



Interoperability in tactical communications



Bittium

indra

 **LEONARDO**

RADMOR
WB GROUP

ROHDE & SCHWARZ



THALES

a4ESSOR

Interoperability in tactical communications

Sharing information is key to success of any mission. Secure and timely exchange of data in the field provides a significant advantage over the adversary. To ensure this capability in coalition operations, where many systems and platforms need to exchange large volumes of data, you need highly interoperable communications systems.

The a4ESSOR alliance is formed by six leading communications companies in Europe: Bittium, Indra, Leonardo, Radmor, Rohde & Schwarz and Thales.

We have defined a European software defined radio technology that ensures autonomy, security and technical sovereignty for armies across the continent while providing NATO with advanced communications systems.

Software defined radios

- › The latest generation of tactical radios meets the voice and data transmission needs of all domains and platforms in the armed forces.
- › Many hardware components are replaced with software to increase flexibility and suitability for different scenarios.

The waveform

- › Provides transmission capacity.
- › Determines frequencies, modulation, networking, data protocols, data rate, and COMSEC/TRANSEC.
- › Ensures full interoperability between different radio equipment and multiple armies.

The mission

- › The waveform and its parameters can be changed depending on data volume, distance, topography or radio spectrum status and occupancy.
- › Security depends on encryption techniques, which makes the control of the waveform vital.
- › Military waveforms entail a high degree of complexity. They have to cope with different platforms, the hierarchical level and scenario.



Advantages

- › Quick and secure data exchange and information sharing, improving command and control effectiveness
- › High interoperability in coalition operations, enabling allies to operate as a single force
- › High-performance COMSEC and TRANSEC, enabling information security and personnel safety
- › High flexibility, allowing the radio equipment to adapt to any scenarios
- › High maintainability, making updates easy to implement
- › High upgradeability, enabling seamless adoption of future technologies
- › Independence from hardware platform, making the waveforms easy to port to multivendor radio equipment
- › Enhanced connectivity in the field through high-performance and secure mobile IP networks (MANET)
- › Scalability, enabling the establishment of tailored networks that self-organize and self-repair
- › Capability to operate either with or without satellite positioning systems (GNSS)

a4ESSOR - Our objectives

We remain engaged in the ESSOR Programme to meet ambitions of European states

- › Development of the secure SCA as the basis to achieve interoperability between armed forces of European states.
- › Development of the ESSOR High Data Rate Waveform (HDRWF) to become the reference standard in Europe and at NATO level.
- › Development of other waveforms (narrowband, ground-air-ground) to become the reference standard in Europe and at NATO level.
- › Establish guidelines and processes to develop portable waveforms, as well as to validate interoperability of radio platforms and lay the foundations for secure interoperability between European and NATO armed forces.



Achievements

- › 2009 - ESSOR programme is launched to develop the ESSOR Architecture and the ESSOR High Data Rate Waveform (HDRWF)
- › 2010 - ESSOR Architecture specifications completed
- › 2013 - Implementation of ESSOR Architecture and demonstration of military waveform portability
- › 2014 - ESSOR HDRWF passes the first national essential capabilities review
- › 2015 - Functional validation and interoperability of the waveform completed
- › 2016 - Interoperability field test with the Finnish Defence Forces
- › 2018 - New project is started to extend the operational capabilities of the ESSOR HDRWF
- › 2019 - ESSOR Architecture published
- › 2020 - Germany adopts the ESSOR waveform and joins the programme
- › 2021 - The European Commission funds the Enhanced Capability (ENC) projects through the EDIDP to develop new waveforms for land, ground-air-ground and satellite communications
- › 2022 - Interoperability of the extended ESSOR HDRWF is demonstrated
- › NATO CWIX 2018, 2021, 2022, 2023 - Joint interoperability demonstration of ESSOR HDRWF
- › 2023 - NATO adopts ESSOR HDRWF as STANAG 5651



a4ESSOR SAS • 8/10 Avenue des Louvresses, 92230 Gennevilliers, France • info@a4essor.com

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