



MIDAS

UAS Sensor Data Exploitation



Process, Exploit, and Disseminate Sensor Data

MIDASTM (Modular ISR Data Analysis and Storage) is a near real-time system for processing and sharing Intelligence, Surveillance and Reconnaissance, (ISR) sensor data for UAS and other Unmanned Systems (UxS). MIDAS provides a simple, powerful interface for reviewing and comparing real-time, near real-time and historical sensor data, including full-motion video (FMV). With MIDAS, UxS operators can analyze sensor data; view it in a temporal context; and even have access to AI tools for tasks like full-motion video analysis without having to wait for data to be transferred to headquarters for analysis. This allows operators to develop actionable intelligence from sensor data at the forward edge, where it's needed the most.

Make Timely Use of your Data

Unmanned systems are increasingly being adopted by military and civilian organizations for a variety of roles previously carried out with manned aircraft, including Intelligence, Surveillance and Reconnaissance (ISR), and search and rescue operations. These drones can carry a variety of sensor packages, and produce a high volume of data including FLIR and full-motion video.

However, the sheer volume of data produced can introduce operational challenges. Analysts typically pull data from various sources depicted on separate displays and try to decide what data is relevant and useful. After this lengthy process the analyst must then figure out how to get this data to where it is needed in the tactical environment. This takes time and often the initiative is lost.

While it's useful for unmanned system operators to have access to real-time ISR sensor data, the raw data is of limited use unless it can be analysed and shared. A lack of standards implementation for data exchange, and the sheer volume of sensor data collected confronts organizations with significant challenges, including:



The MIDAS viewer allows operators to visualize sensor data collected in the mission area, correlate it to the flight path, and compare it with sensor data from previous missions.

- Data collected by sensors such as Full Motion Video (FMV) is available only to the sensor operator and not the wider enterprise due to storage/connectivity limitations
- No ability to compare data collected in real-time to same legacy data from earlier missions in the same area
- Lack of capacity to archive and compare data from different sensor types
- Inability to create intelligence products at the forward edge
- Limited capabilities to share or disseminate products in real-time to decision makers

A Portable PED Solution you can Deploy Anywhere

MIDAS™ was developed to provide a rapid capability for the exploitation and further distribution of sensor data to include from Unmanned Systems (UxS). MIDAS enables the monitoring of the current mission sensor feeds and permits comparative analysis against legacy sensor feeds from the same search area. Providing this capability at the tactical level will reduce the current connectivity reliance and wait times associated with higher-level headquarters decisions.

MIDAS is based on the NATO Alliance Ground Surveillance project which required the storage and retrieval of vast amounts of intelligence data for Intelligence Analysts from a Triton (upgraded Global Hawk) Unmanned Aircraft System (UAS). Kongsberg Geospatial provided this strategic data storage capability and has now packaged that strategic capability into a tactical and portable form factor.

This MIDAS ISR capability can now be deployed anywhere a tactical UAS goes, giving to the front-line war-fighter an decided advantage in his/her situational awareness. This also provides civilian UAS operators and search and rescue organizations with a powerful capability to more effectively manage and use sensor data during search and rescue or survey missions.

The MIDAS form-factor consists of a stand-alone laptop for the operator interface, and a portable server in a ruggedized case for the Data Storage and Retrieval (DSAR) component. It doesn't interfere with the Command and Control (C2) / Ground Control Station (GCS) for the UAS. The form factor of a laptop can be set up anywhere and is ideal for confined spaces encountered in a frontline C2 tent, a building, naval surface vessel or even in an aircraft.

Compare Real-Time Data with Open Data or Previous Missions

Using the MIDAS Viewer analysts can view layers of open source or even classified data situated in a Common Operating Picture (COP) view. The MIDAS platform includes a common network connector Application Programming Interface (API) which allows any data source to be retrieved and displayed with temporal and spatial metadata in a map.

The DVR-style data animation playback capability of MIDAS is ideal for reviewing mission data, and allows analysts to animate massive data sets to see the progression of intelligence reports and incidents as they happened in time and space.

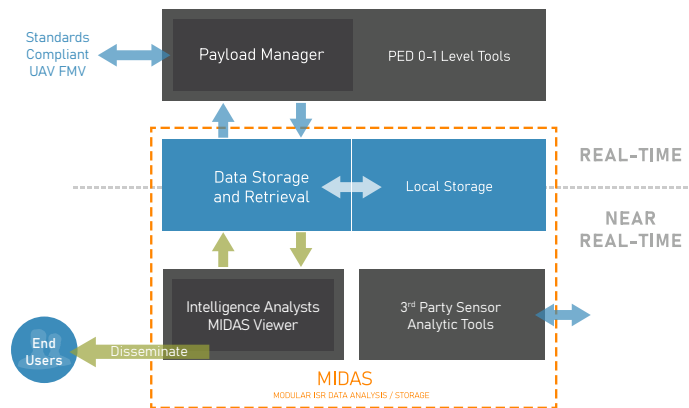
If an analyst notices something anomalous in the real-time FMV data feed from an Unmanned Vehicle's sensor feed, they can simply highlight the mission area on the MIDAS map display and MIDAS will search and return the range of historical intelligence products created from previous missions within that area for comparison with the current data.

How MIDAS Works

MIDAS provides tools for sensor analysis and the creation of intelligence products and briefing materials. This includes the tools required to create products for briefings and presentations. Reducing the reliance on headquarters for sensor data analysis and intelligence product creation dramatically shortens the time required to develop actionable intelligence from raw sensor data.

The MIDAS components are illustrated in the orange in the diagram shown here. MIDAS provides a Data Storage and Retrieval (DSAR) capability to receive and store the standardized sensor data and mission meta-data at real-time.

This sensor data is available to the Intelligence Analyst to be exploited, and is enabled by interfaces to third-party analysis tools whose new products can be stored in the DSAR as a product of that mission file.



MIDAS provides ready access to local storage, a sensor data DSAR and third-party tools for near real-time analysis.