

USE CASE

Multi-INT Sensor Fusion & Analytics at the Edge

Overview





The DoD vision of integrating AI/ML algorithmic capabilities into Intelligence, Surveillance and Reconnaissance (ISR) at the tactical edge is critical for decision dominance and battlefield superiority. Real time and persistent 360-degree situational awareness is the foundation of the "Sense, Make Sense and Act" vision for Joint All Domain Command and Control (JADC2), leveraging interconnectivity across all DoD and Intelligence services, including joint and partner coalitions. Incorporating data ingestion, processing, analytics at the edge, multi-path connectivity to the cloud with integrated battlefield communications to provide a common operating picture in a single solution is critical for operational success. The Sigma Defense portfolio of tactical communications solutions is positioned to deliver those capabilities, providing greater situational awareness in any multi-domain environment: air, sea, land, space and cyber; even in contested and non-permissive environments.

Sigma Defense Capabilities

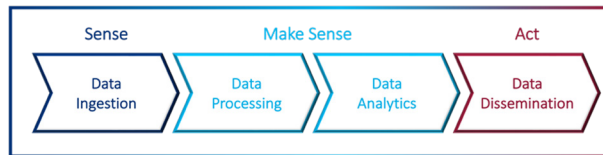
The alignment of DevSecOps and the next generation tactical relay provides intelligent data fusion in a single appliance to extract maximum value from sensor data and accelerate ISR Data Transport (DT). The Sigma Defense "Multi-INT" Sensor Fusion Compute system enables the ingestion of multiple sensor streams, local processing, the application of locally run analytics tools on fused sensor data, and dissemination to local operational elements via a TAK server. The enriched data is then uploaded to a commercial Cloud where additional, more comprehensive analytics can be performed and then disseminated back local elements and to senior-level stakeholders and other entities as required.



Next Generation Software-Defined Tactical Relay for Intelligent Data Fusion

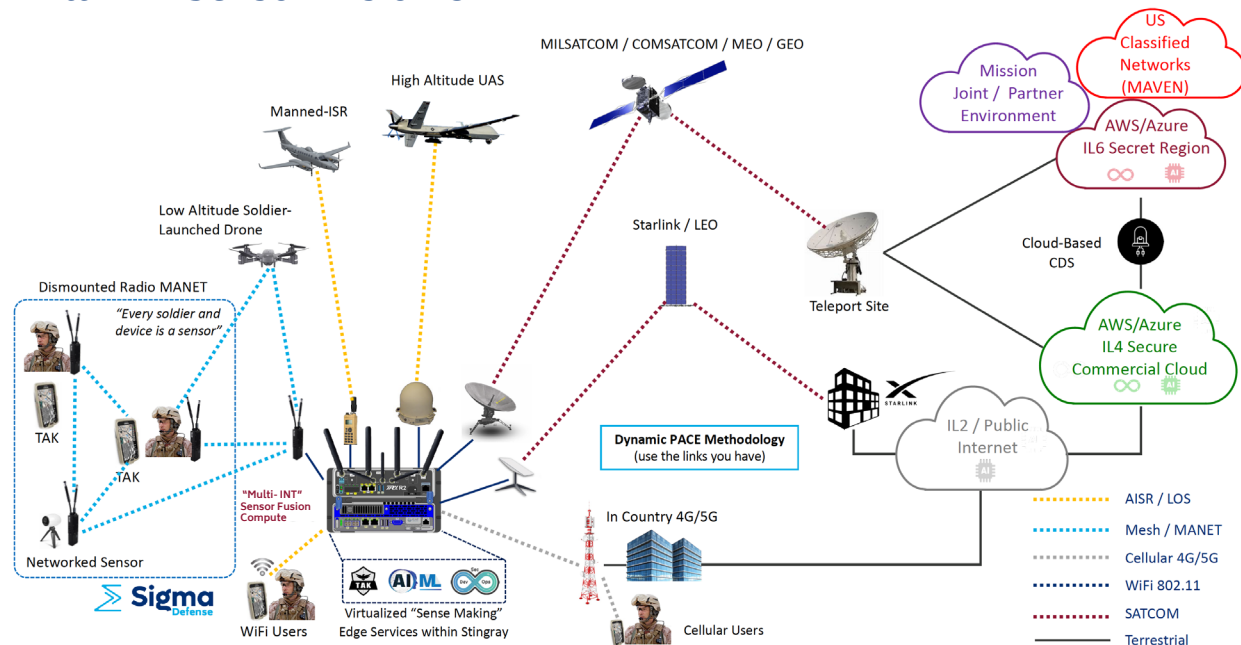
 Battlefield Communications	 Data Ingestion & Analytics at the Edge	 Multi-Path Reach Back to the Cloud	 Coalition Common Operating Picture
<ul style="list-style-type: none"> Soldier carried TAK Sensors Mesh MANET Network UAV/UMS ISR Sensor data 	<ul style="list-style-type: none"> AI trained profiles for specific analysis Inference on data for intel collection, analysis & dissemination 	<ul style="list-style-type: none"> MEO, GEO, LEO, wireless, wired backhaul AI/ML in the Cloud for deeper insights 	<ul style="list-style-type: none"> Real-time visibility across multiple domains Accessible at the tactical edge or globally via the Cloud

- **Ingestion of Multi-INT Sensor Data:** Including optical, hyperspectral, acoustic, seismic, EW, SIGINT, other.
- **ISR Sensor Fusion Process:**



- **Single Integrated Hardware & Software Appliance:** Integration of edge compute and analytics to derive maximum value from data and expedite data transport
- **Automated Software Enabled Communications:** Integration, configuration (radio & satellite link routing) & software updates
- **Analytics at the Edge:** AI focused inference based upon AI training developed in the Cloud
- **Data and Intelligence Dissemination:** C6ISR interconnectivity for a joint and coalition common operating picture

Multi-INT Sensor Fusion OV1



Conclusion

Sigma Defense has a long history of delivering AISR tactical relay to SOCOM that combined with Black Pearl DevSecOps capabilities from SOLUTE, a Sigma Defense Company, enables agnostic data ingestion and sensor fusion, processing and analytics, and local tactical dissemination of enriched situational awareness to the warfighter in a DDIL or contested environment without having access to the Cloud. Our technology agnostic approach to connecting people, systems and data combined with our extensive experience designing, integrating, training, and supporting tactical edge communications makes Sigma Defense uniquely positioned to deliver revolutionary Multi-INT Sensor Fusion and Analytics at the Edge.



About Sigma Defense

Sigma Defense Systems LLC is a leading technology company serving the Department of Defense (DoD), providing systems and services for Intelligence, Surveillance, and Reconnaissance since 2006. The company's software-focused approach to tactical communications accelerates information collection and sharing for faster decision-making, risk reductions, increase lethality, and overall greater mission outcomes. Customers turn to Sigma Defense for engineering, program management, and logistics services supporting technical solutions that encompass ground, air, maritime and space-based systems. Sigma Defense is headquartered in Perry, GA with satellite offices both CONUS and OCONUS. For more information, visit www.sigmadefense.com.