

COM.SUB.IN: Military diving experiences and challenges

Rear Admiral Paolo PEZZUTTI
Commander COM.SUB.IN, Italian Navy

HISTORY



A «HYBRID» ORGANIZATION



1961

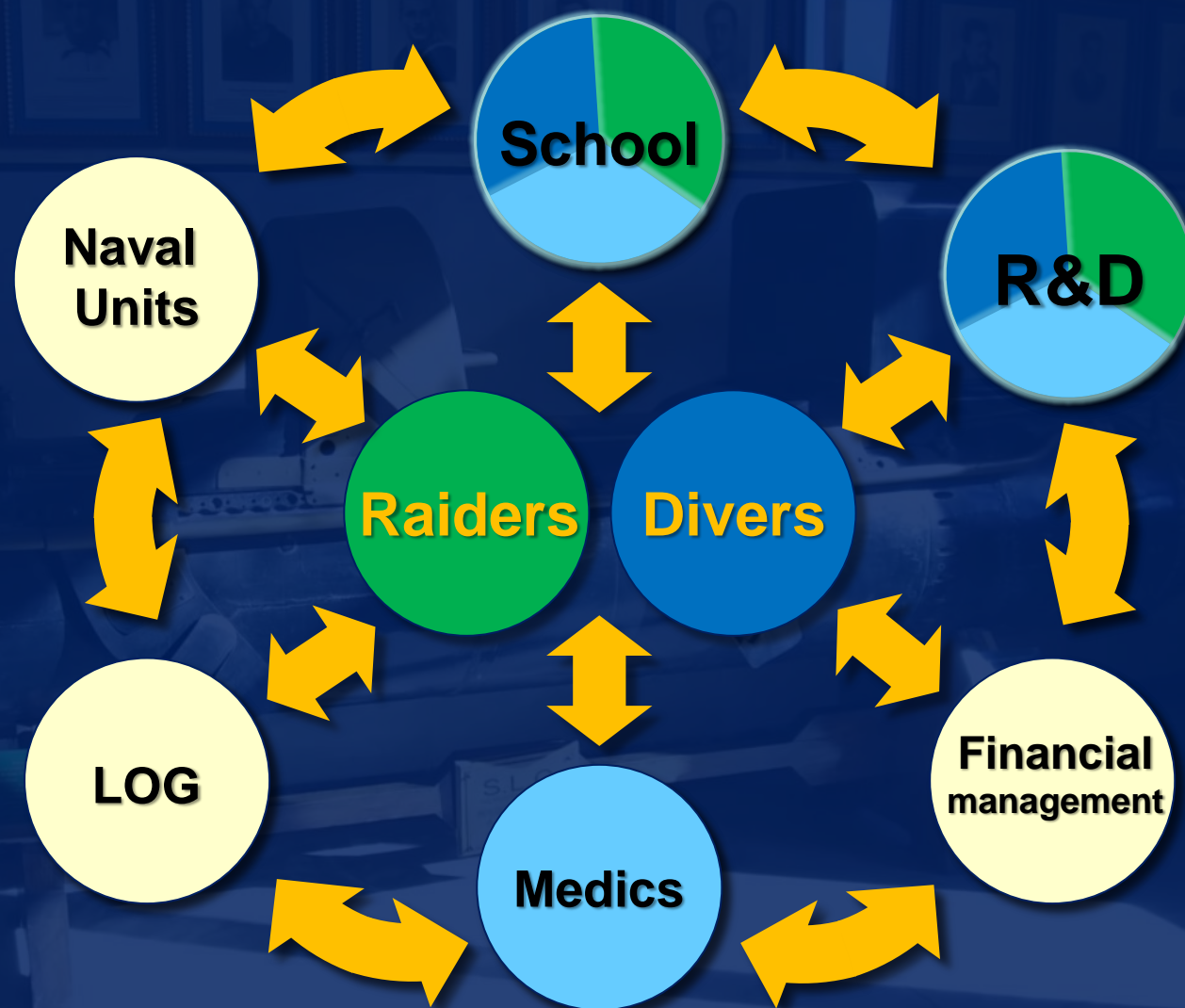


Navy Divers



Special Forces

A «USER DRIVEN» ORGANIZATION



ORGANIZATION

NAVY C.o.S.



COMSUBIN

*Commander of Navy Divers and
Special Forces*

**Special
Forces**

**Navy
Divers**

**Naval
Units**

R&D

School

Medics

Logistic

**Financial
management**

COMSUBIN INFRASTRUCTURE



Leper hospital of Varignano (1724)

COMSUBIN INFRASTRUCTURE



COMSUBIN INFRASTRUCTURE



**Conventional
scenarios**

**Hybrid theatres
and risks**

Sea control

Priority of undersea warfare

Technological superiority

SPECIAL FORCES CAPABILITIES



MISSIONS

- Military Assistance
- Direct Action
- Special Reconnaissance
- Counterterrorism
- Hostage rescue/release

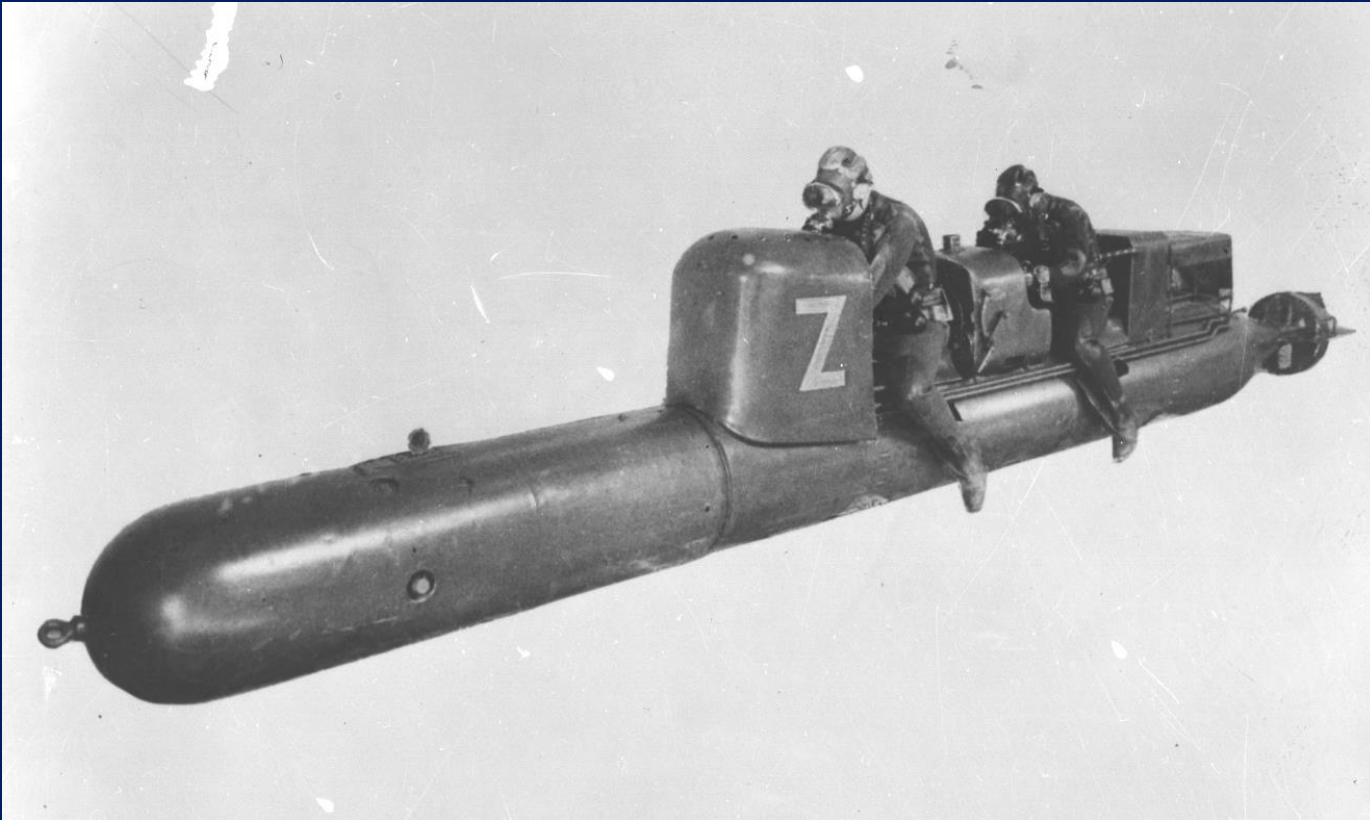
CONTINUOUS DEVELOPMENT

- Concepts
- Technologies
- Techniques
- Tactics
- Procedures

NEW GENERATION OF SDVs

- Endurance, speed, number of operators transported
- Full integration into the Command and Control architecture
- Payloads
- Navigation systems
- Propulsion system
- Life support system

SPECIAL FORCES CAPABILITIES



Italian SLC
«Siluro a Lenta Corsa»
2nd World War

The Telegraph

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Emilio Bianchi, 'human torpedo' obituary

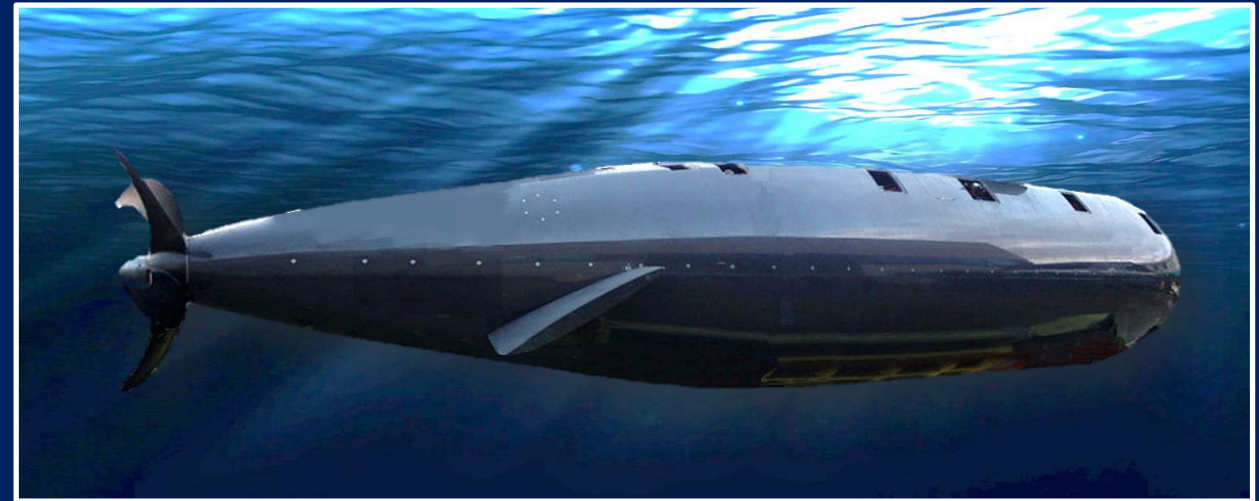
Italian seaman involved in the sinking by 'human torpedoes' of British battleships in Alexandria



Emilio Bianchi

5:41PM BST 20 Aug 2015

DRY COMBAT SUBMERSIBLE



NAVY DIVING CAPABILITIES



MISSIONS

- Distressed Submarines Search & Rescue (DISSUB SAR)
- Explosive Ordnance Disposal (EOD) & Improvised Explosive Devices Disposal (IEDD) in maritime and underwater domains
- Underwater works of any type (i.e. Salvage)

CONTINUOUS DEVELOPMENT

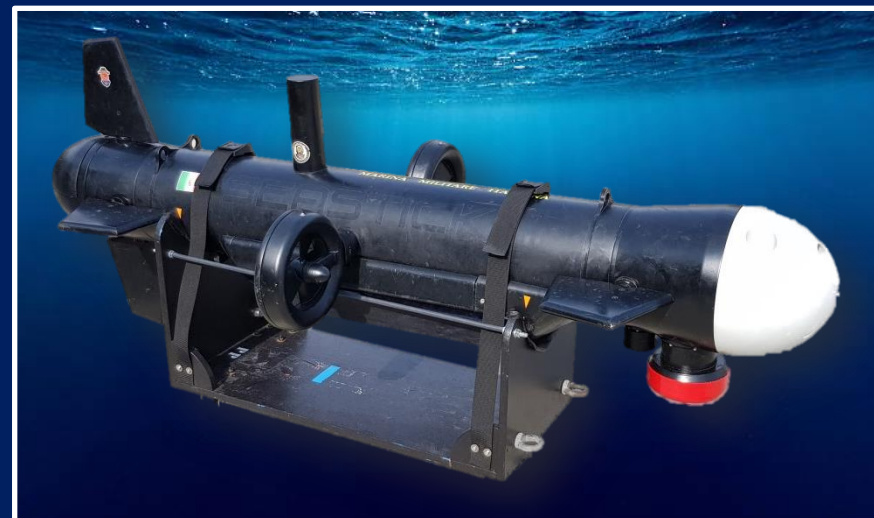
- Technologies
- Diving physiology (*Air, Nitrox, Heliox, Trimix*)
- Diving systems (*scuba, surface supplied, closed and semi-closed circuit*)
- Decompression tables
- Diving procedures

DIVING CAPABILITIES

- Scuba diving up to 80 m
- Saturation diving up to 300 m
- DISSUB Ops up to 300 m
- Atmospheric Diving Suit (ADS) up to 300 m
- Remotely Operated Vehicle (ROV) up to 2.000 m

TECHNOLOGY AREAS WE ARE INVESTIGATING

- Underwater networking
- AUV for EOD intervention
- Wearable to monitor divers (t-shirt)
- Combat diver digital navigation device



TECHNOLOGY



*Semi-Closed
& Fully Closed
breathing circuits*

*Surface
Supplied*

*Atmospheric
Diving
System*

*Hyperbaric
chambers*

Improvements technology for

- Divers equipment and materials
- improved endurance & shortened decompression
- lower mag & acoustic signature
- Lighter and more resistant materials for hyperbaric chambers

NEW SHIP



SHIP CHARACTERISTICS

Length: **120 m** Displacement : **8.000 t**
Crew: **200 people**

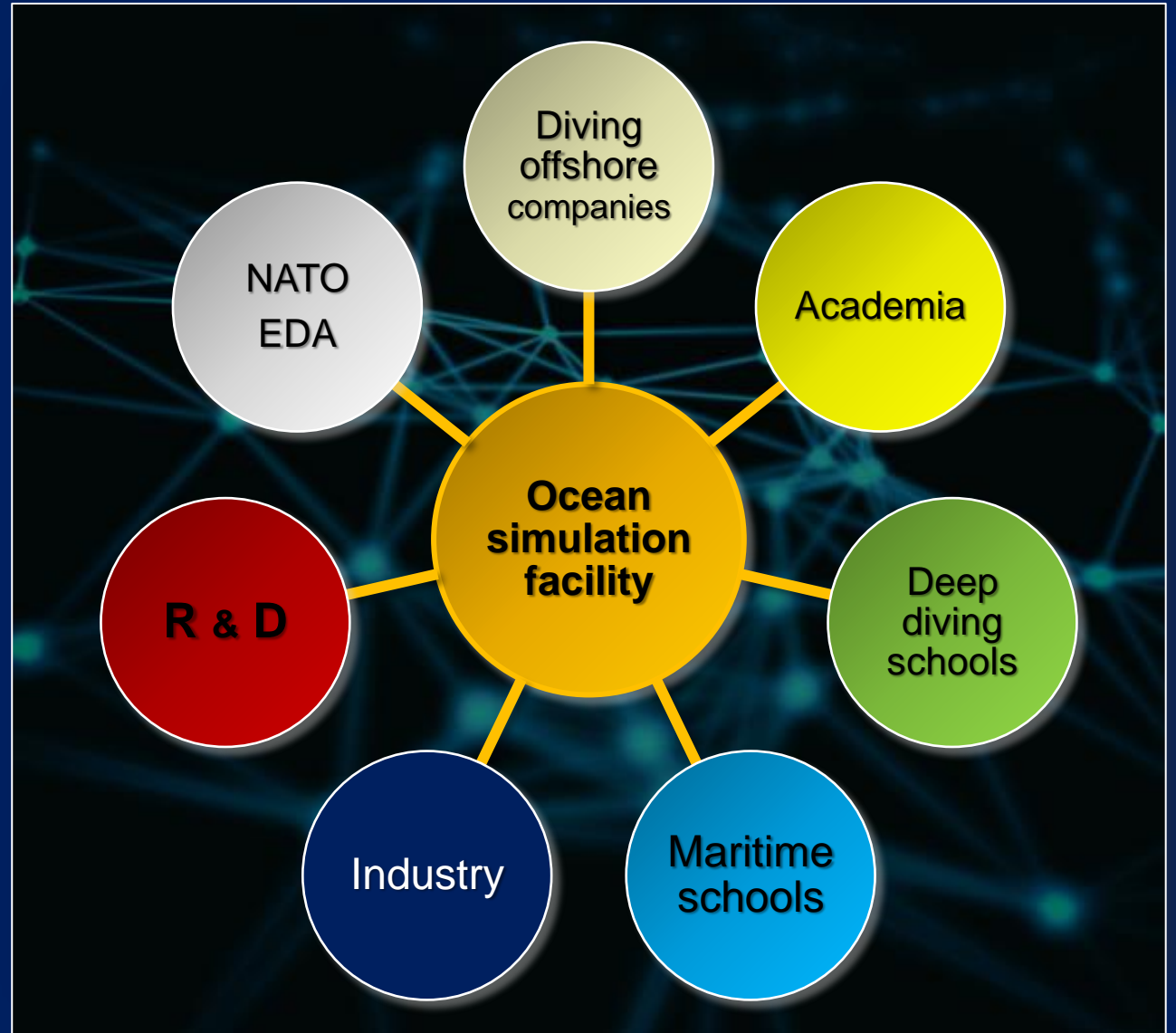
SHIP CAPABILITIES

- Dynamic position system
- Deep diving up to 300 m
- Submarine rescue:
 - SRC up to 300 m
 - SRV up to 600 m
- ADS up to 300 m
- ROV up to 4.000 m
- AUV up to 4.000 m
- Designed to embark NSRS and SRDRS

DEEP DIVING SIMULATION FACILITY

THE NEW DEEP DIVING SIMULATION FACILITY

- **Cornerstone** of research & development activities and education and training with academia, industry and deep diving schools.
- **Network** of professional competences important for the national underwater community from the operational and scientific perspective.



CONCLUSION: KEY PRINCIPLES

- Keep it simple!
- Technical infallibility does not exist: have a “bail-out”
- Perfect system does not exist: have the right one for the right scenario
- Modularity / Common parts / Common references provide a substantial benefit
- Civilian technical standards are mature enough for military application in many cases

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Undersea Defence Technology

26-28 June 2018

SEC, Glasgow