. The IRIS-T SL and its launcher are produced by Diehl Defense. This gives the TLVS an effective, application-optimised effector mix.

The TLVS system is augmented by reloading vehicles, as well as vehicles for logistics system support, reconnaissance, passenger transport and recovery.

With its netted-distributed capability and open plug and fight interface, the TLVS is the first ever air defence system featuring a capability to react flexibly, based on the task force principle to changing threat situations with a use of force tailored to the mission.

System components

- Launcher with eight PAC-3 MSE missiles
- MC4IS-tactical operation centre
- 360° multifunction fire control radar
- Launcher with eight IRIS-T SL missiles
- Medium range radar 360°
- Surveillance radar 360°
- Optronic sensor