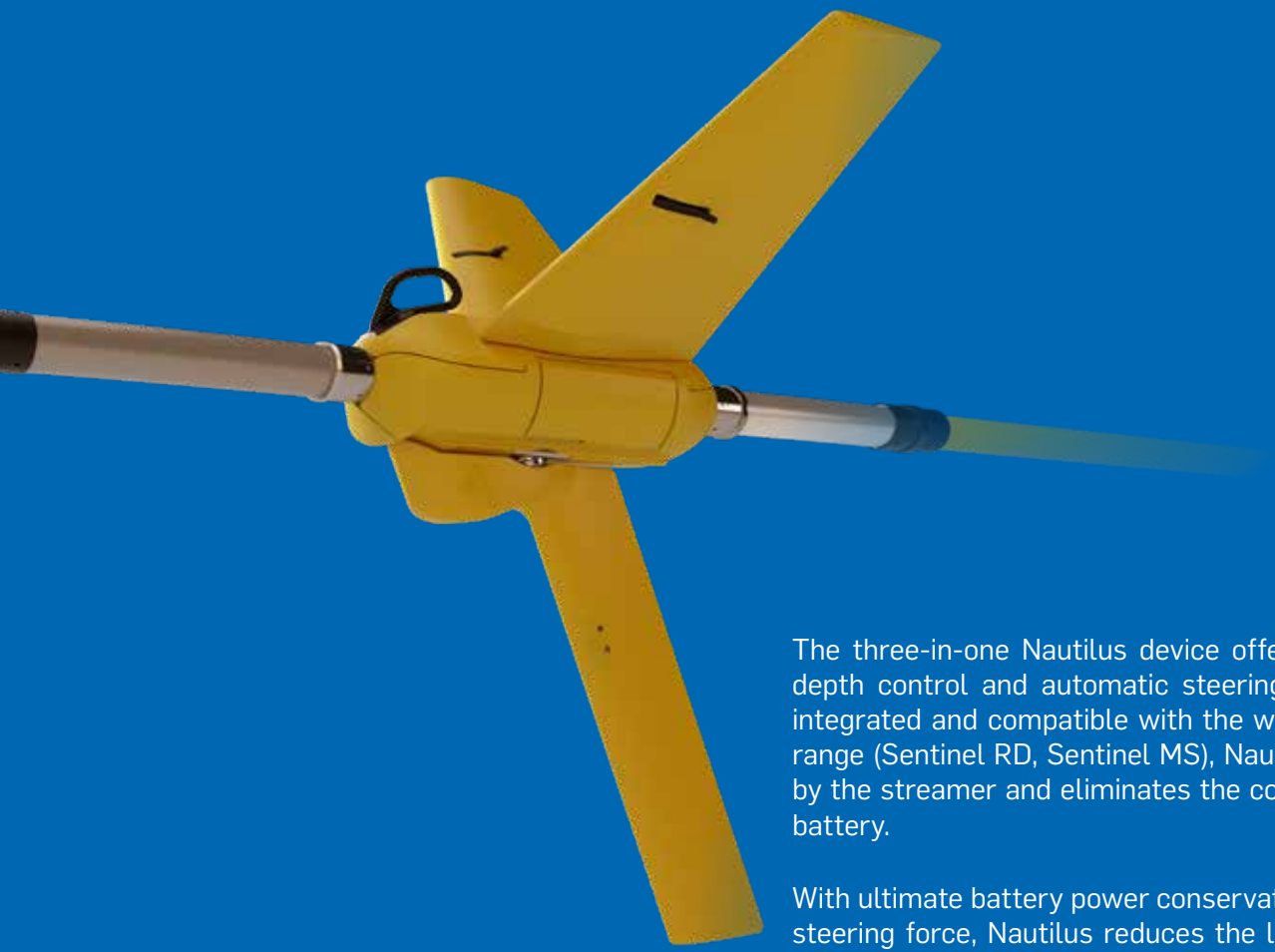
SERCEL

# Nautilus®

THE UNRIVALLED ALL-IN-ONE
STREAMER POSITIONING SYSTEM

# FULLY INTEGRATED STREAMER STEERING SYSTEM



The three-in-one Nautilus device offers acoustic positioning, depth control and automatic steering in a single unit. Fully integrated and compatible with the whole Sentinel® products range (Sentinel RD, Sentinel MS), Nautilus is directly powered by the streamer and eliminates the costly need to service the battery.

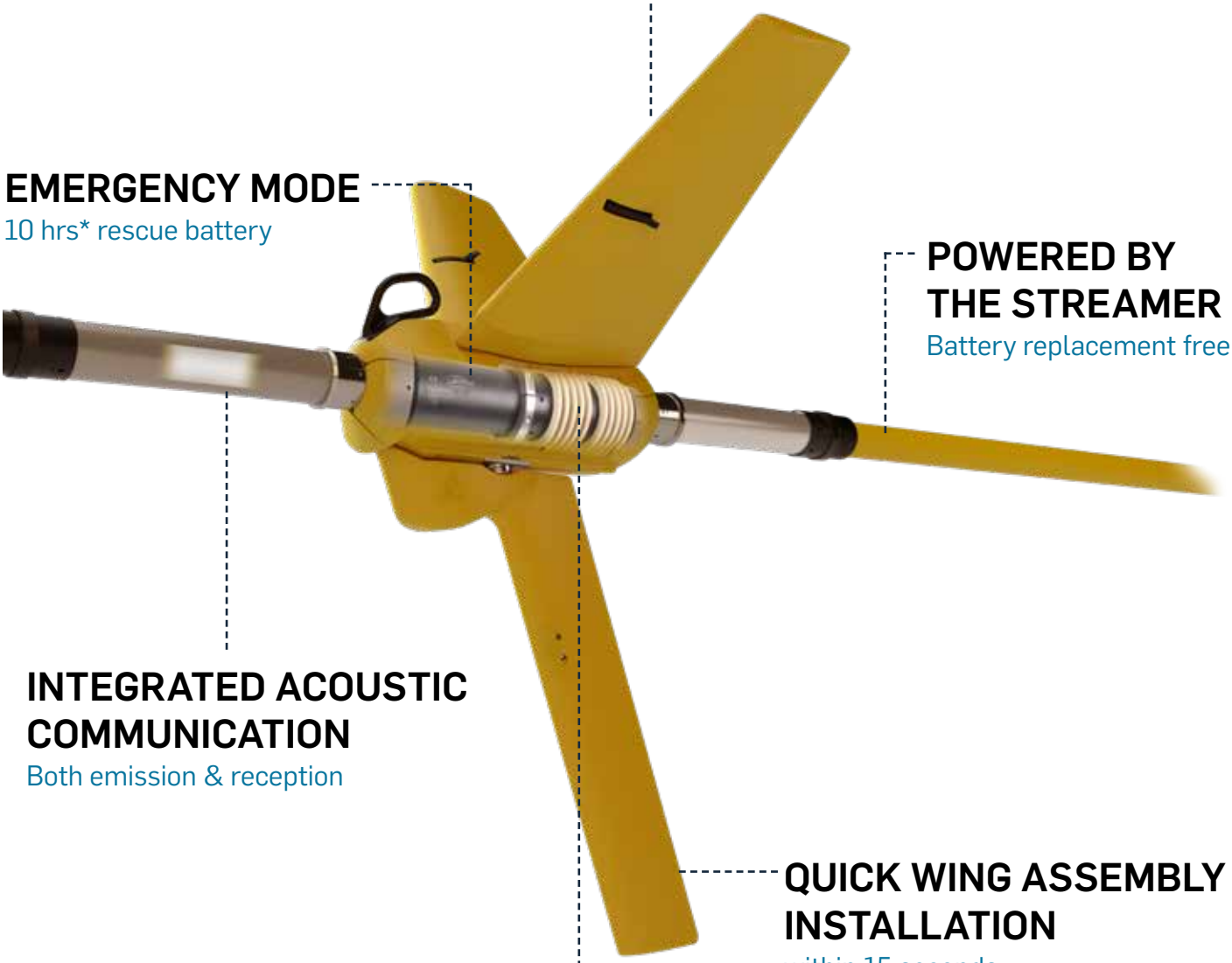
With ultimate battery power conservation, and a much greater steering force, Nautilus reduces the line change and keeps a better control of any streamer configuration (3D, high resolution, fan mode, variable depth), resulting in maximum production with minimum infill acquisition to be performed.

Its in-line and revolutionary design reduces noise compared to conventional birds and allows quick installation during deployment.

# FEATURES & BENEFITS

## HIGH LIFT & STEERING FORCE

- 400 N
- 2 motorized upper wings and 1 smart free keel



## EMERGENCY MODE

10 hrs* rescue battery

## POWERED BY THE STREAMER

Battery replacement free

## INTEGRATED ACOUSTIC COMMUNICATION

Both emission & reception

## QUICK WING ASSEMBLY INSTALLATION

within 15 seconds

## DEPTH MEASUREMENT

Embedded pressure sensor

* Typical, considering a fully loaded battery and depth control only

# FEATURES & BENEFITS

## HIGHER EFFICIENCY

### Adjustable spread configuration

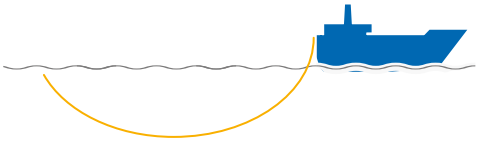
Nautilus is able to manage any marine survey configuration going from standard 3D acquisition to high resolution and variable depth streamer configuration.

**Standard survey** (100 m. separation)

**High resolution survey**
(shorter streamer separation - from 25 m.)

**Fan-mode survey**

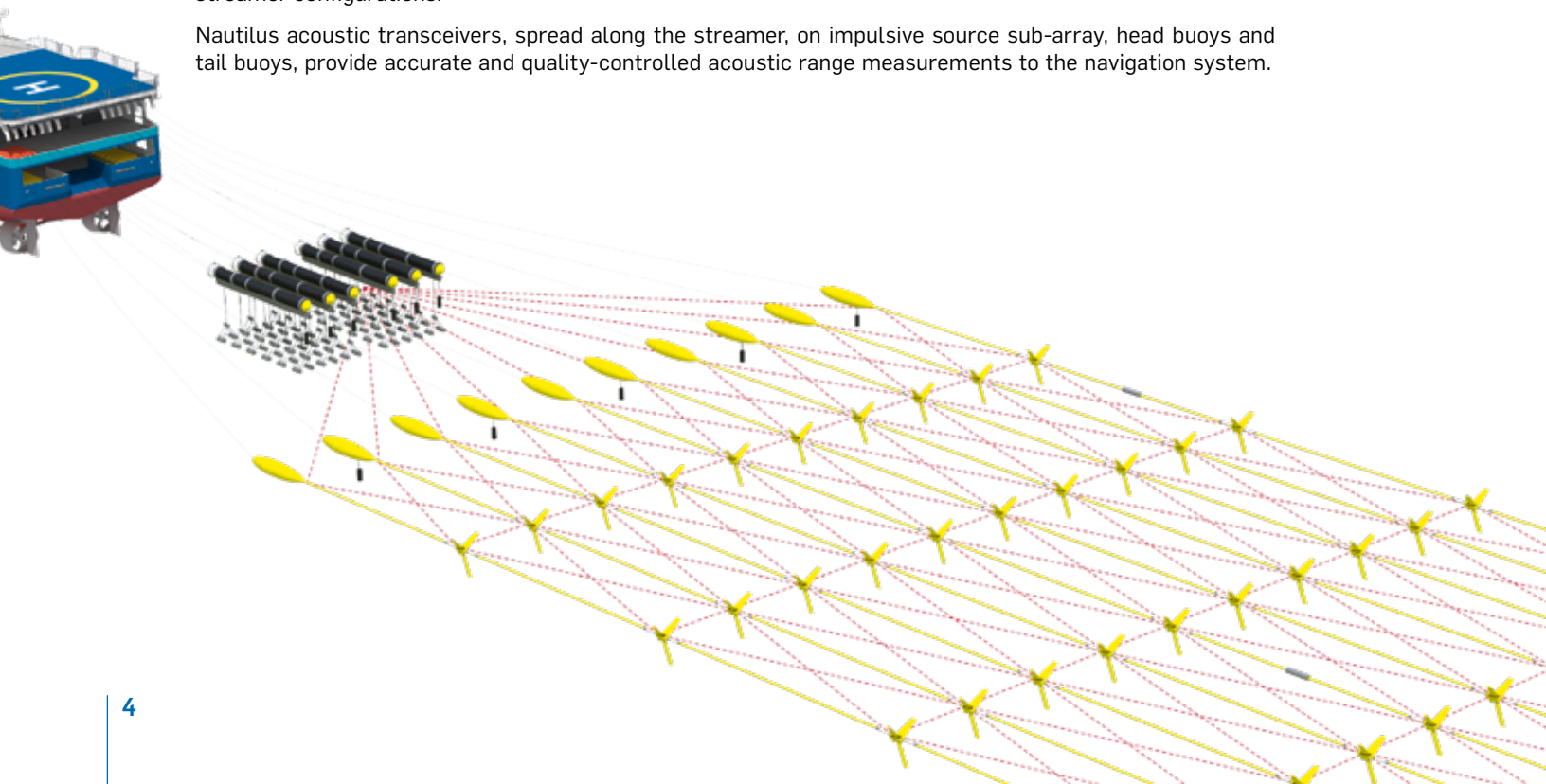
**Variable depth survey**



### Improved positioning

Nautilus has been designed as an efficient solution for full acoustic bracing and cable control for 3D and 4D streamer configurations.

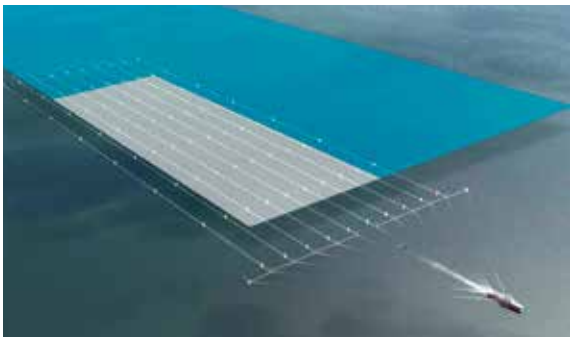
Nautilus acoustic transceivers, spread along the streamer, on impulsive source sub-array, head buoys and tail buoys, provide accurate and quality-controlled acoustic range measurements to the navigation system.



# IMPROVED PRODUCTIVITY

## Reduced infills

Nautilus maximizes productivity by shortening jobs thanks to a high steering capability. The quantity of infills is reduced due to a feather compensation of up to 3°, while turns are greatly optimized.



## Extended weather window

Operations during rough weather are also maintained thanks to Nautilus' vertical stability in high seas.

## Fault-tolerant architecture

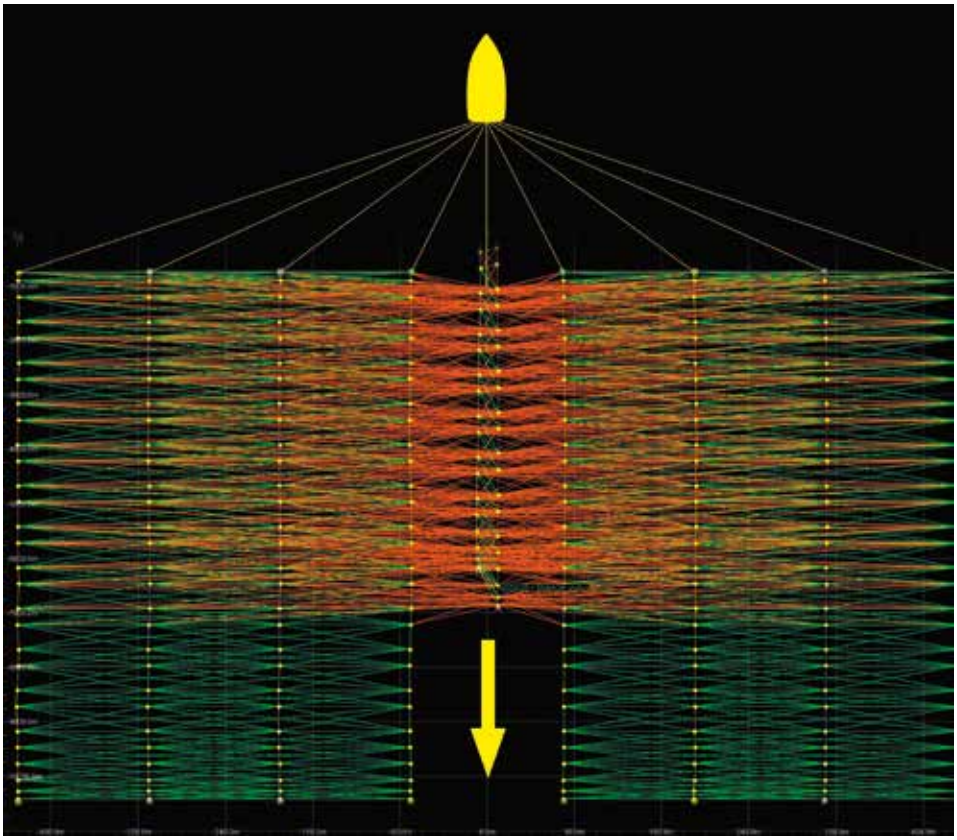
Nautilus takes advantage from the redundant architecture allowing all elements to communicate and position themselves without interruption, whatever the conditions.

In addition, by providing continuous mode and local lateral control, Nautilus prevents from INS disrupt.

# ADVANCED SAFETY

## During deployment

Nautilus-steered Sentinel streamers offer increased safety during critical operations. By being able to position streamer deployments and retrievals, Nautilus, combined with SeaPro Nav, minimizes the risk of tangles and allows less compasses to be used or only as a redundant backup.



## During operations

Powered by the streamer, Nautilus does not require any regular battery inspection and replacement. This eliminates the need to handle and store lithium batteries onboard and reduces workboat

**No battery storage on board, powered by the streamer**

**No workboat operations required, battery replacement free**

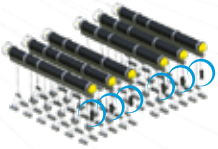
**Emergency mode, in case of system's breakdown**

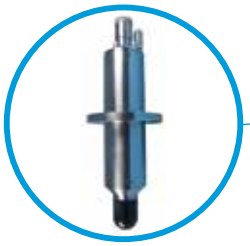
# IN-SEA ARCHITECTURE

## NSN

### Nautilus Streamer Node

- Acoustic range measurement
- Combined depth and steering control
- Telemetry redundancy
- Power redundancy, built-in rechargeable battery
- Exist in 50 or 70 mm diameter connector size

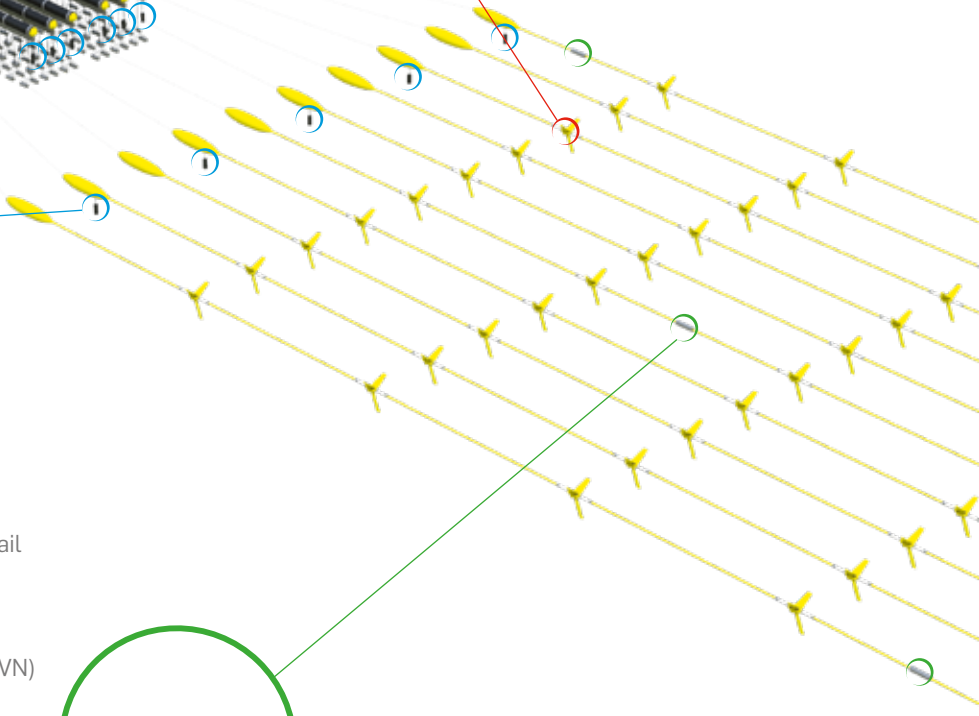




## NVN

### Nautilus Vessel Node

- To be mounted on the vessel hull, head buoy or tail buoy
- Acoustic range measurement
- Telemetry and power-supply through NAI (hull-mounted and head buoy NVN) or NSI (tail buoy NVN)

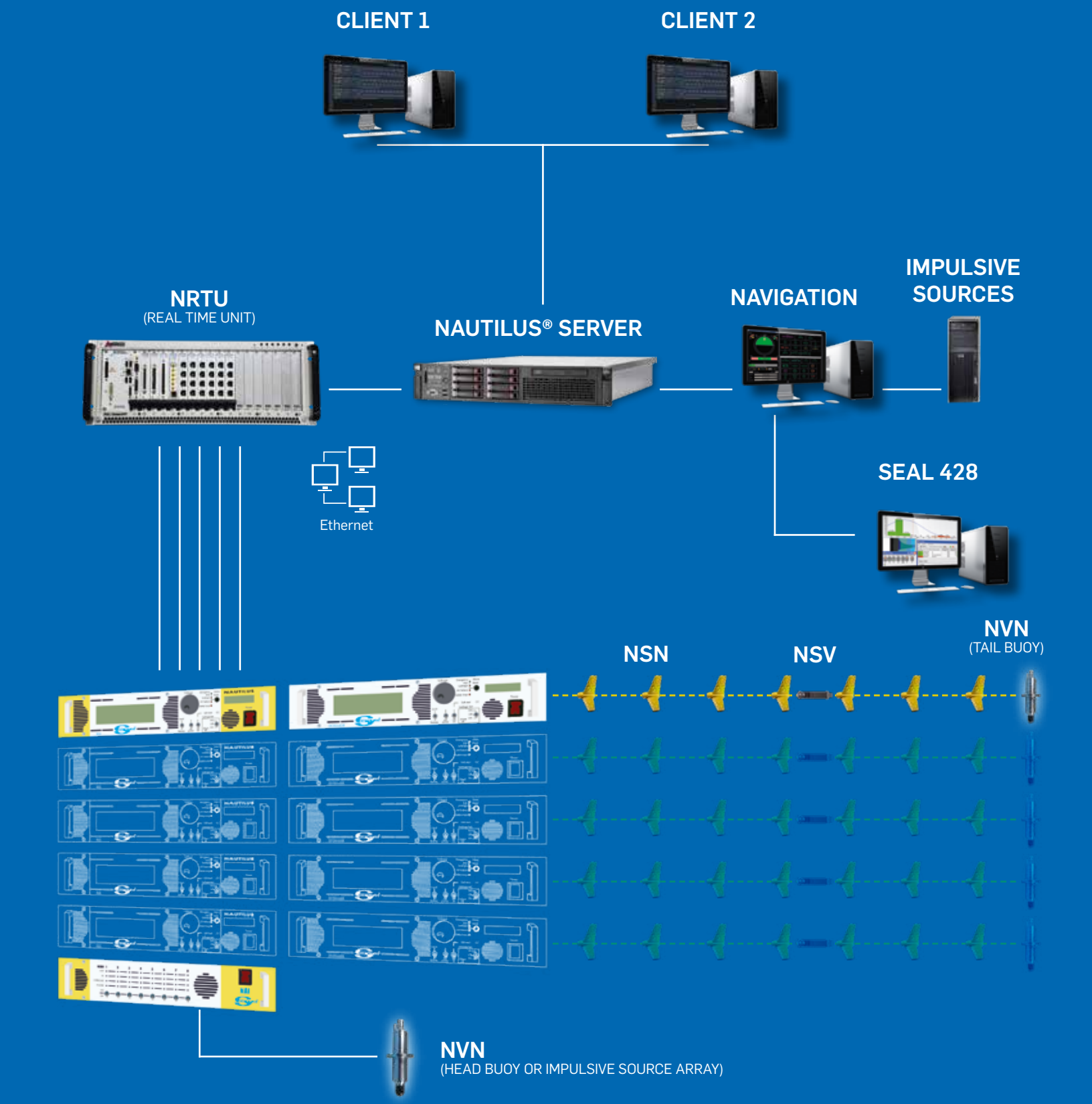


## NSV

### Nautilus Sound Velocimeter

- Speed of sound measurement
- In-line streamer-powered module
- Telemetry and power redundancy through NSI

# ON-BOARD ARCHITECTURE



# NAI

## Nautilus Auxiliary Interface

- Interface between the NRTU and the auxiliary acoustics
- Generation and control of low voltage power supply for Vessel hull (NVN) and impulsive source (NGN) acoustics
- Telemetry conversion

# NSI

## Nautilus Streamer Interface

- Interface between the NRTU and the streamer
- Generation and control of high voltage power supply for in-sea equipments (local and remote operations)
- Telemetry conversion

# NAUTILUS SERVER

## Formatting and processing of positioning measurements

- Interface to navigation system
- Status and control interface to NUI
- Rackable workstation operating Linux Red Hat

# NRTU

## Nautilus Real Time Unit

- Real time commands generation
- Rackable realtime controller (PXI

# NUI

## Nautilus User Interface

- Set of user interface to control Nautilus operations
- Multi-client capability (local or remote)
- Linux Operating System

# OPTIONS

## FLOAT

The NSN Float is a floatation shell used to protect and ballast an NSN if at sea with no wing assembly fitted. It is well suited for the front end where loads can damage the WA or at the tail. The NSN float is compatible with both NSN50 and NSN70.

## LINE TRAP

The line trap has been designed to be easily clamped on the streamer tow point in order to cut fishing nets when working in sensitive areas. Four traps equipped with blades can catch and cut ropes. A sacrificial indicator placed ahead of the blade enables to assess efficiency of the system. The Line trap is compatible with SSAS50 and SSAS70.

## MAINTENANCE KIT

Sercel provides complete sets of tools for Nautilus preventive maintenance and repairs of all related in-sea equipment: NSN (Eccentrics, rings...), Wing Assembly etc.

**SERCEL - FRANCE**
16 rue de Bel Air
B.P. 30439 - 44474 CARQUEFOU Cedex
Téléphone : (33) 2 40 30 11 81
E-mail : sales.nantes@sercel.com
SAS au capital de 25 000 000 €
Siège Social : 16 rue de Bel Air - 44470 CARQUEFOU
378.040.497 R.C.S. Nantes Code APE 2651B

**SERCEL INC. - U.S.A.**
17200 Park Row
Houston, Texas 77084
Telephone : (1) 281 492 6688
E-mail : sales.houston@sercel.com

**www.sercel.com**

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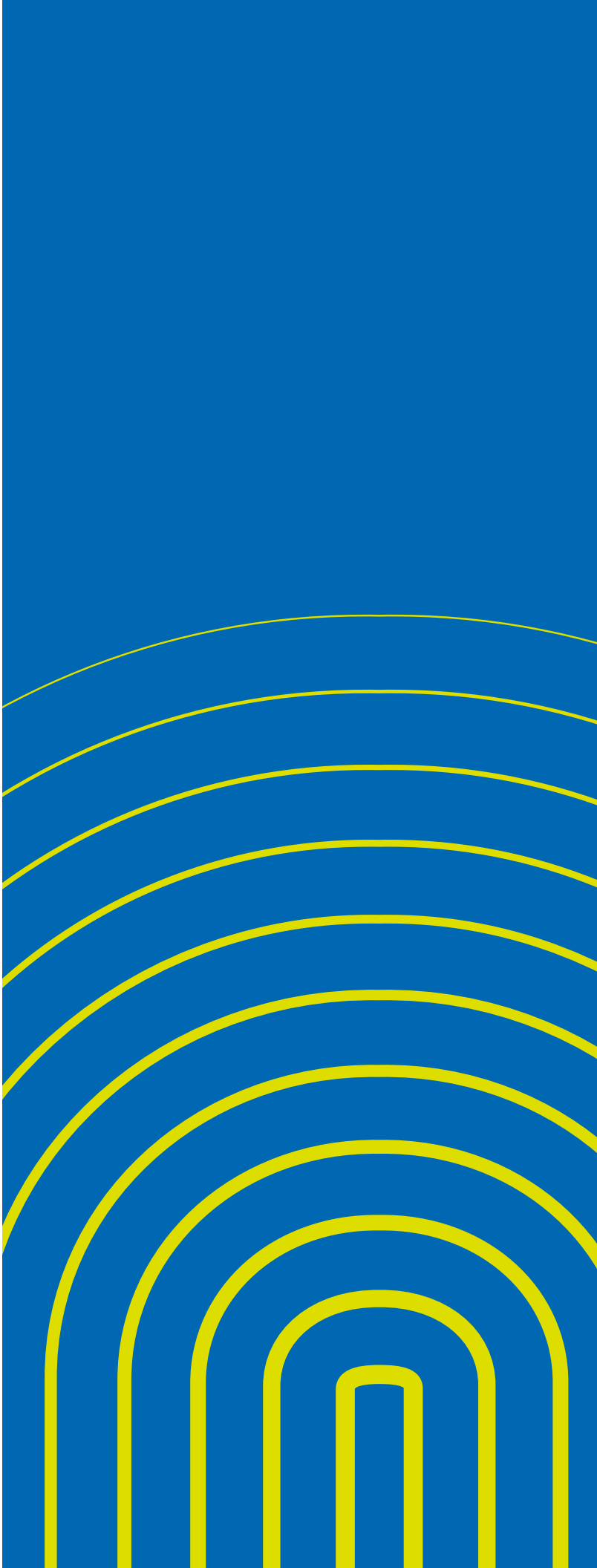
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