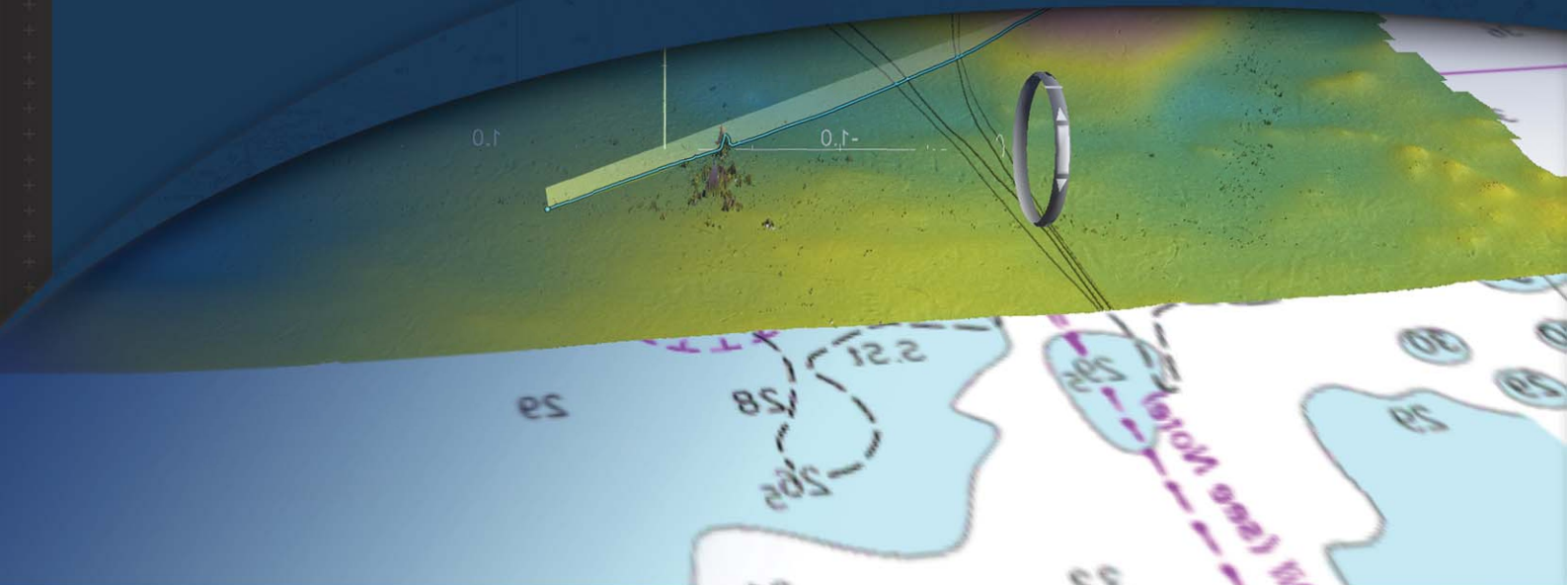


Fledermaus

FM Hydro



Beyond Charting — the modern hydrographic workflow

The premier tool for geo-spatial processing, quality control and validation of hydrographic survey data. With its intuitive interface, ease of data integration, and the most flexible CUBE[®] implementation available, FM Hydro is the ideal tool for the rapid assembly, analysis and dissemination of data in an interactive 4D environment. FM Hydro can be used at all stages of the survey process.

FM Hydro is the ideal software bundle for:

- **Surveyors/Data Processors** in the field cleaning and validating data, who require an efficient and accurate means of obtaining a clean, validated final data product.
- **Charge Surveyors/Data QC Personnel** ashore, who need to rapidly assess a survey, extract features and contacts, perform quality control, and supply validated soundings to a database with confidence that the best estimate of the seabed has been obtained and all identified features retained.
- **Charting authorities** who must verify data, conduct charting comparisons, and extract charting products.

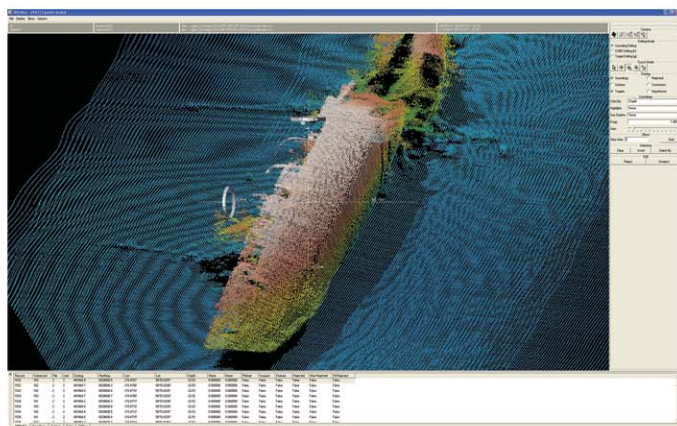


Image courtesy of Historic Scotland, Sula Diving, CCOM/JHC UNH, MCA

FM Hydro moves users beyond point editing to comprehensive data analysis and sound decision making.

It combines powerful processing tools with the flexibility and added value of the Fledermaus visualization package, giving you the ability to utilize new methods and techniques for chart validation and data QC.

Improved project management and workflow

- Supports all major sonar and bathymetric lidar data formats and third party software packages to allow easy import into the geo-processing and validation workflow.
- Integrates geo-spatial processing and validation of multiple survey data types in a single workflow.
- Flexible Project Data Management tools allow you to create customizable workflows while keeping your data and products organized.

Efficient processing, quality control and validation in an intuitive 4D visualization environment

- Rapidly process data using a combination of an optimized PFM data structure, 3D spatial access, and powerful automated CUBE⁽¹⁾ processing.
 - Most flexible implementation of the CUBE algorithm – change algorithm parameters at any time to reflect changing seabed topography, minimize operator interaction, and optimize results.
 - Dynamically updating surface lets you very quickly review and validate the results of the auto-processing as well as operator edits.
 - Utilizing a hybrid CUBE implementation, edit both the CUBE surface and/or the soundings.
 - Re-CUBE the data in selected areas or the entire dataset.
- Quickly evaluate survey coverage and confirm achievement of survey standards and IHO Order accuracies using enhanced coverage maps, automatic calculations of standard deviation, sounding density and cross-line comparisons.
- Validate current surveys by comparison to existing charting products and databases using draped raster imagery, contour modeling, vector ENC data and automated shoal and feature selection.
 - Integrate existing feature datasets such as wrecks, cables and seabed structures; easily update databases with current information.
 - Monitor seabed change both spatially and temporally.
- Option to add the latest generation of backscatter processing (FM Geocoder ⁽²⁾) for enhanced wreck and feature identification, texture sheet production, and semi-automated seabed characterization.
- Option to add water column data processing (FM Midwater) for least-depth detection on wrecks and obstructions.
- Option to add direct integration to ArcGIS ⁽³⁾ software via FMGIS; easily transfer soundings, survey areas, rasters, and geotiffs to your bathymetric database for conflict detection, query, and product creation within the ArcGIS software suite.

Additional Tools

- Calculate dredging volumes using the surface difference tool.
- Identify safe transit routes and channels for navigation using instant profiling and clearance planes.
- 4D display of temporally changing seabed for analysis in space and time.
- Monitor survey vessels transiting proposed routes in real-time via serial cable or UDP packet; save paths for later playback and analysis. Generate simulated tracks for analysis.

Products, data export, and database integration

- FM Hydro's CUBE implementation makes it possible to take full advantage of the algorithm and deliver a variety of products – grids, cleaned data and/or thinned data. The full set of data deliverables for databasing and archiving includes:
 - Complete set of cleaned data points.
 - Multiple sets of selected soundings including features, thinned soundings for charting, etc.
 - Table of features.
 - Contours.
 - Multiple sun illuminated surfaces and geo-referenced imagery—shoal, deep, CUBE, median, sounding density.
 - Open-source Bathymetric Attributed Grid (BAG).
 - Direct export of points, polygons, and grids to AutoCAD and GIS databases.
 - Temporal products including time series surface of mobile areas.
 - Google Earth KML and KMZ files for upload and distribution.
 - Seamless workflow from processing to database with the optional interface to ArcGIS ⁽³⁾ software.

Notes:

(1) The CUBE algorithm was developed by Dr. Brian Calder at the Center for Coastal and Ocean Mapping/Joint Hydrographic Center at the University of New Hampshire.

(2) The FM Geocoder product originates from research by Luciano Fonseca at the Center for Coastal and Ocean Mapping/Joint Hydrographic Center at the University of New Hampshire.

(3) Integration with ArcGIS software requires an ArcGIS license, and is only available for Windows 32-bit systems. Trademark provided under license from ESRI.