ROKE

WORLD-LEADING ELECTRONIC WARFARE SUPPORT SOLUTIONS

ACHIEVE SPECTRUM SUPERIORITY

OUR PEDIGREE

Our heritage in Electronic Warfare and Signals Intelligence (EWSI) has been cultivated from a long history of strategic High Frequency Direction Finding (HFDF) technology. It provides the foundation for growth of our collective suite of Electronic Support (ES) and Mission Management tools, allowing a gateway between force commanders and the tactical war fighter.

Our solutions are deployed globally from HQ to the frontlines of the tactical battlespace, delivering both immediate threat to life warning to local commanders, and reach back building block intelligence to decision makers. The ability to provide real-time situational awareness is key to the delivery of battle-winning effect.

The launch of our low size, weight and power Super Resolution Adaptive Digital Beamforming technology provides a Software Defined Radio based Sensor optimised for the congested, cluttered and contested digital electromagnetic environment. Combined with a fully integrated mission planning and analytical suite, our capabilities bring an end-to-end deployable solution to a globally challenging and diverse problem.

CYBER AND ELECTROMAGNETIC ACTIVITIES (CEMA)

Deriving Information Advantage from the Electromagnetic Spectrum (EMS) is critical in today's data-driven, information-led warfare. Our Electronic Warfare and Signals Intelligence (EWSI) products and solutions give you the ability to identify and disrupt your adversary's radio, radar and other communications emissions. This provides operational advantage so you can interpret and exploit the EMS as intelligence sources to support better strategic and tactical decision-making.

If you would like to find out more about our CEMA products and solutions there are QR codes located in each section that will take you through to our website where more information is available.

PERCEIVE MR®

Utilising Adaptive Digital Beamforming and Super Resolution Direction Finding, PERCEIVE MR® is our latest iteration of integrated wideband sensor.

What is PERCEIVE MR® ?

PERCEIVE MR® is a multi-role, multi-platform Software Defined Radio (SDR) based Electronic Surveillance system. PERCEIVE MR® utilises Adaptive Digital Beamforming and Super Resolution Direction Finding techniques to help overcome the congested and contested electromagnetic spectrum.

Software

Applying modern design practice, PERCEIVE MR® utilises sophisticated software in the form of PREFIX / VIPER and simplified operator orientated workflows provide pre/during and post mission planning and analysis.

PERCEIVE MR® will also classify and decode a range of complex transmissions.

Key Features:

- 100MHz instantaneous bandwidth covering 2MHz to 6GHz
- Super Resolution Direction Finding (separate multiple signals on the same frequency)
- 32 digital drop channels
- Adaptive Digital Beamforming (increases sensitivity and reduces co-channel interference)
- Azimuth and Elevation
- Fast Hopper effective intercept
- Dual GNSS and inertial navigation with MEMS inertial sensor data and magnetic compass
- PREFIX / VIPER software for laptop or screen use
- Single fibre optic cable carrying power and data for ease of integration

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RESOLVE 3

An operationally proven, tactical EW system.

What is RESOLVE 3?

RESOLVE 3 is an operationally proven electronic support system, which allows for accurate Direction Finding and Position Fixing.

RESOLVE 3 enables the operator to locate, interrogate and prioritise complex battlefield communications in order to deliver near real time tactical intelligence including cross queuing other ISTAR assets.

RESOLVE 3 is fully configurable for the mission and scalable from manpack to a fully integrated vehicle system.

Software

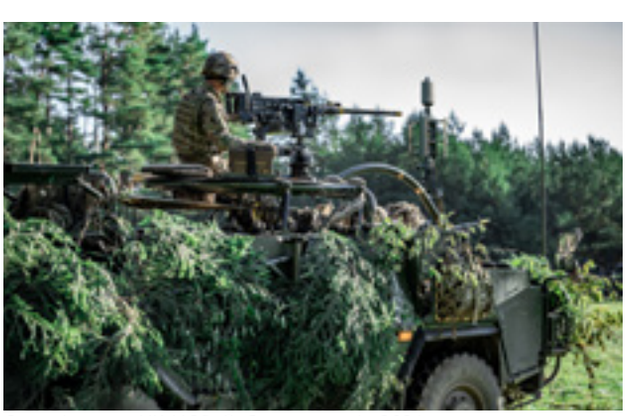
Applying modern design practice, at the heart of RESOLVE 3 is sophisticated software: PREFIX / VIPER for the laptop and TACFIX for a tablet. RESOLVE 3 will also classify and decode a range of complex transmissions.

PREFIX / VIPER simplifies EW operator workflow by providing pre/during and post mission planning and analyst tools.

TACFIX is the most advanced, simple to use android-based application for on-the-march, short and medium halt electronic support deployments.

Vehicle Mounting

For operations on-the-move, the QuadTac antenna can be mounted using a simple clipin vehicle mounting kit. This facilitates single sensor position fixing whilst on the move.



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Key Features:

- 40MHz instantaneous bandwidth covering 2MHz to 3GHz
- On-the-move or dismounted configurations
- Laptop or Tablet display HMI
- PREFIX / VIPER software for laptop and TACFIX software for tablet
- The entire Signals Intelligence (SI) picture in one view with wideband geolocation capability
- Android tablet interface which allows for detailed assessment on-the-march
- User friendly human interfaces. Providing good situational awareness and clear military advantage
- Modular system is easy to transition on-the-move, for short, medium and long halt
- Radio agnostic, using IP-based networking for effective data sharing
- A reduced workload burden through automated and prioritised discrimination of fixed frequency and frequency hopping signals

PREFIX/VIPER

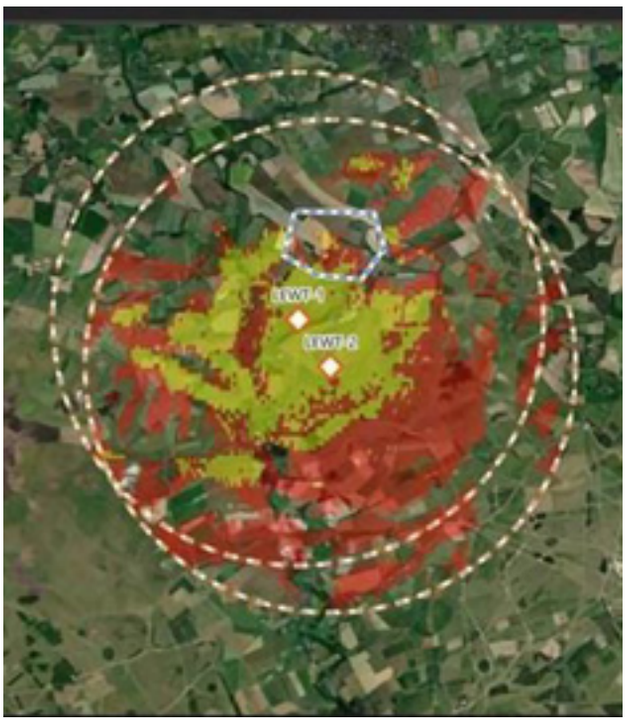
Roke provides a common operator and command control software package, fully integrated with our modern EW sensors.

What is PREFIX / VIPER?

Common across all Roke EW systems, PREFIX / VIPER enables intuitive visualisation of the Electromagnetic Environment by virtue of powerful search optimisation and filtering tools. This enables the operator to easily extract near real time spectral information to inform the commanders tactical decision making.

Traditionally, EW operators are expected to analyse all signals, whether of significance or not. PREFIX / VIPER allows them to focus on a specific area of interest, such as a valley or building, significantly reducing the burden on operators, as well as the training requirements.

PREFIX / VIPER was developed to remove the issues of complex RF-data presentation and laborious information access. It visualises information by overlaying a map so that the operator can quickly identify a precise target fix.



Key Features:

- Pinpoint accuracy for superior target precision
- Highly targeted pre-mission planning and real-time mission adaptation
- Accurate visualisation of data and geofencing capabilities
- Simplifies operations, minimising the training burden on operators by automating many processes that would have previously been undertaken by the operator
- High tempo operations benefit from the reduced need to swap between software applications to interrogate the data
- Non-expert users can easily access the database storage, gaining information they need, formatted for ease of understanding and minimal interpretation
- CESMO and JICD 4.2 compatible, VIPER can contribute to, and receive data from, coalition partners operating in the land, sea and air domains - critical for combined missions

LOCATE

The LOCATE HF spectrum monitoring and Direction Finding system features Adaptive Digital Beamforming and Super Resolution Direction Finding to deliver strategic COMINT capability.

What is LOCATE?

LOCATE systems provide intercept and direction finding capability across the full HF spectrum and offers Super Resolution Direction Finding (SRDF) and Adaptive Digital Beamforming (ADBF) technology.

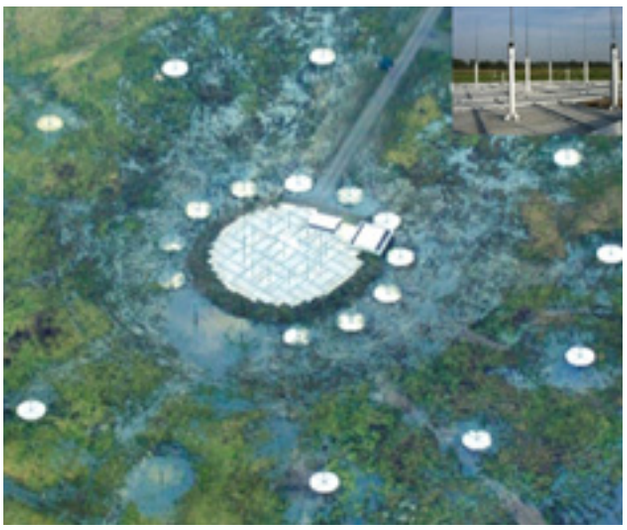
LOCATE systems are in operational use around the world, at numerous sites including both new installations and mid-life upgrades.

MCDWR16 Digital Wideband Receiver

The MCDWR16 offers multi-channel monitoring and combines a maximum of nine DWR16 receivers into a convenient 2U package. The receivers can be configured to provide up to 36 simultaneous, independently tuned, narrowband frequency channels. Alternatively, Direction Finding (DF) is supported over a maximum of four simultaneous frequency channels. Two MCDWR16 units can be connected together for larger systems.

Signals Monitoring Application (SMA)

The SMA is the principal operator / sensor interface for the manual search and HF survey / DF tip-off modes, specifically designed for use by skilled and semi-skilled operators. The Graphical User Interface reduces operator burden whilst maximising flexibility to look at the entire active transmission to narrow band prosecution and hopper transmissions.



DiVA Wideband Stare

Using advanced techniques, the DiVA Wideband Stare application permits the LOCATE operator to enter thousands of prioritised Frequencies of Interest (FOIs) throughout the full HF band. Upon detection of activity on a specific FOI, DiVA Wideband Stare will instantaneously log, record, and tip the detected activity to compute real-time Super Resolution Direction Finding (SRDF) solutions. Remaining fully operational when 'operator not present', DiVA Wideband Stare renders legacy narrowband fast scanning techniques obsolete.

Key Features:

- Communications Intelligence (COMINT) and geolocation
- Detection, interception and collection of Signals of Interest (SOIs)
- Monitoring of interference
- Estimation of spectrum occupancy
- Tasking of array systems for radio direction finding (DF) and Beamforming
- Spectrum policing
- Enhanced signal reception to increase link availability
- Research into high frequency (HF) propagation to enhance ionosphere models

LOCATE-T

LOCATE-T is a field deployable, HF Electronic Support and Direction Finding capability.

What is LOCATE-T?

LOCATE-T delivers LOCATE performance in a field deployable configuration, providing flexibility in mission specific locations.

LOCATE-T benefits from the same class leading technology as the static, LOCATE configuration, including Super Resolution Direction Finding (SRDF) capability utilising Adaptive Digital Beamforming (ADBF).

Key Features:

- Super Resolution Direction Finding (SRDF)
- Based upon the widely recognised Multiple Signal Classification (MUSIC) algorithm, simultaneously produces directional finding results in both azimuth and elevation for co-channel signals
- Resilient to jamming and de-correlated multipath
- DF ground wave accuracy is a function of array aperture in wavelengths, array layout accuracy, environmental scattering, and signal to noise ratio (SNR)
- Option to add Adaptive Digital Beamforming (ADBF) capability
- SRDF provides the ability to resolve two or more signals whose angular separation is less than the natural beam width of the array
- SRDF algorithms operate with very few samples and are not fixed to particular array geometries
- HF Electronic Support capabilities are available in a compact form that enables flexible operation from tactically deployed semi-mobile and static positions
- LOCATE-T provides the user with a capability associated with the strategic LOCATE system
- ADBF provides the ability to extract co-channel signals based upon their direction of arrival
- ADBF is used to synthesise array patterns, which simultaneously point a beam at a Signal of Interest (SOI), whilst directing nulls in the array pattern, to suppress multiple co-channel interferers
- The enhanced output data may then be demodulated regardless of the presence of other signals
- ADBF can be applied to multiple SOIs simultaneously, improving the signal to noise ratio and the signal to interference ratio

PERCEIVE MR®


RESOLVE 3

ROKE

We believe in improving the world through innovation. We do it by bringing the physical and digital together in ways that revolutionise industries.

That's why we've fostered an environment where some of the world's finest minds have the freedom, support and trust to succeed.

Roke is a team of curious and deeply technical engineers dedicated to safely unlocking the economic and societal potential of connected real-world assets. Our 60 year heritage and deep knowledge in sensors, communications, cyber and AI means our people are uniquely placed to combine and apply these technologies in ways that keep people safe whilst unlocking value. For our clients, we're a trusted partner that welcomes any problem confident that our consulting, research, innovation and product development will help them revolutionise and improve their world.

If you're bringing the physical and digital worlds together, we'd love to talk.

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