

Bringing Near Real-Time Threat Identification and Location Information to the Entire Coalition



DEFENSE SOLUTIONS

UNCLASSIFIED



The screenshot shows the HUNTR interface. On the left is a map with several sensor locations marked with yellow triangles and labeled with IDs like 7277, 5075, 51015.2, 51015.4, 51015.8, and 51015.9. A central point is labeled GR01. On the right is a chat window with messages from JTAC (VMF) and P3C (CESMO). At the bottom, there is a table with columns: TN, URN, CESMO, Identity, Category, NetworkNa, Range, Bearing, Callsign, State, Fuel, TQ, PQ.

TN	URN	CESMO	Identity	Category	NetworkNa	Range	Bearing	Callsign	State	Fuel	TQ	PQ
00100	6361036	DEU.100.1	FRIEND	LAND	VMF	1,283	183		15776		0	0
51017	6361196	DEU.17.1	FRIEND	AIR	Link 16	0,077	118	GR03	5	15200	14	13

Challenge

- Low probability of intercept threats
- Single-sensor geolocation
- Different TDL transmission standards and protocols

Solution

- CESMO IP Protocol using IP and existing radios on limited bandwidth networks
- Joint multi-sensor geolocation
- TCG HUNTR Network Translator with CESMO

Results

- Easily adoptable solution
- Increased situational awareness
- Increased warfighter survivability
- Fast development to operational

Challenge

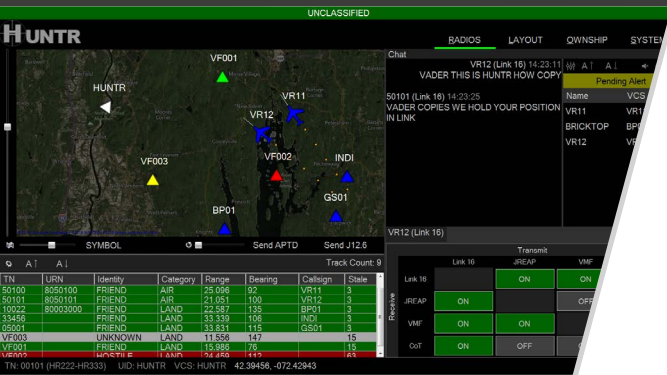
Co-operative Electronic Support Measure Operations (CESMO) was born from lessons learned of past and recent conflicts with the goal to give NATO coalition forces the ability to precisely identify the type and location of threats through the sharing of information across platforms. CESMO is the digital protocol NATO adopted in Standardization Agreement (STANAG) 4658 to support electronic warfare (EW) and electromagnetic support operations. It aims to connect all sensors on the battlefield in order to detect radio frequency (RF) emissions from various sources such as ground, air, and sea platforms or EM interference emitters such as GPS jammers. The goal is to use the data collected from the various platforms to find, share, fuse, locate, and identify the precise locations and types of emission sources in near

real time. For more information on the role that CESMO plays in NATO electronic support measure operations, read our [white paper](#).

Today, CESMO is led by the German Air Force and Czech Army and is developed in a working group that includes a large number of participants from almost all NATO nations. While the goal of CESMO is collaboration and standardized information sharing among coalition forces, the Achilles heel remains the availability and the compatibility of tactical data links (TDL). Since some assets already use the Link 16 TDL, it seems that Link 16 would be an obvious option. While Link 16 is a widely accepted and utilized tactical data link, there is limited adoption outside of naval and air forces.

This is partly due to costly, time consuming integration,





and complicated interoperability validation. However, most assets already have a software-defined radio (SDR) with encryption available to send and receive data. Because CESMO is IP based with variable message sizes, it can use tactical radio network technology. Thus every platform with a radio is capable of quickly and cost effectively implementing CESMO without the need for costly, additional hardware. However, not all platforms will implement CESMO, so the challenge is to translate CESMO to and from all in-service data links.

Solution

Curtiss-Wright has been an active part of the TDL community for the last 20 years. Due to our reputation in the TDL industry and because we had the most operator friendly network translator on the market, the German Air Force turned to Curtiss-Wright to add CESMO to its TCG HUNTR™ tactical gateway. The extreme simplicity and automation of TCG HUNTR gives military organizations exactly what they need — fast and easy access to relevant TDL data on the battlefield while minimizing personnel, training, and expertise requirements. This is especially important at the tactical edge where rapid, simple, reliable information exchange is critical.

In 2016, when the members of the German Armed Forces were in Boston, they met with Curtiss-Wright to discuss our TDL solutions and learned about TCG HUNTR. At that meeting, the German Air Force asked us to develop a gateway demonstration for the biggest TDL conference, the International Data Links Symposium (IDLS), later that year. After a successful demonstration, we were asked to become part of the CESMO working group and to integrate CESMO message translation into our TCG HUNTR software.

After a two month development effort Curtiss-Wright brought TCG HUNTR to the field during Baltic CESMO Trial 2017, a live military exercise, and successfully demonstrated translating CESMO messages to and from Link 16.

However this was just the beginning of the journey. The CESMO messaging standard was rapidly evolving. Currently,

upon request of the German Air Force, Curtiss-Wright is an integral part of the team which aims to further develop the CESMO standard.

Results

True information exchange across multiple domains and data links, without increasing operator overhead or risk, is when survivability really starts to increase. This is where TCG HUNTR adds value as a field-proven translation gateway for several TDLs and eliminates the many challenges associated with legacy TDL gateways. The simplicity of TCG HUNTR allows warfighters to exchange data in a natural and intuitive way across CESMO, Link 16, VMF, and other tactical networks without the need of expert knowledge of the technologies or complexity behind the scenes. Every participant has instant access to critical information at their fingertips increasing situational awareness leading to improved targeting and survivability. Without TCG HUNTR, fusion and dissemination of information across multiple data links would be a slow and manual process, significantly increasing the delay of data sharing, creating unnecessary distractions, and introducing the risk of errors on each end of the communications.

Through the combination of CESMO and TCG HUNTR, warfighters have access to vital information that has never before been available. They are now able to access required information exactly when they need it. This is only possible due to commitment from both military and industry and more specifically from the strong partnership between Curtiss-Wright and the German Armed Forces. Partnering with Curtiss-Wright gives the German Air Force direct access to Curtiss-Wright's rapid prototyping code development expertise and decades of experience developing and deploying TDL hardware and software. Fast software enhancements have been achieved through a number of CESMO codefests where the software gets updated in real-time via the collaboration of industry and military developers. Curtiss-Wright is at the forefront of bringing the CESMO information to the rest of the TDL community.