Patria

ARIS

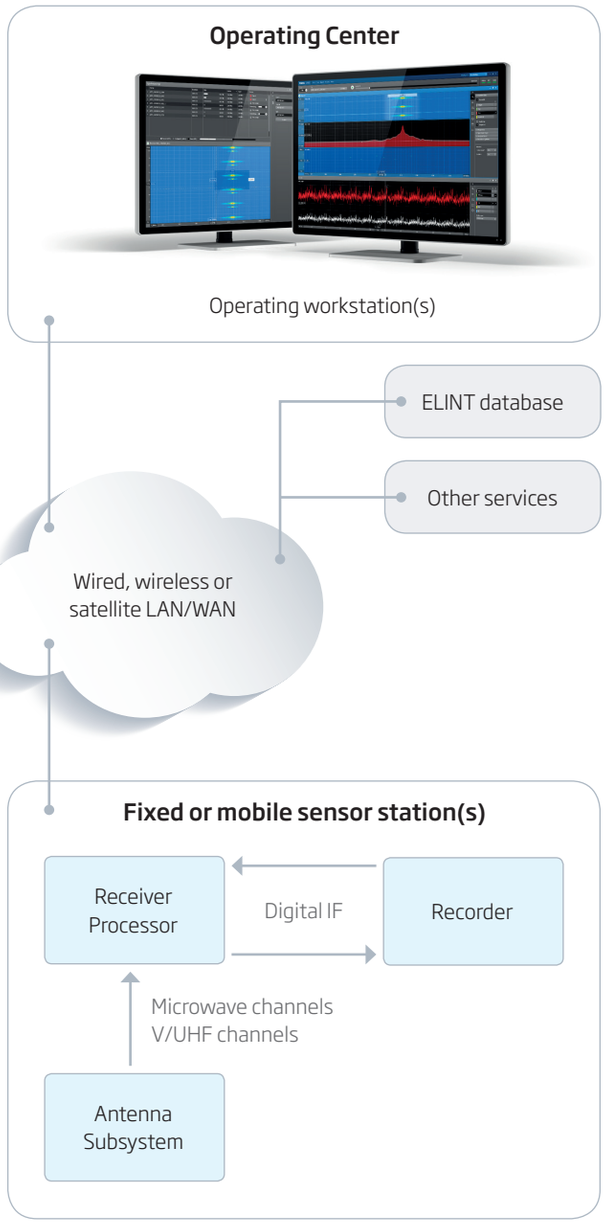
Advanced Real-time
Intelligence System

ARIS -Advanced Real-time Intelligence System

ARIS is a remote operable ELINT system for interception and analysis of modern and increasingly complex signal environment. It combines all ELINT functionalities (search spectrum, real-time spectrum analyzer, real-time oscilloscope, pulse analyzer, modulation analyzer, direction finding and wideband recorder with playback and offline analysis capabilities) in a single system offering comfortable user experience.

All the functionalities can be accessed and operated either locally at a sensor station or remotely from an operating center. The system can be used manually for detailed signal analysis or it can run predefined surveillance tasks autonomously to record signals for later analysis. Analysis results are input to the ELINT database.

System Overview



Remote Operability

ARIS is remotely usable from a user interface that is software run on any PC workstation. Multi-user and multi-sensor operations are supported. The network connection is secured with data encryption, user authentication and access control.

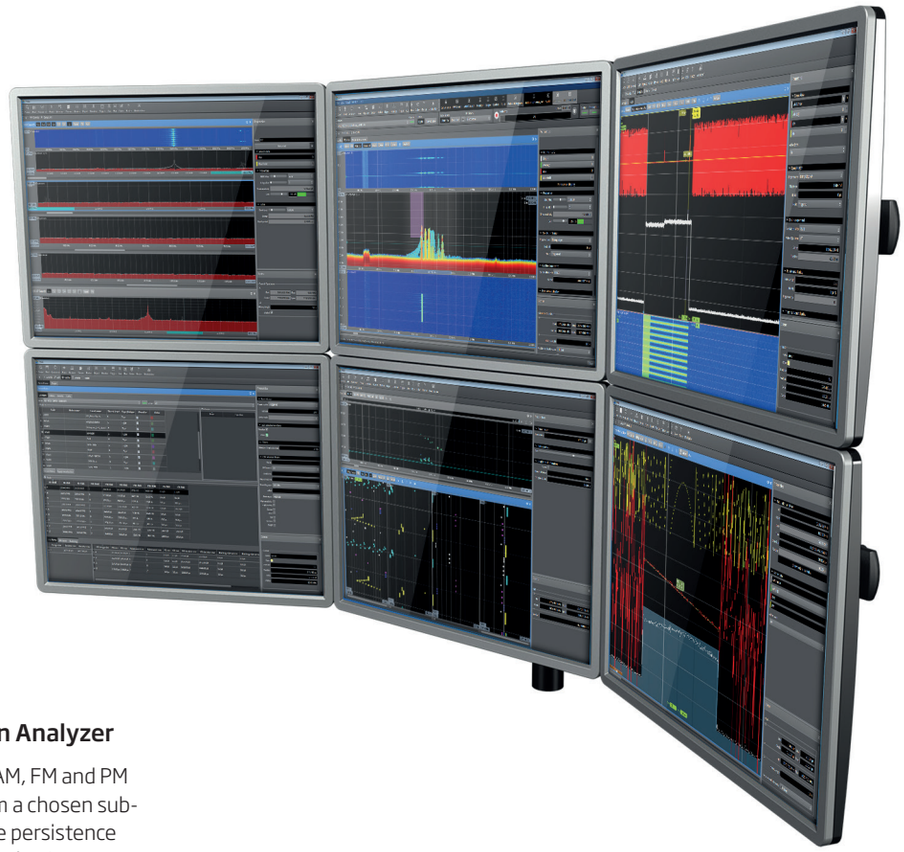
Installations

The system installations are available for various vehicle types or for transportable shelters. There is also an open interface for integration to external systems. ARIS can be configured to airborne and ship-borne ELINT operations.

Functionality

Search Spectrum

Search spectrum is used for spectrum surveillance. It gives a quick overview of the full spectrum with several spectrum displays that can be opened for various sub-bands. Due to digital channelization it provides enhanced probability-of-intercept combined with good sensitivity.



Real-time Spectrum Analyzer

Real-time Spectrum Analyzer illustrates time-frequency content of chosen band with three displays – a real-time spectrum persistence display, a snapshot spectrogram, and a waterfall spectrogram.

A dense signal environment with very low SNR frequency sweeps and frequency hopping pulse sequences is easily analyzed.

Real-time Oscilloscope and Modulation Analyzer

To analyze a chosen waveform in more detail, AM, FM and PM video signals and pure I/Q can be detected from a chosen sub-band and illustrated with real-time oscilloscope persistence display and with trigger sequence display. With shorter acquisition times the display can be used to analyze intra-pulse and inter-pulse modulations. Longer acquisition times reveal e.g. beam patterns.

Pulse Analyzer

Continuous pulse processing is performed over the whole 500 MHz monitoring bandwidth. The pulse detection is done in channelized manner providing good sensitivity and selectivity. All the detected pulses are revealed on 2D scatterogram, which is used for filtering pulses for further analysis displays and for exporting to external data files. The pulse sequences are further analyzed with time raster display, individual pulse parameter displays and histograms. Intra-pulse modulations of selected pulses can be analyzed with the Modulation Analyzer.

Recorder

Continuous recording in circular buffer mode enables the user to catch short-lived interesting events. All the tools available for online signal processing are also available when analyzing the recordings with full-speed playback or by manually navigating the recording timeline. Recordings can be cropped in time and frequency and exported from the system. Autonomous mode enables the system to record triggered signal events automatically.

Emitter Report

To improve the ELINT database, results of the analysis are collected to Emitter Report, which is sent to the database along with corresponding signal and PDW files. The database connection is customizable.

Additional functions

PRF audio is generated either from wideband detectors or from a selected sub-band and streamed to the user.

Direction finding can be done using a spinning DF antenna or V/UHF monopulse antenna.

Active emitters are automatically recognized based on a mission database and tracked on an active emitter list.

System monitoring and maintenance is assisted with remotely usable built-in test, calibration and hardware management tools. Software upgrades can be distributed remotely.

ARIS is a complete system solution

aimed at ELINT operators and signal analysts demanding high-end performance and comfortable user experience.

Search Spectrum

Real-time Spectrum Analyzer

Real-time Oscilloscope

Modulation Analyzer

Pulse Analyzer

Recorder with autonomous operation capability

Direction Finder

Active Emitter List

Specifications

Search Spectrum

» Less than 1 ms sweep times possible for 18 GHz band

Real-time Spectrum Analyzer

» BW 100 kHz - 500 MHz

» RBW 50 Hz - 25 MHz

» Up to 17 million frames per second and zero blind time

Real-time Oscilloscope

» BW 100 kHz - 100 MHz

» Up to 2 million aqcuisitions/s and less than 100 ns blind time

Pulse Analyzer

» Frequency accuracy better than 600 Hz and TOA/PW timing accuracy better than 1 ns for 3 µs pulses

» Up to 100 million PDW/s unblockable pulse processing, recording and analysis capability

Reporting and interfaces

» Operator driven ELINT and autonomous surveillance modes

» ELINT mission database

» Customizable interface to master database

» Various reporting and file formats

» Open external interface

Receiver Processor

» Two microwave channels (0.5–18 GHz, optionally up to 40 GHz)

» Two additional high dynamic range channels for VHF and UHF (20 - 3000 MHz)

» Standard 19" 10U top loader chassis

» Weight 55 kg

» Power consumption typ. 750 W

Recorder

» Over 1 hour capacity for 500 MHz band

» Dual channel recording

» Standard 19" / 3U

» Weight 32 kg

» Power consumption typ. 500 W

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