

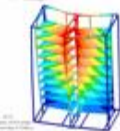
# New System Building Blocks

## Defense & Homeland Security



**SHOCK TECH**

**MILCOTS™**





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## Corporate Profile

---

- **1Robotics: US Small Business**

- Joint Venture between ECA and 901D

- **901D**

- US Leader in the design and manufacture of:
  - Shock and vibration tolerant MIL Standard hardware
  - EMI compliant
  - Test and evaluation
- Located near New York City
- 100 employees
- Raytheon 3 star supplier in 2008



## ECA

---

- Designing and manufacturing Unmanned Underwater Systems since the 50's
- 600 employees
- Underwater vehicles world leader
  - 450 Vehicles delivered
  - 20 Navies
  - Ultra deep water systems (up to 20000 ft)
- First AUV developed in the world in the early 80's



# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

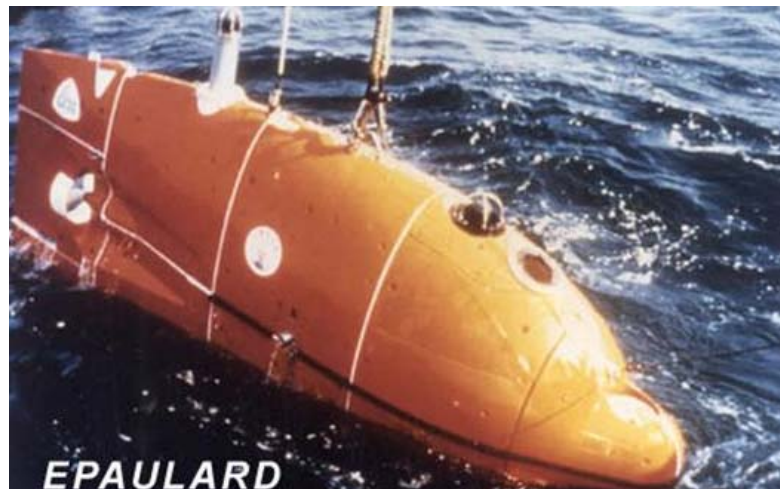
## ECA

**Since 1970:** *Leader in underwater robotics*



**Since 1980:** *Leader in subsea mine countermeasure & AUVs*

*20000 ft rated vehicles*





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## 1Robotics Competencies

- ◆ State-of-the-art sensor integration
- ◆ Development of complex systems
- ◆ Automation, robotics & remote controlled systems
- ◆ Customization of standard products
- ◆ Concept, studies and prototypes
- ◆ Special equipment
- ◆ Software



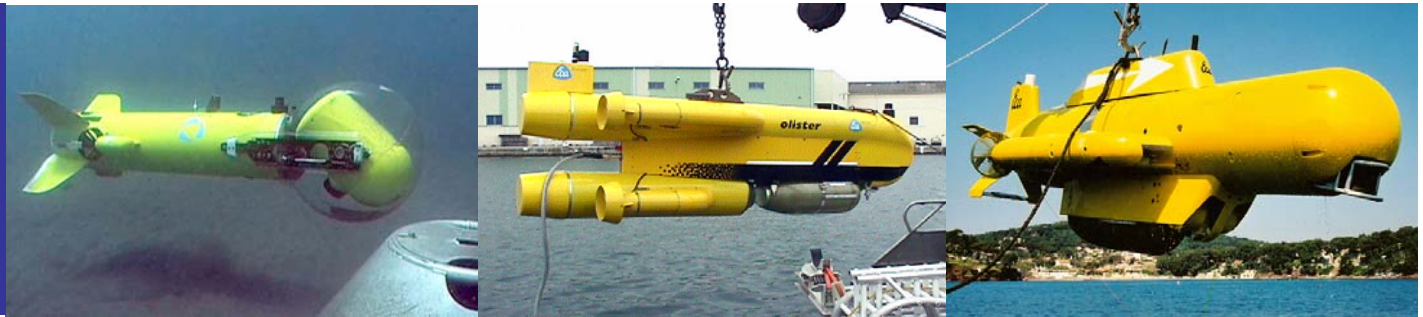


# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## 1Robotics Product Line

Underwater  
Mine Disposal  
Systems



Inspection &  
Intervention  
Systems  
Defense & Security



Unmanned  
Ground  
Vehicles

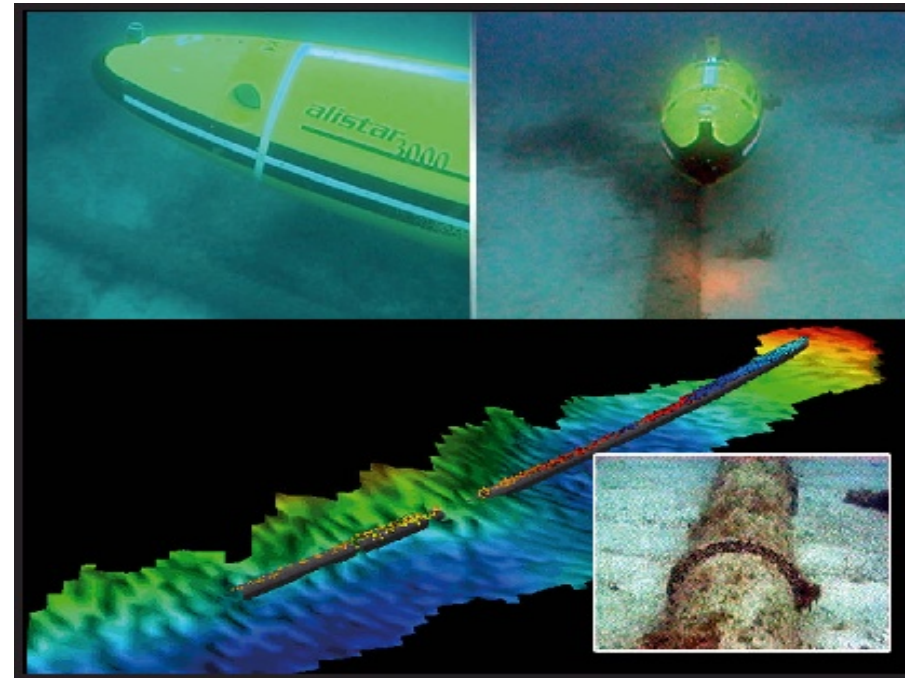




## A3000

### Deep water inspection AUV

- ◆ 8 thrusters / Hovering capability
- ◆ Close Visual Inspection (CVI)
- ◆ Active ballast system
- ◆ 2 payload sections
- ◆ BITE system
- ◆ Low rate & high rate acoustic link
- ◆ 10 000 ft rated vehicle





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## A3000

- 5 meters long
- 1,68 meter max width
- 1,45 meter height
- Operational from 0 to 3000 msw
- 2 knots cruise speed
- 24 H autonomy @ cruise speed
- 5 knots max speed
- Hovering capabilities
- Active ballast system
- Automatic safety release weight
- 2100 kg with payload
- 200 kg flexible payload

### Technical characteristics



**MANOEUVRABILITY**





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Introduction



Delivered to the French Navy Hydrographic Institute

Vehicle delivered in July 2008



# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Main Specifications

Dimensions	L16 ft
	Dia 2.2 ft
Weight	2000 lbs
Max Depth	1000 ft
Max Speed	8 knots
Endurance	20h at 3 kts
Turning radius	50 ft





## ALISTER Equipment

---

- **NAVIGATION**

---

- INS – IXSEA Phins
- DVL – RDI Workhorse
- DGPS - WAAS EGNOS

- **COMMUNICATION**

---

- Bi-directional 433 MHz low rate radio link
- Bi-directional Ethernet radio link
- Low rate acoustic link
- FO link (option)

- **SAFETY**

---

- Release weight
- Emergency acoustic link
- Area limits
- Energy monitoring.....



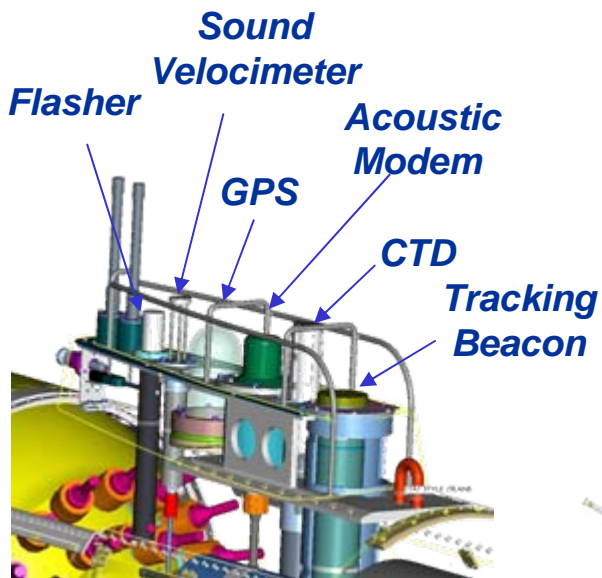
# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

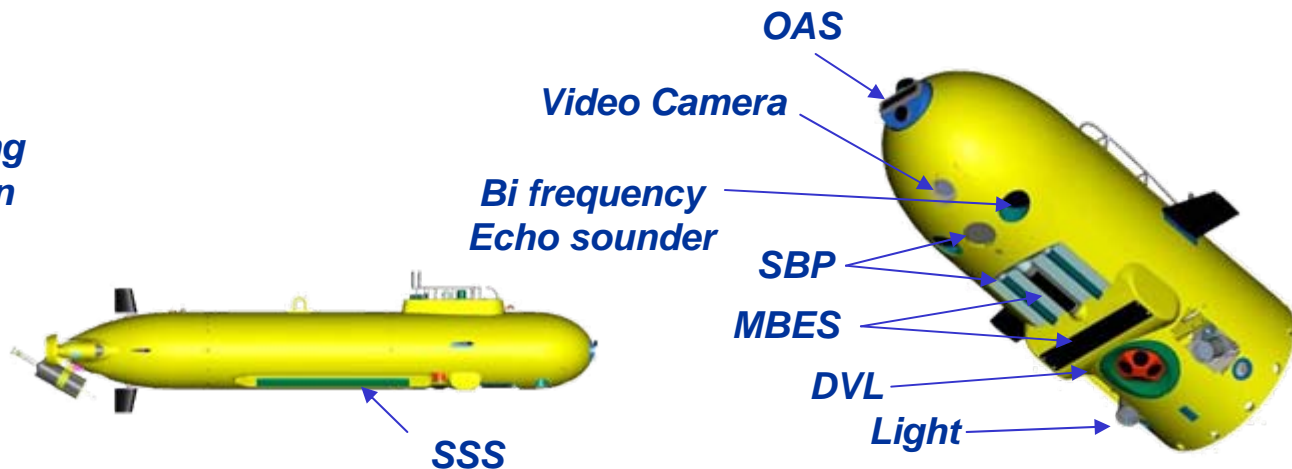
## ALISTER Sensors Integration

### • SENSORS

- Obstacle Avoidance Sonar (OAS) Blueview P450E
- Side Scan Sonar (SSS) KLEIN 5500
- Multi-Beam Echo Sounder (MBES) RESON 7125
- CTD probe Seabird SBE 49
- Sub Bottom Profiler (SBP) Edgetech 4 - 24 kHz
- Video camera & search light (DEL lights)



All sensors working together

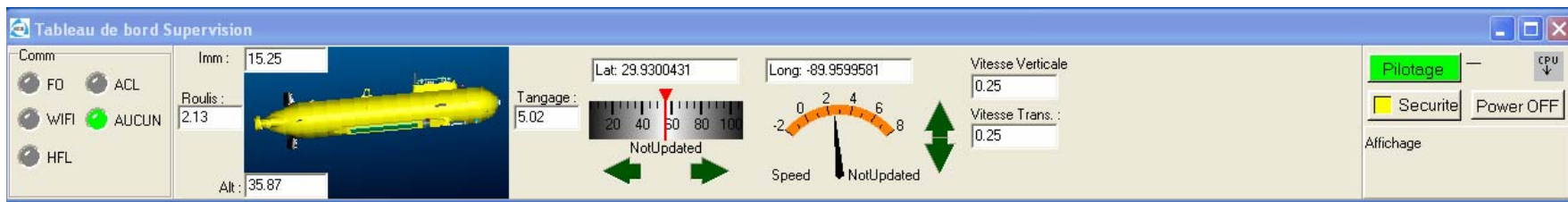
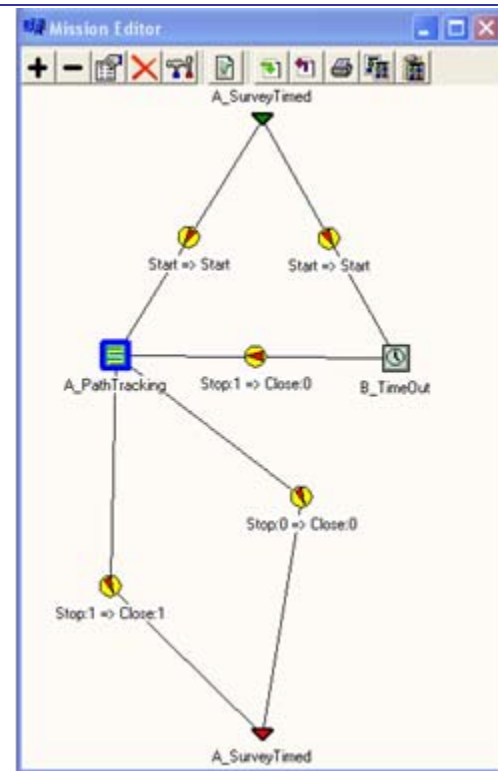
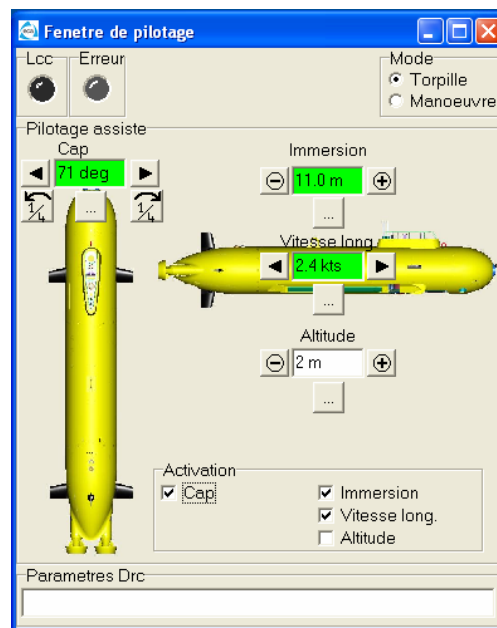
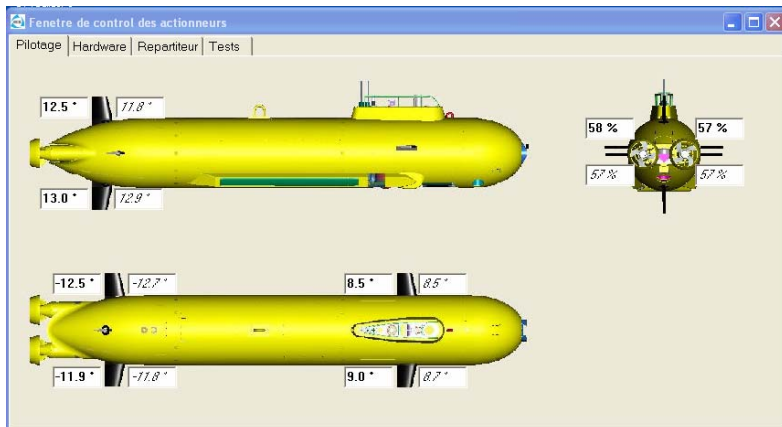




# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Mission Planning System





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Missions

---

- Rapid Environment Assessment (REA)
- Hydrography, Oceanography
- Homeland and port security (e.g. MCM)
- Intelligence gathering - covert reconnaissance
- Bathymetry



# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Sea Trials

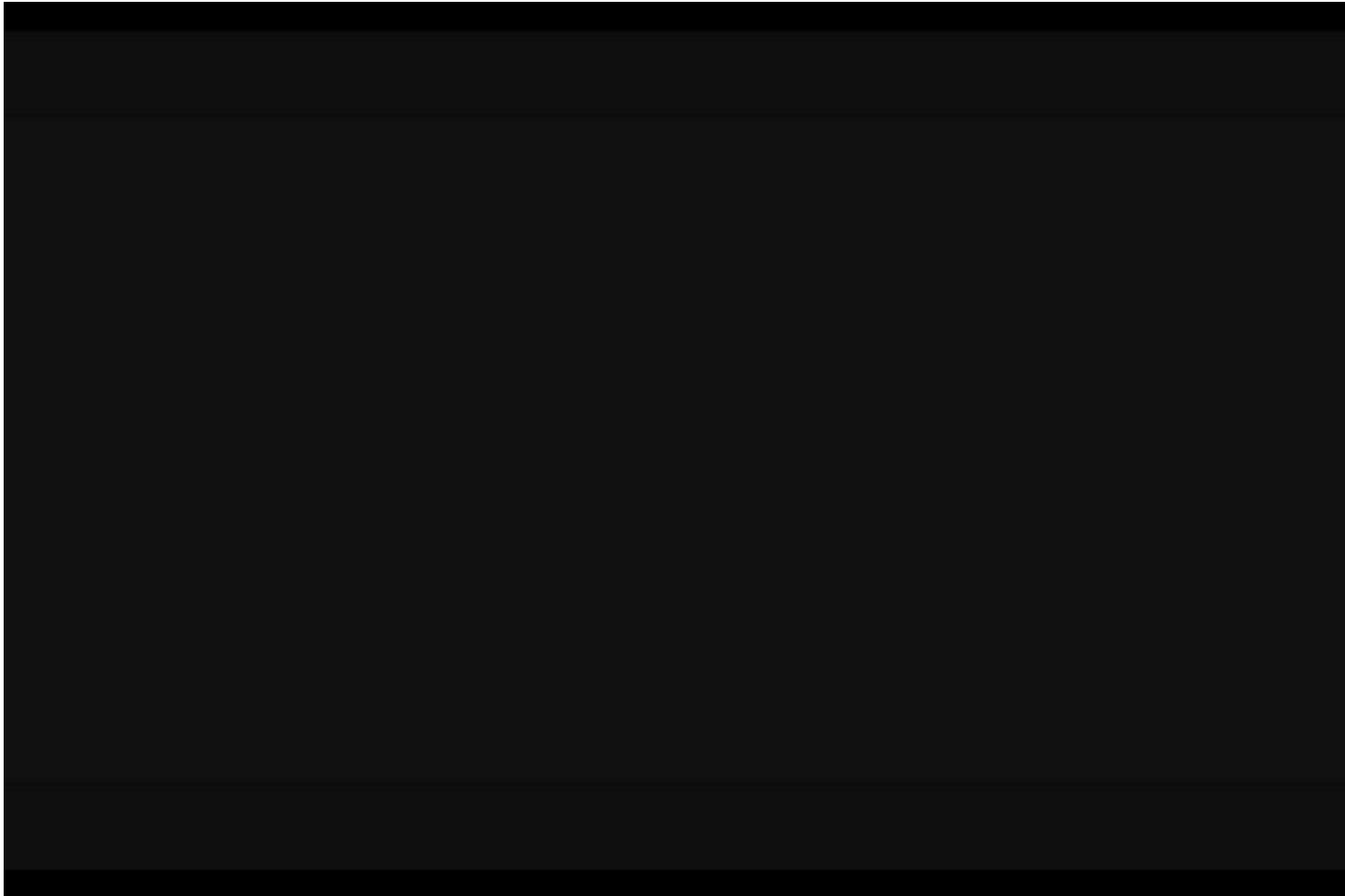




# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Operational sea trials



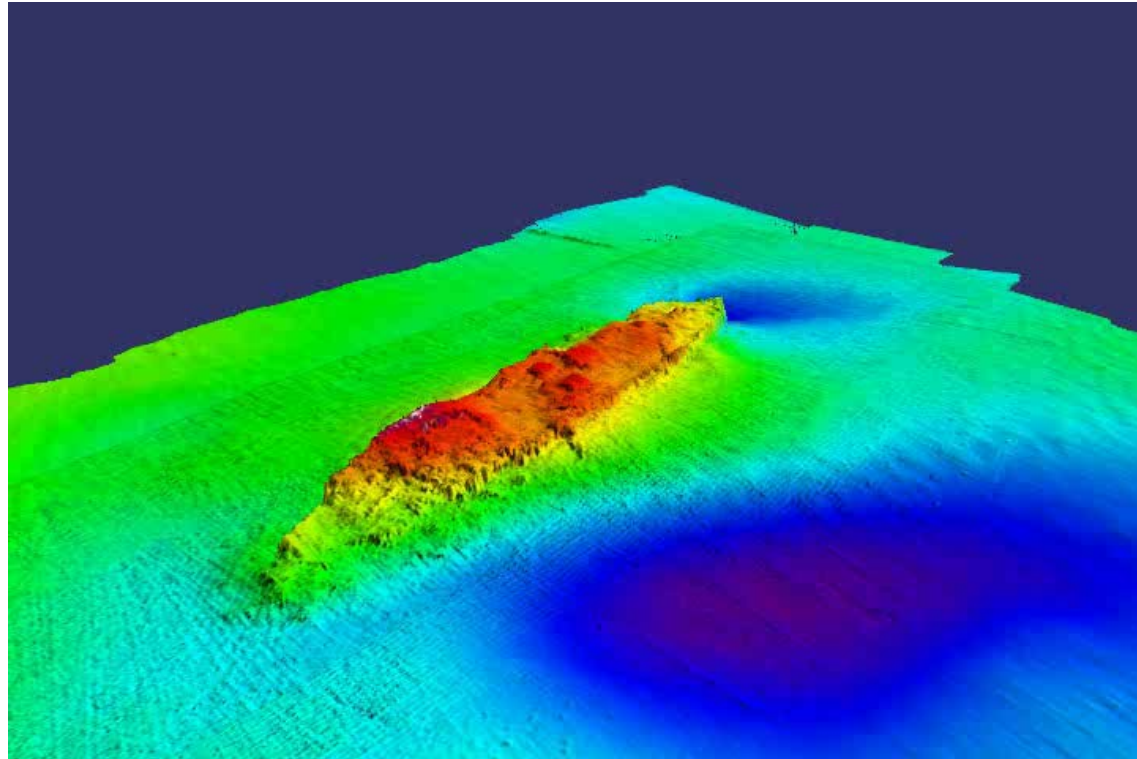
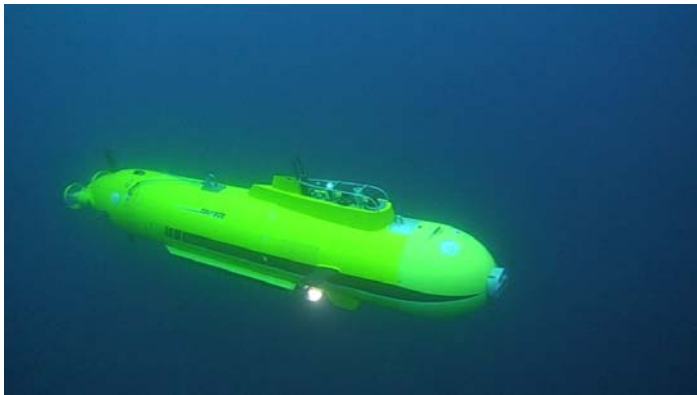




# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Results from trials



**MBES images – Courtesy SHOM**

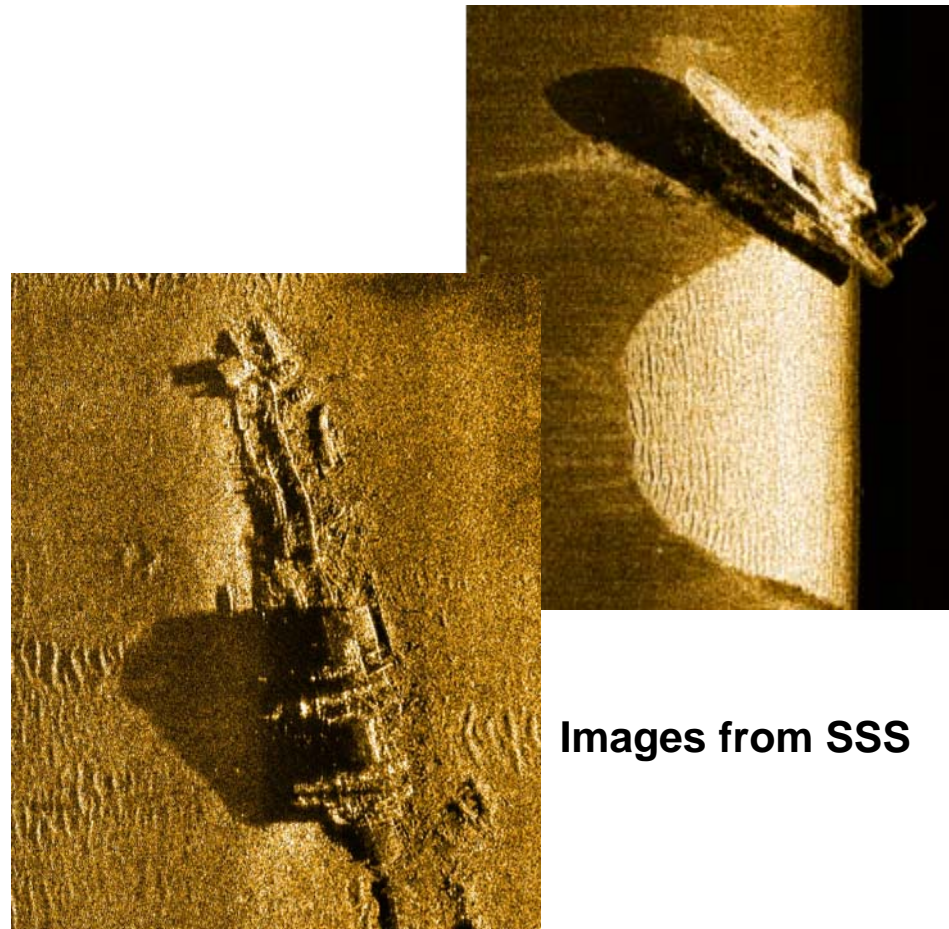
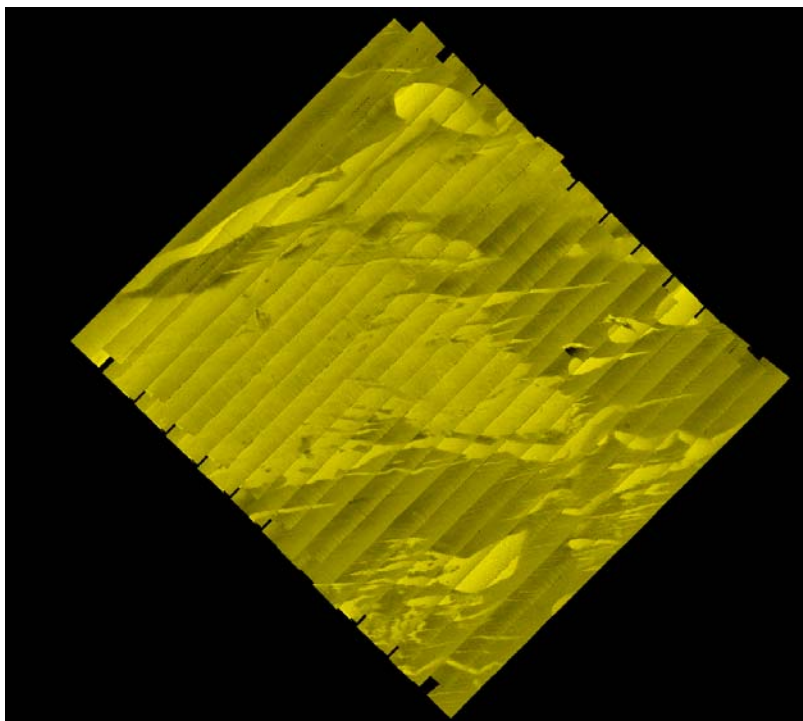


# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ALISTER Results from trials

**Mosaic image from SSS**



**Images from SSS**



## HULL INSPECTION – ROVING BAT



**A powerful Hybrid ROV/Crawler for:**

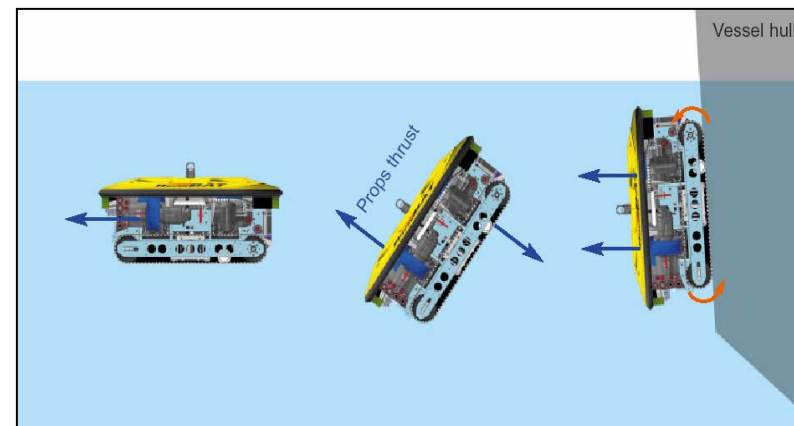
**Homeland security:**

- Inspect and detect IEDs on the ship hull
- Perform Close Visual Inspection (CVI)
- Neutralize suspect packages

**Ship maintenance:**

- Inspect hull plate thickness

- ◆ **Currently Operational & Proven**
- ◆ **Maneuverable: Free-flying mode & Crawl**
- ◆ **ACCURATE INSPECTION:**
  - **Crawling mode**
  - **High definition video cameras & sonar, etc.**

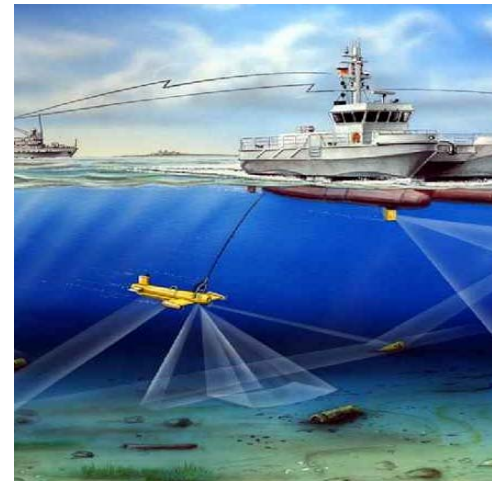




# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## Towed Systems

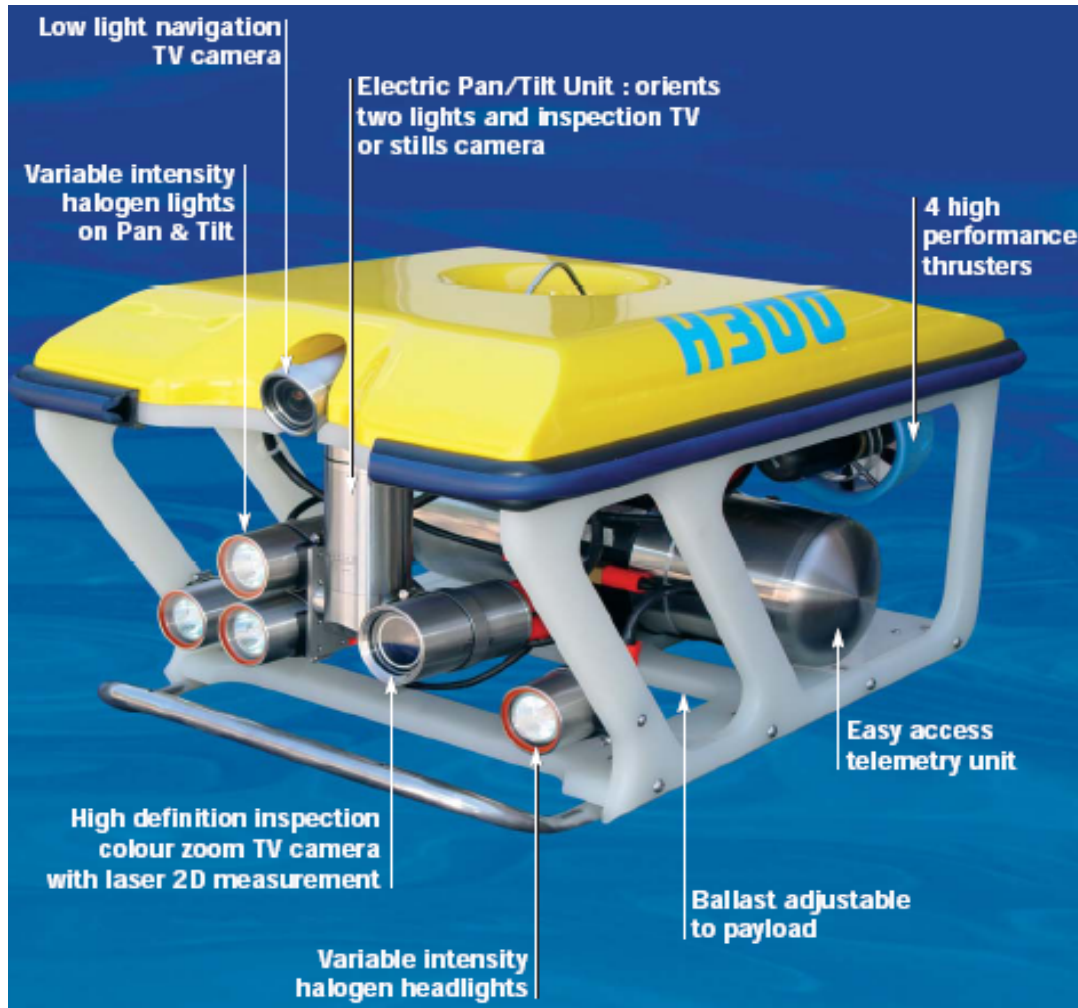




# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## H300 ROV





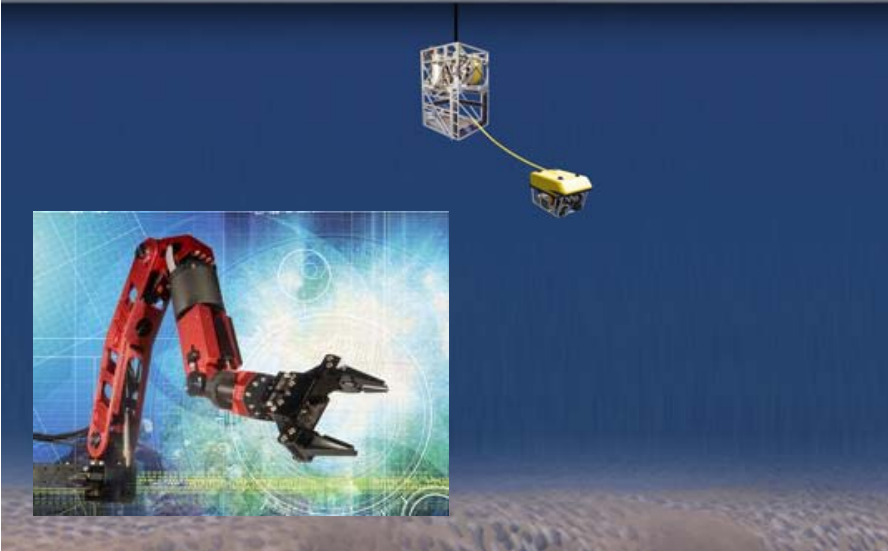
# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

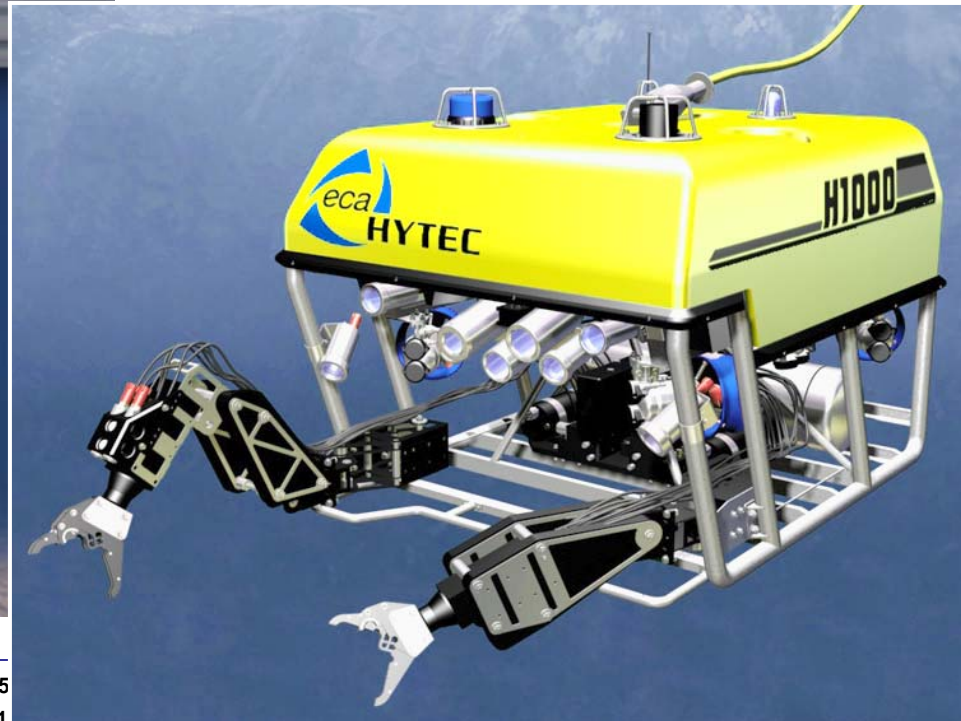
## H1000 ROV



*Surface Control*



*Deep Water Manipulator Arm*





# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## VICTOR 6000 ROV

- Working depth : 20 000 ft
- Speed: 1.5 knots
- Cameras:
  - 1 main 3-CCD camera
  - 2 piloting cameras
  - 5 additional color cameras
- Lighting: 8 flood lights totaling 5 kW
- Manipulators:
  - 1 7-function manipulator arm, lifting 100 kg
  - 1 5-function grasping arm, lifting 100 kg





# 1ROBOTICS

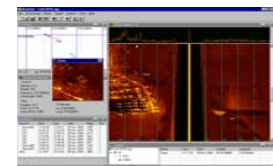
Mine Warfare, UUV, ROV, AUV, USV, UGV

## USV – INSPECTOR

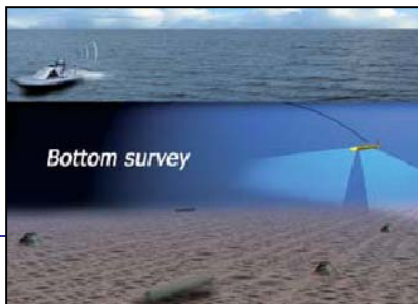
- ◆ **MODULAR** Various payloads: Towed target, 360° camera, side scan sonar, towed sonar mine killer, CRBN sensors, acoustic devices
- ◆ **FAST** 35 kts - Mine search performed with a towed sonar at 10 knots
- ◆ **ADAPTABLE** Autonomous or remotely controlled

### INSPECTOR's missions:

- ◆ Coastal and Port Security applications
- ◆ Shallow water surveying
- ◆ Mine detection, classification and neutralization
- ◆ Real-time data collection/transmission
- ◆ Route survey / channel exploration
- ◆ Mapping and oceanography
- ◆ Fleet training



**C-MAX**







# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## ROV - Viperfish

### ◆ Mission

- Port Security inspection survey
- Visual Inspection
- Intervention
- Mine Disposal

### ◆ Tiltable Payload

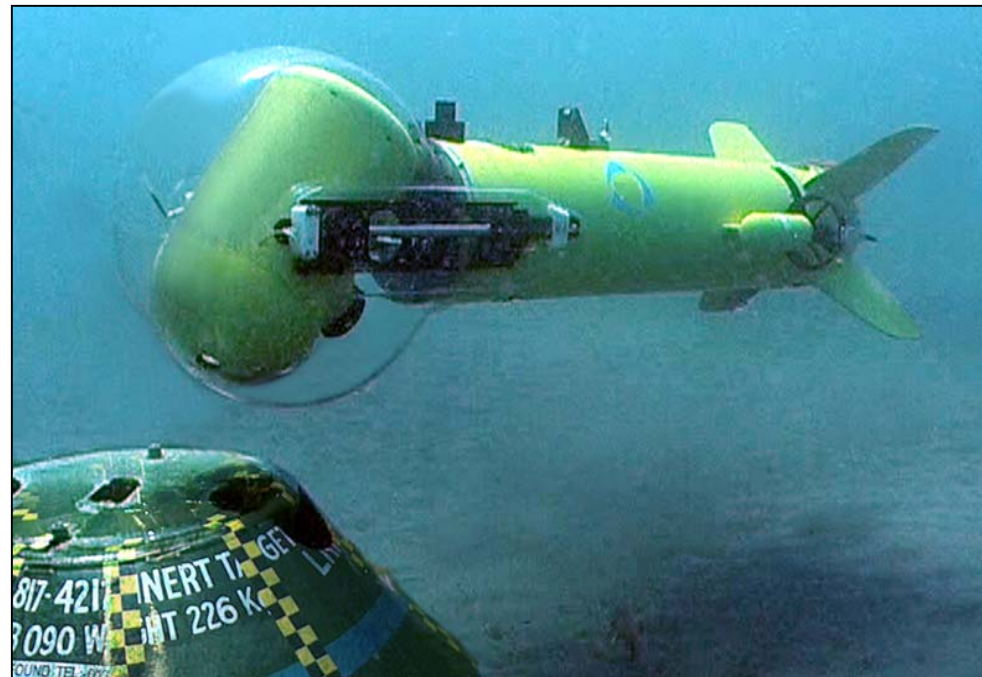
- Sonar System
- Video Camera
- Auto set searchlight
- Warhead

### ◆ 4 thrusters

- Hovering capability
- 6 knots

### ◆ Specifications:

- Length 60"
- Main body 9"
- Weight in air 100 lbs



**Observations & Questions ?**



# 1ROBOTICS

Mine Warfare, UUV, ROV, AUV, USV, UGV

## Contact Us

---



**Marvin Goldberg, VP**  
**1ROBOTICS,**  
**Washington DC Operations**  
**360 route 59**  
**Monsey, NY 10952**

**Tel: 301-807-5422**  
**Fax: 301-776-5356**  
**[www.1robotics.com](http://www.1robotics.com)**

***1Robotics...Tomorrows Answer in  
Unmanned Land and Undersea  
Technology***