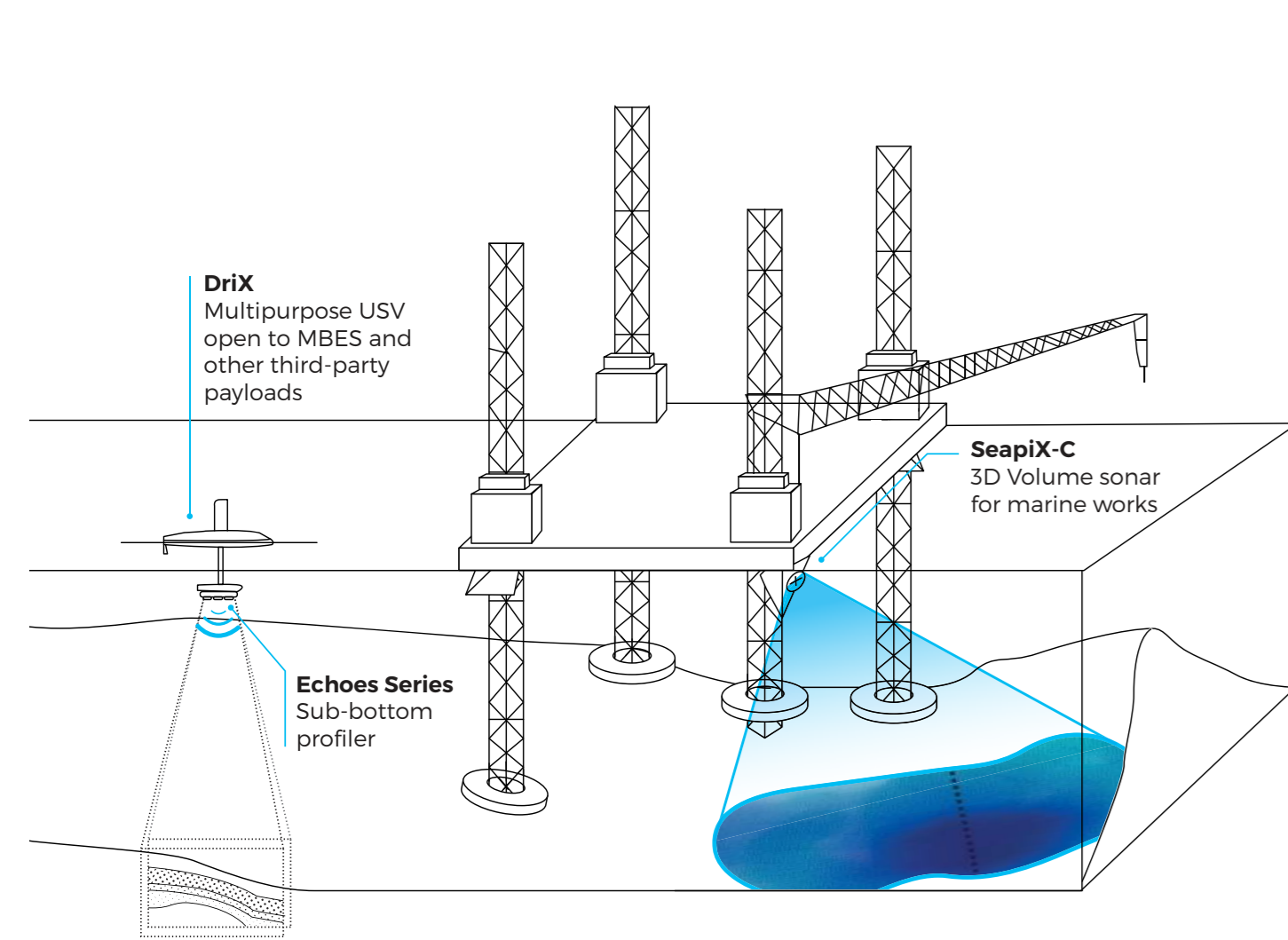


SOLUTIONS FOR MARINE SURVEY

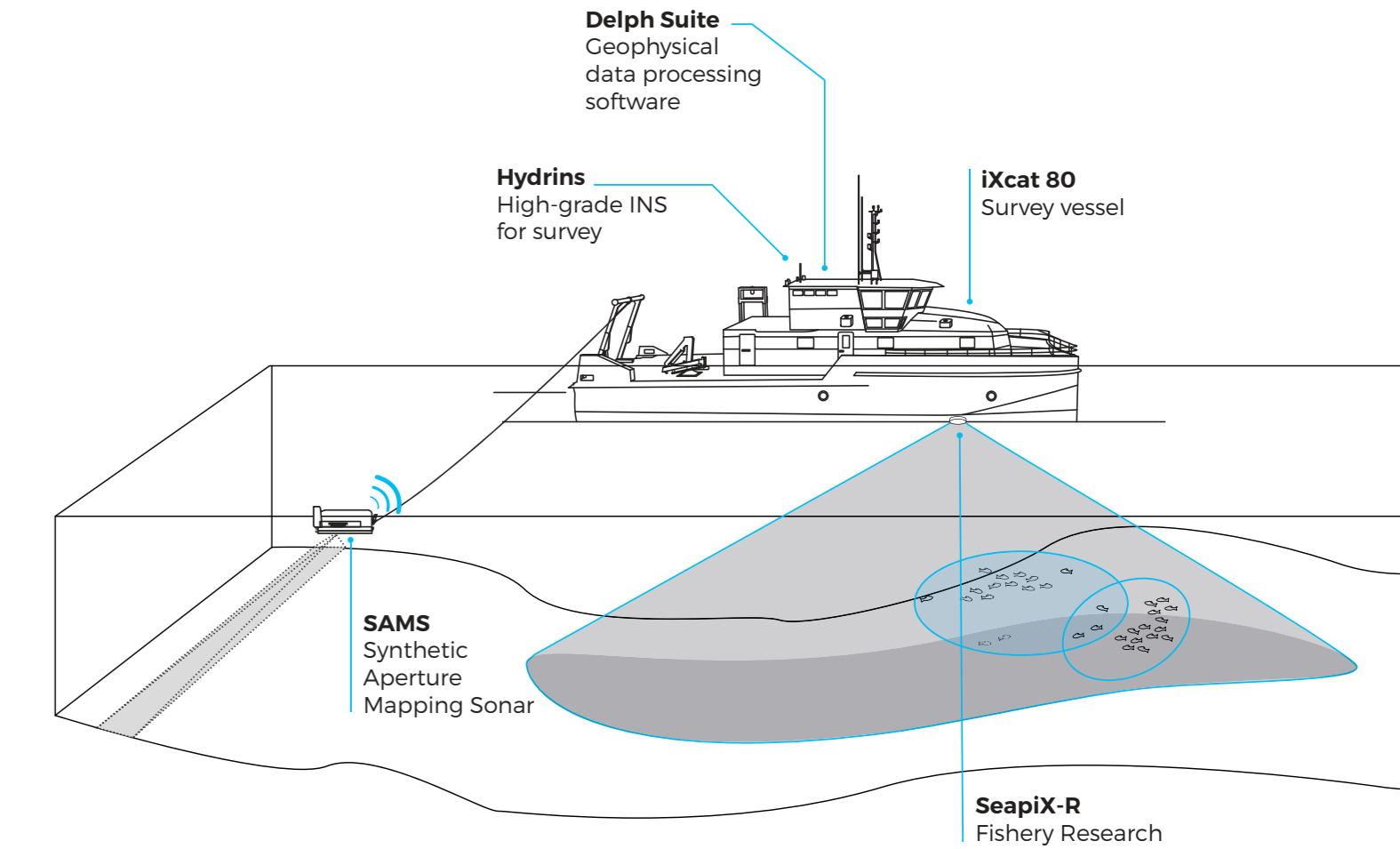
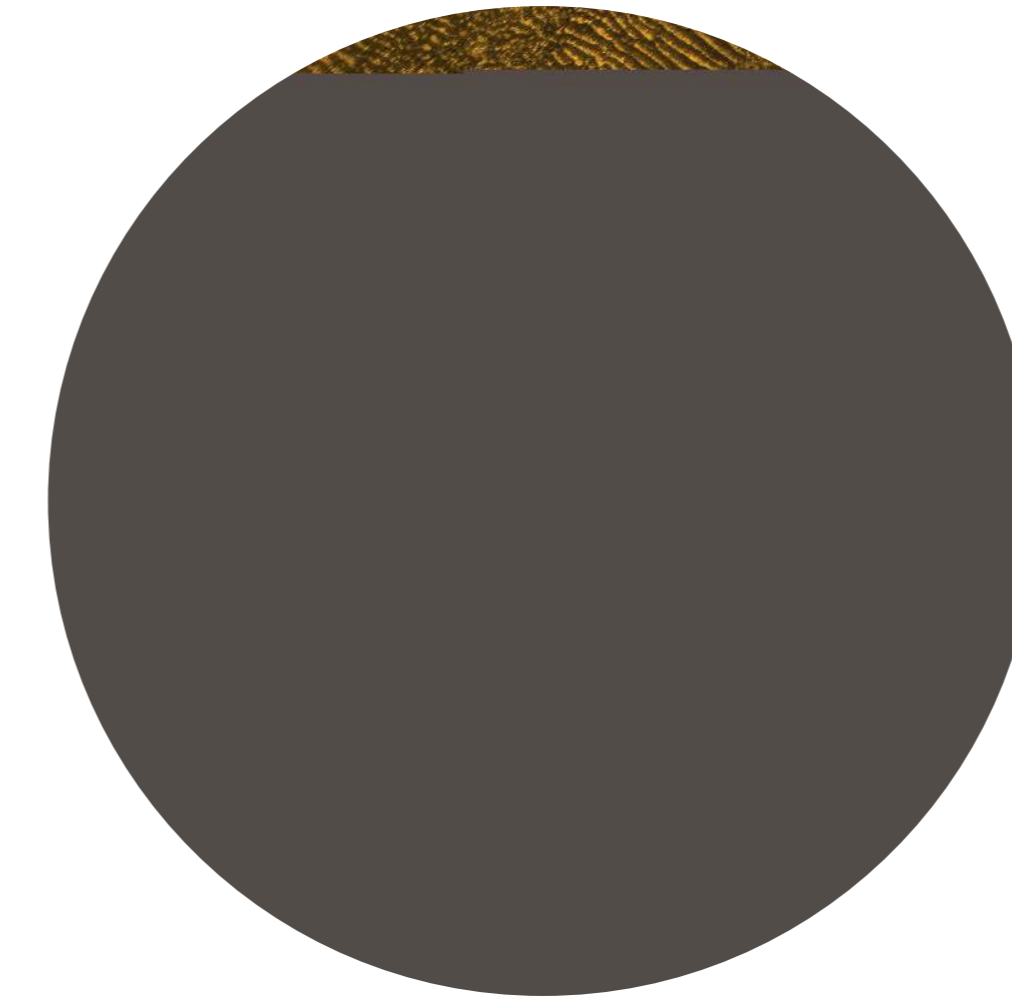
FROM SENSORS TO MARINE SURVEY SOLUTIONS



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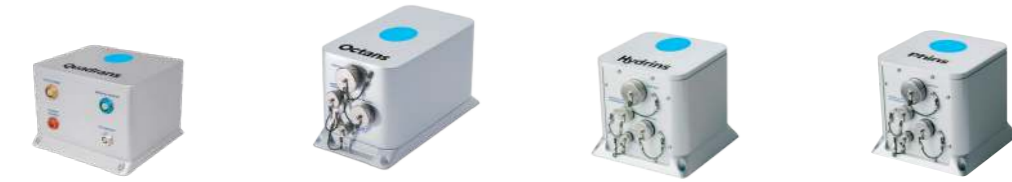
SUBSEA IMAGERY | **ixblue**

INERTIAL SURFACE NAVIGATION

SURFACE ATTITUDE AND HEADING REFERENCE SYSTEMS & INERTIAL NAVIGATION SYSTEMS

iXblue provides a unique range of AHRS and INS, all based on Fiber-Optic Gyroscope Technology. Its systems are highly sensitive to Earth Rotation, allow for a simpler North seeking and ensure smooth and reliable inertial navigation even in case of GNSS outage.

FOG technology presents the highest performance for the lowest cost-of-ownership, providing a much-needed peace of mind to surveyors, military or civilian.



Quadrans
Surface gyrocompass and AHRS

Octans
Surface gyrocompass and motion sensor

Hydrins
High-grade INS for hydrographic and multi-beam surveys

Phins
Multipurpose high-performance INS

Heading accuracy (RMS)	0.23° deg secant latitude	<0.1 deg secant latitude	<0.01 deg secant latitude	<0.01 deg secant latitude
Roll & Pitch (RMS)	0.1 deg	0.01 deg	0.01 deg	0.01 deg
Heave	5% RMS / 5 cm	5% RMS / 5 cm	2.5% RMS / 2.5 cm	2.5% RMS / 2.5 cm
Pure inertial drift				0.6 nm/h
Position accuracy real-time				
No aiding for 1, 2 and 5 min		0.8 m / 3.2 m / 20 m (CEP 50)	0.8 m / 3.2 m / 20 m (CEP 50)	
Certification and others				
IMO / IMO HSC	•	•	•	•
External sensors	GPS, EM log	GPS, EM log	GPS	GPS, EM log, DVL
Options				Range depths

ENVIRONMENT MONITORING & MARINE WORKS

SEAPIX-R - 3D VOLUME SONAR FOR ENVIRONMENTAL SURVEY

SeapiX-R is a 3D multibeam sonar providing accurate water column coverage, biomass assessment and seabed mapping. It brings new insights to the scientific community for the evaluation and the monitoring of marine environments.



Frequency	10 KHz
Modulation	CW and CHIRP
Across track multibeam swath	64 channels, stabilized
Along track multibeam swath	64 channels, stabilized
Beam stabilization	TX + RX, built-in MRU
Beam resolution	1.6° angular / 7.5 cm radial
Triple echograms from all swath	Adjustable from 1° to 120° each
Typical range	Biomass 400m, Bathymetry 600m
Volume resolution	0.6m³ @100m
Volume coverage	120° x 120°
Signal processing	SV, TS, NORM, calibrated
SED fish extraction	Up to 200.000 single fish detections
transmission power	4KW

SEAPIX-C - 3D VOLUME SONAR FOR MARINE WORKS

SeapiX-C is a solid-state 3D multibeam sonar for highly accurate and real-time georeferenced static bathymetry. It enables instant monitoring and decision-making for more efficient and safer marine works operations.



Aperture	120°
Frequency	145 kHz to 155 kHz
Number of beams per swath	256 beams along track and 256 beams across track
Single Élément beam opening	1.6°
Array	Seerable Symmetrical dual Multibeam, No moving part
Multi-head capability	Up to 4 simultaneous heads managed by a single interface
Modes	Classic bathymetry, static bathymetry, scan
Acoustic processing with navigation	Realtime acoustic data fusion with navigation GIS system
3D acoustic presentation	2D and 3D acoustic presentation
Bathymetry	Bathy from all swath, dynamic and static bathymetry
Navigation & chart system	Embedded ECS navigation and charting system
Recording / Export	RAW Data, 57k
Motion sensor	Embedded
Network	Copper Gigabit Network (Optical fiber in option)

SEABED MAPPING

ECHOES SERIES SUB-BOTTOM PROFILERS

Echoes Series provides a complete solution for acquiring, processing and interpreting high quality geological data thanks to its integration with the provided Delph Seismic software. This complete solution covers the full range of applications, from shallow to deep water.



	Echoes 3500 T1	Echoes 3500 T3	Echoes 3500 T7	Echoes 5000	Echoes 10000
Typical penetration and operational depth (m)	150 Shallow water	150 Continental shelf	150 Full ocean depth	150 From shallow water to full ocean depth	40 Shallow water
Frequency range (kHz)	1.7 - 5.5	1.7 - 5.5	1.7 - 5.5	2 - 6	5 - 15
Equivalent source level (dB @kVa) (ref 1uPa@1m)	224 @ 2	227 @ 2	235 @ 4	216 @ 1	233 @ 2
Resolution (cm)	20	20	20	15	8
Frequency response	Flat spectrum				
Digital data format (bit raw data)	24	24	24	24	24
Available pulses	AM-FM / User- designed and CHIRP library				
Aperture (°)	45	30	20	30	20
Transmission power (kVA)	2-4 (6 option)		2		2 (4 option)

SAMS SERIES SYNTHETIC APERTURE MAPPING SONARS

Sams Series offers optimal imaging performance with respect to environmental conditions in terms of swath, resolution, image quality, coverage rate and absolute pixel positioning accuracy. Sams is also available as a payload for ROV and AUV.



	SAMS MT-3000	SAMS DT-6000
Coverage rate (km²/h)	7.2	6.12
Frequency (KHz)	100	55
Bandwith (KHz)	30	15
Maximum depth (m)	3.000	6.000
Full swath (m)	800	1.800
Along-track resolution (cm constant resolution in optimal conditions)	15	15
Speed (knots)	=4.5	=2-3
Navigation & Positioning	USBL+INS+DVL+SVP	USBL+INS+DVL+Pressure sensor+SVP
Other sensors	Magnetometer, Subbottom profiler, Pinger locator	
Dimensions (L x W x H) (m)	2.2 x 1 x 0.9	3.3 x 1 x 1.5
Weight in air / water (kg)	280 / 120 (200kg removable additional dead weight)	1.100/neutral
Electrical power supply	600V - 1.200W	600V - 1.200W

DELPH SONAR

Delph Sonar is a complete acquisition, processing and interpretation software package designed to easily perform accurate and productive side-scan sonar surveys. Providing an optimal QC at any stage and relying on Delph powerful workflow and ease-of-use, side-scan sonar mapping has never been so fast.

- Opened to most digital side-scan sonars
- Open to industry standard XTF formats
- Complete and fast data processing
- T.V.C. gain calibration on sonar data
- Complete data interpretation tools
- Target picking on the profile or a mosaic
- 2D/3D coverage map

DELPH MAG

Delph Mag locator is a unique operational solution for the mapping of buried objects: in a few comprehensive steps, it filters and maps magnetic anomalies. Although requiring no prior expertise in magnetic science, it provides an accurate magnetic anomaly map to locate magnetic sources.

- Generic ASCII import and XTF data format
- Navigation and geometry correction
- Diurnal correction from reference station of by filtering
- Generic data interpretation tools from maps
- Combined multi-sensor interpretation with side-scan sonar, sub-bottom and bathymetry data
- 2D geo-referenced anomaly vector display
- 2D/3D magnetic map display from generated models
- Iso-contours generation from all maps

DELPH SEISMIC

Delph Seismic is the most complete acquisition, processing and interpretation software package designed to provide geologists and geophysicists with easy access to all data collected from high-resolution seismic systems and sub-bottom profilers.

- All analog seismic sources
- Digital sub-bottom profilers
- Extensive data processing library
- Complete data interpretation
- Automatic seabed and horizon tracking
- 3D geo-referenced interpretation display

DELPH ROADMAP

Delph RoadMap is featured with all Delph software and provides advanced real-time and offline data display in a powerful 2D/3D cartographic environment.

- Support for virtually all geodetic systems
- Connection to single or multiple positioning equipment
- Project organization with sensor oriented themes in the project
- Support for any XTF and SEG Y data
- Integrated access to Delph Seismic, Sonar and Mag
- 2D/3D display of all data
- Configurable layout and vertical exaggeration
- Coverage map display for all sensors

DELPH SAS

Delph SAS streamlines synthetic aperture sonar processing within the industry leading Delph Sonar Interpretation software. Advanced side-scan sonar processing, mapping and analysis now shares common tools with regular side-scan sonars and benefits of Delph optimized workflow.

- Accurate absolute positioning in real-time
- Full resolution INS-based navigation and motion compensation
- Robust SAS processing against sonar motion
- Natural 100% across and along-track coverage at any speed
- Native production of standard XTF records and geoTIFF mosaics
- Delph Sonar target analysis and databasing tools