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## **Underwater Acoustic Signal Analysis**



# Underwater Acoustic Signal Analysis

## >> Acoustic Intelligence (ACINT) system

The Underwater Acoustic Signature Analysis System (UASA) is an Acoustic Intelligence (ACINT) system that may be located on land or at sea.



The UASA performs Low Frequency (LOFAR) Sonar data collection, processing, analysis, classification and database management. The LOFAR data, which consists of acoustic signals radiated by various sources, is received and collected by naval and air platforms operating passive sonar systems such as submarines, surface platforms with towed arrays, air platforms using sonobuoys, fixed bottom-moored sonar systems, etc.

Once the LOFAR sonar data is collected it is analyzed by the central ACINT laboratory and the outcome is an accurate acoustic signature of the target. Following this process the acoustic signature is input into the platforms' acoustic signature database, where it is used as an aid for real-time classification.

The signals received may be from:

- » Surface Vessel Radiated Noise
- » Submarine and other underwater platforms Radiated Noise
- » Torpedo noise
- » Sonar transmissions
- » Biological noise

## >> Features

The UASA applies advanced processing algorithms on the received signals to derive classification and identification parameters of the signal source.

- » The UASA system also performs the following tasks:
  - » Offline acoustic signature analysis from various targets in a standardized format
  - » Incorporation of recorded and archived environmental data to aid offline analysis of acoustic signatures
  - » Using oceanographic data to support the analysis of the acoustic signature of known platforms
- » Archiving of all data, which would facilitate:
  - » Compilation of a classification library
  - » Creation of Noise Based Alerts especially for torpedoes, missiles and submarines
- » Presentation of data in a comprehensive database for sea/air platforms to support online classification of targets in the vessels' Sonar systems.



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