RTsys

Underwater Acoustics & Drones

MAN-UNMANNED TEAMING

RTSYS

- **French Company**
- **Defense Focused since 2010**
- **Present in more than 80 countries**
- **MCM & ASW**
- **AUVs, hand held sonar, training target, and sonar calibrator**

- EOD
- ARMY / NAVY / MARINES Clearance Diver
- MCM Group
- Special Forces
- Combat Divers
- SAR / Coast Guard
- Maritime POLICE

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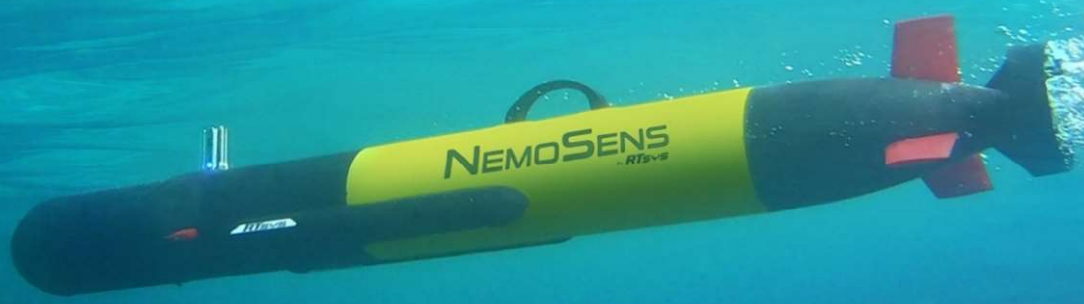
MANNED-UNMANNED TEAMING FOR EOD AND COMBAT DIVERS

NEMOSENS MICRO AUV

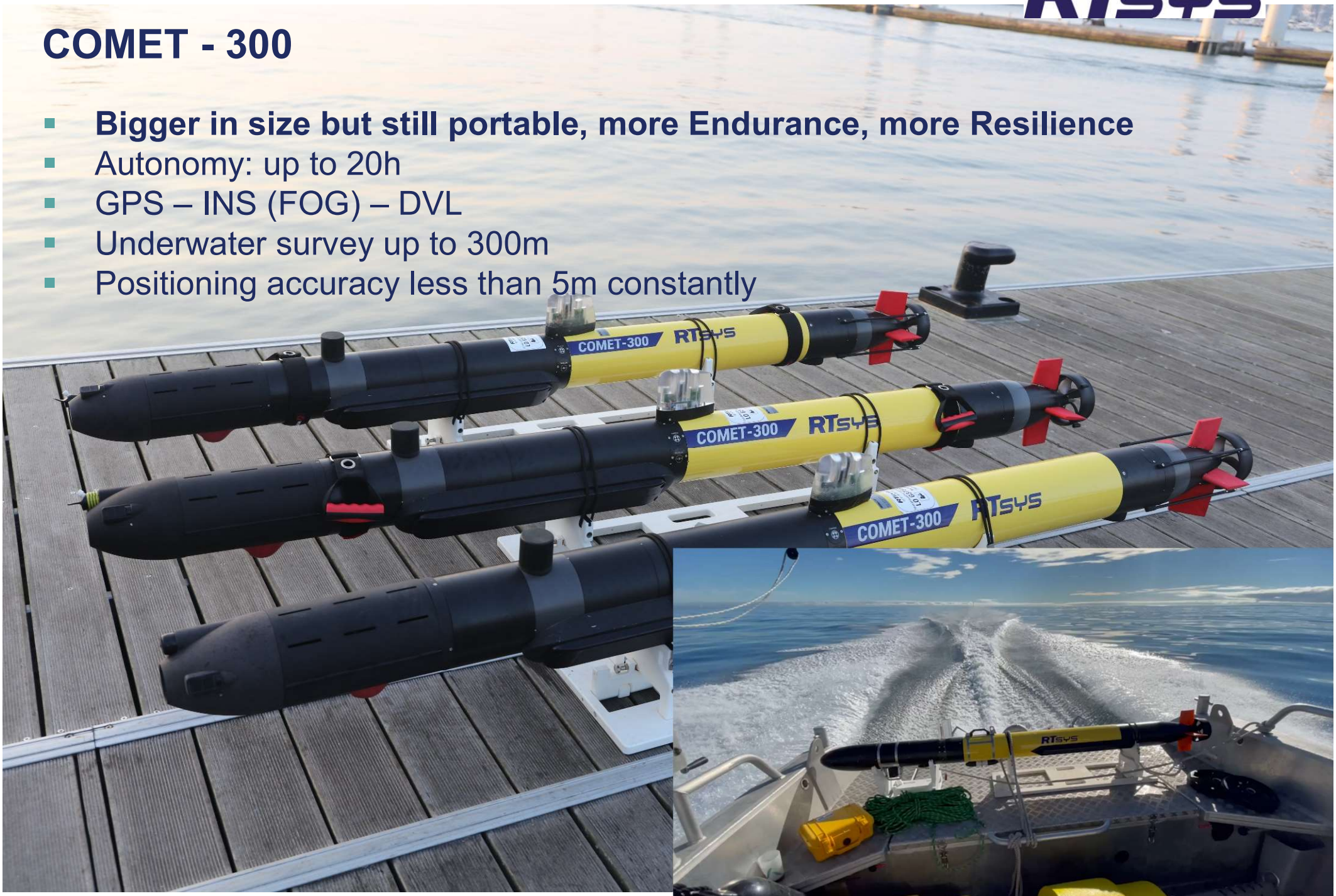
AUVs FOR MINE LOCALIZATION & IDENTIFICATION



- *Portability, Endurance, Resilience*
- Less than 10kg
- Autonomy: up to 10h
- Underwater survey from 2m to 300m
- Positioning accuracy less than 5m constantly
- Beaching, Amphibious, Harbour operations

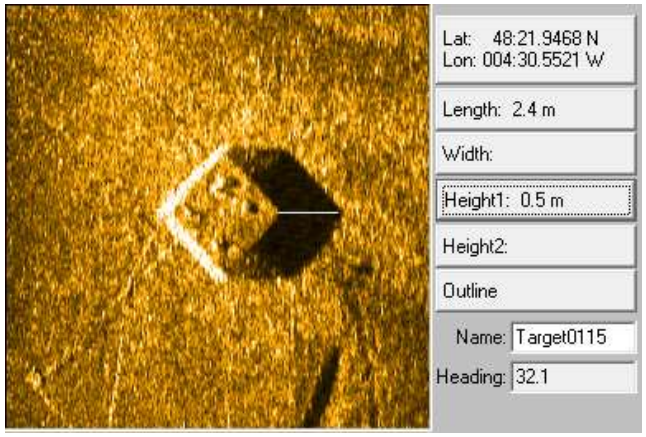
COMET - 300

- **Bigger in size but still portable, more Endurance, more Resilience**
- Autonomy: up to 20h
- GPS – INS (FOG) – DVL
- Underwater survey up to 300m
- Positioning accuracy less than 5m constantly



EXTEND THE TRADITIONAL SCOPE OF OPERATIONS OF EOD & COMBAT DIVERS

- Mine Countermeasure Missions (MCM)
- Very Shallow Water missions (VSW)
- Rapid Environmental Assessment (REA)
- Search And Locate (SAL)
- Search And Rescue (SAR)
- Amphibious and Beaching operations
- Harbor protection
- Intelligence, Surveillance, and Reconnaissance (ISR)



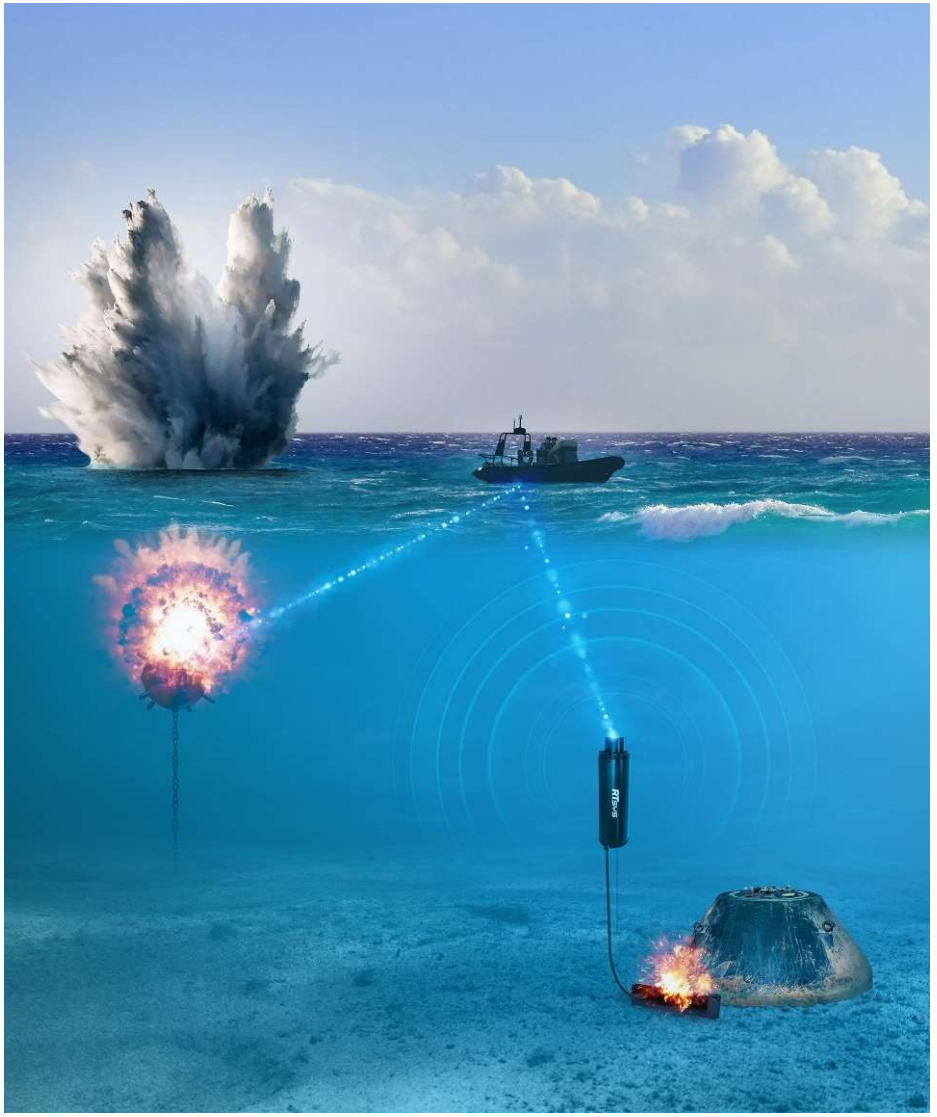
SONADIVE HANDHELD SONAR

- **Diver's navigation, imaging under zero visibility, communication**
- Dual frequency sonar (900 / 2250 kHz)
- 12" screen
- GPS – INS – DVL
- Text messages
- Underwater survey up to 100m – Autonomy 6 hours
- Positioning accuracy less than 5m constantly
- Certified STANAG 2897 B Grade

SONADIVE HANDHELD SONAR

- **Compatible with Diver Propulsion Vehicle (DPV)**

SONABLOW ACOUSTIC FIRING SYSTEM



- **Neutralization of mines – no wires**
- 2km acoustic range
- 7 days autonomy
- Encrypted data
- Safer and easier process
- Triggering at any time from the surface

MANNED-UNMANNED TEAMING

WHAT THE TECHNOLOGY CAN BRING TO DIVERS?

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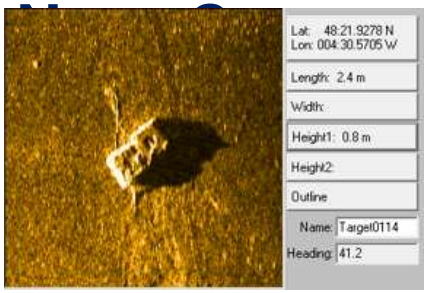
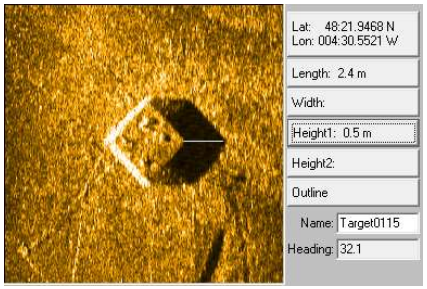
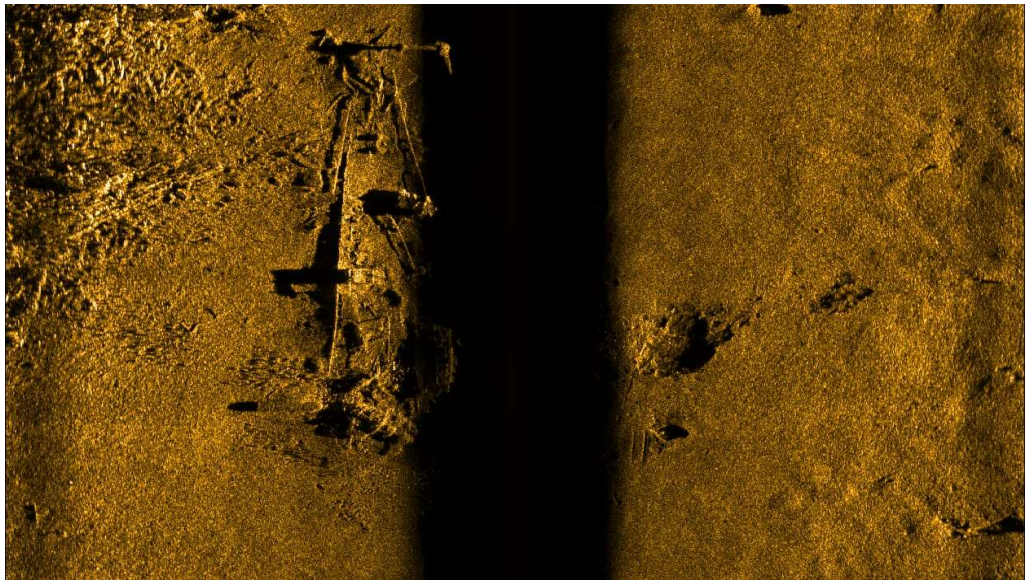
POWERED BY SDA®

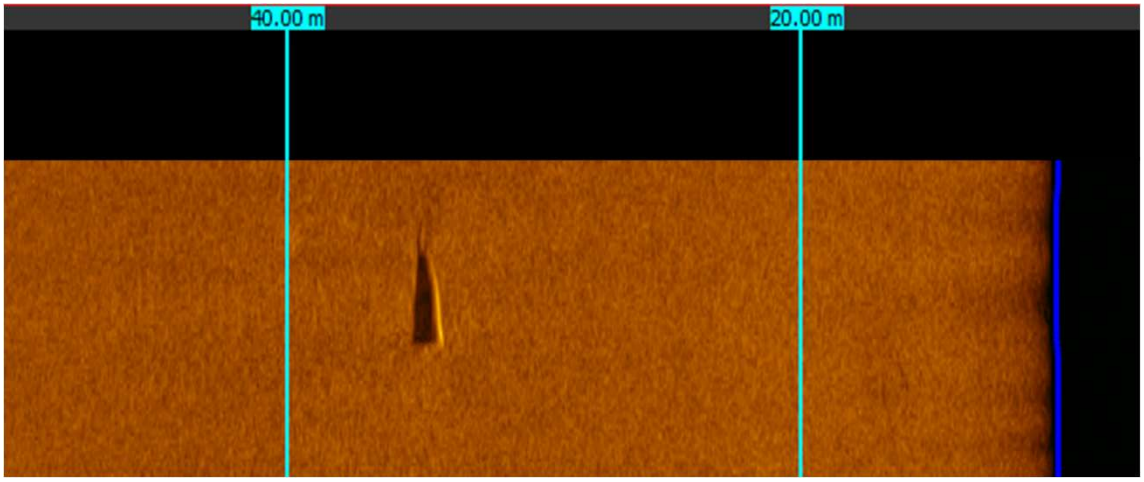
900 KHZ MICRO Side Scan Sonar







450-900 KHZ Side Scan Sonar Comet-300

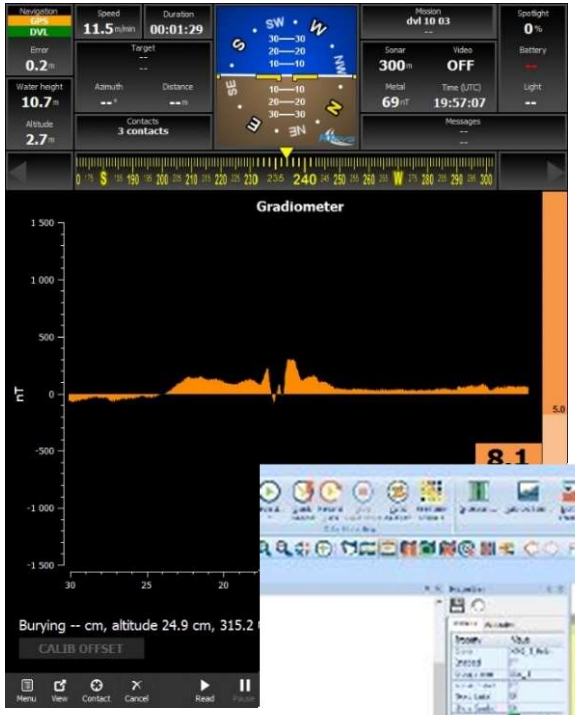


MKIV ENGLISH MINE

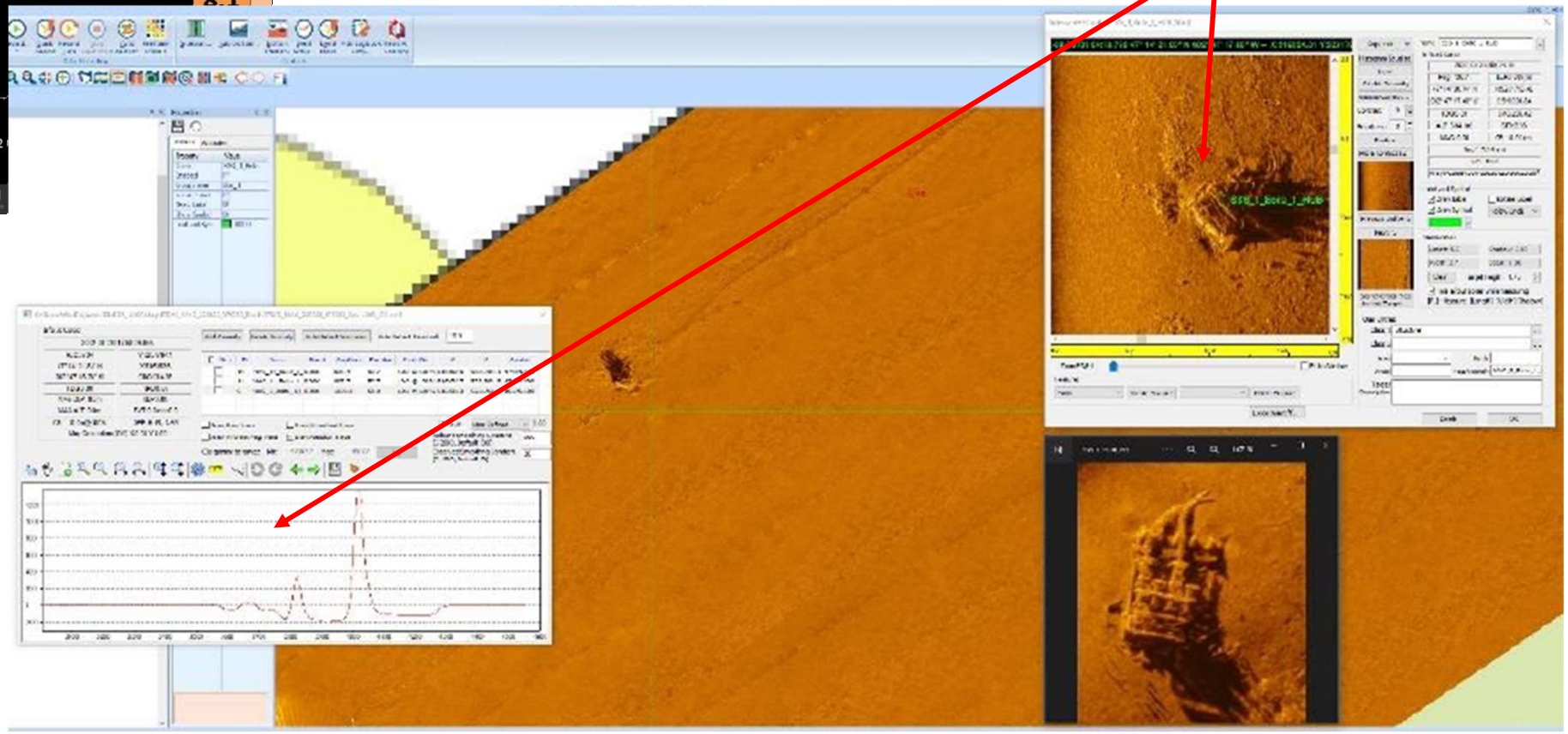
Length: 2,8m

Width: 0,7m

MAGNETOMETER / GRADIOMETER

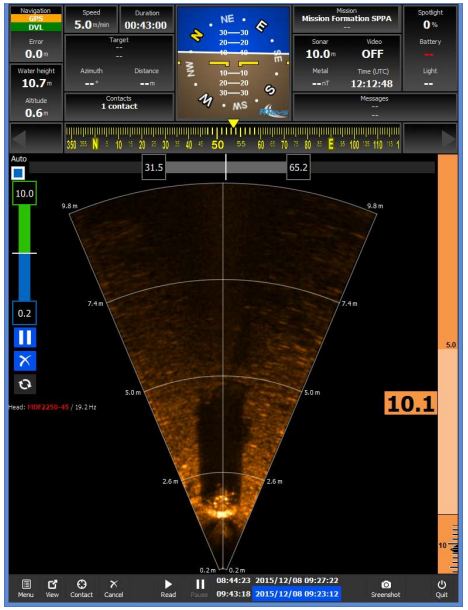


Correlation of sonar images and magnetic anomalies on a single software view.



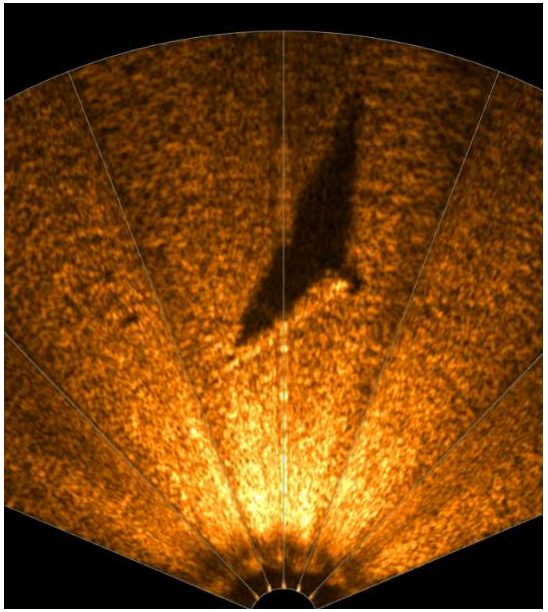
SONADIVE

Tactical View

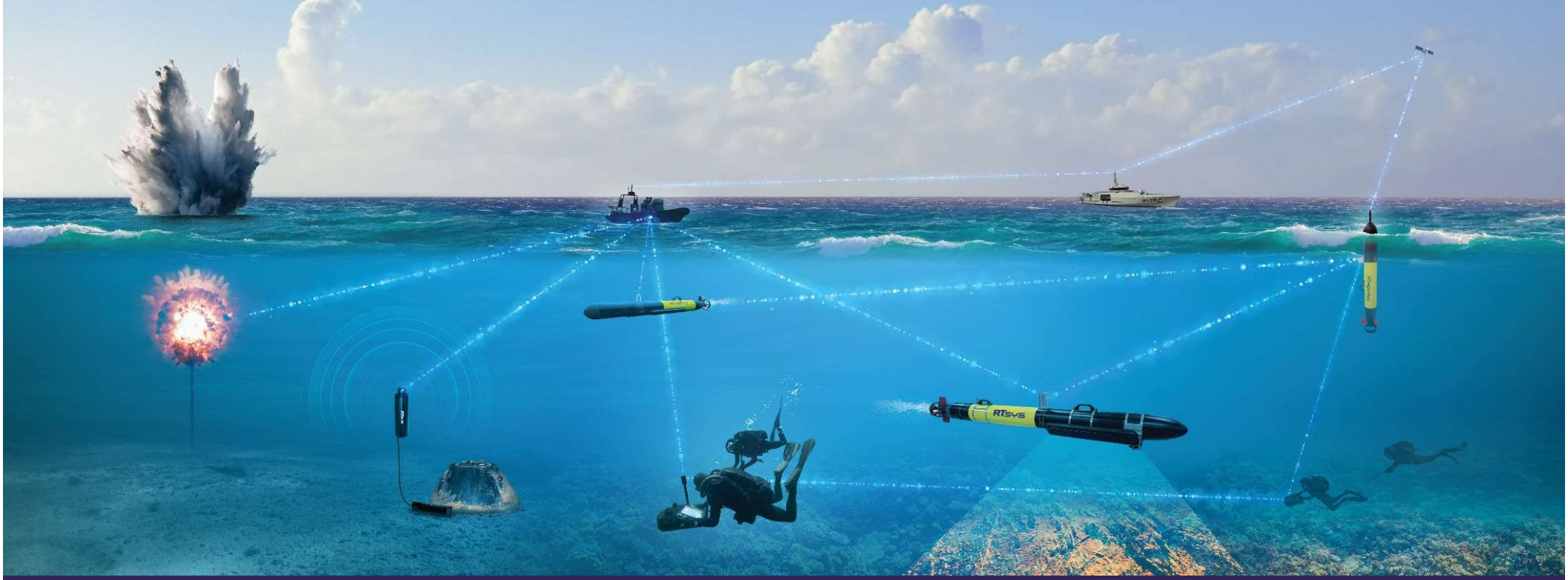


Detection / Identification

Communication
(information/safety)



Imaging sonar



Manned-Unmanned Teaming is the collaborative use of both manned and unmanned systems to achieve a common objective.

In the context of EOD diving operations, Manned-Unmanned Teaming is the most valuable solution to enhance **safety** and **efficiency** :

💪 Minimize the risks to divers and increase the speed of operations

🧠 Humans at the center of operational decisions

€ Reducing cost of mission

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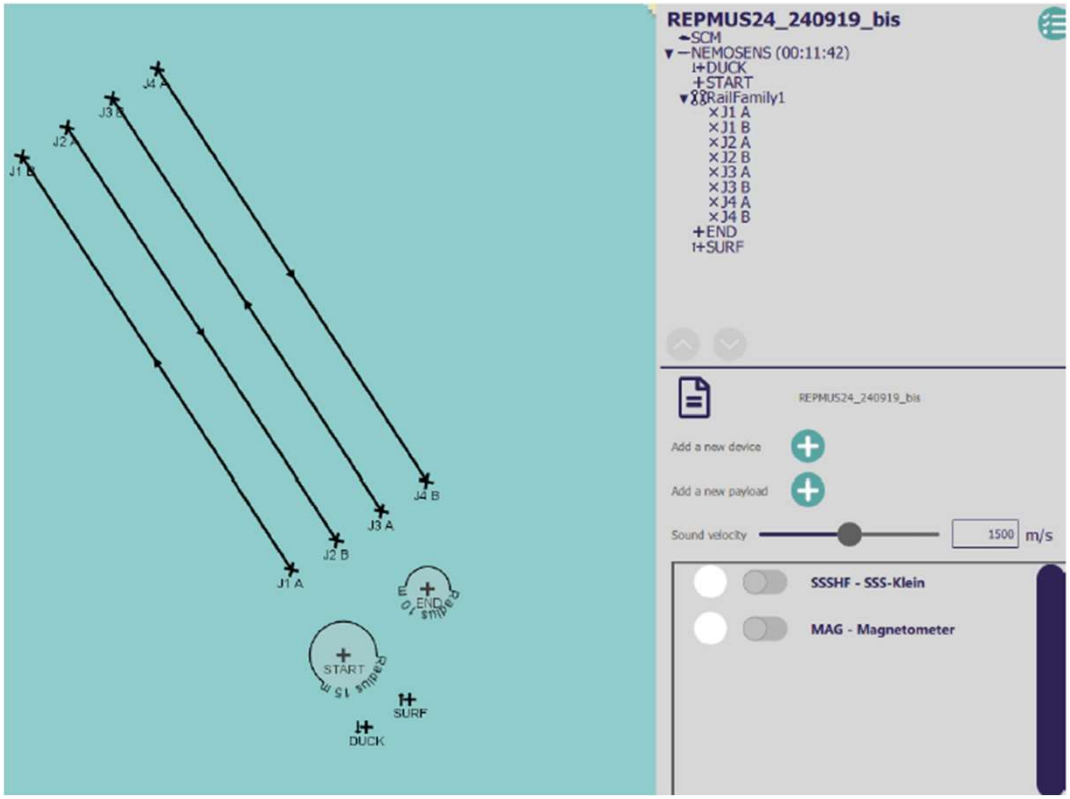
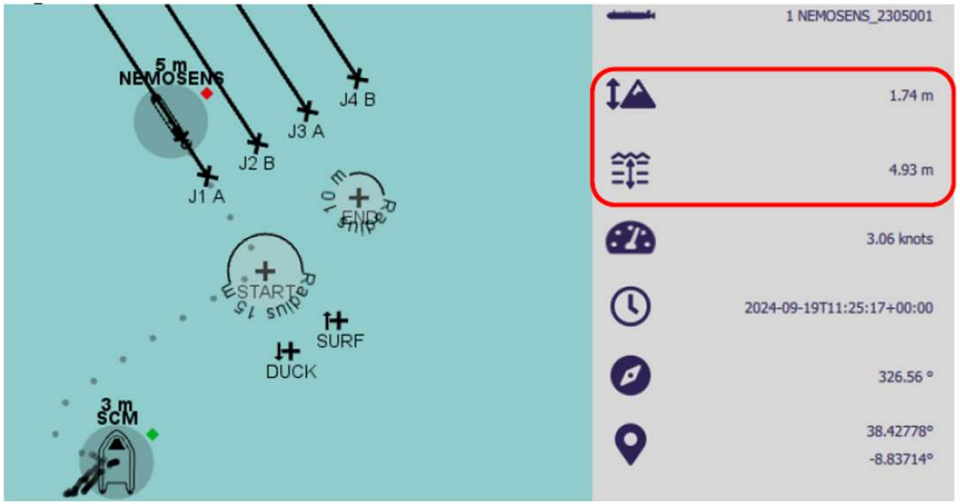
POWERED BY SDA®

MicroAUV NEMOSENS on Very Shallow Water ops

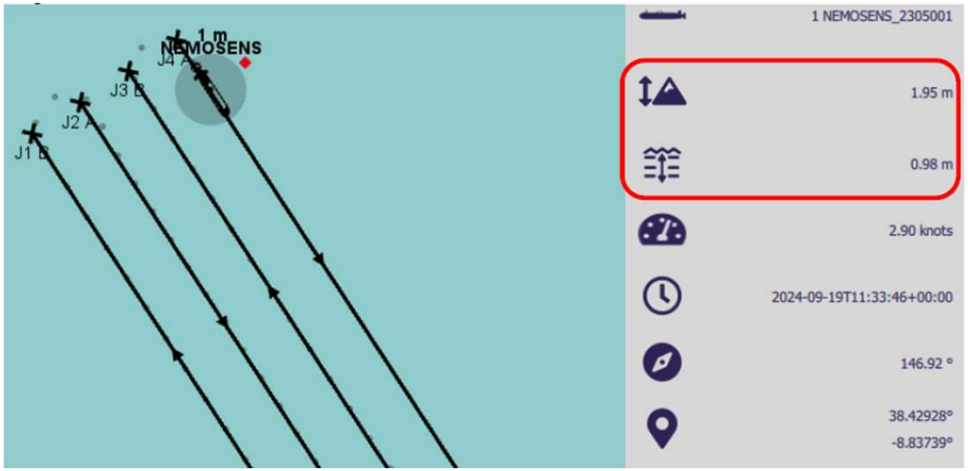
- Capability to navigate in less than 3m of water column



Mission plan



Beginning of the mission



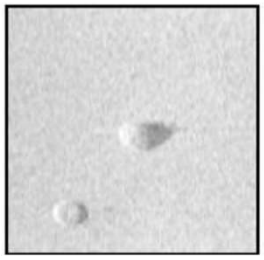
NemoSens of the 4th rail

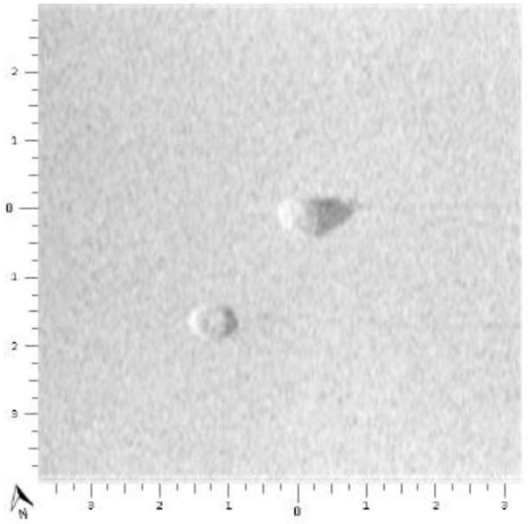
MicroAUV NEMOSENS on Very Shallow Water ops

- Capability to monitor SSS data

Classification		
State	Type	Confidence
Contact	Debris	1

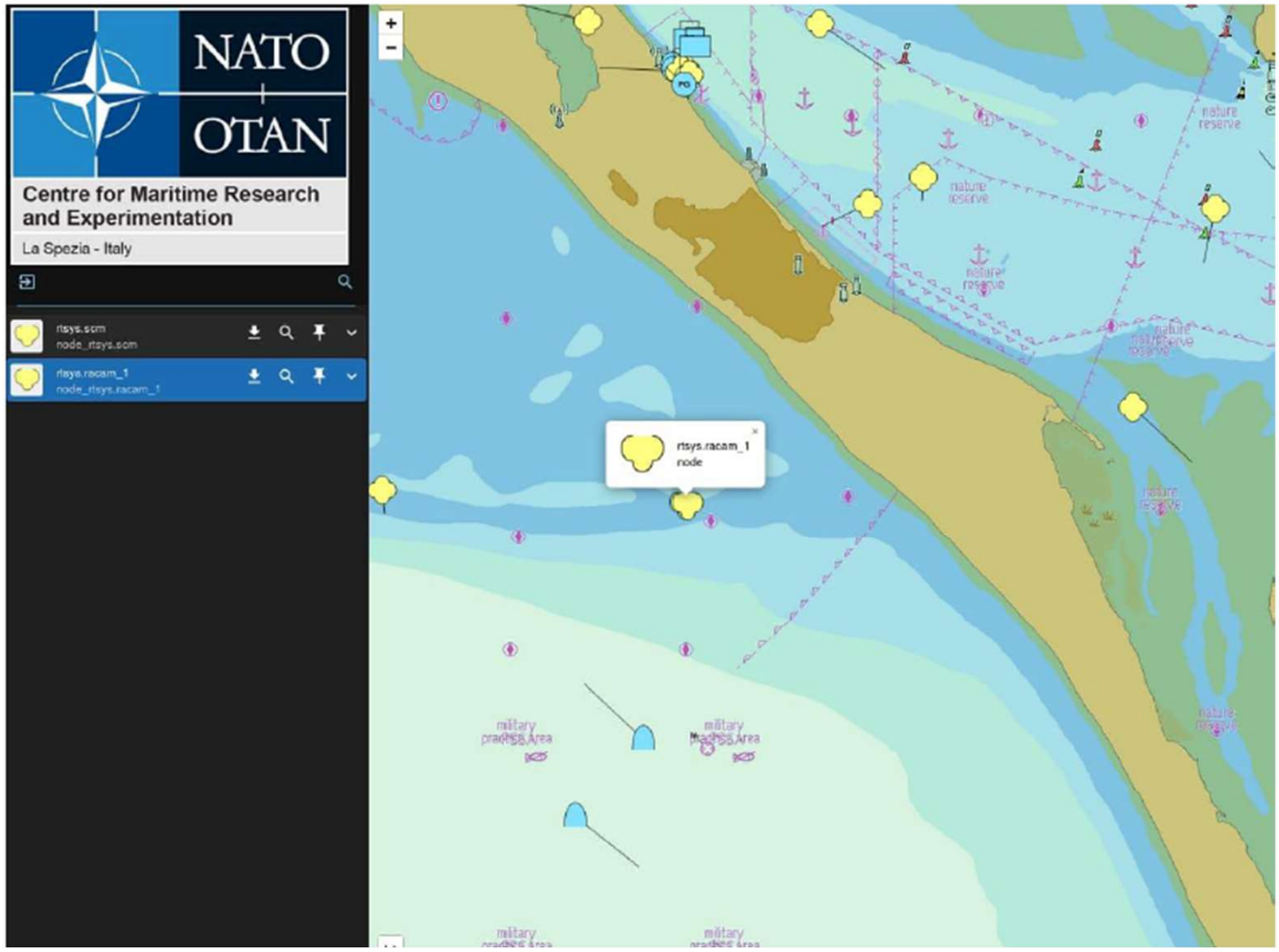
Dimension	
Length	0.50 m
Width	0.53 m
Height	0.21 m





MicroAUV NEMOSENS on Very Shallow Water ops

- Capability to display position/bearing/speed on C2 system



MAN-UNMANNED TEAMING FOR ASW TRAINING

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How to allow easy and high ends ASW training without mobilizing some of Navy's most valuable assets ?

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Need for solution to replace the Submarine during **ASW Training**

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SEMA

PORTABLE & RECOVERABLE TARGET FOR ASW SONAR TESTING AND TRAINING

More than **20 units** in operation worldwide & **NATO first choice** of ASW training target

AS USED BY FRENCH ARMED FORCES

CHARACTERISTICS

- Lenght: L 213 cm
- Weight: 33 kg
- Operating depth: 300 m
- Speed: 15 knots
- Autonomy: 24 hours at 4 knots (1.5 hour at 15 knots)

ACOUSTIC FEATURES

- Echo-repeater: 1 to 33 kHz
- Noise maker: 200 Hz to 38 kHz

ASW UNITS NEEDS TO MAINTAIN

Basic Training

A single unit for operator training in elementary anti submarine tasks for :

- Surface Unit, MPA,HELO or SUB :
  - Active mode: detection, tracking, classification, internal procedures
  - Passive mode: detection, tracking, classification, TMA (Target Motion Analysis)
  - Use of weapons: Torpedo firing exercise

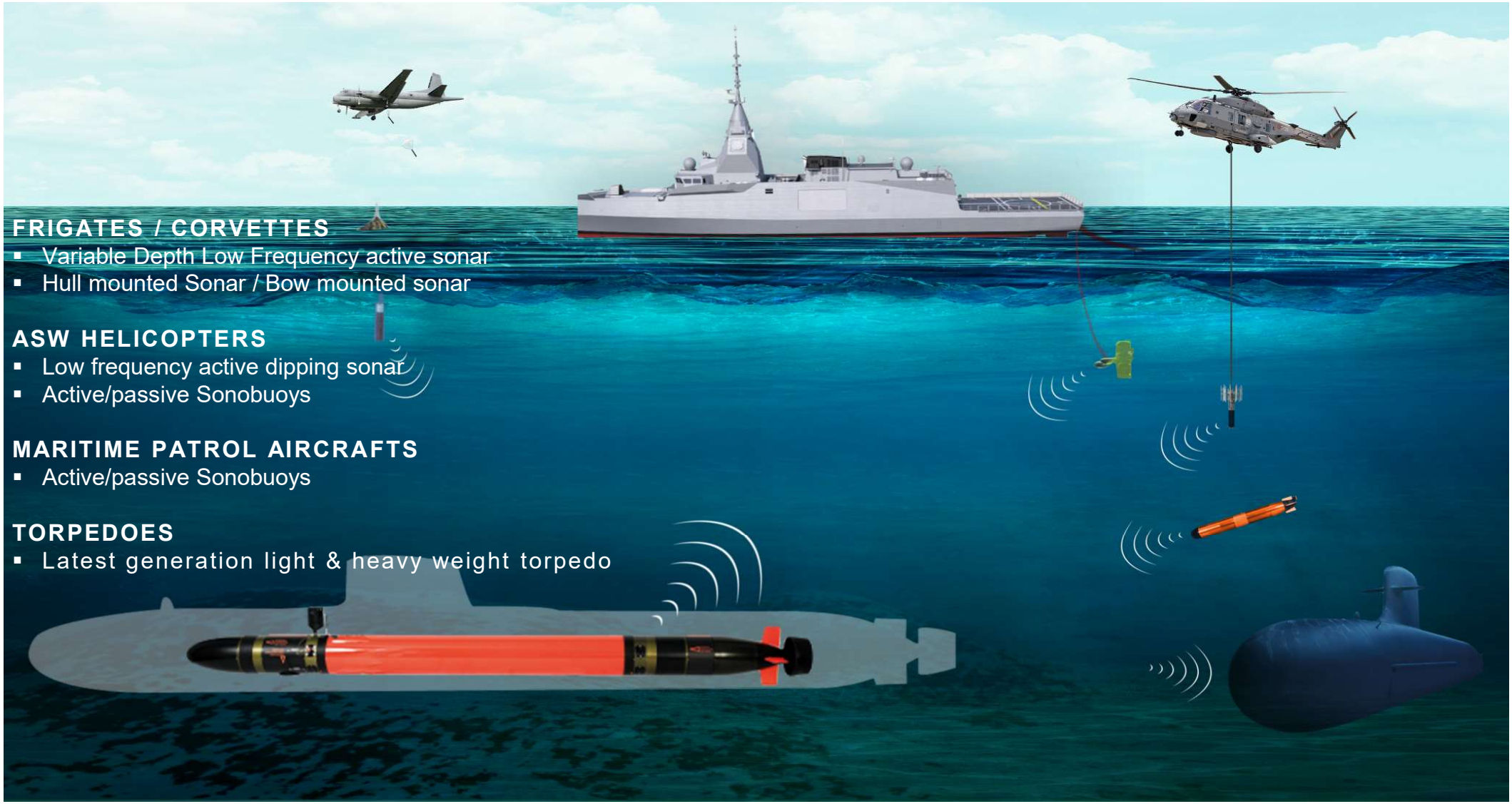
ASW UNITS NEEDS TO MAINTAIN

Advanced Training

- Training in cooperation with several ASW assets
  - Application of procedures
  - Naval force management / Coordination of assets
  - WSM (Water Space Management) / PMI (Prevention of Mutual Interference)
  - Safety rules in exercise
  - Anti torpedo reaction

SEMA

PORTABLE & RECOVERABLE TARGET FOR ASW SONAR TESTING AND TRAINING



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SEMA benefits:

- **Operator training (detect, classify, prosecute, RETEX)**
- **Elementary or higher training of ASW units in passive and/or active mode**
- **Torpedo Firing exercise**
- **Cost effective**

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