



SHADOWS

HIGH PERFORMANCE MAPPING SONAR



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HIGH PERFORMANCE SYNTHETIC APERTURE MAPPING SONAR

SHADOWS, THE NEW GENERATION SURVEY SOLUTION

Conventional sonar systems provide either high or low resolution, but have a blind zone at nadir, beam distortion across track, and require a huge post-processing effort before any map can be made available. Several technological steps are necessary to improve on these requirements:

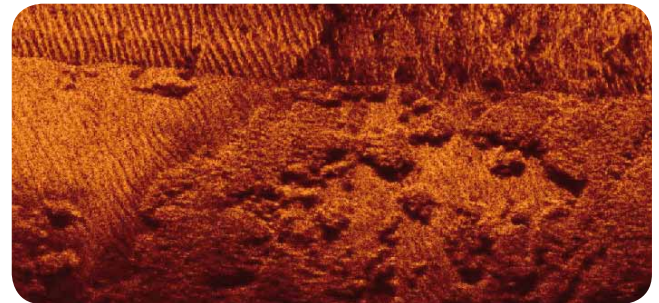
- Synthetic Aperture Sonar (SAS) technique providing constant across track resolution
- Perfect real-time knowledge of fish attitude to build up the virtual array and obtain geo-referenced data
- Cutting edge hardware and software architecture to allow real-time building of geo-referenced image and data dissemination

For a number of years IXSEA has been developing the key innovative technologies and sensors which are assembled together in the SHADOWS system:

- Synthetic Aperture Sonar algorithm
- transducer design and manufacturing
- Precise underwater acoustic positioning systems
- High performance FOG-based (Fiber Optic Gyroscope) Inertial Navigation System

SHADOWS is the new generation survey solution providing affordable Synthetic Aperture Sonar technology.

Designed as a comprehensive survey solution, SHADOWS offers constant resolution with no gap at nadir, immediate access to orthorectified images over a 600m swath with an easy and straightforward user interface.





...FOR REAL-TIME APPLICATIONS OR OFFLINE USE

FEATURES

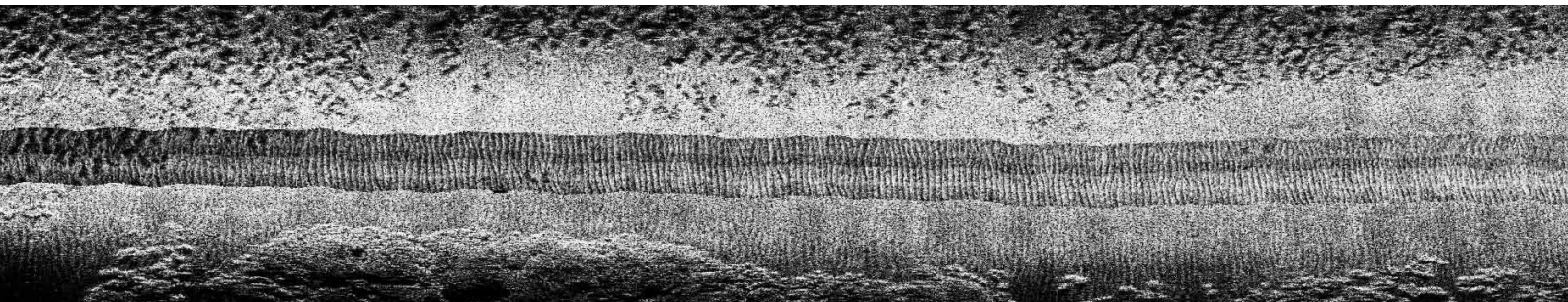
- 15 cm along and across track
- Up to 600m swath
- Frontal looking sonar (GAP filler)
- Real Time orthorectified imagery
- Client-server architecture
- Standard data format
- Complete system solution

BENEFITS

- Constant image resolution immediately available with no beam distortion over the whole range
- Wide swath at constant resolution and no gap at nadir. SHADOWS allows a triple coverage at half the speed of a traditional high-grade SSS thus a third off usual survey time
- No gap at nadir. Multi-routing for blind zone is no longer required
- Perfect matching between successive stripes provides immediate usable charts and massively reduces post-processing time
- Immediate data dissemination, real time access to data from any remote location through WEB tools and services
- Industry standard data format following OGC recommendation (WMS, WFS. Direct access from ARCGIS, Google Earth..)
- Full featured system from data acquisition to charts production. SHADOWS' pre-integrated system saves mobilization time and keeps all of its complexity inside for an easy-to-operate professional solution

APPLICATIONS:

- Route and debris survey • EEZ mapping • Environmental monitoring • Hydrography • Offshore survey
- Reconnaissance and salvage exploration



SHADOWS SYSTEM ARCHITECTURE

SHADOWS is a complete survey solution with all the necessary components required from data acquisition to final chart production.

NAVIGATION:

- High performance FOG based INS allowing accurate micro-navigation (key conditions to SAS processing)
- GAPS pre-calibrated USBL system delivering exceptional performance in shallow water conditions
- DVL (Doppler Velocity Log), GPS (during initial system alignment)
- Stable towfish body and structure

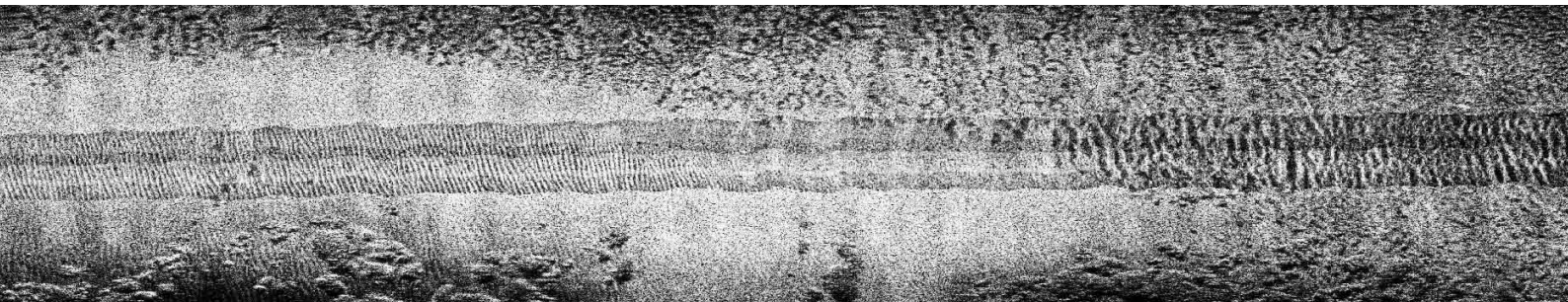
ACOUSTIC ARRAYS:

- 2 x 24 channels side arrays (100kHz)
- 48 channels frontal array (300kHz), making the most of fish micro-navigation to fill up the image at nadir and build a continuous image across track

PROCESSING AND DATA HANDLING CENTER:

- Control command with IXSEA common look and feel user interface(WEB-based interface)
- Data processing and analysis
- Data display
- Data dissemination





TECHNICAL SPECIFICATIONS

SIDE SONAR ARRAYS

Antenna length	2 m
Resolution	0.15 m constant along and across range
Reception channels	24 on each side
Range	600m at 5 knots, 300 meters at 10 knots

FRONTAL SONAR ARRAYS

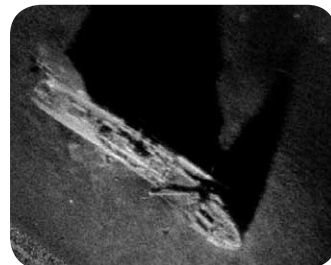
Antenna length	0.6m
Resolution	0.4 to 0.15m
Center frequency	300kHz
Transmission transducers	4
Reception channels	48
Range	50-80 meters

FISH CHARACTERISTICS

Fish size (L x W x H)	220cm x 120cm x 75cm
Weight in air	450kg
Operational depth	300m (400m survival)
Raw data acquisition rate	40 GB/ Hour
Total power supply	600W (220V 50/60Hz)
Max tow speed	10 knots

TOP SIDE ELECTRONICS

Includes:	Power supply / Processing unit /Data logger
Shipping	transportable GRP 19" rack mount



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