LS telcom
Smart Spectrum Solutions

Global Spectrum Experience

Enabling Electromagnetic Dominance

MANAGE, OBSERVE and DEFEND your Spectrum

System solutions for spectrum management and spectrum surveillance
Radio network and mission planning software
System integration and turnkey projects
Spectrum consulting and training

LS telcom is a Leading Solution Provider for Electromagnetic Spectrum Operations (EMSO) including

- **Spectrum management and planning**
- **Spectrum surveillance, direction finding and geolocation**
- **Radio network and mission planning**
- **Electronic Support Measures (ESM), Signal Intelligence (SIGINT)**
- **Electronic Counter Measures (ECM)**

We provide software- and hardware systems, system engineering and integration, consulting and training to enable armed forces to achieve dominance in electronic warfare across the electromagnetic spectrum.

Since its foundation in 1992, LS telcom has supported government and military organizations in more than 100 countries worldwide to take advantage of the radio spectrum as a strategic and operational asset.

We ensure to stay ahead of technology and in line with standards through our active cooperation with international organizations such as the
- Association of Old Crows (AOC),
- Armed Forces Communications and Electronics Association (AFCEA) and
- International Telecommunications Union (ITU).

We are certified according to
- ISO 9001 for improved customer satisfaction,
- ISO 14001 for holistic environmental management and
- ISO 27001 for effective information security.

With its headquarters in Germany, LS telcom operates worldwide, with subsidiaries and partners on all continents.
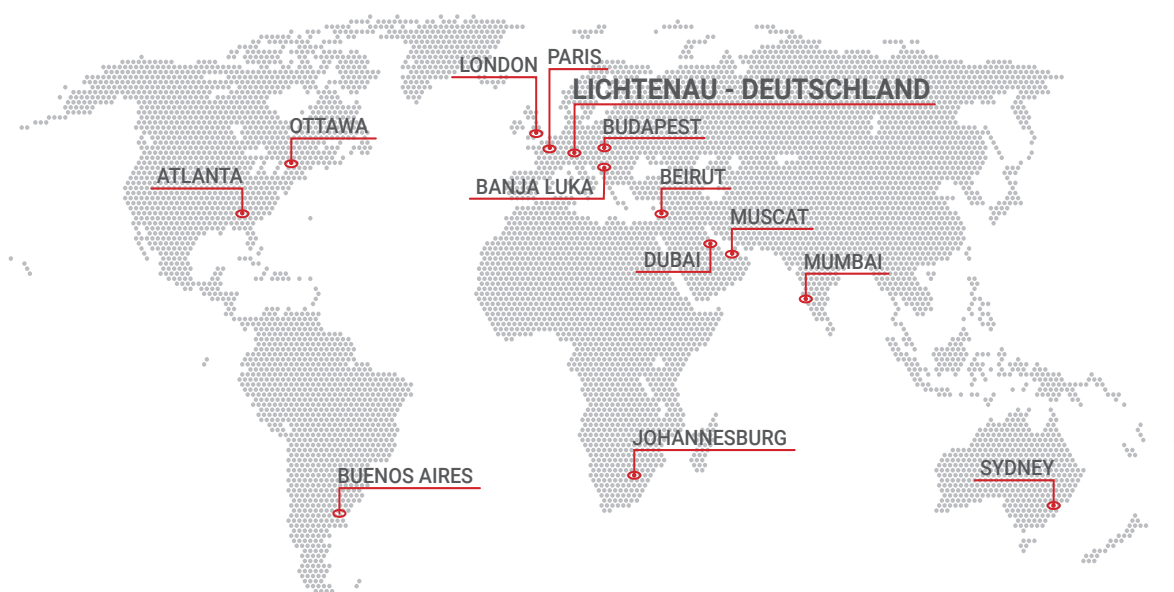
LS telcom subsidiaries and offices

Enabling Electromagnetic Dominance

Given the increasing complexity of the constantly evolving environment in Electromagnetic Spectrum Operations (EMSO), it is clear that EMSO demand a level of coordination and synchronization, which is impossible without specialized capabilities to support situational awareness, coordination and prioritization of actions across the electromagnetic environment.

LS telcom understands these unique requirements of the military and provides an integrated product portfolio enabling electromagnetic dominance across the radio spectrum - on the ground, in the air, and on water.

**PLAN & MANAGE
your Spectrum**

mySPECTRA
Integrated and automated spectrum management, radio network and mission planning

**OBSERVE & DEFEND
your Spectrum**

LS OBSERVER
Compact and flexible radio monitoring, direction finding and geolocation, and signal jamming

**Electromagnetic
Spectrum
Operations
(EMSO)**

**SPECTRUM CONSULTING
& TRAINING**

Analysis of spectrum demand, development of spectrum strategies, EW training and seminars

**SYSTEM INTEGRATION
& TURNKEY PROJECTS**

Sheltered EWOC and C4ISR systems, integration with third party systems

Our systems are based on nearly 30 years of experience and the most advanced software, hardware and information technology available. Systems are able to run in a networked client-server mode, on-site, in a cloud environment, or as a standalone solution. The sophisticated user access and profile management adheres to the highest security standards, respecting hierarchical structures and validation processes.

PLAN & MANAGE your Spectrum – mySPECTRA for Defense

Spectrum Management

mySPECTRA is LS telcom's flagship system for efficient and effective spectrum management. The system secures access to radio frequencies in a congested and contested electromagnetic environment to meet vital military tasks in different operations (combat, non-combat and peace support).

mySPECTRA follows a holistic approach addressing strategic, operational and tactical spectrum management tasks - also for joint and combined operations.

mySPECTRA supports integration of military staff, processes, data and information based on a central workflow management system, thereby ensuring informed decision-making.

Spectrum management command center

Key capabilities of mySPECTRA for Defense:

- Centralized data management and maintenance
- Spectrum planning
- Frequency supportability
- Equipment management
- Frequency assignment and coordination
- Host nation and international coordination
- Interference management
- Battlespace EW planning
- Spectrum sharing

Significant features of mySPECTRA for Defense:

Web-based	Workflow-driven	Integrated & automated
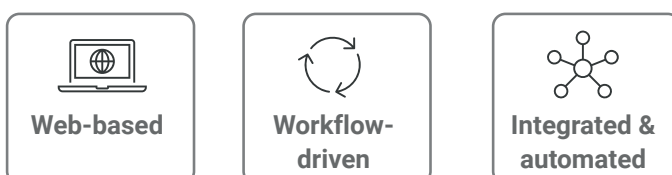
Interoperability is key in military spectrum management. It reduces duplication and enables armed forces to cooperate in an effective manner. mySPECTRA provides standard interfaces to exchange data with different stakeholders (e.g. NATO, ITU, government agencies) and third party systems (e.g. military command systems).

Radio Network and Mission Planning

Planning of radio communication networks

mySPECTRA offers comprehensive military network planning capabilities. Network design, coverage simulations, interference mitigation and frequency assignment is based on
- an ergonomic Graphical User Interface (GUI) ,
- a powerful Geographic Information System (GIS) and
- a library of dedicated propagation models.

To simplify the network planning process and increase the effectiveness, wizards are available to guide the soldiers and automate the network planning processes.
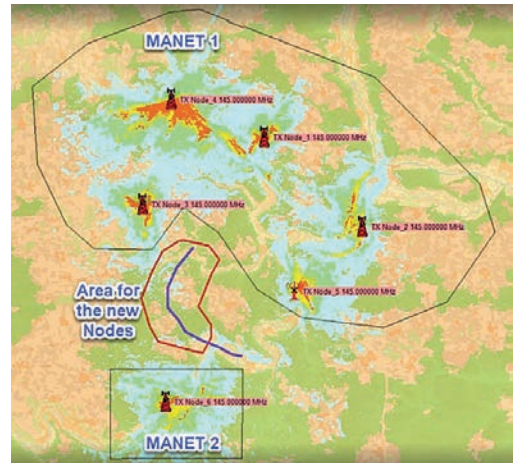
MANET network planning

On-the-move communication availability checks

mySPECTRA provides a communication availability check between dismounted units and headquarters. The integrated on-the-move link budget calculation enables communication planners to move sub-networks or individual stations to new locations and to visualize communication paths between headquarters or other units on the map.

Communication availability check

Mission planning

mySPECTRA provides flexible mission planning capabilities to achieve the desired objective. Different standard mission planning processes are supported by default.

To protect military convoys against attacks by RCIEDs along a planned route, mySPECTRA is able to optimize jammer power to close jammer coverage gaps and to avoid the convoy's detection.

Operational commanders can simulate electronic support measures, counter measures, and electronic protection.
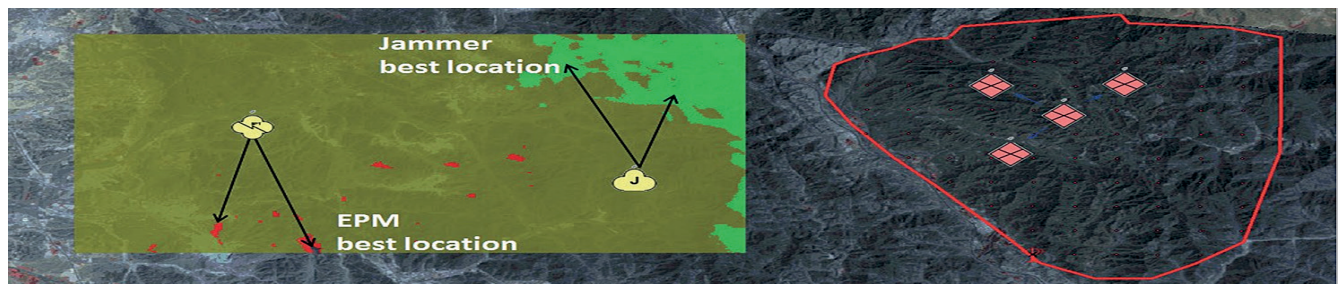
Mission planning display

Users can launch one-click calculations to define the best location for jammer or reconnaissance activities (*green area*) and/or to define the best location to protect receivers from hostile jammers (*red area*). Additional mission planning processes can be implemented upon demand.

# OBSERVE & DEFEND your Spectrum - LS OBSERVER

Spectrum Surveillance

LS OBSERVER is a radio monitoring, intelligent data collection and analysis system. It consists of the central monitoring software in addition to various types of remote monitoring units. The remote units continuously scan the electromagnetic environment 24/7 and record the spectrum usage data - in areas of responsibility (AOR), areas of operations (AOO) and areas of interest (AOI).

Various ruggedized remote monitoring & direction finding units are available as fixed, mobile, transportable, portable, and airborne configurations.

LS OBSERVER hardware

Fixed Monitoring Unit   *Transportable Monitoring Unit*   *Protected Portable Unit*   *Airborne Monitoring Unit*

The data captured by the remote receiver undergoes compression and is securely stored within the monitoring unit. The data stored can be accessed directly on the device or can be transmitted to the central command station. Advanced filter functionality allows the operator to quickly select the required subsets of data to be analyzed. The data recorded populates a theater specific operational spectrum database with real-time frequency channel occupancy, indispensable for the secure frequency allocation to the armed forces in the operational area.
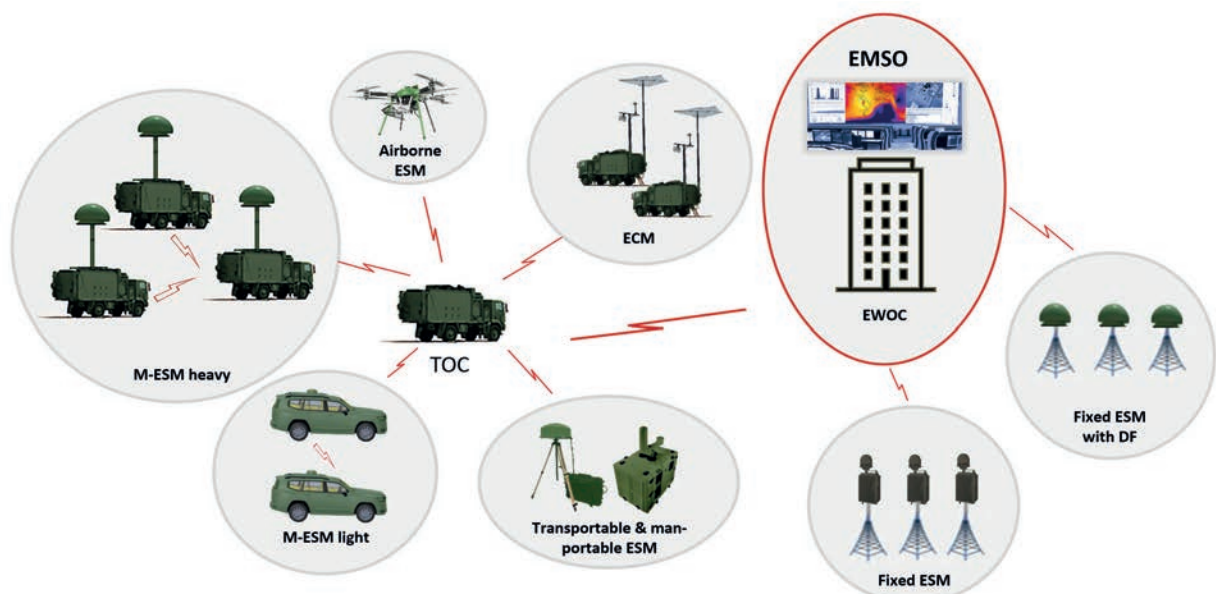


Exemplary EMSO and ESM/ECM solution

Measurements from the remote monitoring units assist military commanders in obtaining a detailed picture of common frequency occupancy and usage in the area of operations.

Spectrum Analysis

Military personnel uses LS OBSERVER's central monitoring software to analyze the recorded data and identify signals of interest and suspicious transmissions. This enables the recognition of immediate threats, aids in avoiding enemy interference, and prevents fratricide. The software visualizes results of indications and warnings (I&W), such as geolocation and direction finding. Should the system detect any new, unusual or unknown signals compared to the stored measurement data or the force´s frequency database, it will trigger an alarm and geolocate the source of the signal using integrated geolocation techniques.
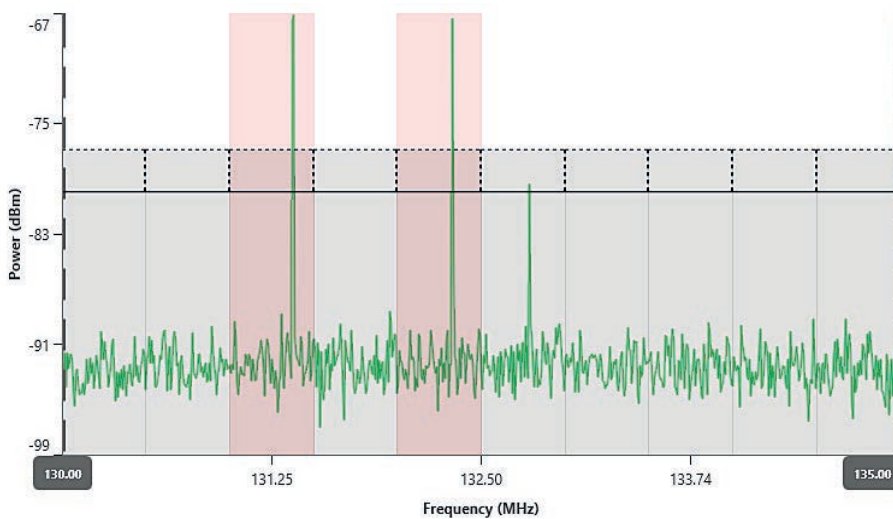
Automatic threat detection
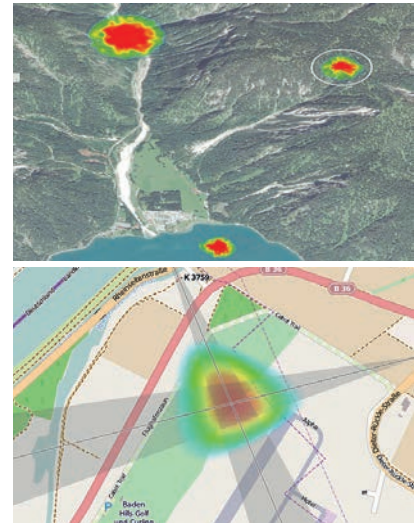
Cross section AoA / heatmap AoA and multi-spot geolocation

System Integration and Turnkey Projects

LS telcom integrates different software and hardware components and delivers complete EWOC, ESM & ECM shelters on a desired platform:

- Armored and protected vehicles
- Naval and maritime units
- Aircraft and UAV
- Transportable sheltered container units
- Maintenance and service entities

We offer flexible delivery options to meet your specific needs. Choose units pre-equipped solely with operational infrastructure, or opt for a turnkey solution that includes comprehensive, purpose-built hardware and software equipment. The installed software is optimized for monitoring, spectrum analysis, and network planning. A variety of omni and directional monitoring antennas can be mounted for various frequency ranges, in addition to direction finding antennas for HF, VHF and UHF.
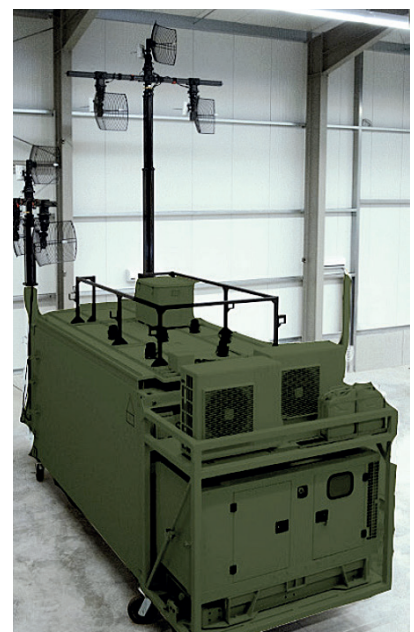
Sheltered EW operations center

Trust in more than

30

years of know-how
and experience

Over

4000

participants in our LS telcom
Training Academy

Customers in more than

100

countries

MANAGE, OBSERVE and DEFEND your Spectrum with our Solutions:

Software- and hardware systems, system engineering and integration

- Spectrum management

- Radio network and mission planning

- Spectrum surveillance

- Spectrum analysis

FCA