Coda Octopus
Sound Underwater Intelligence

Coda Octopus Solutions for Geophysical Operations

Version 1.6.7.21

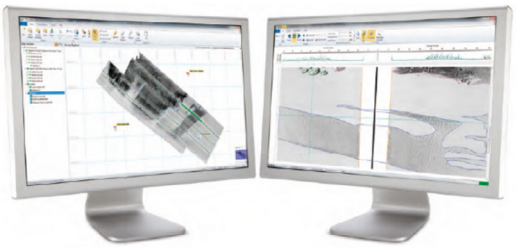
Our Solution

Geophysical Data Interpretation Solutions

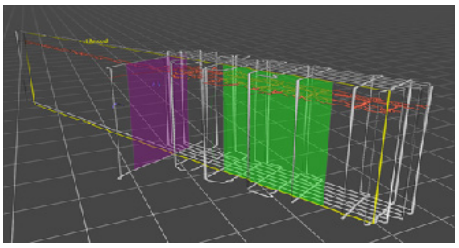
Survey Engine® Interpretation Software Suite

Survey Engine® Sidescan+

Sidescan+ is the Survey Engine® software module for processing and interpreting sidescan sonar data. Based around a powerful SQL database, Sidescan+ gives fast access to all survey data, including from the largest datasets, offering exceptional time saving advantages when processing and interpreting sonar data.



Sidscan+ integrates fully with Seismic+ so that both sub-bottom profiling and sidescan datasets can be processed in the same project. Sidescan sonar processing functionality can be greatly expanded by using Mosaic+ - a powerful module for creating high resolution mosaics and interpreting features on the mosaic quickly and easily.

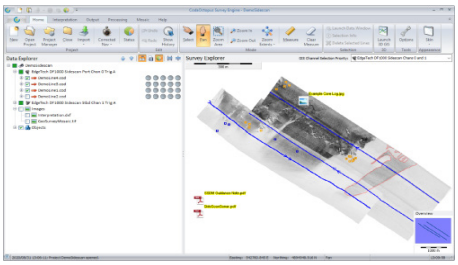


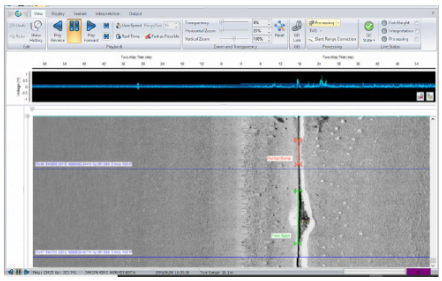
Survey Engine® Seismic+

Seismic+ is the Survey Engine® software module for 2D seismic data processing, interpretation and reporting. Seismic+ integrates fully with Sidescan+, Mosaic+, and Pipeline+ so that both sidescan and sub-bottom profiling data sets can be processed, interpreted, and reported in the same project.

Survey Engine® Mosaic+

Mosaic+ is the most productive, integrated sidescan mosaicking solution for the marine survey industry. Coupled with an extremely intuitive user interface and full integration with the existing Survey Engine applications, Mosaic+ allows users to produce the highest quality mosaics and feature interpretations in shorter timescales.





Survey Engine® Pipeline+

Pipeline+ is a targeted interpretation toolkit for interpreting sidescan sonar records from a pipeline inspection survey. It includes full pipeline free span length and height calculations with the ability to define the extents of the interpretation corridor.

Our Solution

Geophysical Data Acquisition Solutions

DA4G-USB

Benefits

Simplified digital and analogue acquisition
Compact and robust package
Operates with Geosurvey software
Windows® 10 Compatible
Standard USB-to-PC interface
Minimal field setup
Expert 24x7 Technical Support

Compact, Portable Geophysical Acquisition Platform with USB Interface

The DA4G-USB is the latest in the DA4G series of acquisition systems from the CodaOctopus®: GEO family. This new streamlined system takes the industry leading digital and analogue acquisition components from the DA4G and presents them in a robust and compact package for analogue and digital acquisition.

This small form-factor platform with generic USB-to-PC interface facilitates the use of existing PC hardware for geophysical data acquisition. The DA4G-USB runs our GeoSurvey software for either single sensor acquisition (DA4G-500) or dual sensor acquisition (DA4G-USB 1000 or 2000). The GeoSurvey software dongle can be embedded in the hardware or issued separately.

DA4G-USB is based on the 4th generation of our successful DA product range. Built on twenty years of knowledge, experience and innovation in supplying acquisition systems to the worldwide geophysical survey sector, the DA4G-USB is a purpose-built, turn-key solution to incorporate the latest hardware specifications designed to meet the demanding nature of offshore survey work.

With a series of simplified hardware and software solutions that are backed by high quality global service and support, CodaOctopus®: GEO remains the family of choice for advanced geophysical solutions.

Digital Acquisition Solution
Coda GeoSurvey supports data acquisition from a range of digital towfish interfaces. This solution can be easily deployed on any Windows 10 PC simply through the installation of the dongle and the supporting GeoSurvey application software.
The Digital-only solution is suitable for situations where only a digital towfish is being deployed and there is no requirement for analogue data acquisition.

The full acquisition feature set of GeoSurvey is available including robust navigation data acquisition ensuring that all data is correctly time stamped with the appropriate navigation data.

Supported digital interfaces include: Edgetech , Klein Marine Systems and GeoAcoustics.

Features

- Compatible with all leading sidescan sonars and sub-bottom profilers in digital or analogue formats
- Acquire digital and analogue data simultaneously
- Up to 4 analogue input channels
- Dual independent asynchronous triggering
- Magnetometer input
- Includes GeoSurvey software and fully compatible with the new Survey Engine® range of processing software
- Small form factor, portable acquisition platform

Applications

- Site Survey
- Pipeline Survey
- Geophysical Survey
- Geo-hazard Survey
- Cable Route Survey
- Environmental Survey
- Wind Farm Survey

Object Detection

Benefits

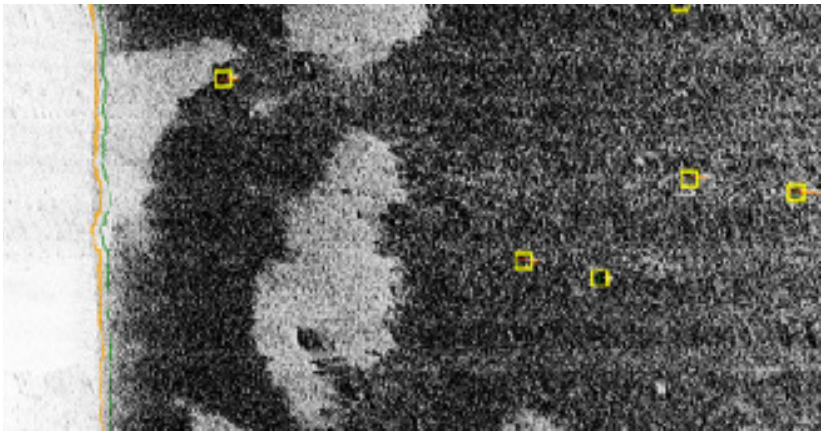
Consistency across multiple survey lines that would require to be tagged by a team of geophysicists.

Multiple detections where the same sidescan data can be processed in SEADP several times using different detection parameters or filters.

Confidence based reporting of detections to allow further refinement of the detected boulders not captured by a human.

Automatic measures for every detection returned by SEADP for no additional processing effort.

Speed. SEADP reduces the tasks from “days” to “minutes.”



Automatic Boulder Detection for Sidescan Sonar

Survey Engine® Automatic Object Detection Package (SEADP) is designed to automatically detect boulders of varying sizes in processed sidescan sonar data which a “human” Geophysicist would be able to detect using the naked eye. The broad objective of SEADP is to deliver to the market significant time savings and repeatability of processes, through automating “repetitive” tasks. This therefore allows customers to use their talented geophysicists pool or more demanding tasks. SEADP therefore automates the process of identifying boulders.

Features

- Accurate individual measurements (length, width, height)
- Batch processing of several SSS files in a single step
- Optimized mode improves detection rate for specific to the target size ranges
- Operates with two interpretation models for optimized detection
- SSS data process and manual visual scaling applicable to input files
- Automatic calculation of boulder confidence level value for each detection
- Boulders are color coded based on confidence level allowing for quick QC
- Color coded confidence level display in GIS and Waterfall display
- Filtering options based on confidence level and size
- Area-based de-duplication tool for overlapping SSS data
- Supports the most important data file formats in the industry
- Quick generation of high-quality reports and output images
- Interpretation report can be exported in different formats (Excel, CSV, etc.)

Automating Geophysical Survey Tasks

Object Detection

Workflow

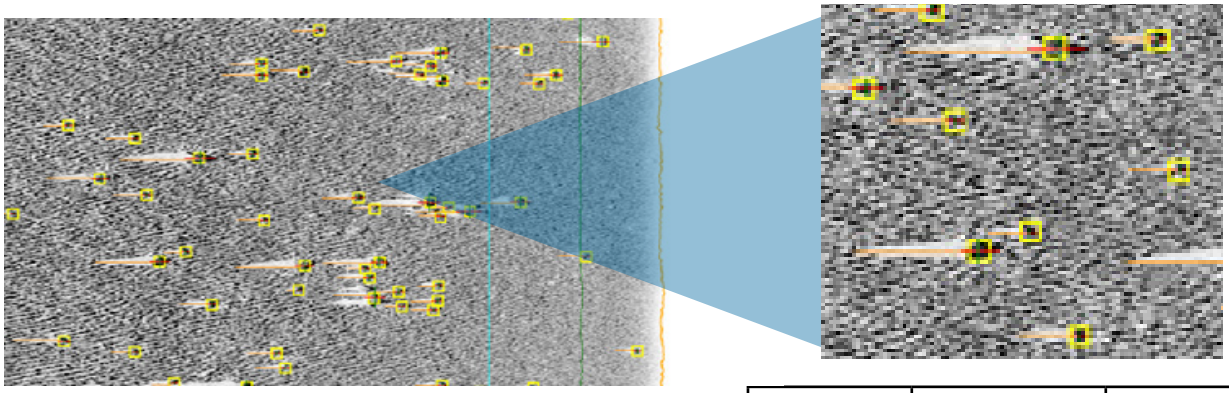
Preparation
- Data Importing
- Sea-bottom interpretation
- Sidescan post processing

Classification
- Files Selection
- Parameters Input

Refinement
- QC and Interpretation & Filtering
- Reporting

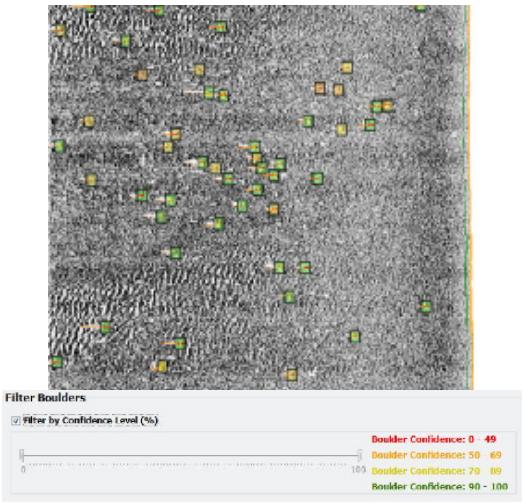
Most Common Industry Formats:
(CODA, XTF, JSF)
Survey Engine Post Processing Tools:
TVG, Frequency Filters, Smoothing, Nav. Correction
Quick and Easy Sea-Bottom Autotraacking:
Automatic tool that saves time and effort
Batch Processing:
Optimized for processing groups of files or large size files
Customizable Process:
For channels, processes, and measurement methods
Editable features:
Editable measurements (Length, Width, Height)
Optimized Method:
Size parameters selected according to the geological settings
Filtering Options:
Filtering based on confidence levels or measurements
Reporting Options:
Customizable and exportable in different formats

Automatic Measurement Lines & Boulder Characterization

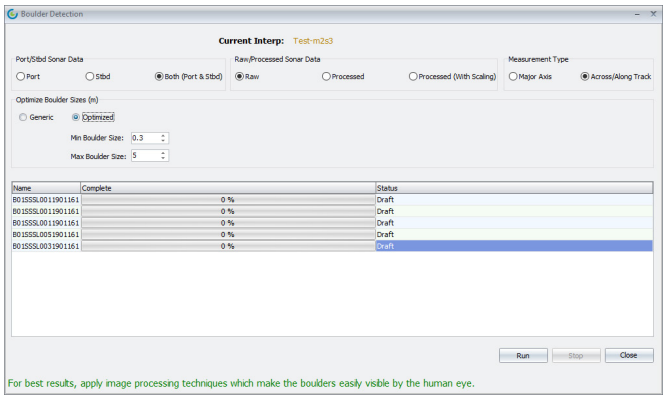


Position	Survey	Size
Easting	Ping Time	Length
Northing	Ping Number	Width
		Height

Confidence Level Color Coding

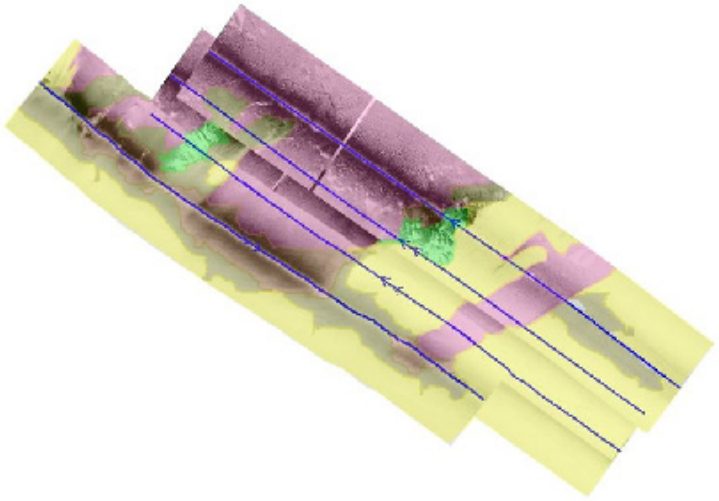


SEADP UI Options



Batch processing of SSS files and optimized mode selector

Seabed Classification



Benefits

Rapid analysis and report generation
Save significant time and cost
Minimize laborious manual interpretation
Easily create deliverable reports of findings

Automatic Seabed Classification to Further Enhance Geophysical Survey Tasks

Our latest advancement for the geophysical industry, Seabed Classification is integrated within our industry proven Survey Engine to provide automated seabed classification. This module uses artificial intelligence (AI) based methods to detect and classify seabed types and their geographic extents from Sidescan sonar data. The extent boundaries are instantly visible to the user for validation and QC and can then be exported for use in chart and map generation, direct import to the users chosen GIS platform, or for further processing in Survey Engine.

The boundary generation process automatically creates nodes in a way that avoids any gaps between adjacent seabed types which is vital for contiguous segmentation and reporting. Our software also displays closed boundary areas as coloured polygons helping to identify and distinguish these seabed types, particularly useful to visualize those areas completely surrounded by other seabed types.

With this new fully automated Seabed Classification software, our users can now save valuable interpretation and reporting time when generating charts or maps in support of their geophysical survey projects. Ideal geophysical survey applications include site and geohazard investigation in support of pipe-lay, jacket and riser installation or subsea cable laying operations. For example, ripples in the seabed that alert operators to strong and potentially dangerous currents, can now be more quickly and more repeatably identified for better decision making.

Environmental applications will greatly benefit from the automated classification over large area surveys of differing and varied seabed types.

Features

- Quick and accurate identification of seabed types on sidescan sonar data
- Identified seabed areas are written as Survey Engine interpretation types as editable output polygons
- Generation of reports in multiple formats including ASCII Test Format, HTML, Microsoft Excel Worksheet, and XML
- Large mosaic areas are automatically tiled for analysis on the software making the process scalable
- No data subsampling compromises
- Supports very large projects
- Identify 6 different seabed types including: low amplitude sediment, high amplitude sediment, mixed sediment, ripples, bedrock and boulder fields
- Mosaic survey line transparency to produce superior quality mosaics
- Improved mosaic navigation performance
- Large choice of output formats including GEOTIFF format and interpretation exported in GIS, CAD, Excel, or ASCII
- Support for Seabed Survey Data Model (SSDM) from data file through to GIS in a seamless transition
- Colored GIS visualization of areas for easy identification
- GIS overview shows the track of every line in the survey
- User configurable interpretation types with ability to share between projects

Seabed Classification

Workflow

Preparation	Data Importing Data Files Post-Processing Mosaic Generation
Classification	Area Selection Seabed Analysis
Refinement	QC and Interpretation Reporting

Most Common Industry Formats:
(CODA, XTF, JSF)
Survey Engine Post Processing Tools:
TVG, Frequency Filters, Smoothing, Nav. Correction
Quick and High Quality Mosaic:
Full resolution image, easy-to-update, GIS environment

Area selected from the mosaic:
10 pixel per meter TIFF image
Seabed Classification Analysis:
6 classes, based on Artificial Intelligence, Output Polygons
Editable List of Individual polygons:
Editable attributes (name, color, shape, comments)
Customizable Survey Engine® Report:
Quick Reporting tool, different formats (txt, xml, htlm, xlsx)

Seabed Classes


Rippled Area


Boulder Field

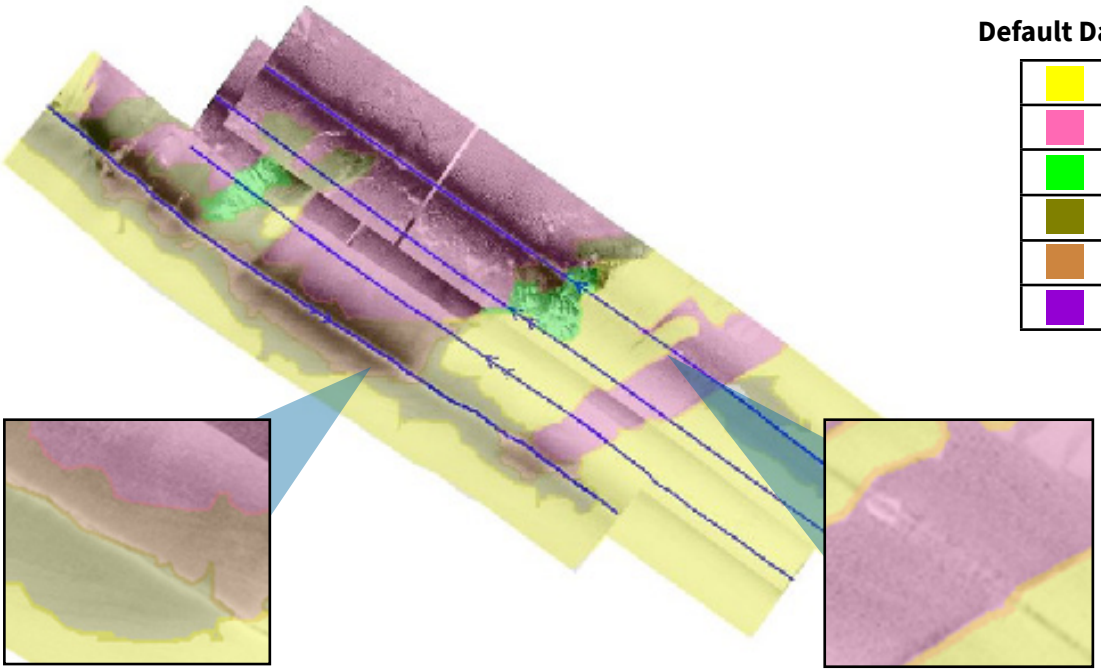

Bedrock Area

Low Amp Sediment


High Amp Sediment


Mixed Sediment

Seabed Classification



Default Data Types

	Low Amp Sediment
	Ripples
	Bedrock
	Mixed Sediment
	High Amp Sediment
	Boulder Field

Accessing Coda Octopus Solutions

- Outright purchase of the software
- Annual license
- Rental on a daily basis
- Service based

Laptop Requirements for GEO Software

	Minimum	Recommended
Processor	Quad Core - 2.0 GHz or faster, 64 bit supported	Quad Core - 2.0 GHz or faster, 64 bit supported
Memory	8 GB	16 GB
Hard Disk	2 GB disk free	5 GB disk free
Display	Single Display 1920x1080	Dual Display 1920x1080
OS	Windows® 10/11. 64 bit supported	Windows® 10/11. 64 bit supported
USB Port	1 x USB port for security key Not required for E-License	1 x USB port for security key Not required for E-License
Graphics Card for Survey Engine® applications except SEADP and Seabed Classification	NVIDIA GTX1050 Ti	NVIDIA GTX1050 Ti
Graphics Card for SEADP and Seabed Classification	Desktop: NVIDIA GeForce GTX 1660 with 6GB RAM Laptop: NVIDIA GeForce RTX 3060 with 6GB RAM	Desktop: NVIDIA GeForce RTX 2080Ti with 6GB RAM Laptop: NVIDIA GeForce RTX 4080 with 6GB RAM

***Only NVIDIA graphics cards are supported*