Overview

HALO has the most comprehensive and forward-looking solution for integrated surveillance. The SmartEye system is an open standard solution that goes well beyond today's competition for the number and variety of input source options. With SmartEye, results and predictions benefit from the use of many (not just multiple) sources to increase the reliability and credibility of the information used.

SmartEye

Halo's SmartEye approach is focused on bringing together a wide variety of data simultaneously to provide higher confidence information faster to key decision makers, allowing timely informed decisions. The system is designed to permit the inclusion of additional capabilities in the future to provide additional unique capabilities and enhancing current systems to adapt to changing adversary tactics.

- Allows for natural language queries.
- Synthesizes and analyzes terabytes of information.
- Uses structured artificial intelligence to increase detection accuracy over time (it learns).
- Uses unstructured artificial intelligence to identify new insights by clustering multiple source data.
- Uses goal-optimized artificial intelligence to assist in prediction of likely next actions for targets of interest.

Inputs and Outputs

HALO's Open architecture AI allows multiple input sources to be incorporated. Aside from what is shown, other key data such as weather and sea data can be included where deemed beneficial to the needs of the client.

As an example, the information from bathythermographs can assist in predicting locations and movements of submarines. Wind, temperature and tide data can also affect target route predictions in shallow littoral areas.

Working with our client's key requirements, HALO's initial requirements refinement process can identify the best mix of sensor information based on the desired outputs.
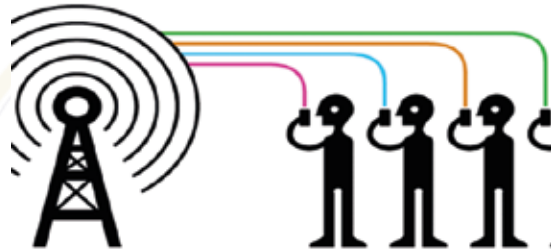

Mobile Phone Intercepts

HALO's SmartEye can receive information from mobile phones where such data is available. This provides information such as the IMEI and ESN along with metadata on the patterns of usage of the mobile phones. Such a system has been used in Singapore with success to identify illegal personnel on commercial ships who are using the vessel as a mode of passage.
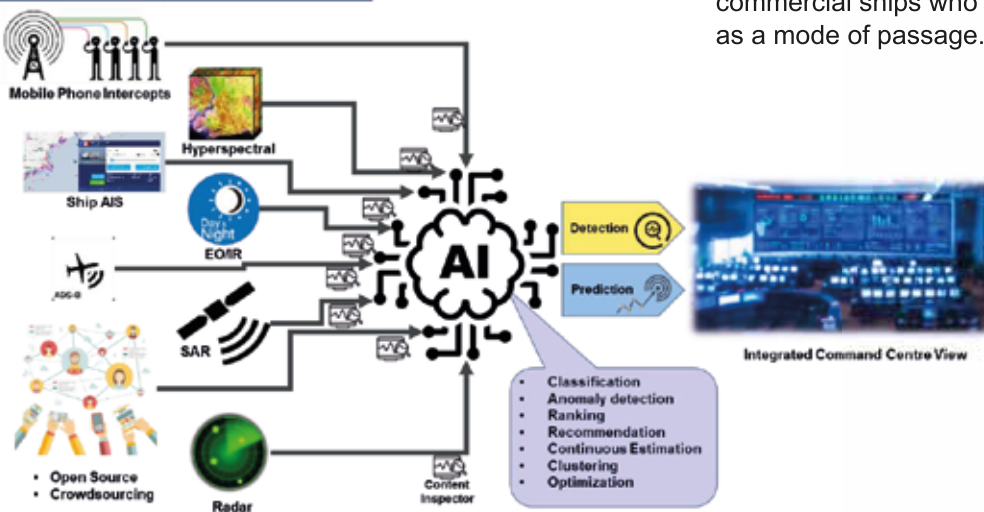
Integrated Command Centre View

Hyperspectral Data

Satellites that monitor the earth in many different wavelengths simultaneously are useful to monitor natural resources and atmospheric characteristics. This information can also be used in an AI to assist in anomaly detection and clustering for AI.
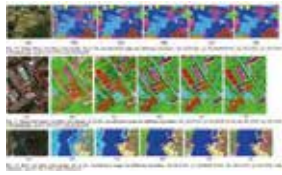
Ship AIS Data

SOLAS regulation V/19 requires AIS to be fitted aboard all ships of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages and all passenger ships irrespective of size. For these ships, the ability to track their movements from both shore stations and from satellite AIS systems are essential to build a database of likely targets and exclude those who are not flagged as threats.

Electro-Optic and Infrared (EO/IR) Imagery

HALO's SmartEye can use the imagery to do several functions, including target identification and anomaly detection. These systems include

Cavite

sophisticated and dedicated EO/IR solutions that are already in the national inventory, satellite sources, and even cameras from mobile phones posted to open-source sites.

Synthetic Aperture Radar (SAR)

SAR can operate through clouds and also provide key moving target indications.

Iceye captured this stereo view of Indonesia by overlaying two images captured minutes apart in July 2019. Credit: Iceye

Coastal Radar

Coastal radar provides a view offshore. This can be in different bands and accessing the raw data allows for secondary processing of the information to obtain insights not normally displayed on the device itself.
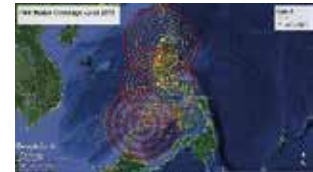
Open-Source Intelligence (OSINT)

OSINT gives information on a significant range of information that can be very important in anomaly detection, clustering, and prediction algorithms.

Crowdsourced Intelligence

Crowdsourced intelligence comes from feedback to user-initiated requests. This is like the alerts that police may post where they are informing people that they are looking for a car or a person, etc. The information is distributed, and the feedback is monitored from the "crowds" to aid in location updates, inputs to refine targets of interest, updates to predictions, and can also be used in future iterations to also help in determining if the target has weapons or other potential threats with them.