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Nothing goes unnoticed

NAVAL ELECTRONIC INTELLIGENCE



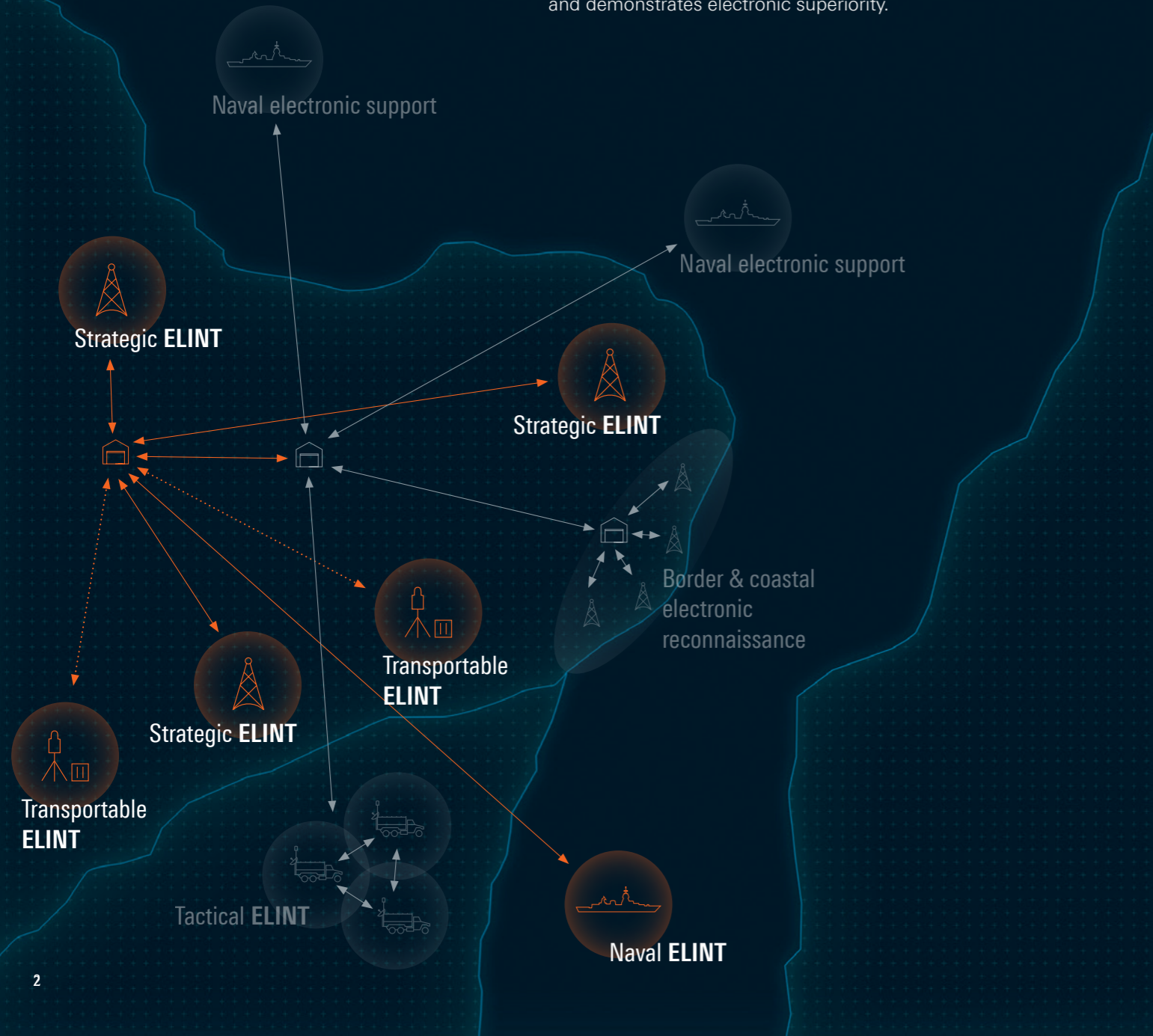
ACTIONABLE INTELLIGENCE FOR PROTECTION AND PARTNERSHIP

Collecting radar signals of interest, enriching national databases, offering actionable intelligence for protection and partnership

National sovereignty depends on knowledge generated by electronic intelligence (ELINT) solutions under national control. This gives planners freedom from dependence on third-party sources when preparing for current and future conflicts.

Increased resilience is a major contribution of ELINT. Identifying threats and vulnerabilities makes it possible to take steps to mitigate them.

Protection of national and allied assets from radar threats is assured with intelligence that can be applied directly in the field. This also has a deterrent effect and demonstrates electronic superiority.



NAVAL ELECTRONIC INTELLIGENCE

The Rohde & Schwarz Naval ELINT system allows collection of radar signals at sea far beyond national borders. It is a highly sophisticated mean to building and extending intelligence capabilities, enhancing national sovereignty and increasing national security.

Operational environment

Naval ELINT collection is a planned operation where the platform is deployed to focus on one or multiple areas of interest for extended periods. The collection assets operate as close as possible to the area of interest gathering vast quantities of emissions.

Threats

Naval ELINT targets signals of interest (SOI) that can be intercepted from the platform in an area of interest (AOI). In the process, not only are SOIs along coastlines collected, but also signals up to the radar horizon and beyond can be targeted.

System purpose

Installed on a dedicated intelligence platform, this mobile system is capable of long mission durations. It offers thorough penetration into other countries' electromagnetic environments without crossing their national borders. Due to its outstanding endurance, the system can monitor and register changes in the electronic order of battle (EOB) in real time over long periods.

BENEFITS

- ▶ **Detection range advantage**
Intercept and collect of high value targets and threats at maximum standoff range
- ▶ **Situational awareness**
Gain a deep understanding of the electromagnetic environment with bearing information
- ▶ **Highest data quality**
Take advantage of the most accurate data to produce high quality intelligence
- ▶ **Focused collection**
Support national strategic priorities by providing intelligence from highly focused missions
- ▶ **Modularity**
The modular naval ELINT system enables demand-driven configurations adaptable to different platforms
- ▶ **Future-ready system design**
State-of-the-art components ensure operational viability for years to come

CONCEPT OF OPERATIONS (CONOPS)

The naval ELINT system operates at sea 24/7/365 for the interception, collection, and analysis of radar SOIs. The system relies on data with bearing information to produce high-quality intelligence for the assessment of radar capabilities and may include emitter location (running fix) and identification. It thus supports intelligence services by keeping the EOB up to date.

The exceptional sensitivity of the multichannel ELINT receiver makes it possible to intercept and collect SOIs at maximum detection range beyond national borders, enabling maximum standoff range.

Analysis of the collected SOIs provides high-quality radar intelligence to populate and update national ELINT and electronic warfare databases.

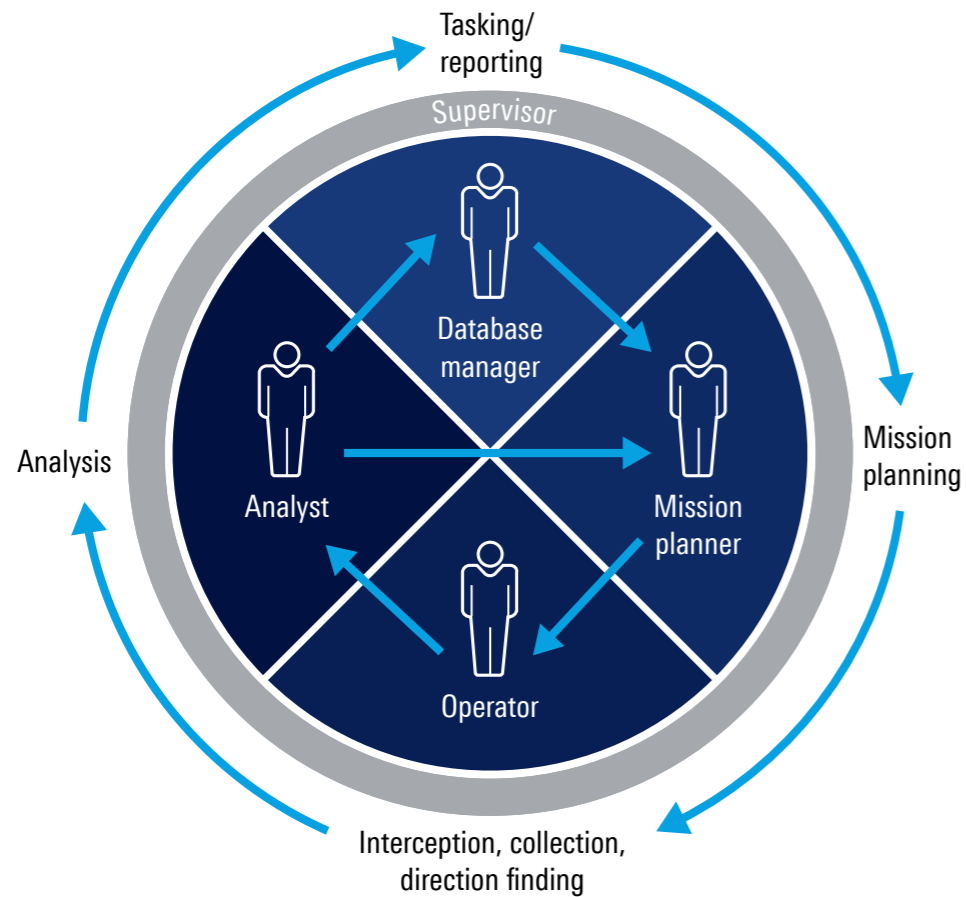
These databases are used to program electronic support systems and radar warning receivers for naval, air and land assets, enabling automatic identification and warning of potential threats (e.g. radars for airborne interception, fire control, target tracking and missile guidance).

Operational workflow

The ELINT workflow has four phases, starting with tasking, followed by mission planning; then comes interception, collection and direction finding, and finally analysis to prepare the collected data for reporting, which then feeds into future taskings. This streamlined process relies on defined operational roles and clear steps for effective intelligence production.

Operational roles

The naval ELINT system enables all operational roles to successfully execute ELINT missions. Each role's explicit area of responsibility and distinct tasks ensure efficient collaboration within the intelligence cycle.



SYSTEM DESCRIPTION

Dataflow & system diagram

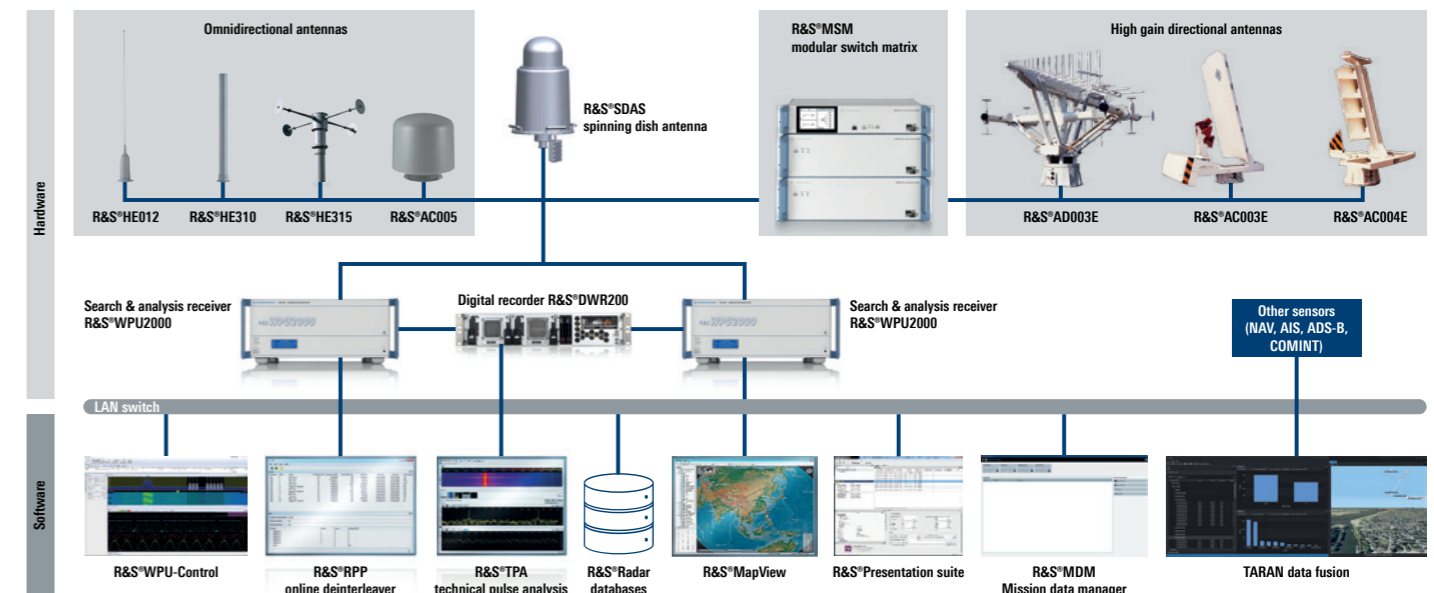
The system receives signals through its antenna(s) and feeds them to highly sensitive ELINT receiver(s) capable of intercepting signals at maximum detection range. Signals can be collected as raw (I/Q) and processed data (PDW/IQDW) from the ELINT receiver(s) and as refined postprocessed data (EDW) from the software layer.¹

According to the CONOPS, data is collected by the system in the AOI and transferred to the ELINT headquarters for in-depth analysis. Intelligence gained from analysis is

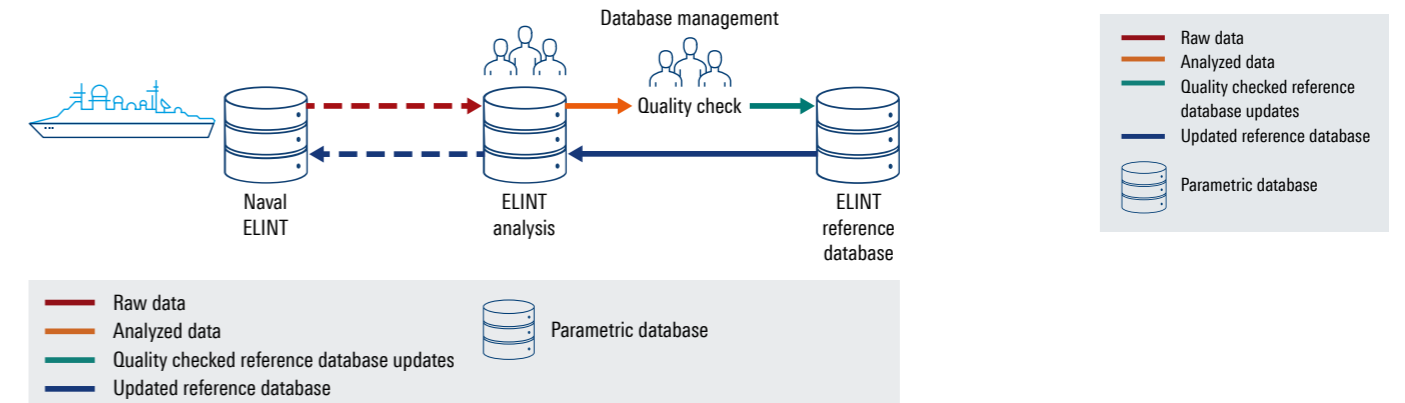
stored in the reference database. Updated reference data may be used to populate other sensor system databases. The seamless integration of the whole process facilitates timely access to the data and ensures the highest quality actionable intelligence.

The system software visualizes the electromagnetic environment and provides bearing information from the direction-finding antenna. This enhances situational awareness, while multiple signal parameter visualizations provide timely and relevant intelligence.

SYSTEM DIAGRAM



DATAFLOW



¹In-phase and quadrature (I/Q); pulse descriptor word (PDW); I/Q descriptor word (IQDW); emitter descriptor word (EDW)



SERVICES

Security of investment and long-term reliability

Rohde&Schwarz is a reliable partner supporting its customers throughout the entire system lifecycle. A comprehensive selection of service modules lays the foundation for an individual service and maintenance concept for every customer. Rohde&Schwarz also offers the opportunity for joint improvements and development.



SYSTEM FEATURES

Antennas covering the radar spectrum and specifically designed for naval applications are combined with a scalable interception and collection system.

The R&S®WPU2000 eight-channel digital wideband processing unit is the heart of the system. This high-performance ELINT receiver with its superheterodyne design applies I/Q processing without aliasing or loss of intrapulse information.

The integrated R&S®RPP online deinterleaver provides automatic analysis for the system. The powerful R&S®TPA technical pulse analysis software is used for manual analysis. An integrated database contains all relevant tables and functions for ELINT collection and provides information to aid situational awareness.

Optional data fusion software supports identification of unknown emitters and tactical analysis by correlating ELINT intercepts with other intelligence sources.

Detailed information about the individual hardware and software products can be found in the corresponding product brochures.

STANDARD SYSTEM DATA

- ▶ Frequency range from 20 MHz to 40 GHz
- ▶ Up to 2 GHz real-time bandwidth
- ▶ Eight independent analysis channels
- ▶ Fully digital pulse processing
- ▶ PDW, EDW, IQDW, I/Q
- ▶ Extensive software capabilities
- ▶ Interpulse and intrapulse analysis
- ▶ Intuitive user interface
- ▶ Wide dynamic range
- ▶ Optional data fusion with other sources

TRAINING

ONLINE, OFFLINE AND ON-SITE

Rohde & Schwarz offers extensive operator and maintainer training courses.

Operator training

Rohde&Schwarz has several former system operators conducting operator training. When it comes to training operators, skilled trainers with real-world experience are often a better choice than systems engineers. They teach practical knowledge based on a first-hand understanding of the problems operators face and are experts at achieving the desired results within the time constraints of the mission.

Maintainer training

Maintainer training is designed to teach the know-how and capability to perform maintenance before, during and after missions. During missions, maintenance is essential to ensure optimal system performance. This training focuses on system installation, configuration and administration. It is intended for system support staff, maintainers and engineers to ensure the operational effectiveness of the system.

Service at Rohde & Schwarz You're in great hands

- ▶ Worldwide
- ▶ Local and personalized
- ▶ Customized and flexible
- ▶ Uncompromising quality
- ▶ Long-term dependability

Rohde & Schwarz

The Rohde & Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test & measurement, technology systems and networks & cybersecurity. Founded more than 85 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

Sustainable product design

- ▶ Environmental compatibility and eco-footprint
- ▶ Energy efficiency and low emissions
- ▶ Longevity and optimized total cost of ownership

Rohde & Schwarz customer support

www.rohde-schwarz.com/support



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