

CASE STUDY

NORBIT iWBMSe integrated in a SB 100 PRO USV
for Multibeam Bathymetry at the Port of Barcelona

in collaboration with



Unmanned Surface Vehicle

SB100PRO

NORBIT
- explore more -



The Company

Founded in May 2019 in Barcelona as a spin-off of the GPAINNOVA Group, GPASEABOTS' activity revolves around the development of technologies for exploring and preserving the marine environment, such as USVs (Unmanned Surface Vehicles) and smart buoys.

Just a few months after its creation, the company was granted the Fuera de Serie ("state-of-the-art") Design & Innovation Award, promoted by one of the most important publishing groups in Spain, in the category of Sustainability.

In 2020, GPASEABOTS deployed more than 100 buoys to study the coastal waters on beaches

in Eastern Spain and launched the SB 100 PRO model, a multipurpose marine drone for all kinds of tasks in sheltered waters. Depending on the payloads, this USV can be used in the fields of hydrology, water analysis, research, Search & Rescue (SAR), mooring inspection and other tasks. Likewise, its use allows access to restricted areas, in which navigation may be restricted, difficult or dangerous.

Another product developed by GPASEABOTS is SB 100 Cleaner, specially designed for sea water surface cleaning in ports and marinas.



The Opportunity

Naval robotics can replace tasks that have always been carried out by traditional methods, which have a high ecological impact and expensive operating costs.

USVs are becoming widespread in several areas in the naval sector. In this real case study, we present a need that is shared by many ports: Mooring inspection in harbors and marinas.

Payloads

GPASEABOTS' SB 100 PRO USV, the most versatile USV platform on the market for sheltered waters activities. It is an indispensable tool for a fast, efficient and precise work.

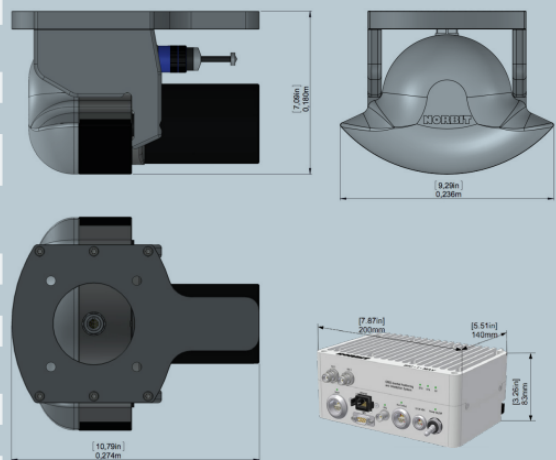
Both the operating cost and its environmental footprint are extremely low, and it allows to expand the range of possibilities in the field of data acquisition.



Norbit iWBMSe is a multibeam turnkey solution offers high resolution bathymetry over a wide swath. The high-end sonar with globally leading GNSS/Inertial Navigation System (Applanix SurfMaster) embedded into the unit ensures fast and reliable mobilization and highest quality sounding for most conditions. The iWBMSe is an ideal choice for protected waterway bathymetric surveys; it may be mobilized on any vessel of opportunity and offers streamlined operability and good performance to match budget and project requirements.

TECHNICAL SPECIFICATION

SWATH COVERAGE	5-210° FLEXIBLE SECTOR (SHALLOW WATER IHO SPECIAL ORDER >155°)
RANGE RESOLUTION	<10mm (ACOUSTIC w. 80kHz BANDWIDTH)
NUMBER OF BEAMS	256-512 EA & ED
OPERATING FREQUENCY	NOMINAL FREQUENCY 400kHz (FREQUENCY AGILITY 200-700kHz)
DEPTH RANGE	0.2-275m (160m TYPICAL @ 400kHz)
PING RATE	UP TO 60Hz, ADAPTIVE
RESOLUTION (ACROSS X ALONG)	STANDARD: 0.9° X 1.9° @400kHz AND 0.5° X 1.0° @700kHz. NARROW OPTION: 0.9° X 0.9° @400kHz AND 0.5° X 0.5° @700kHz
POSITION	HOR: ±(8mm +1ppm X DISTANCE FROM RTK STATION) VER: ±(15mm +1ppm X DISTANCE FROM RTK STATION) (ASSUMES 1m GNSS SEPARATION)
HEADING ACCURACY	0.08° (RTK) WITH 2m ANTENNA SEPARATION
PITCH/ROLL ACCURACY	0.03° INDEPENDENT OF ANTENNA SEPARATION
HEAVE ACCURACY	5cm or 5% (2cm RTK)
WEIGHT	6.5kg (AIR), 2.4kg (WATER) WITH BRACKET (LESS THAN 19KG WHEN PACKED IN PELICAN CASE)
INTERFACE	ETHERNET
CABLE LENGTH	STD 8m, OPTIONS: 25m, PIGTAIL, CUSTOM UP TO 50m
POWER CONSUMPTION	60W (75W MAX) (10-28VDC, 110-240VAC)
OPERATING TEMP.	-4°C TO +40°C (TOPSIDE -20°C TO +55°C)
STORAGE TEMP	-20°C TO +60°C
ENVIRONMENTAL	TOPSIDE: IP67; DUST TIGHT, PROTECTED AGAINST THE EFFECT OF IMMERSION UP TO 1m/WET-END: 100m



Part #12006

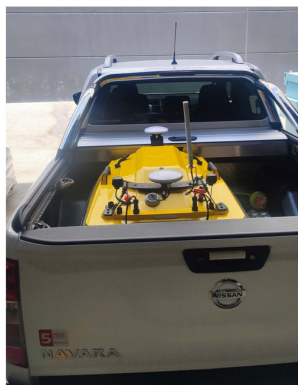
Custom Integration



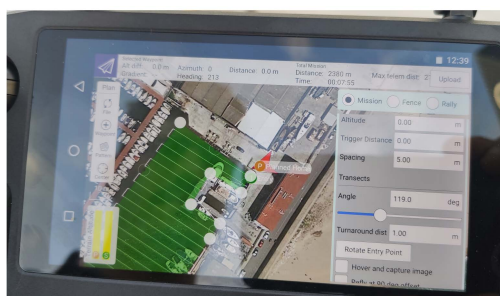


Operation Examples

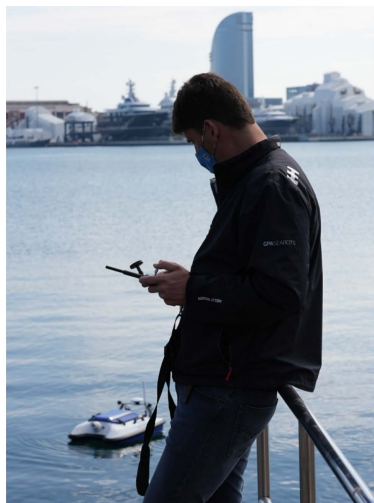
1. Transport



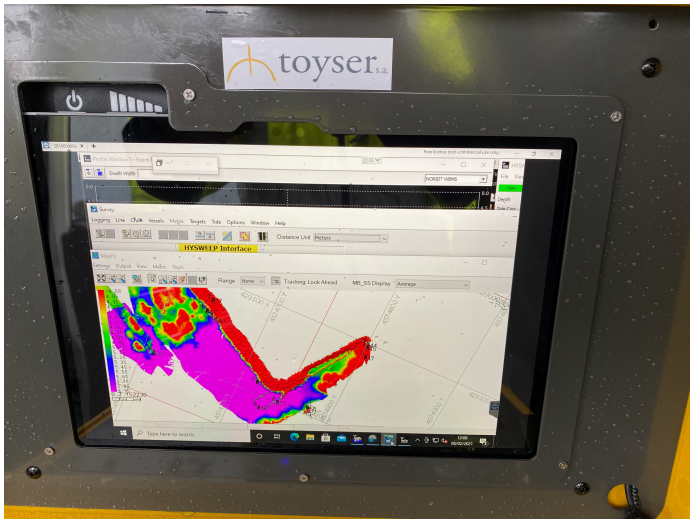
2. Planify Mission & Deploy



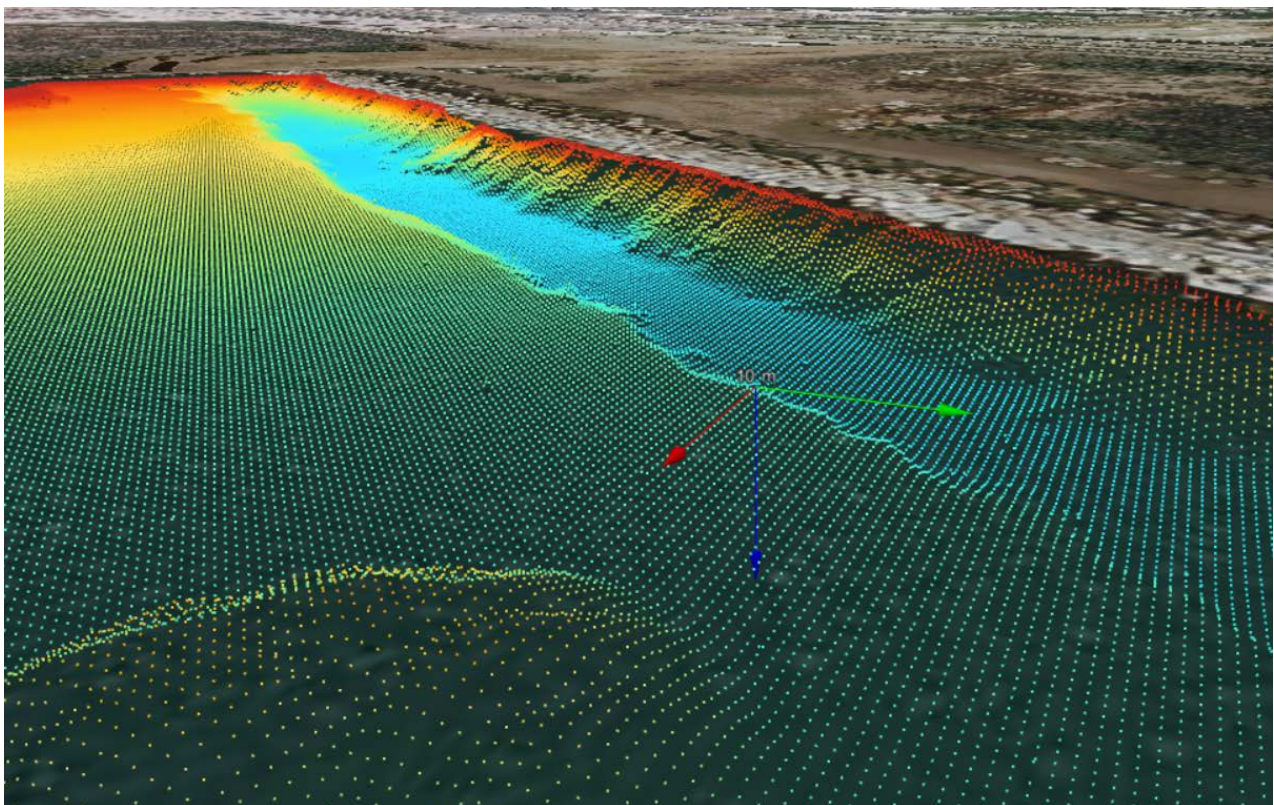
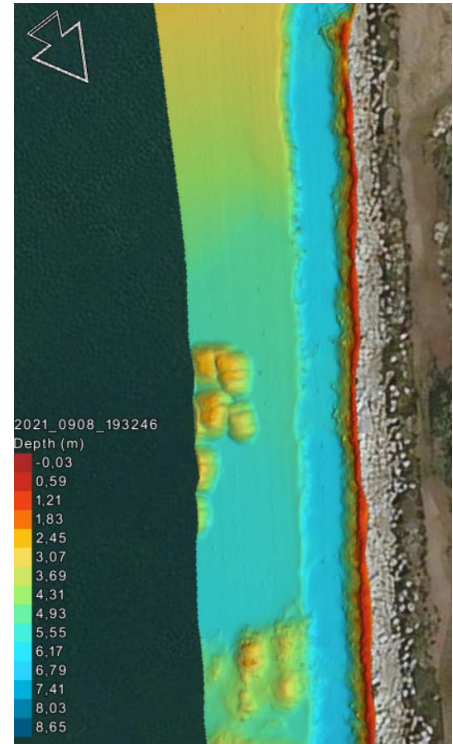
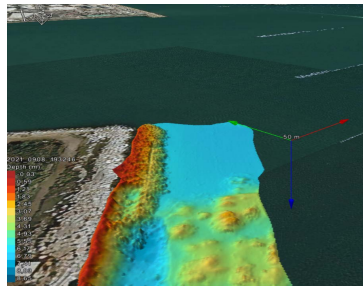
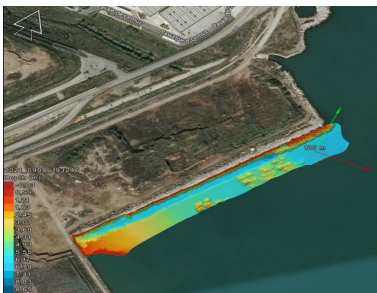
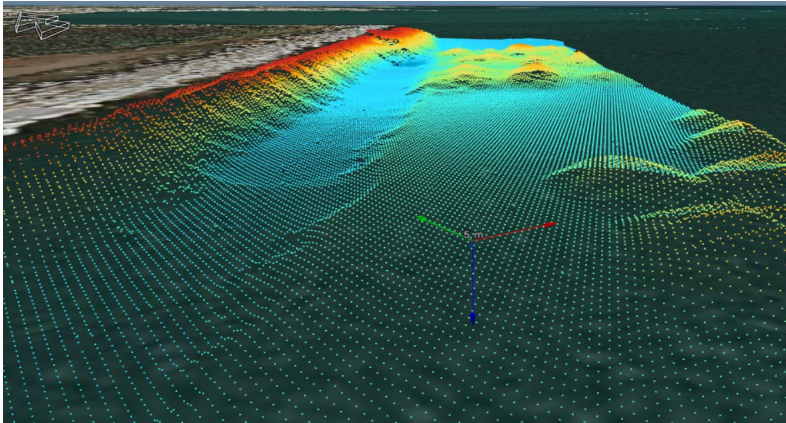
3. Acquisition Time



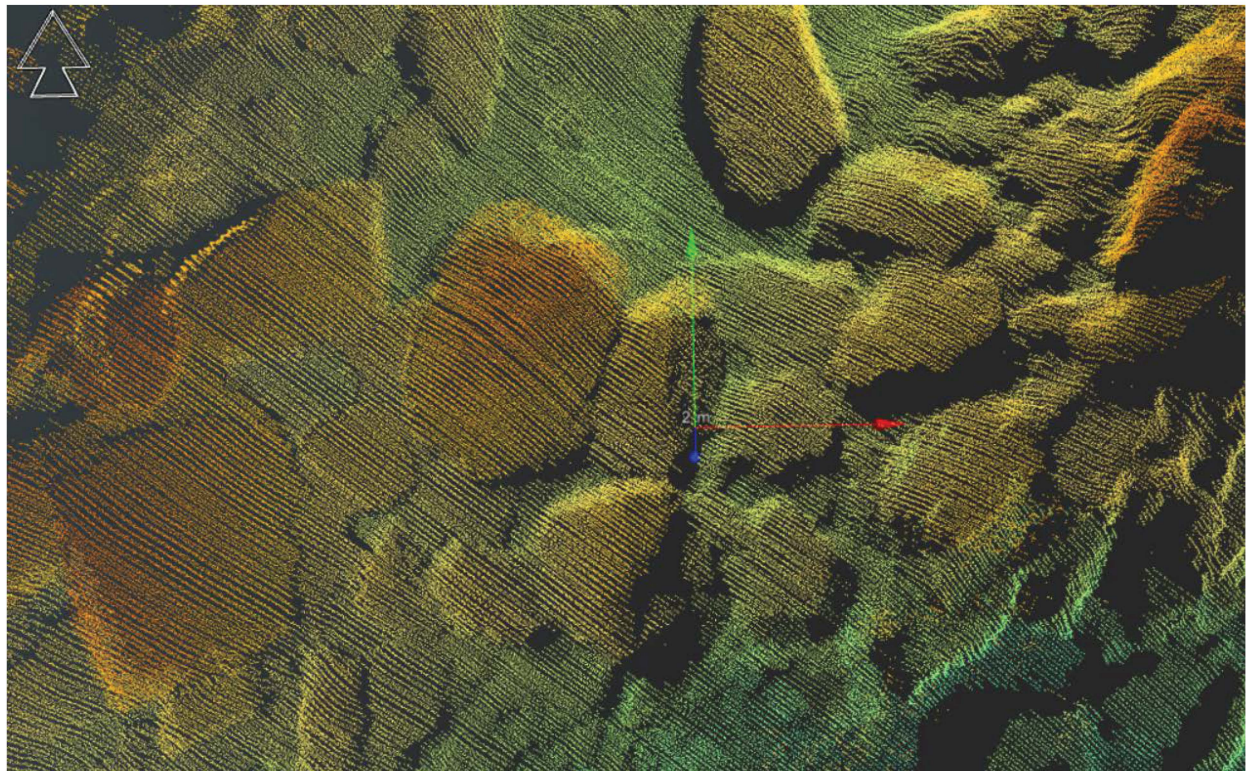
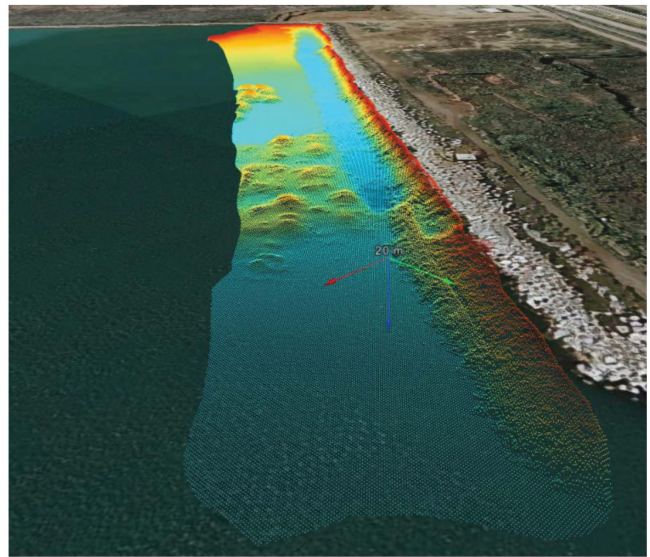
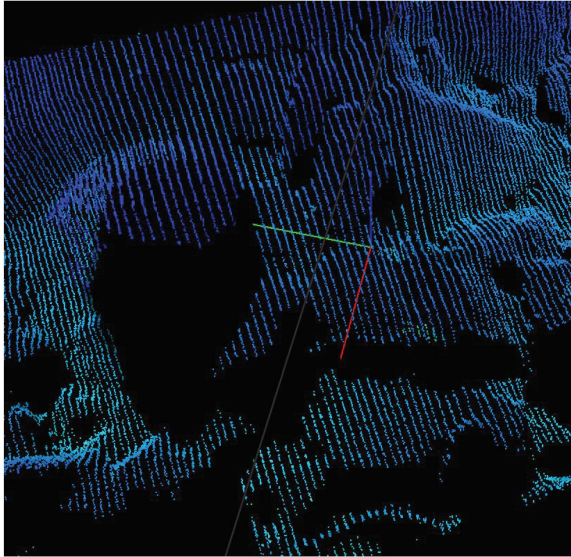
Data Acquisition



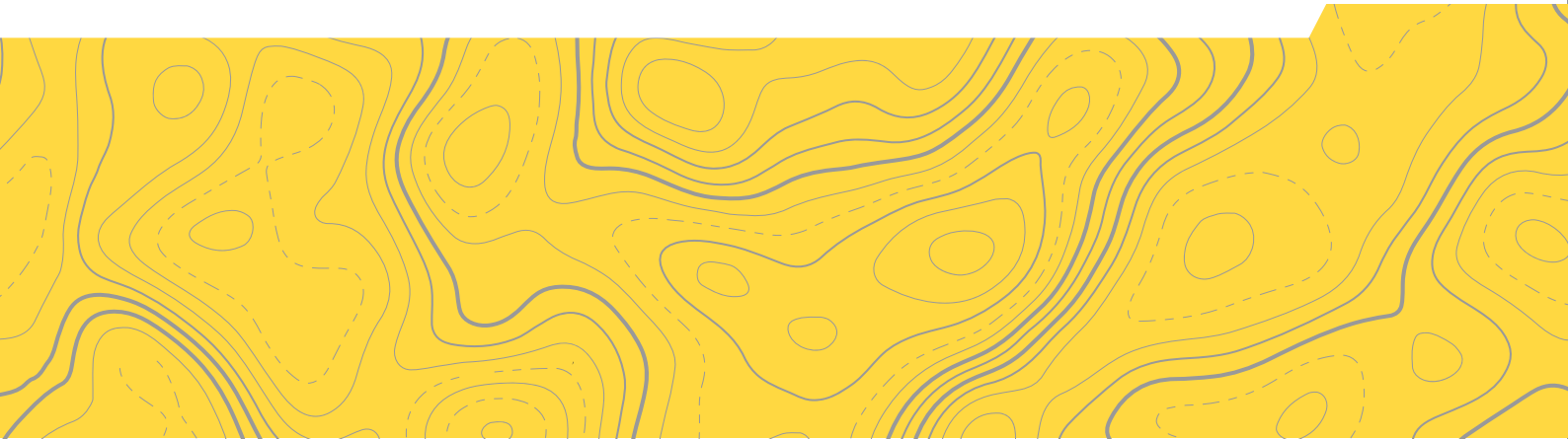
Data Acquired



Data Acquired



Multibeam Echosounder Norbit iWBMSe with INS Applanix Surfmaster and GPS, data acquisition and edit with Coastal Oceanographic Hysweep (Hypack). Data visualization with EIVA NaviModel.



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