

USE CASE

# A Modern Platform for Intelligence Surveillance and Reconnaissance (ISR)

## Executive Summary

When it comes to intelligence, surveillance and reconnaissance (ISR) capabilities, the National Defense Strategy is very clear: the military must develop an integrated intelligence and operations function that can generate accurate, relevant, just-in-time information and intelligence to support a commander's decision-making process.

The Sigma Defense ISR solution was developed with these goals in mind, enabling Defense agencies to autonomously connect people, systems and data with speed and precision for successful mission outcomes. The Stingray Tactical Relay is a key enabler of the DoD's sensor to shooter architecture, providing integration of ISR sensor data at the tactical edge of operations, sharing real-time data and analysis between weapon systems and commanders at all levels, ensuring warfighters maintain military dominance.

## The Challenge

To more effectively support combat operations and meet the demands of the new global strategic environment, the DOD is transitioning to automated ISR capabilities that can be deployed in highly contested environments. Because this is a major shift from operations that rely heavily on manpower, it requires a significant investment in resilient and collaborative ISR capabilities. These capabilities can provide a compelling information advantage to U.S. military forces, enabling:

- Enhanced situational awareness
- Accelerated decision making
- The ability to reliably find, fix and target strategic targets deep in enemy territory



**"A key capability to ensure the U.S. military maintains its dominance is in its intelligence, surveillance, and reconnaissance (ISR) assets."**

— Congressional Research Service Report: **Intelligence, Surveillance, and Reconnaissance Design for Great Power Competition**

## Sigma Defense: An ISR Authority

Sigma Defense, a technology company with a 16-year history of delivering mission-critical tactical communications solutions across the DoD, understands the complexities of ISR and the need to act with speed and efficiency. Our team brings decades of engineering and communications experience from serving and supporting the missions of the U.S. Special Operations Command, Defense Information Systems Agency, the U.S. Air Force, and other Defense agencies. As a result, we operate with first-hand knowledge of ISR challenges and the criticality of a successful military operation's robust capabilities requirements.

The Stingray Tactical Relay, a key component of the Sigma Defense ISR solution portfolio, provides superior, resilient, and effective access to ISR sensor data, enabling connectivity between battlefield sensors and the commanders and warfighters looking to leverage that data for intelligence. The integrated hardware and software tactical communications platform supports the creation and transmission of Full Motion Video (FMV) streams, two-way data exchange with Department of Defense Information Network (DoDIN) customers, bi-directional sensor control, cross-domain protection, ingest/distribution of Global Broadcast Services (GBS) FMV streams, and management of ISR data.

### How it Works

The Stingray Tactical Relay integrates commercial-off-the-shelf (COTS) equipment anchored by an advanced software intuitive user interface, enabling it to collect, analyze and enrich data in near real-time. In addition, the system provides backhaul from special reconnaissance and surveillance platforms for agnostic "multi-INT" sensor data and multiple high-definition FMV feeds while delivering additional data transport as needed, enabling follow-on exploitation of sensitive targets.

The system works in both "push" and "pull" capacities where a user can make a specific query (pull), to commence a chain of events, or configure the system to "push" tagged critical

information to users at specific time intervals or from a user-defined set of parameters. In a "pull" scenario, the command can request data on a broad range of scenarios including flight asset availability, armored vehicle status, soldier positioning or enemy strength and positions. Commands also can request, specific information for operational planning purposes or use the information to enhance the Common Operational Picture (COP) for overall situational awareness.

For a COP visualization, data is sourced from various relevant sensors that produce data within a target environment. The collected data, including geo- and relevant metadata, is then put in a user-requested format for ingestion and distributed to the specified government enterprise or cloud.

Once formatted, the system aggregates and overlays data sets, converting the data to relevant and actionable information. It can then be analyzed using artificial intelligence and machine learning algorithms for predictive analytics, returning the enriched information in near real-time to be queried for informed decision-making.



## Elevating ISR Performance with Sigma Defense

As the Internet of Things (IoT) continues to evolve and produce more sensor data for collection and dissemination, Defense agencies are expanding ISR capabilities in the most critical environments. For example, if the U.S. military provides humanitarian aid to respond to a natural disaster, information and intelligence germane to that environment are crucial for decision-makers. By collecting and analyzing video from aircraft and unmanned aerial vehicles, current weather conditions, geographical mapping data, and ground moisture in various areas, decision-makers can quickly define, assess and analyze the situation to determine which actions will produce the best outcome.

The modular, open systems approach of the Stingray Tactical Relay works seamlessly with other systems, sensors, and platforms, supporting operational continuity even as technologies change. This approach also aligns with the future DOD ISR enterprise's aim "to gain access to data from multiple domains (space, air, land, sea, and cyber); make rapid sense of that data; securely deliver that data to weapons, weapon systems, and commanders; and possess a workforce that can execute its mission in competition and combat, at a pace greater than the enemy", making it the ideal solution to scale to a broad range of ISR missions. [Quote from: **CRS Report R46389: "Intelligence, Surveillance and Reconnaissance Design for Great Power Competition"** ]

### Conclusion

The Sigma Platform provides a robust suite of communications tools to the modern warfighter, enabling a cloud-capable approach to intelligence, surveillance and reconnaissance. The Stingray Tactical Relay's ability to transmit and analyze data from disparate sources make it a key enabler of the DoD's sensor to shooter architecture, providing integration of ISR sensor data at the tactical edge of operations, sharing real-time data and analysis between weapon systems and commanders at all levels, ensuring warfighters maintain military dominance by exceeding escalating requirements for rapid analysis and situational awareness.



### Stingray Tactical Relay System capabilities

- Creates and transmits Full Motion Video (FMV) streams
- Bi-Directional data exchange with DoDIN customers (C2 Services)
- Bi-Directional sensor control
- Backhaul for Line of Sight (LOS) and Beyond Line of Sight (BLOS) environments
- Cross-Domain protection
- Ingests and distributes FMV from Global Broadcast Service (GBS), saving SATCOM bandwidth