

HIGH ROLLER MULTI-INT SENSOR PAYLOAD

Real-time, autonomous intelligence, surveillance, and reconnaissance data collection from an integrated payload

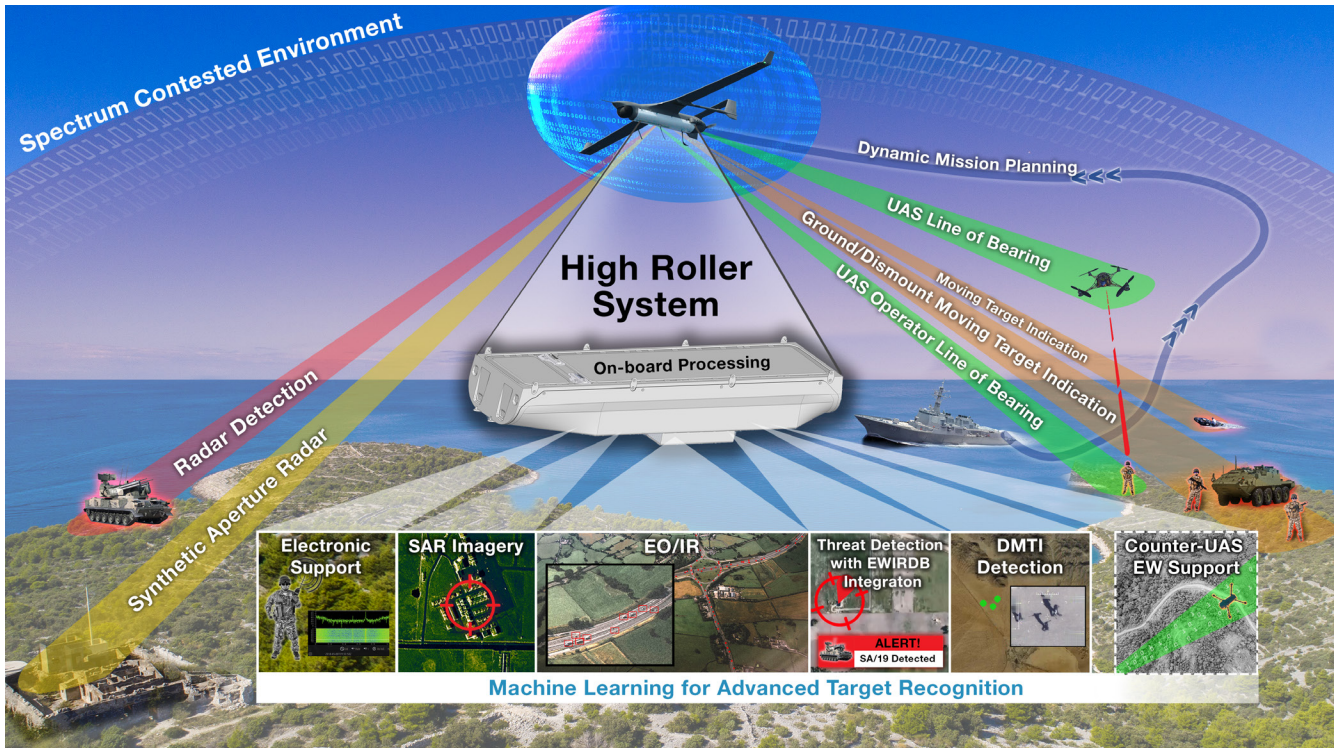
The High Roller system represents a major advancement in capability for forward-deployed and expeditionary units who do not have access to intelligence, surveillance and reconnaissance (ISR) systems deployed at higher echelons of command. The multi-intelligence (multi-INT) system provides squadron commanders with real-time correlation between signals of interest (SOI), synthetic aperture radar (SAR), electro-optical/infrared (EO/IR) imagery, and moving target indicators (MTI). The system is configurable, leveraging easily swappable mission cards/packages to address evolving mission needs.

The High Roller system is a multi-INT system-of-systems that enables real-time, autonomous ISR data collection from an integrated payload that is size, weight, and power (SWAP) compatible with the Navy RQ-21A Blackjack and similar tactical UAS. Beyond providing independent streams of ISR data from a single platform, the High Roller system delivers a force-multiplying capability – allowing onboard systems to work collaboratively and autonomously, providing multiple-look, geo-registered Multi-INT data to a single analyst or payload operator.

THE HIGH ROLLER SYSTEM PROVIDES A FORCE MULTIPLYING CAPABILITY – ENSURING ISR SUPERIORITY AGAINST ANY ADVERSARY



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MISSION OPERATION

Planning

A predefined set of targets and flight paths are specified prior to take-off. System can operate autonomously for A2AD missions. For additional mission flexibility, the operator can adjust flight paths and targets in real-time.

Operation

During a mission, the radar automatically turns on and off as it passes areas defined during the planning phase. All data is automatically processed onboard and either stored or downlinked. A user can define a new mission or additional areas of interest while the system is in flight.

ONBOARD PROCESSING

Pre-processing

Data is filtered and pre-processed to eliminate returns from outside the antenna beam and to provide increased signal-to-noise ratio (SNR). This ensures a more clear and accurate data picture for the operator, making it easier and faster to identify good actionable intelligence.

Onboard Image Formation

Back-projection is performed in real time on a field-programmable gate array (FPGA).

Onboard GMTI Detection

Real-time Space Time Adaptive Processing (STAP) is performed to enable dismount detection and to create a resilience to jammers in denied environments.

Onboard Signal Analysis

Signal analysis and processing is performed simultaneously with all modes. The system monitors the spectrum and provides geolocation of found emitters. High Roller utilizes a low SWaP SDR and supports the open frameworks for easy integration of custom processing.

Cross Cuing

High Roller can cross cue the EO/IR ball gimbal from all modalities.

Data Storage and Downlink

Image data and detection data is stored on the sensor's solid state drive and can be downlinked to a ground user.

GROUND DISPLAY

All data uses standard formats such as STANAG 4609, STANAG 4607, STANAG 4676, NTIF and JICD 4.2 to enable ingestion into ground stations.

RADAR SPECIFICATIONS

- Operating band: 9.5–10 GHz
- Peak transmit power: 60 W
- Bandwidth: <= 500 MHz
- Beam width: 3° x 30° (Az/EI)

FEATURES

- ▶ Onboard processing of data to reduce bandwidth usage
- ▶ Real-time, autonomous ISR data collection against any adversary
- ▶ SWaP compatible with Navy RQ-21A and similar tactical UAS
- ▶ Low power consumption
- ▶ New missions or additional areas of interest are configurable while the system is in flight
- ▶ Provides multi-INT (SOI, SAR, EO/IR, MTI) combined to a single analyst/payload operator
- ▶ Processing modes
 - GMTI/DMTI
 - X-band SAR
 - Signal Analysis (geolocation, etc.)
 - Auto cuing of EO/IR



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