



SUBSEA TECHNOLOGY

Enabling Tracking & Diver Communications

Ioseba Tena

UDT 2019



**POSITIONING
NAVIGATION
COMMUNICATION
MONITORING
IMAGING**

Introduction to Sonardyne

Leading independent provider of underwater acoustic, inertial, optical and sonar technology

70+

The number of countries where we operate

>275

Sonardyne employees worldwide

>45

The age of our company

10,000

Transducer manufactured each year

10mm

Positioning accuracy of 6G acoustic technology

156,000

Total square footage of our facilities

500Mb/s

The speed we can transfer data subsea

12,000m

How deep our equipment can operate

100%

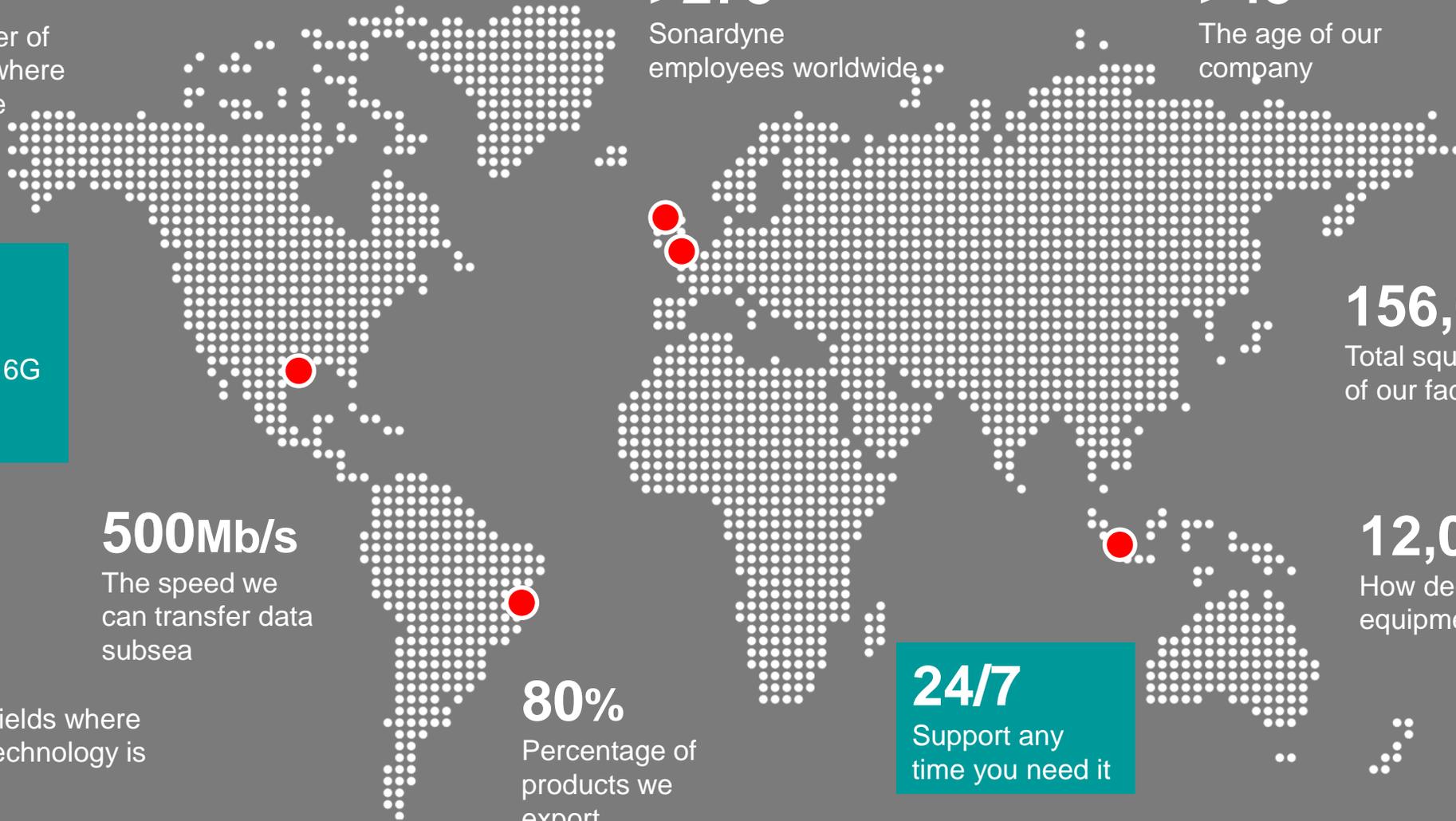
Deep water fields where Sonardyne technology is used

80%

Percentage of products we export

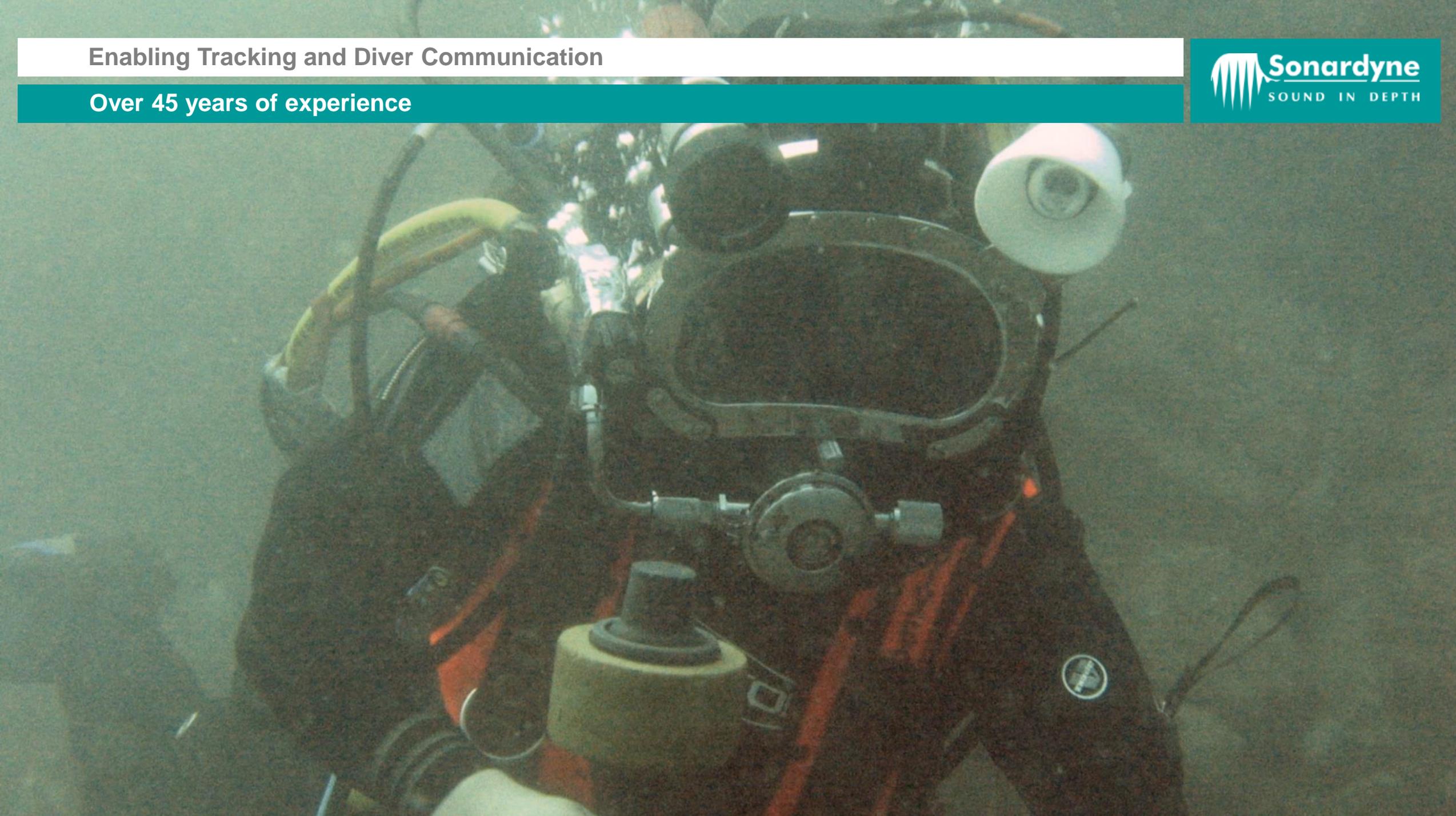
24/7

Support any time you need it



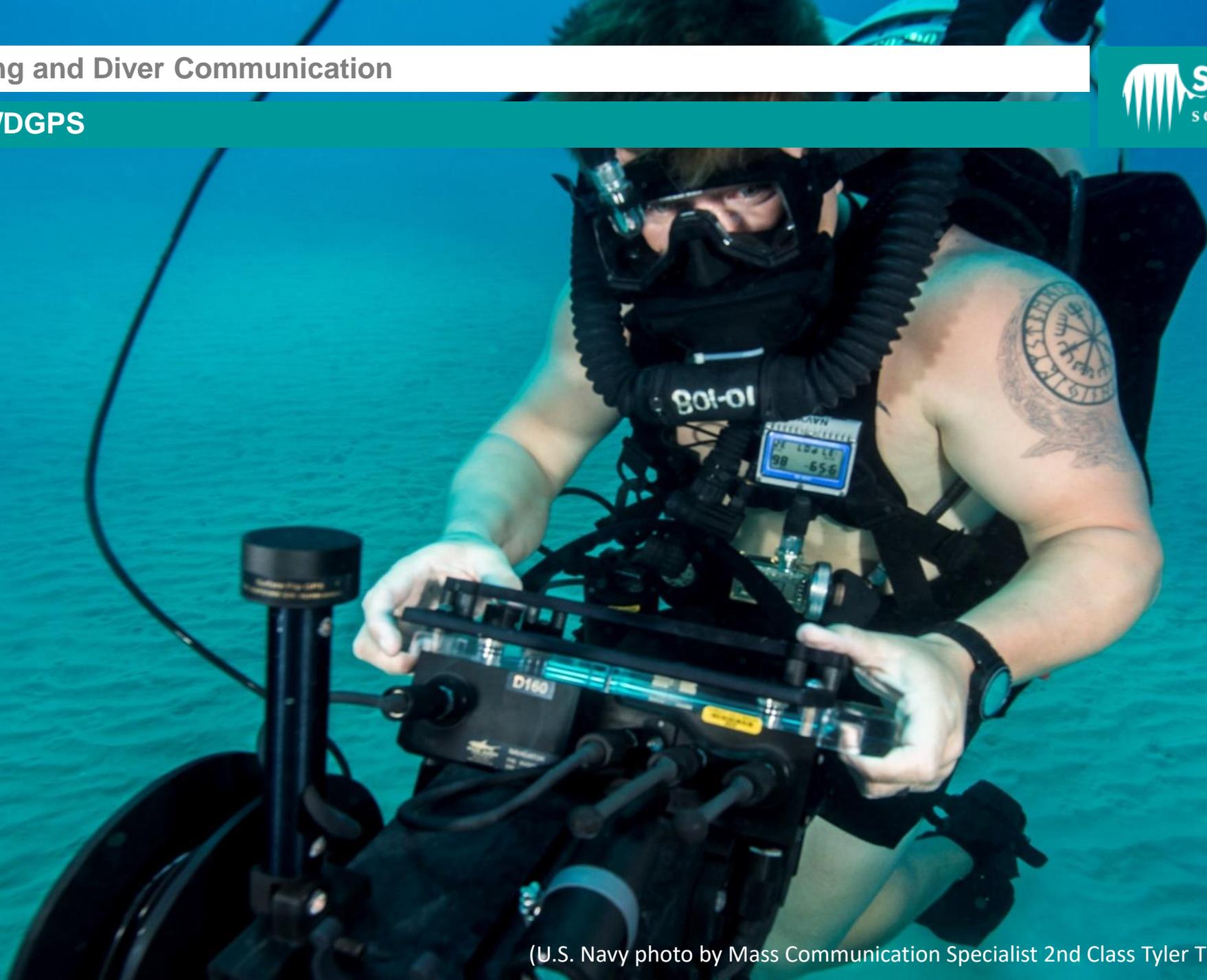
Enabling Tracking and Diver Communication

Over 45 years of experience



Enabling Tracking and Diver Communication

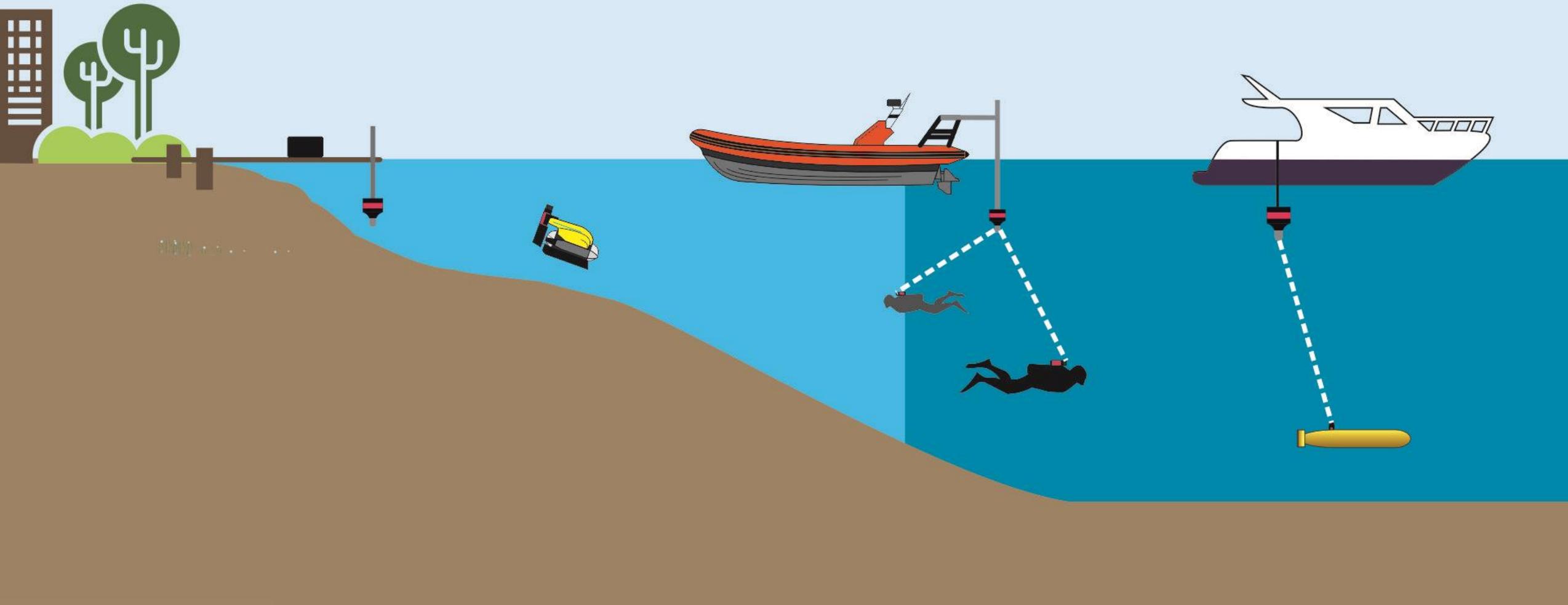
Dead-reckoning/DGPS



(U.S. Navy photo by Mass Communication Specialist 2nd Class Tyler Thompson/Released)

Enabling Tracking and Diver Communication

Can we leverage commercial work?

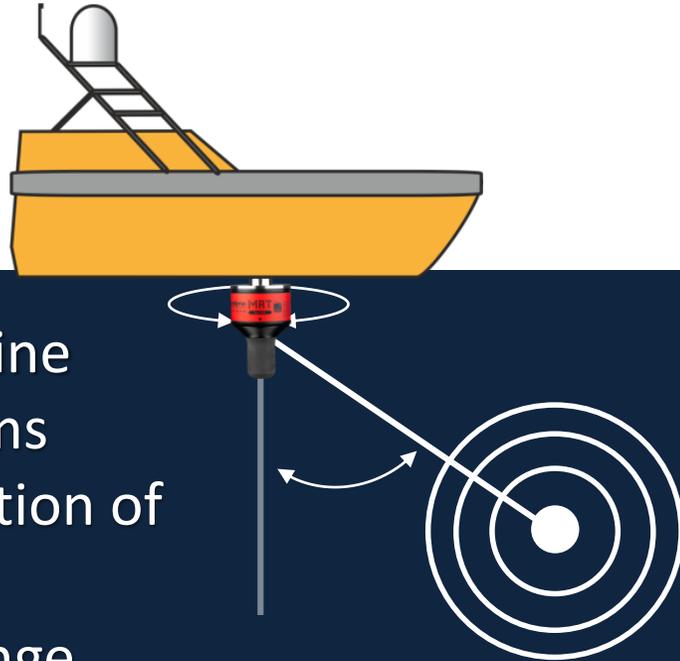


Enabling Tracking and Diver Communication

Can we leverage commercial work?



How does USBL work?

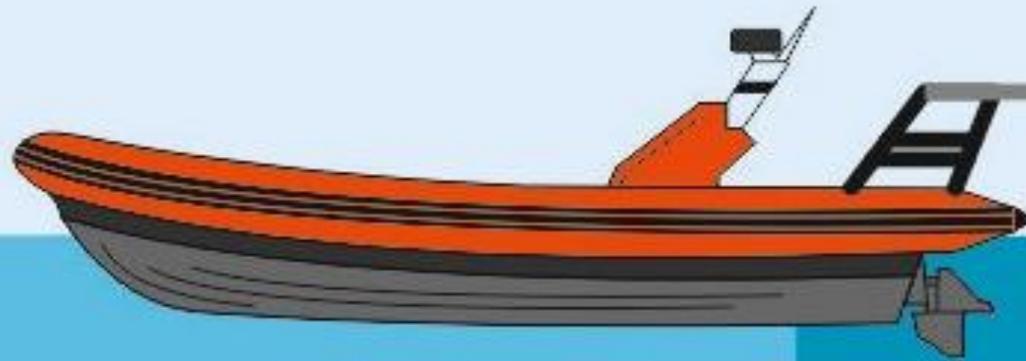


Ultra-Short BaseLine positioning systems calculate the position of subsea target by measuring the range and bearing of a transponder from the vessel

We can track multiple targets in sequence



Can we leverage commercial work?



Sonardyne Wideband® 2

FOR PROBABLY THE FIRST TIME, YOU CAN TRACK AND COMMUNICATE WITH DIVERS USING A SINGLE SONAR SYSTEM. THE SONAR CAN TRACK DIVERS AND EXCHANGE DATA WITH THEM. IT CAN ALSO TRACK AND COMMUNICATE WITH OTHER SONAR SYSTEMS. IT CAN ALSO TRACK AND COMMUNICATE WITH OTHER SONAR SYSTEMS.



Track

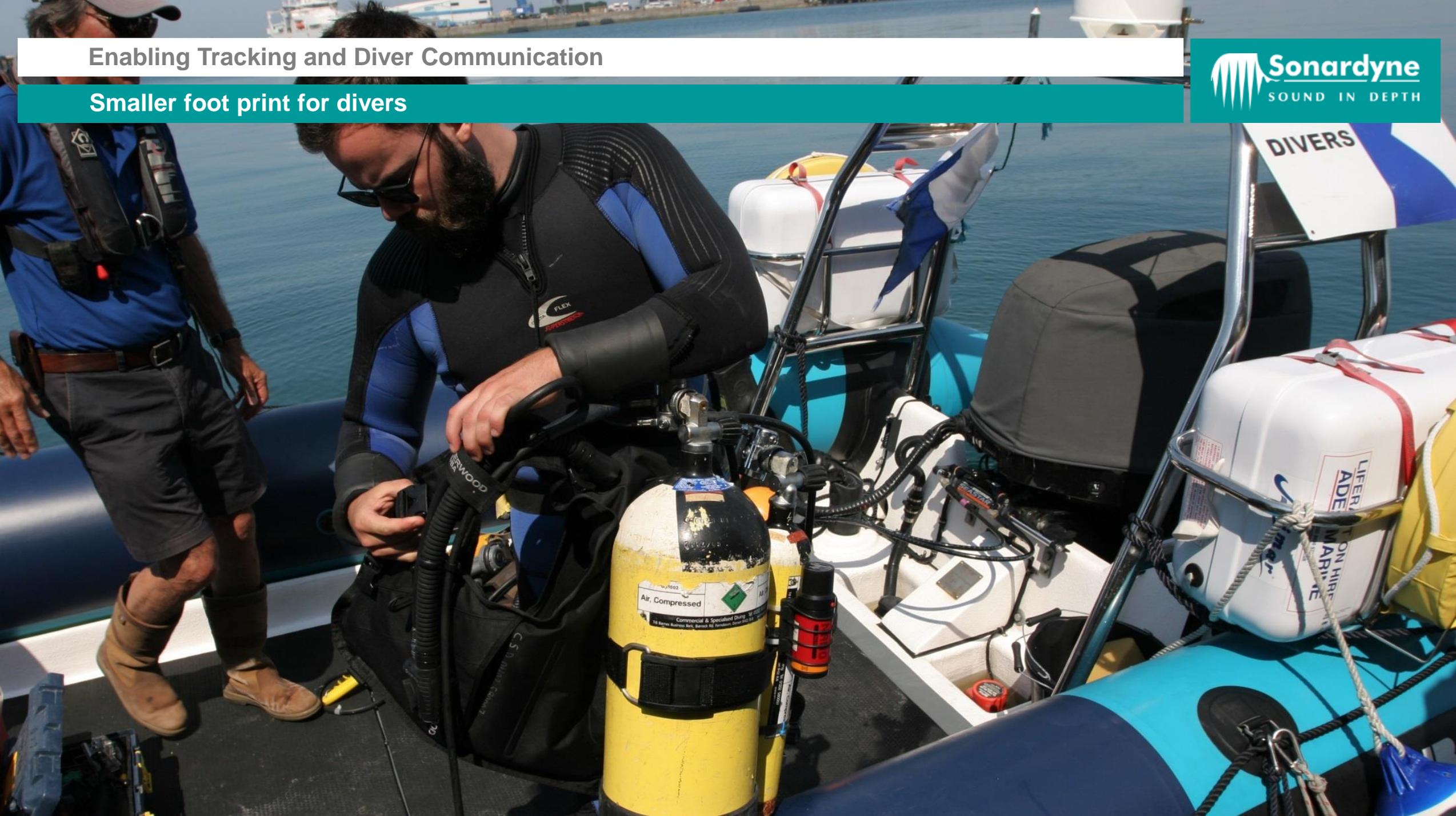
Exchange Data

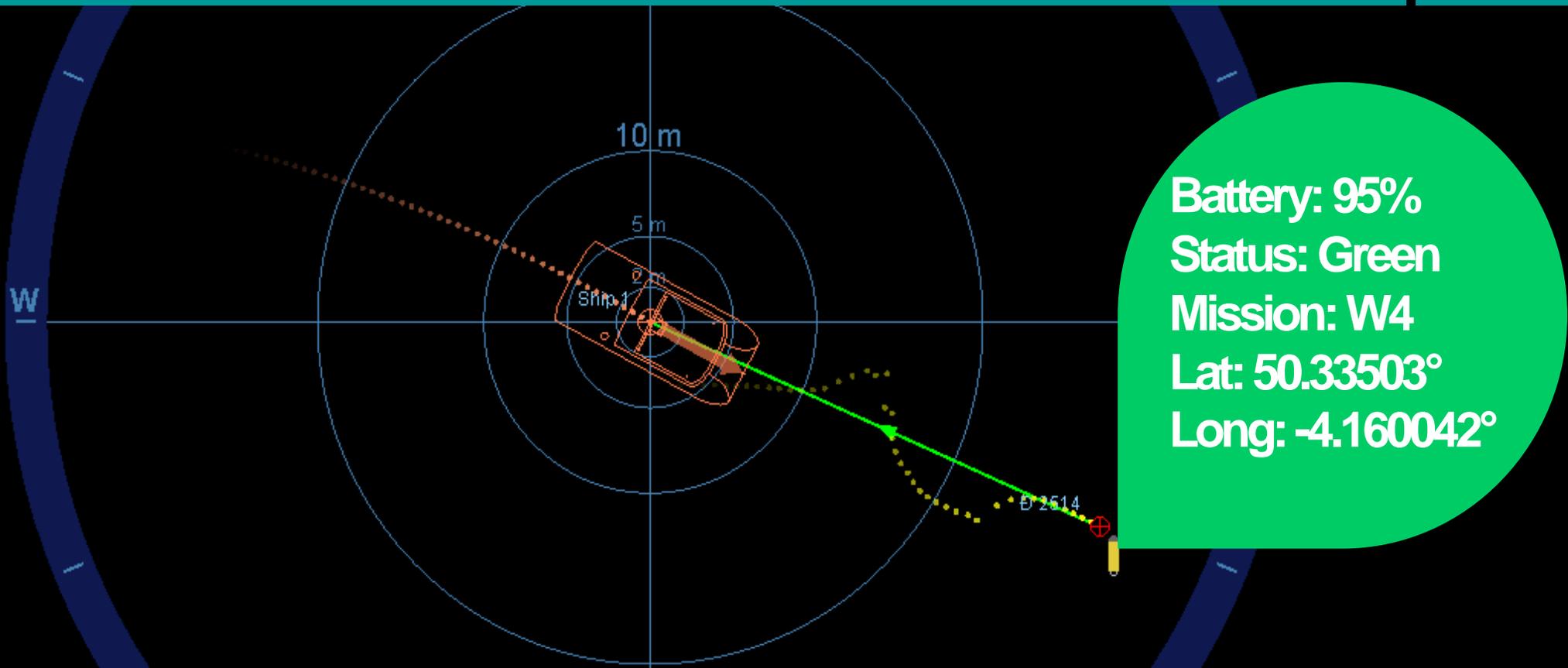


USBL

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Smaller foot print for divers





“Track and Communicate with divers”

Enabling Tracking and Diver Communication

Highest performing for vessel deployment



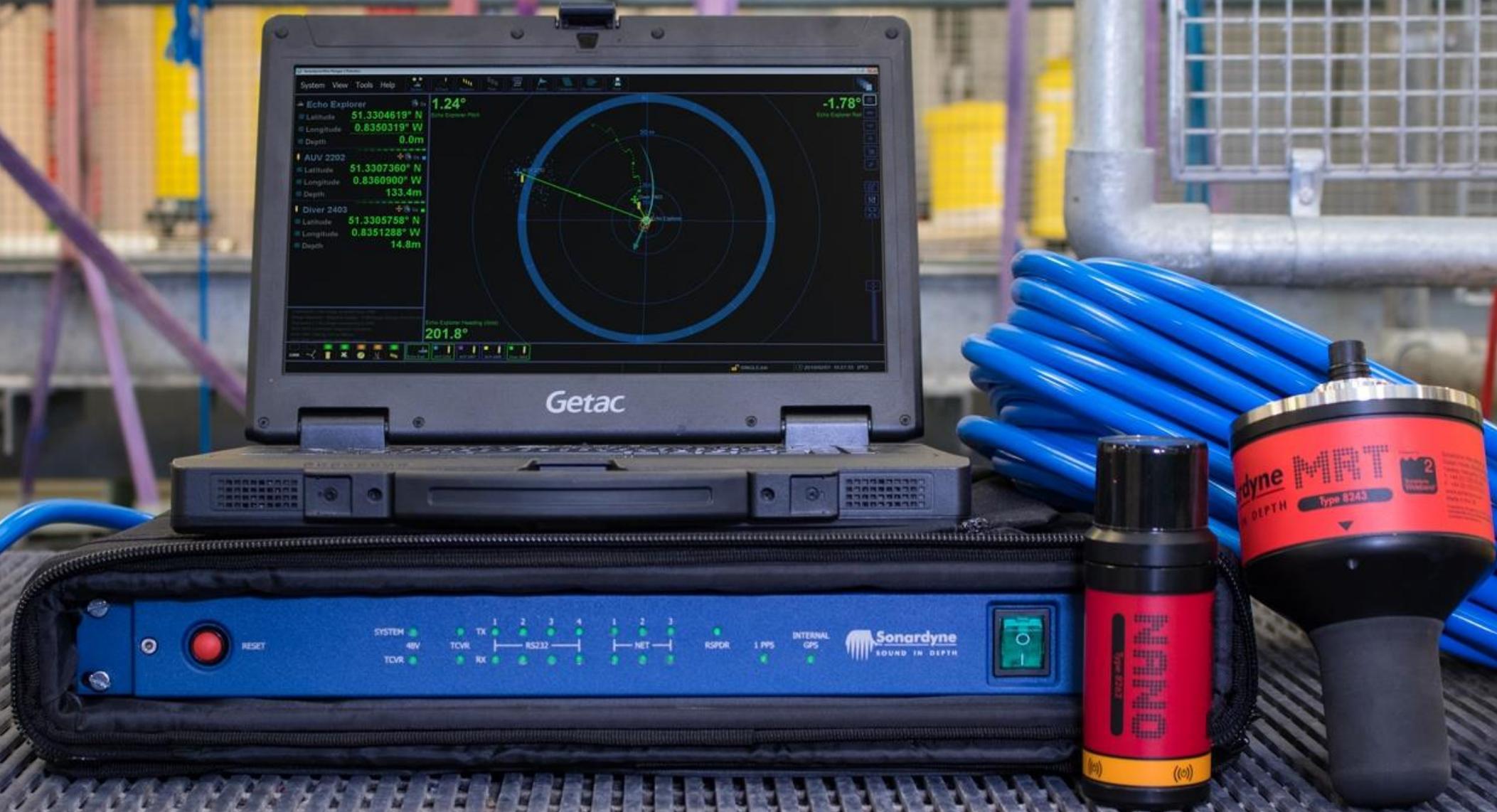
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Portable and accurate for vessels of opportunity



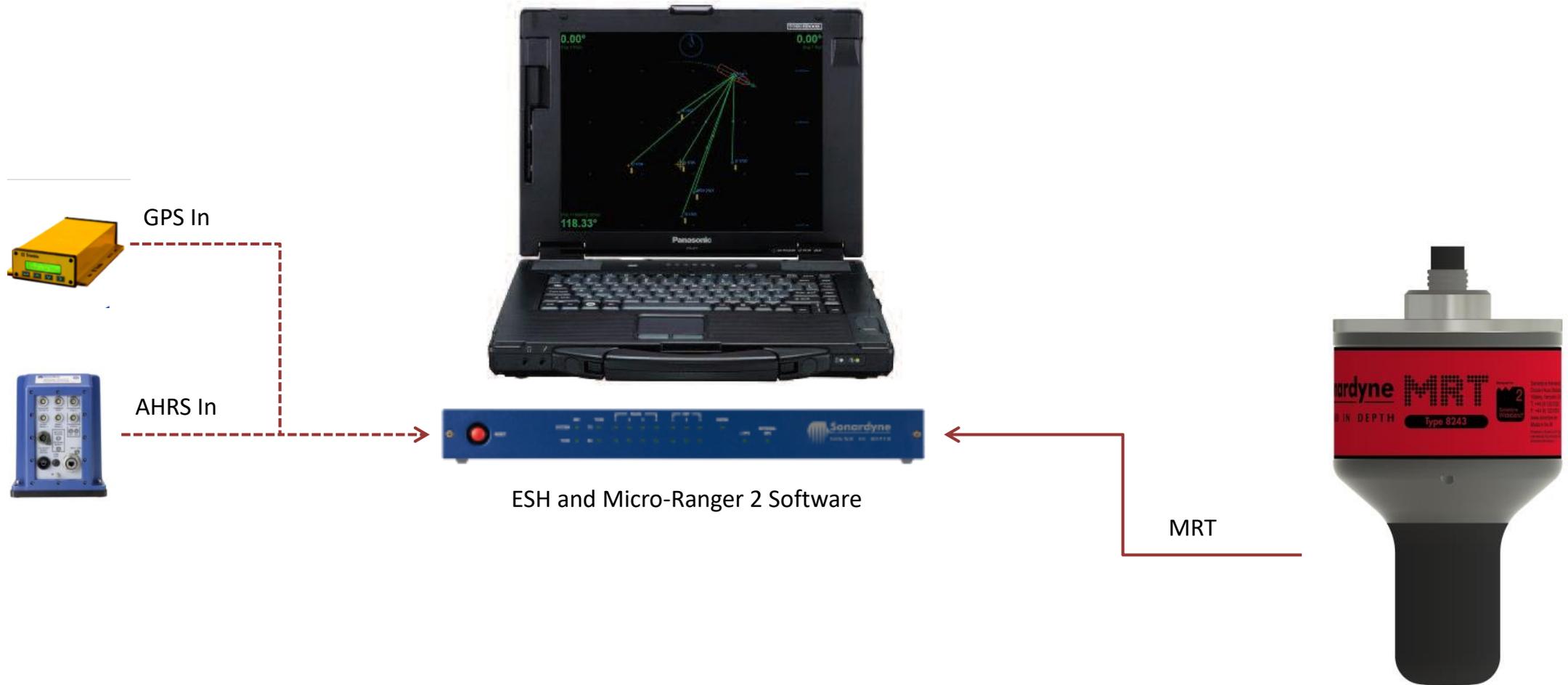
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Portable systems for RHIBs



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Simple to operate



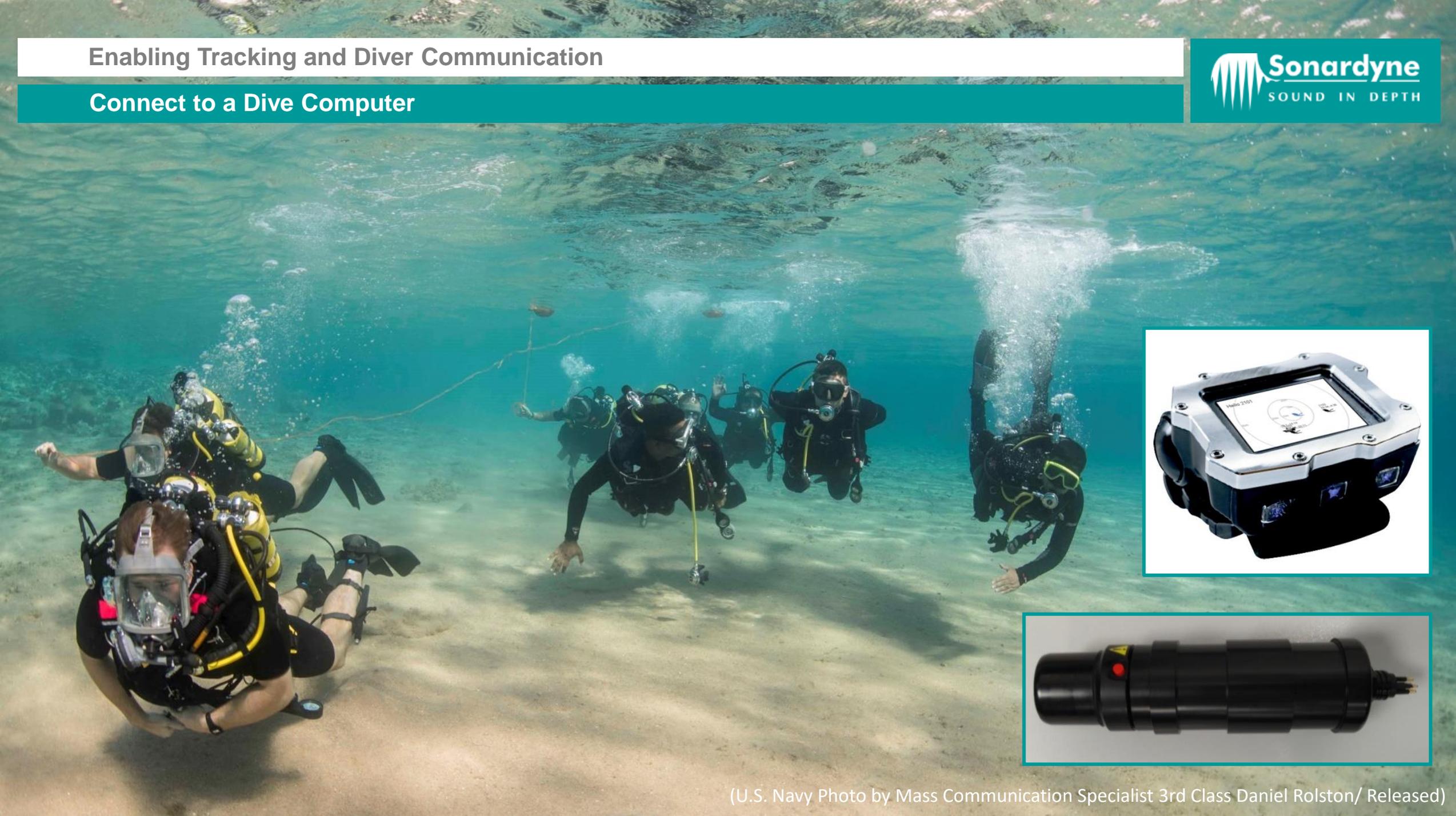
Different ranges



	MRT	HPT 3000	HPT 5000
Operating Range	Up to 995m	Up to 995m (4000m option)	Up to 7,000m
Acoustic Coverage	Greater than 200 degrees	Full 180 degrees	Full 180 degrees
Position Repeatability (DRMS)	5% of slant range	0.2% of slant range	0.1% of slant range
Transmit Source Level SL = dB 1 μ Pa @ 1 m	184 dB	194 dB	200 dB
Electrical	48 V DC (\pm 10%) Typical 500 mW, Max 10 W	48 V DC (\pm 10%), Typical 15 W, Max 120 W	48 V DC (\pm 10%), Typical 15 W, Max 120 W
Communication	Ethernet 100 Mbps	Ethernet 100 Mbps	RS485, Baud Rate Switchable Ethernet 100 Mbps
Length x Diameter	164 x 106 mm	310 x 234 mm	373 x 225 mm
Weight in Air (Water)	1.5 kg	20.4 (10.9kg)	28 kg (15 kg)

Enabling Tracking and Diver Communication

Connect to a Dive Computer



(U.S. Navy Photo by Mass Communication Specialist 3rd Class Daniel Rolston/ Released)

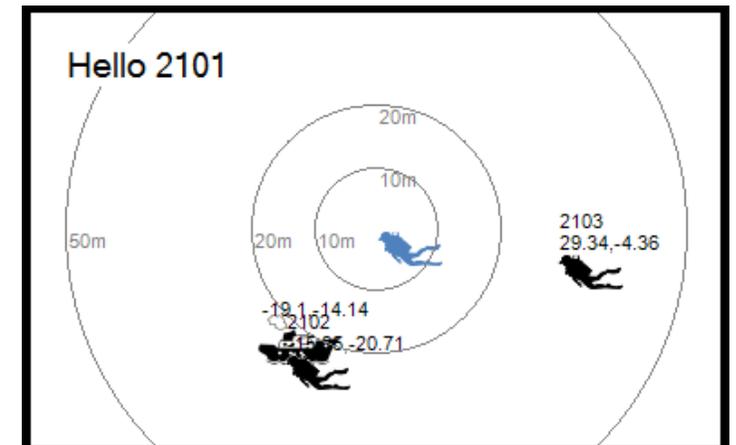
Data Upload from Nano

- Our TS9 payloads allows 16bits to be transmitted the full Nano range, in a 32ms pulse without interrupting tracking
- Nano-to-USBL and Nano-to-Nano
- Upload pre-defined messages



Data transfer to Nano

- Receive long text messages from Micro-, Mini- and Ranger 2 systems.
- Including real world position of the Vessel and multiple Beacons (display in dive computer)
- Send small (10 bit) payloads without any interruption of tracking
- Passive receive without tracking to maintain diver covertness



Tracking & Telemetry Examples



MRT



HPT 3000



HPT 5000

Demonstrated Telemetry Range (Shallow Waters – 10m)

500m

750m

1250m

Demonstrated Telemetry Range (Full Ocean Depth)

500m

995m

4500m



Enabling Tracking and Diver Communication

Applications



SPECIAL OPS

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Applications



SALVAGE

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Applications



CONSTRUCTION

(U.S. Navy photo by Mass Communication Specialist 1st Class Charles E. White/Released)

Enabling Tracking and Diver Communication

Applications



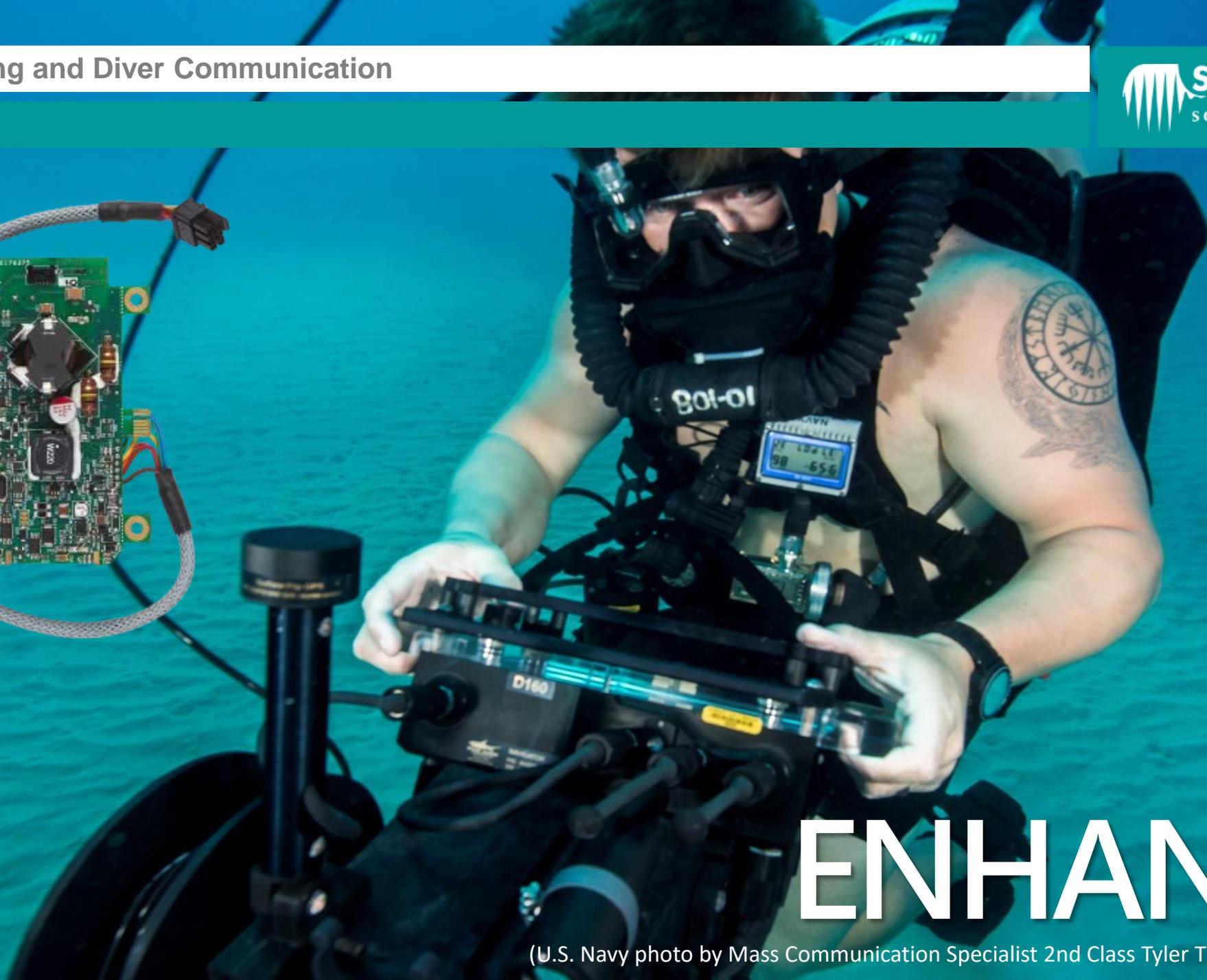
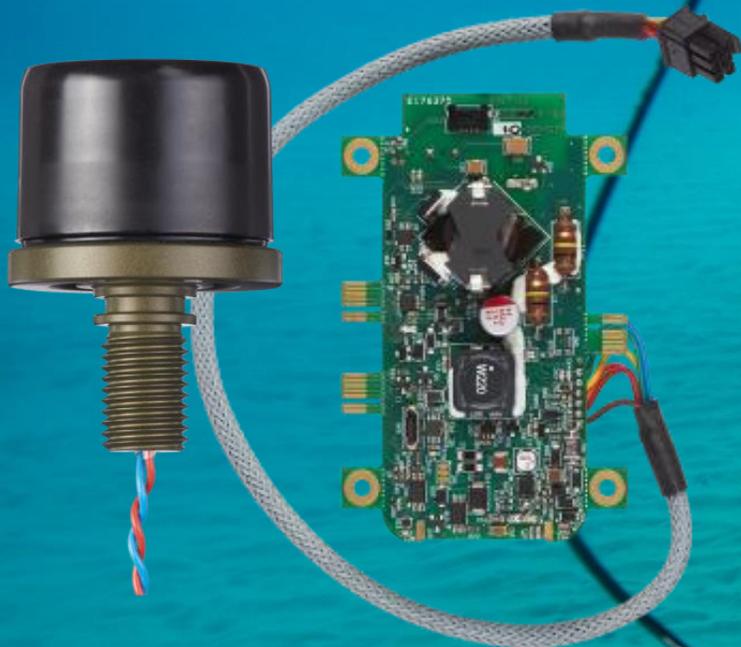
RE-ACQUIRE

(U.S. Navy Photo by Mass Communication Specialist 3rd Class Daniel Rolston/ Released)

Enabling Tracking and Diver Communication



Applications

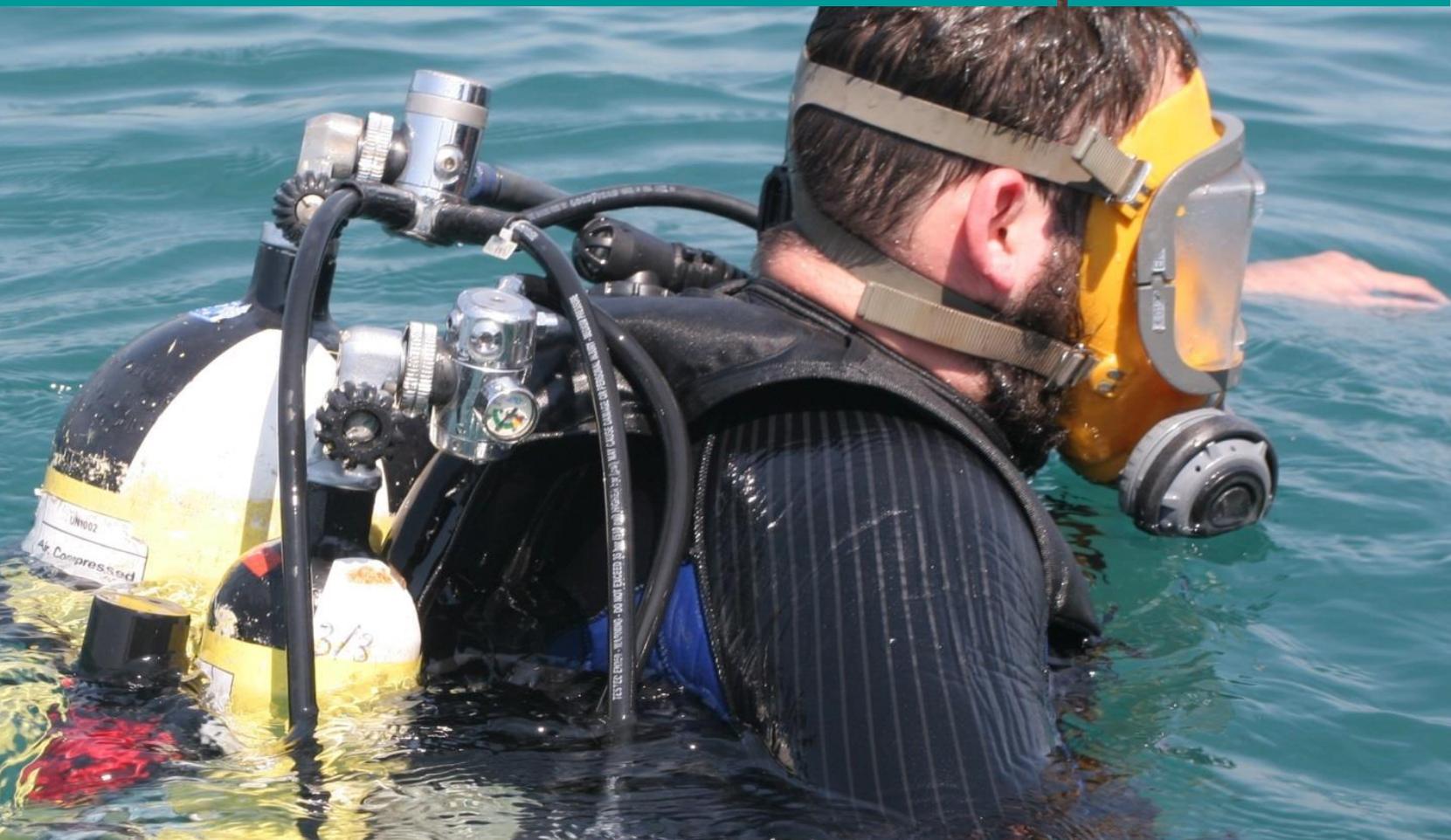


ENHANCE

(U.S. Navy photo by Mass Communication Specialist 2nd Class Tyler Thompson/Released)

Enabling Tracking and Diver Communication

Interconnected Subsea



INTERCONNECTED



SUBSEA TECHNOLOGY

**Thank you for your time today
Any questions?**

SONARDYNE.COM



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