

Digital Intelligence

BAE SYSTEMS

Software-defined Electronic Warfare

Cyber and Electromagnetic Activities



Software-defined Electronic Warfare

Traditional EW capability procurement meets specific short-term needs, but has limitations due to the pace of change in the threat landscape. It is therefore essential that traditional EW capabilities become part of a software-defined suite that supports growth in CEMA.

Off-the-shelf products are attractive, but typically hardware-optimised for specific functions. This proliferation of disparate equipment collectively takes up significant physical space and creates a significant through-life support burden.

Hardware should enable – not restrict – future capabilities.

Delivering software-defined EW requires:

- Radio transceiver hardware that can operate over all frequencies of interest: from sub-3 MHz to tens of GHz
- A suite of portable, open standards-compliant ‘apps’ implementing EW functions; the ability to keep these up to date and to deploy them to platforms quickly and easily
- Through-life integration and logistics support; appropriate training; and the development of tactics, techniques and procedures (TTPs)

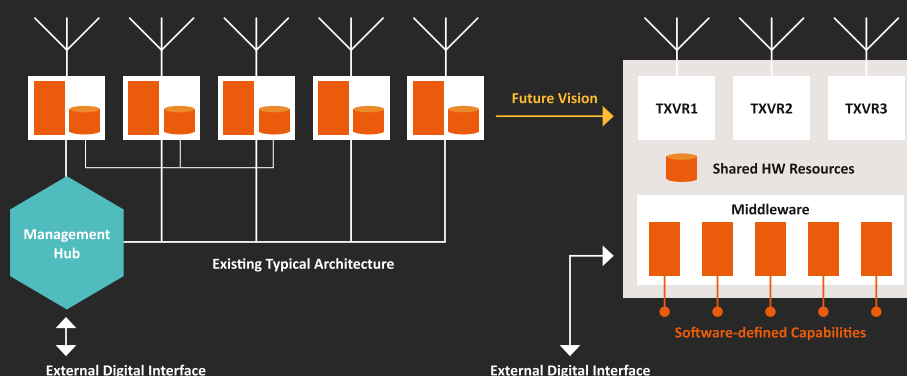
Features

Our systems support a software-defined future, implementing EW functions as portable apps including:

- Spectrum monitoring
- Network survey
- Signal classification and identification
- Specific emitter identification
- Direction-finding (DF) / provision of lines of bearing (LOBs) through time-difference of arrival (TDOA), often distributed between nodes
- Demodulation and decoding, even with precision timing requirements
- Force protection electronic countermeasures (FP ECM)
- Precision electronic attack and cyber delivery

Mission Concept

Multiple disparate hardware-based capabilities become hosted as software applications on shared hardware resources



As waveforms become more advanced, our technology has risen to meet the challenges of today and tomorrow

Cyber and Electromagnetic Activities

The electromagnetic spectrum (EMS) underpins our daily lives, and modern warfare. It enables both communication and sensing. But as the demand placed on it continues to grow, it is increasingly both congested and contested. Cell phones use spectrum close to safety-critical radars, while in combat, commanders wish to deny their enemies' use of the EMS while guaranteeing their own. The increasing complexity and interconnection of wireless systems have blurred the traditional lines between 'cyber' and 'electronic warfare' (EW), leading to the concept of 'cyber and electromagnetic activities' (CEMA).

Increasingly, CEMA is being seen as a fifth domain of warfare. To maintain their defensive strength, states must ensure they have a CEMA enterprise that can operate with:



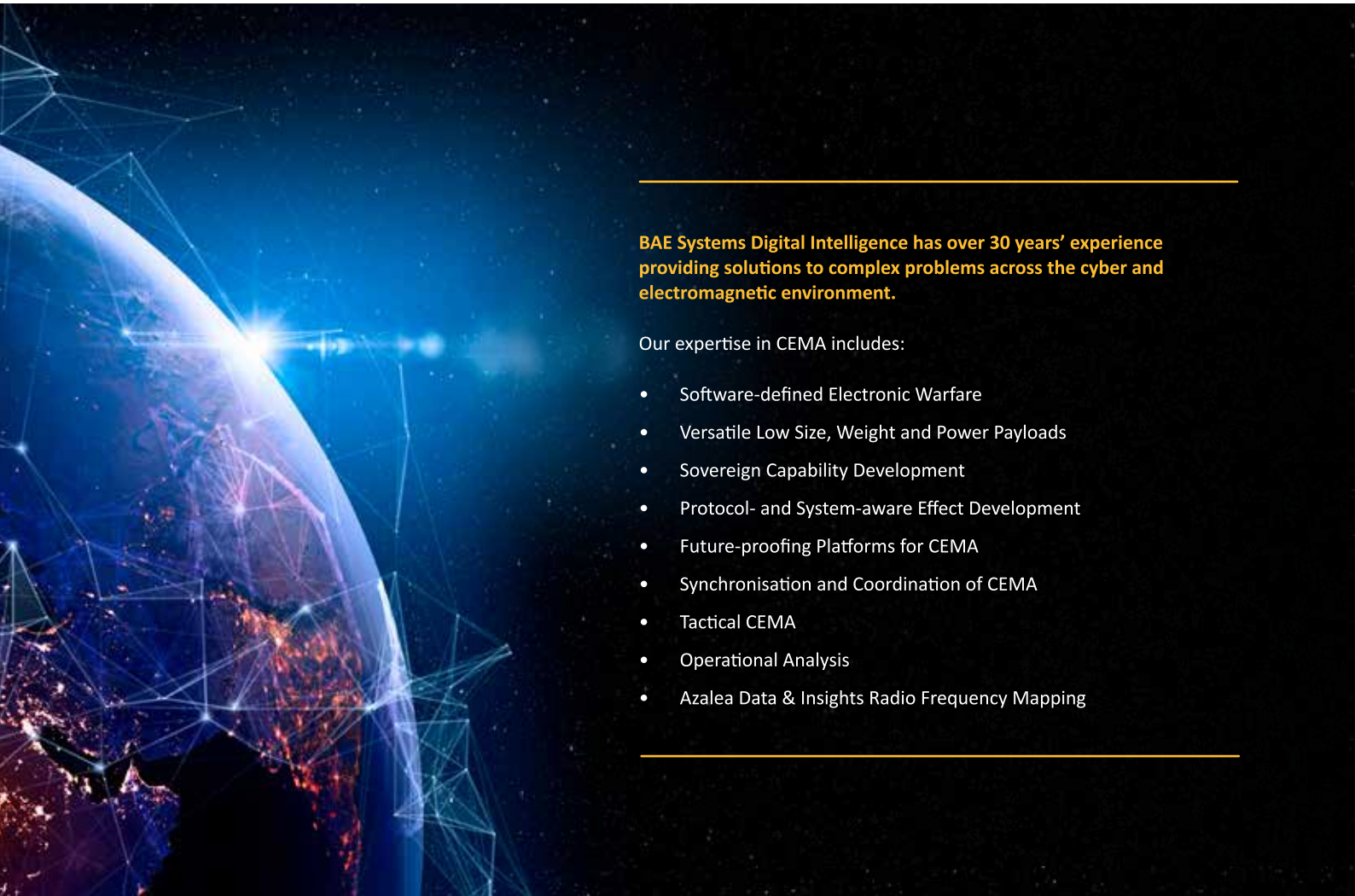
Speed



Agility



Versatility



BAE Systems Digital Intelligence has over 30 years' experience providing solutions to complex problems across the cyber and electromagnetic environment.

Our expertise in CEMA includes:

- Software-defined Electronic Warfare
 - Versatile Low Size, Weight and Power Payloads
 - Sovereign Capability Development
 - Protocol- and System-aware Effect Development
 - Future-proofing Platforms for CEMA
 - Synchronisation and Coordination of CEMA
 - Tactical CEMA
 - Operational Analysis
 - Azalea Data & Insights Radio Frequency Mapping
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BAE SYSTEMS

To learn more about our CEMA integration capabilities, visit baesystems.com/CEMAintegrator

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