ROHDE&SCHWARZ

Make ideas real

NAVICS

Enhanced connectivity

Product Brochure | Version 03.00

AT A GLANCE

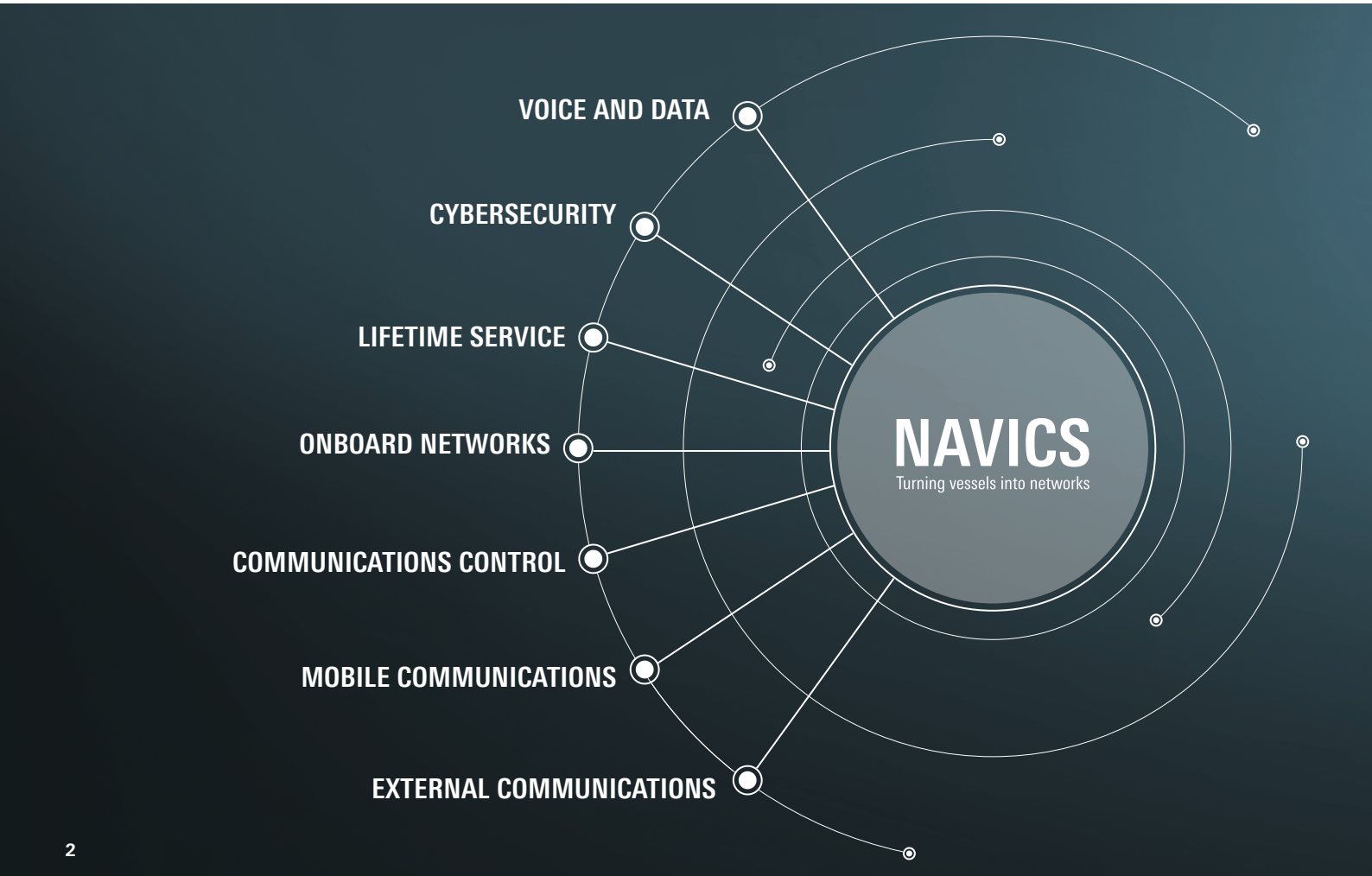
You want reliable security and cyber resilience from an independent supplier who has full control of security maintenance through the entire life cycle of the system? You want to invest in future-proof VoIP based technology rather than outdated TDM based equipment? NAVICS, the fully IP based naval integrated communications system (ICS) from Rohde&Schwarz, is right for you.

NAVICS is a turnkey solution for all naval vessel classes that provides reliable, secure and operationally proven voice and data communications.

NAVICS revolutionizes 24/7 onboard communications by enabling revolutionary freedom of movement throughout the entire ship with NAVICS WCS, an intuitive communications system for uninterrupted, high-quality voice communications on the move.

NAVICS is a complete naval communications system, where all subsystems interact seammlessly to form the NAVICS ecosystem. These include:

- Voice and data
- Cybersecurity
- Lifetime service
- Onboard networks
- Communications control
- Mobile communications
- External communications



VOICE AND DATA

Voice communications

Today's naval forces need reliable, interception and jam resistant voice and data connections. Rohde&Schwarz has supplied armed forces with communications systems for decades and is the turnkey supplier for secure naval communications solutions for vessels around the world. The company has extensive experience and expertise in integrated communications and network systems for naval platforms and joint or combined networks for stable and secure communications. Voice priority over data allows radio equipment to be used for synchronized data and voice communications, saving costs and onboard space.

Full voice over IP

Full voice over IP enables easy interfacing with all IP based subsystems, such as radios, broadcast and intercom systems.

Complete feature set providing voice communications from a single voice terminal

High performance voice terminal architecture with access to all communications subsystems, such as external communications, internal broadcasts and alarms. Each voice terminal can be used for a whole spectrum of communications.

Always mission ready

Redundant architecture with no single point of failure ensures high availability even in the event of failure or damage.

Highest quality communications

NAVICS has best in class latency and link setup for top quality communications in mission critical scenarios.

Operable with gloves

The voice terminals can be fully operated while wearing gloves. With solid design and protection, the latest touch screen technology is sensitive enough for unlimited operation.

Operation in dark ship mode

The wide range, high contrast and dimmable displays make the voice terminals available in all lighting conditions.

Easy operation

Easy and intuitive smartphone like commands make the voice terminals easy to use without any special training.

R&S®GB5900SM NAVICS voice terminal

R&S®GB5900T NAVICS voice terminal

R&S®GB5900W NAVICS WCS voice terminal

VOICE AND DATA

Data communications

Data communications are becoming more and more important to maritime operations. Modern message handling systems ensure reliable data transmissions for all kinds of necessary information. Message handling systems that force operators to intervene when messages are faulty are becoming a thing of the past in the medium-term. Information from data link systems is also mission critical in common operational scenarios.

Message handling system

Message handling in line with STANAG 4406 and ACP 127 covers all naval data communications requirements for formal messaging. ACP 127, though still in use, will be superseded by STANAG 4406. For backward interoperability, the Rohde&Schwarz messaging system has gateways that automatically convert messages into appropriate formats.

Messages are created in one mailbox. Depending on the selected recipients, the message automatically transforms into the needed message format. Incoming messages are shown in one mailbox for all message types.

Standard HF NATO protocol

STANAG 5066 is the NATO standard protocol for HF radio communications. The protocol provides robust and reliable data exchanges over HF and V/UHF radio communications. An error correction mechanism can also be added to standard ACP 127 communications. The operator no longer has to check received messages for correctness and request they be resent if they are corrupted.

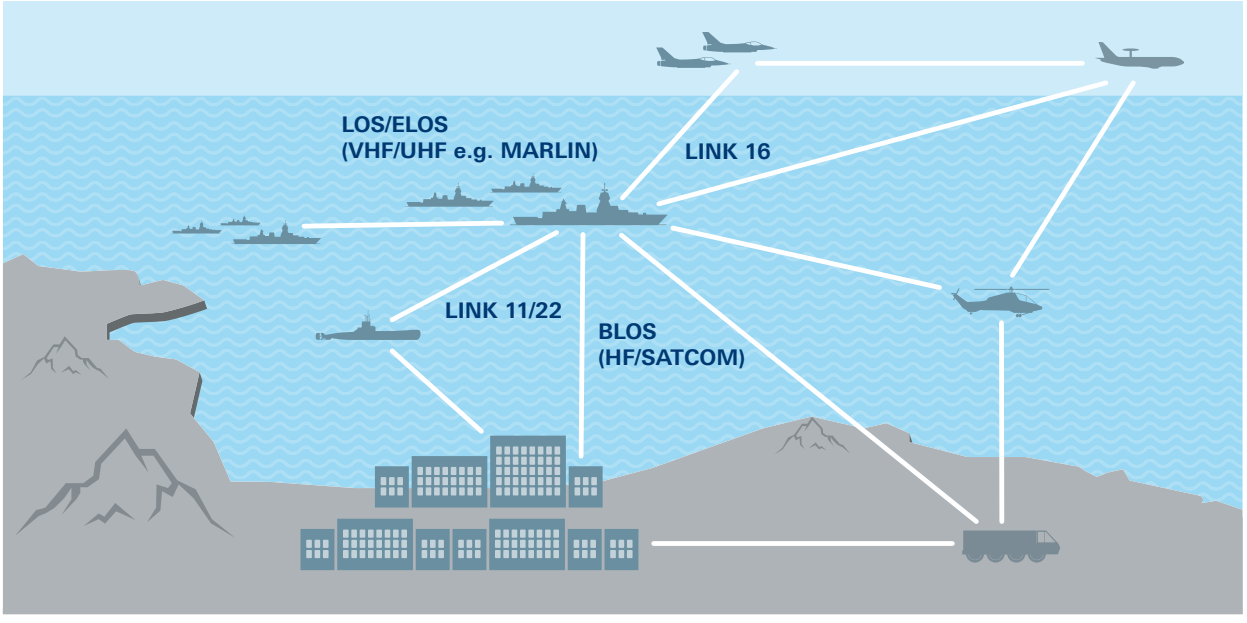
Data link

Link 11/16/22 tactical data link systems can be easily integrated into NAVICS. The very fast signal processing means data from these systems can be transported over the Ethernet and dynamically switched to the appropriate radio with the required link interface.

Fully integrated data transfer applications

All message handling systems are perfectly integrated with the NAVICS voice communications system. Radios can even provide both data and voice communications. The voice priority over data feature enables an external radio line being used for data communications to temporarily handle voice communications, while data communications are paused. These resume after the voice link is terminated.

Transport of Link 11/16/22 information and message handling for seamless data communications



CYBERSECURITY

NAVICS is an accredited multi-level solution with a holistic approach to security. NAVICS not only addresses the security triad of confidentiality, integrity and availability but also tracks security across the entire solution lifecycle including design, supply chain, development, testing, integration, commissioning and operation.

Multi-level security with a single headset

- Accredited communications equipment allows the secure exchange of information among different classified domains and ensures there is not unintended exchanges of information
- Users can establish communications to other domains and networks with the mission device/headset

Crosstalk prevention and interception protection

Automatic volume reduction when audio is from nearby voice terminals and Tempest certified equipment protect against unintended and uncontrolled information exchanges and interception.

Secure hardware and software components protect confidentiality

- Dedicated hardware security modules, trusted filters for red/black separation and encryption devices maintain confidentiality
- Appropriate identity and access management ensures adherence to the least privilege and the need-to-know principles

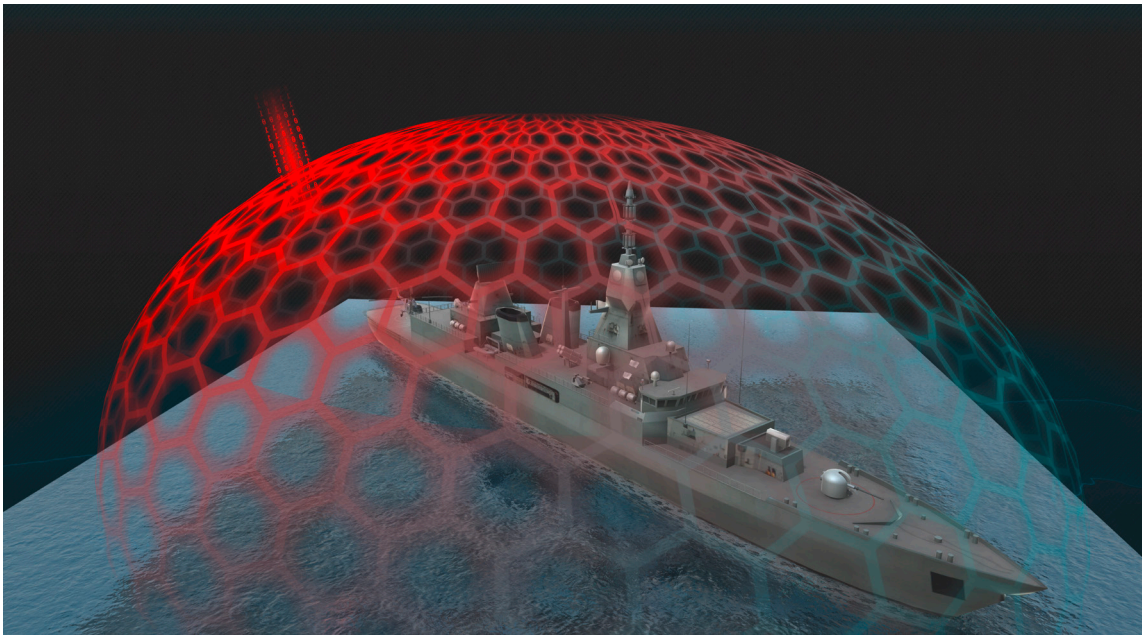
Integrity-defending mechanisms by design

- Integrity checks on both system and file level during manufacturing and operation
- Consistent security monitoring and intrusion/malware detection

"Security by design" across entire solution lifecycle

- Accredited implementation of ISO 27001 provides the framework for all security activities
- Defense-in-depth is the overarching security design paradigm for the solution level, network and server infrastructure and individual components and applications
- Dedicated security assessments include offensive penetration testing to safeguard the high security status of NAVICS
- Manufacturing depth of almost 100 % ensures security and reliability for all components
- Security maintenance as a lifetime service

Protection against internal and external threats.



LIFETIME SERVICE

Maintaining complex technologies, especially at sea, requires dedicated staff, is time consuming and resource-intensive. The technical experts at Rohde&Schwarz ensure peace of mind with professional maintenance, repair and overhaul (MRO) services for the entire lifecycle from one source, including up-to-date cyber resilience.

These services range from analysis of operational requirements to system design, production and commissioning as well as lifetime support.

A global service network with local contacts ensures short response times. The service portfolio includes standardized products and individual service concepts tailored to customer requirements. A free 24/7 hotline provides support for all company products.

Minimal obsolescence risk

- Future proof – widespread international standards such as internet protocol (IP), Ethernet or Wi-Fi® are constantly being improved and will be available long term
- Commercial of the shelf (COTS) products are used where feasible to minimize the risk of obsolescence as defective devices can be easily replaced by successor models

Lifecycle system management

- The NAVICS life cycle management system can distribute security updates and patches to ensure security maintenance through the whole lifecycle
- Rohde&Schwarz offers security maintenance services to keep cyber resilience up to date

Minimal spare part stocking

- A minimal spare part depot helps save money in tight military budgets:
  - A modular product concept reduces the number of required spare parts
  - The manufacturing depth of nearly 100% allows Rohde&Schwarz to replace faulty parts quickly

Lifetime cost savings

- The noted reliability of Rohde&Schwarz products minimizes maintenance and repair costs
- Rohde&Schwarz logistic analysis includes the usage profile and gives customers a transparent and predictable overview of operating costs throughout the entire life cycle

Technical support

Rohde&Schwarz engineering expertise is best utilized as part of complete customer support concept with permanent availability and fast, professional problem solving.

Excellent service

The Rohde&Schwarz support network covers many different time zones with over 70 qualified service and sales locations for 24/7 service support.

Rohde&Schwarz global sales and service network with subsidiaries and offices in more than 70 countries

ONBOARD NETWORKS

NAVICS uses state-of-the-art voice over IP (VoIP) and Ethernet standards and is moving away from outdated, proprietary time-division multiplex (TDM) systems. The secure and ALL-IP based system solution for internal and external voice and data communications provides a single, Ethernet network for all services.

One Ethernet network of copper or fiber optic cables connects all communications devices on board. This ensures the reliable and secure exchange of information along with the advantages of modern IT technology in today's vessels.

ALL-IP without any legacy technology

NAVICS uses international IP standards with VoIP software-based switching, saving costs with minimizing the risk of obsolescence compared to solutions that use proprietary and outdated time division multiplexing (TDM) systems.

Compact multi-purpose media gateway

A very compact multipurpose media gateway integrates seamlessly with all non-IP capable and legacy subsystems, for modernization without replacement.

One Ethernet network

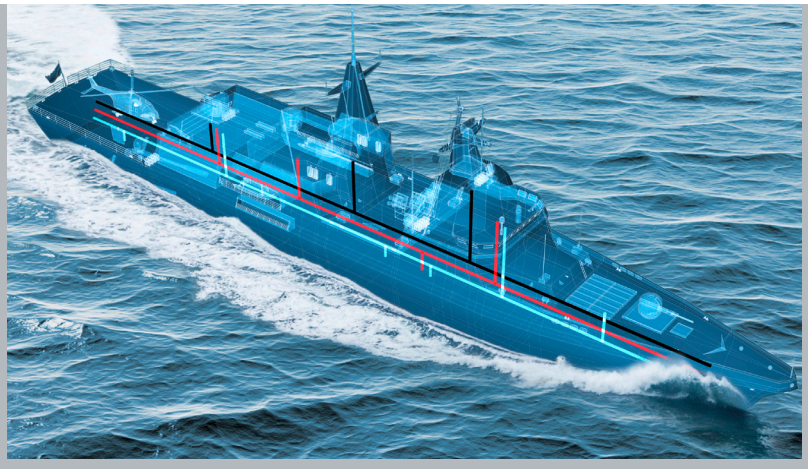
- Having one Ethernet network for voice and data communications reduces cost for additional cabling
- The Ethernet network acts as power supply for various devices thanks to power over ethernet (PoE)
- Very fast signal processing based on FPGAs can transport and switch tactical data (LINK 11/16/22) signals over an Ethernet network
- Standard Ethernet architecture allows easy scaling of systems for all naval platforms and shore stations
- Standardized IP technology allows easy expansion of a system by adding further IP capable devices

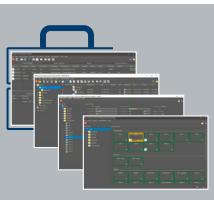
Communications equipment connected to one Ethernet network also for different classified information domains

LANCOM switches

Media gateway

Trusted filter





Application suite

- Message handling
- Communications control
- Anti-malware
- Vulnerability scanner
- Backup and restore

Voice terminals

Cybersecurity threat protection

Phones

Wi-Fi®, NAVICS WCS voice terminal

COMMUNICATIONS CONTROL

Internal and external communications on board vessels need a control system that can handle complex communications planning and monitor individual communications devices. The system needs to fully integrate all internal and external resources to control and supervise all communications.

Management of external communications

The communications control application R&S®SIMCOS provides radio line management combined with device configuration and monitoring. Complete communications plans with predefined communications lines can be easily activated.

Management of internal communications

R&S®SIMCOS completely manages internal communications for conferences, point-to-point communications along with users and roles that have the necessary rights.

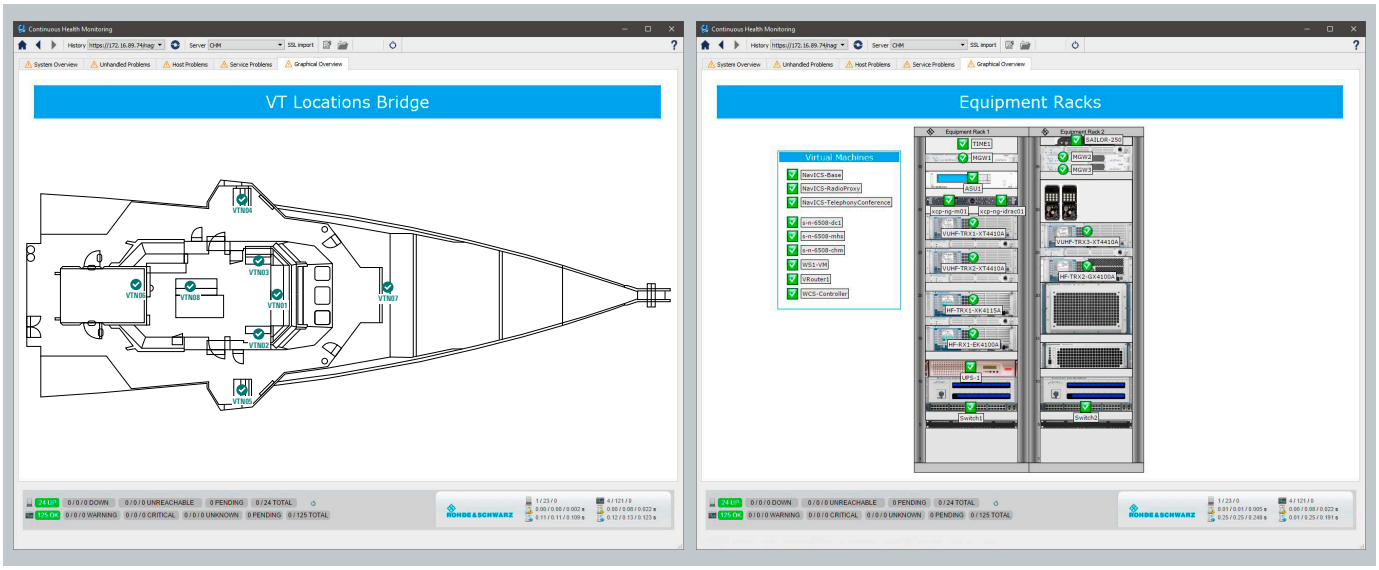
System health status at a glance

The R&S®SIMCOS CHM continuous health check application provides a complete overview of the health status of any monitored equipment including location visualizations. Alerts and warnings automatically inform of system failures. R&S®SIMCOS CHM allows operators to react as early as possible and take countermeasures.

Staff reduction

NAVICS saves costs and human resources by requiring only minimal staffing for operation. Complete remote control and monitoring is available from one working position.

Continuous health monitoring for on time reporting of critical system components.



MOBILE COMMUNICATIONS

A revolutionary wireless communications system, NAVICS WCS keeps noise pollution to a minimum to make missions a success and improve the quality of life on board through new, modern, silent and efficient communications. Smartphone-like ATEX wireless handhelds enable excellent integration and enhanced connectivity to everything and everyone on board with pin-point accuracy; anytime, anywhere.

Ruggedized and ATEX tested

- The smartphones act as mobile voice terminals and provide secure communications anywhere on board with same internal communications capability as a fixed voice terminal
- Fully integrated into all onboard voice communications scenarios
- ATEX (Atmosphère Explosible) certification enables usage in critical areas such as munition depots

Wi-Fi® network

The wireless communications system uses a secure closed Wi-Fi® network that only smartphones with registered certifications can access.

Wi-Fi® is a registered trademark of Wi-Fi Alliance®.

Hardened operating system

The smartphones have a hardened Android operating system for the NAVICS WCS app that can lock out many standard features for higher security.

Expandability

The wireless communications system can be expanded to include data communications apps. Potential applications include messaging services, maintenance, electronic documentation as well as smartphone localization.

Silent ships

- Announcements can be monitored with just the headset
- NAVICS WCS establishes direct and individual communications instead of broadcast announcements
- Silence on board is vital for certain missions

NAVICS WCS for mission-critical areas while on the move.

EXTERNAL COMMUNICATIONS

NAVICS is fully integrated with external BLOS and LOS communications subsystems. Together with Rohde&Schwarz radio equipment and antenna solutions, NAVICS provides top range and performance. Various third party equipment can also be integrated.

Rohde&Schwarz radio equipment provides advanced COMSEC, TRANSEC and high-speed data transmission, while RF filters and EPM filters ensure interference-free communications.

High data rate communications satellite services are accessible for voice and data communications within the NAVICS communications architecture.

Fully integrated into communications control

R&S®SIMCOS radio line management can define and configure complete radio lines from voice terminals or data applications to antennas with automatic settings for the relevant parameters in all radio line components. Important parameters can be monitored and adapted with the voice terminal without the radio operator.

Space saving antenna solutions

Rohde&Schwarz can design customized antenna solutions for a given platform to reduce space, weight and interference. One example is the signal mast Rohde&Schwarz integrated antenna system (IAS) with an ingenious space-saving, interference-free design and omnidirectional coverage.

Integrated naval communications standards

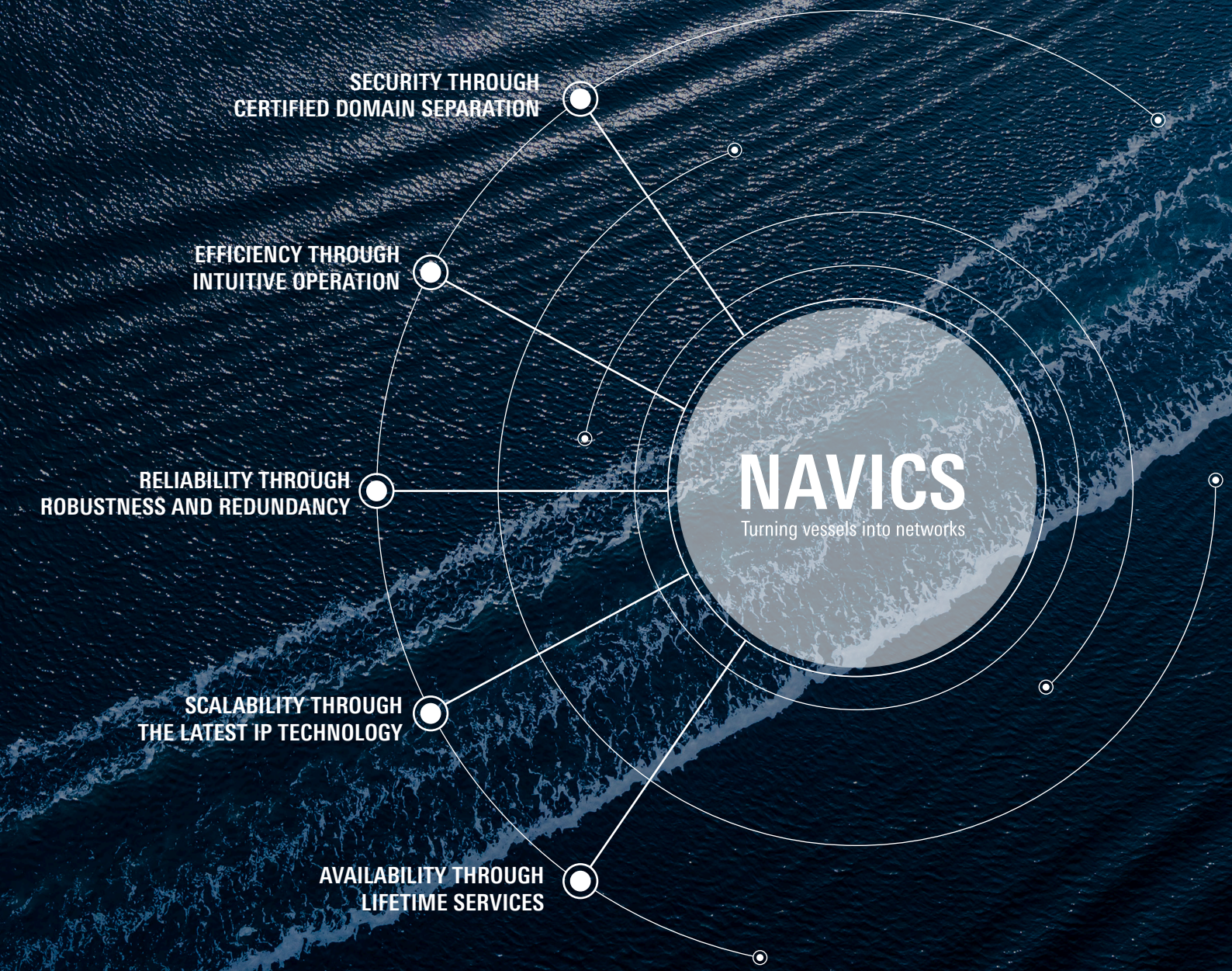
SOVERON communications equipment has integrated NATO standards, enhanced EPM/ECCM modes (SATURN) and supports data link modes (LINK 11/22) required for successful participation in multi-national and allied missions. SOVERON secure communications architecture is best implemented by Rohde&Schwarz as a partner combining radio, cryptology, routing and network management from a single source.

Integrated antenna systems (IAS) for communications and ESM applications.

SOVERON radio family for secure BLOS and LOS radio communications.

NAVICS – TURNING VESSELS INTO NETWORKS

NAVICS, the IP based naval integrated communications system (ICS) from Rohde & Schwarz, is a turnkey solution for all classes of naval vessels from small ships to large frigates. It is designed to ensure operationally proven, secure and fully IP based, internal and external voice and data communications.



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 90 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

Service at Rohde&Schwarz
You're in great hands

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

Sustainable product design

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

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Certified Quality Management
AQAP-2110

Certified Information Security Management
ISO 27001

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