



EIVA

MARINE SURVEY SOLUTIONS

Oceanwise

NaviModel - the GIS you already have

- 
- A world map with a dark blue background and white landmasses. The map is overlaid with numerous small colored squares representing office locations. A legend in the bottom-left corner identifies the colors: a black square for 'ENA offices', an orange square for 'ENA representatives', and a light blue square for 'ENA support offices'. The locations are distributed across all major continents, with a high concentration in Europe and Asia.
- ENA offices
 - ENA representatives
 - ENA support offices

Founded in 1978 • ISO 9001 certified • Headquarters in Denmark • Sonardyne Group
40 years experience in construction and survey • Specialise in software and hardware
Worldwide customer base and workplace • Internal research and development teams

ScanFish



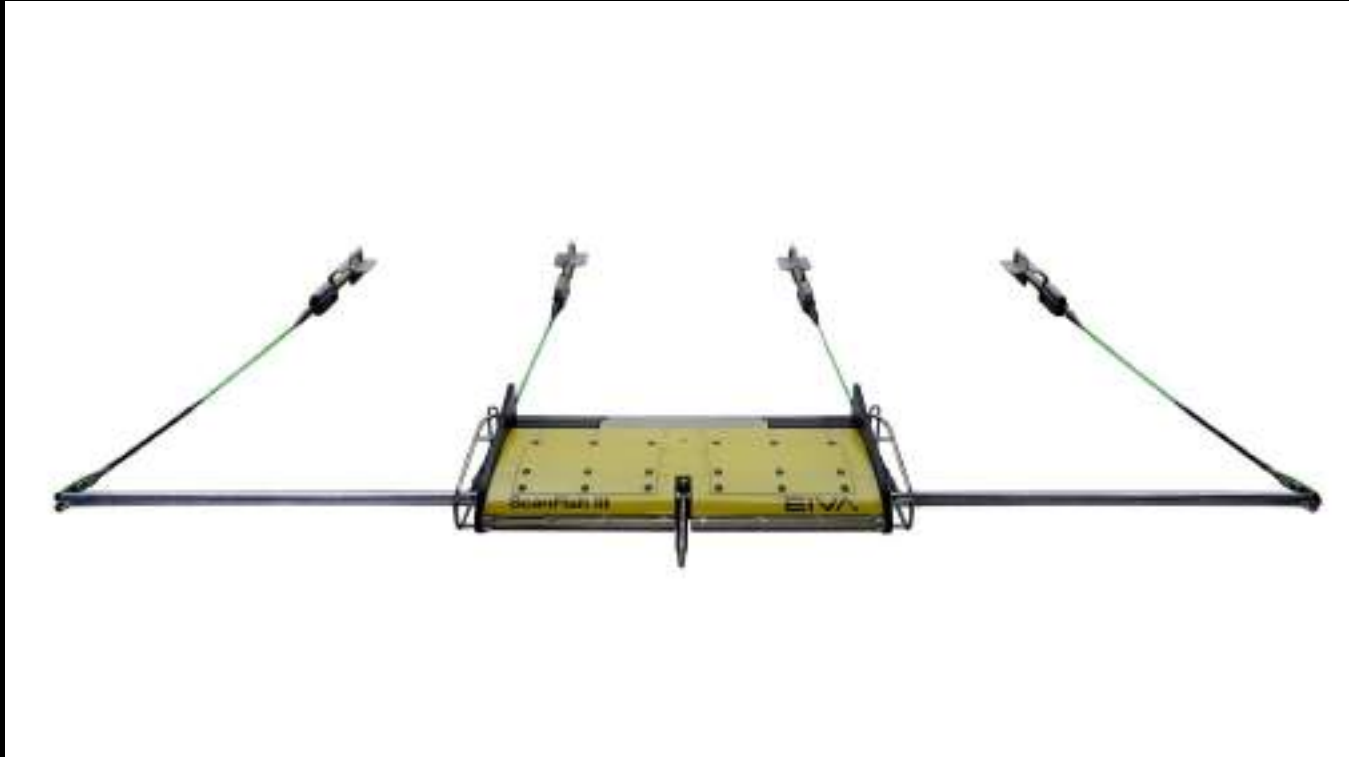
ScanFish Rocio

Aarhus Harbour



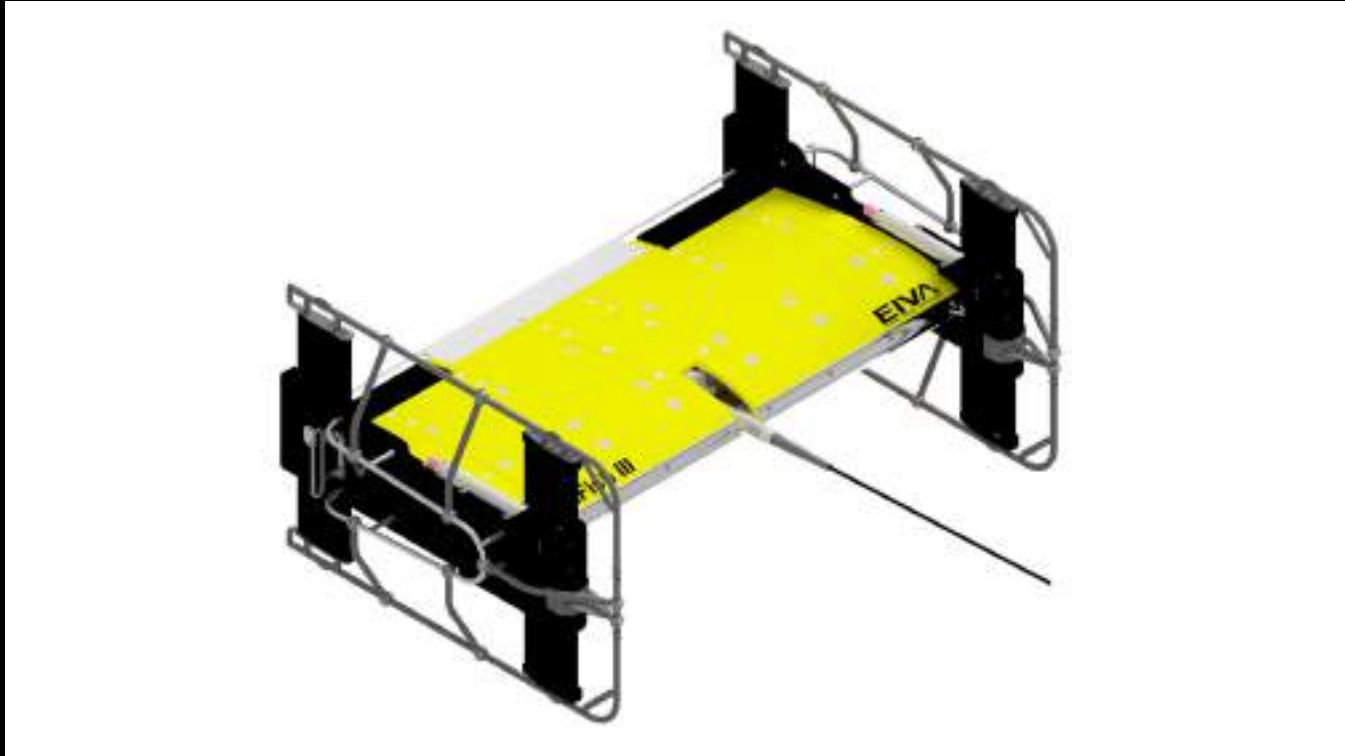
ScanFish onboard the AURORA

ScanFish



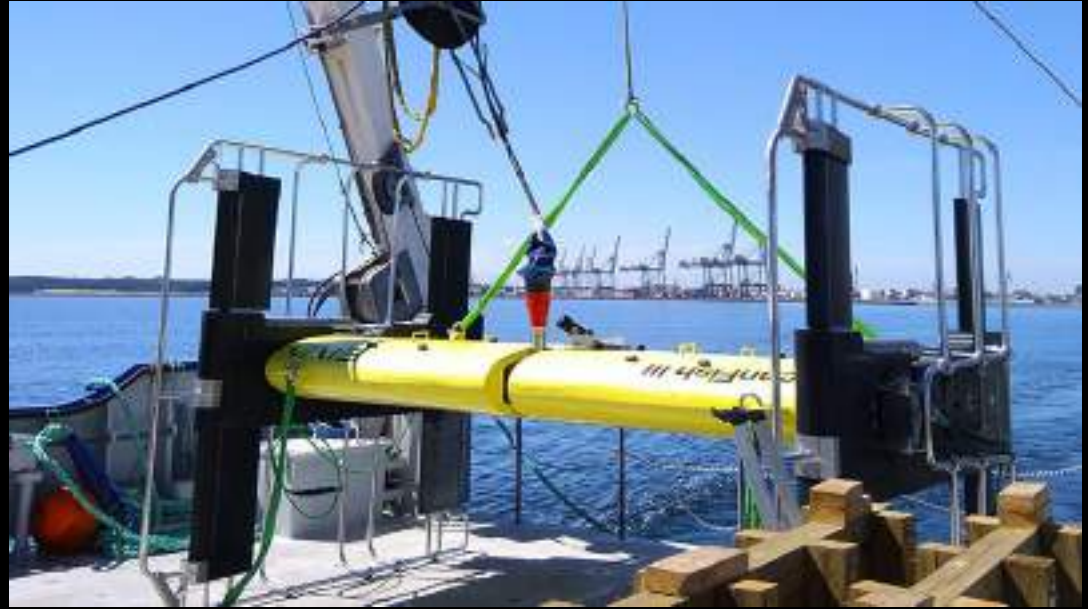
ScanFish Katria

ScanFish



ScanFish 3D steering

ScanFish



ScanFish XL

ToughBoy

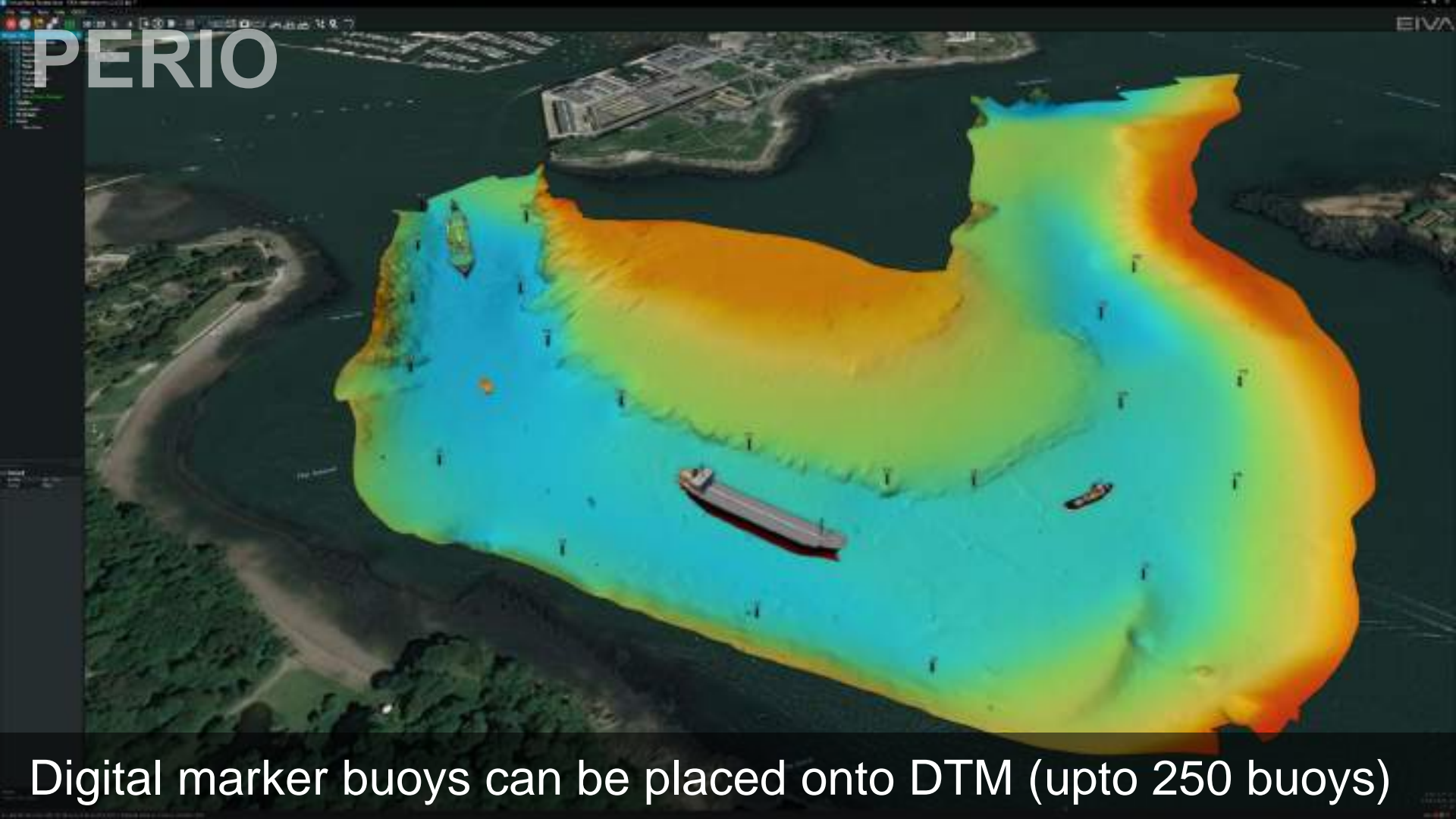


ToughBoy - Wave, temperature and current observations

Odense Harbour



EUR 150k spent per year on temporary marker buoys

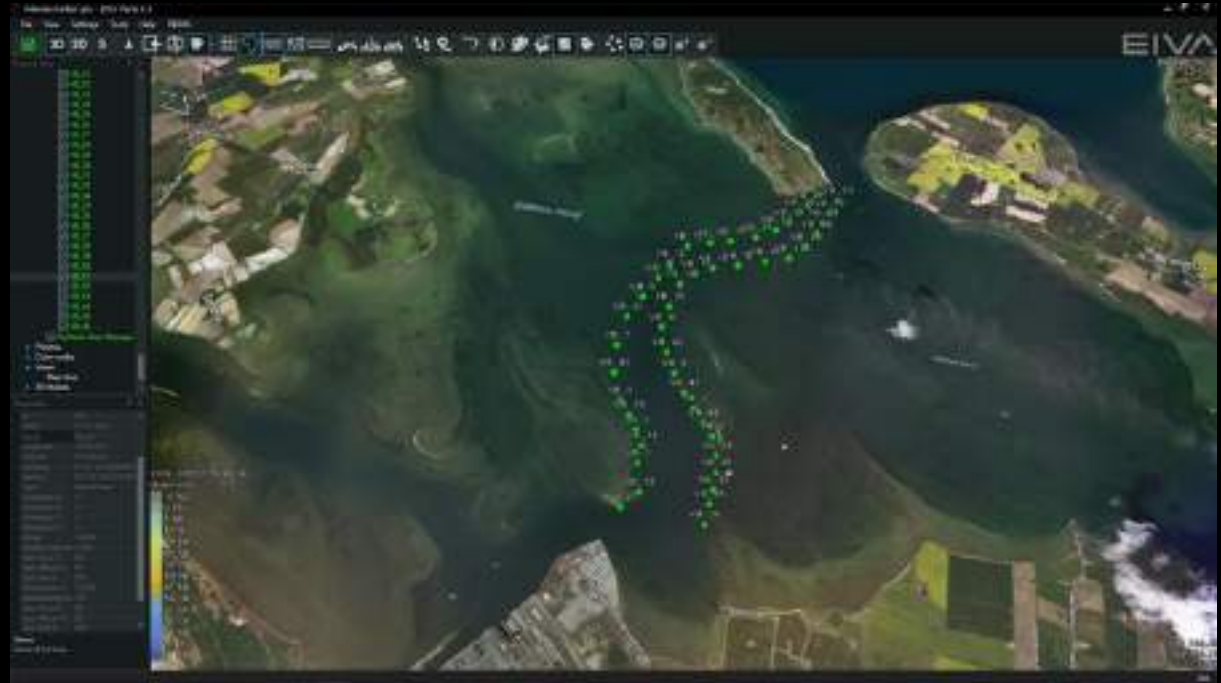


PERIO

EIVA

Digital marker buoys can be placed onto DTM (upto 250 buoys)

PERIO

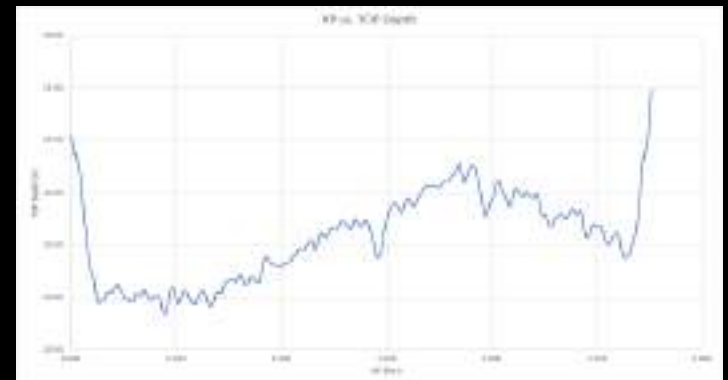


Virtual marker buoys are then broadcast across the AIS (AtoN)

Introduction



Date	Time	TOP KP	TOP DCC	TOP Easting	TOP Northing	TOP Depth
21/09/2019	00:09:21	0.000	-0.88	468016.39	2048917.15	21.49
21/09/2019	00:09:26	0.001	-0.87	468017.29	2048916.72	21.48
21/09/2019	00:09:31	0.002	-0.87	468018.20	2048916.31	21.45
21/09/2019	00:09:36	0.003	-0.87	468019.11	2048915.89	21.47
21/09/2019	00:09:41	0.004	-0.87	468020.02	2048915.47	21.48
21/09/2019	00:09:47	0.005	-0.88	468020.93	2048915.06	21.49
21/09/2019	00:09:53	0.006	-0.88	468021.84	2048914.64	21.50
21/09/2019	00:09:59	0.007	-0.89	468022.75	2048914.23	21.52
21/09/2019	00:09:05	0.008	-0.88	468023.65	2048913.80	21.52
21/09/2019	00:09:12	0.009	-0.87	468024.56	2048913.37	21.54
21/09/2019	00:09:18	0.010	-0.87	468025.47	2048912.96	21.55



NaviPac



Workflow Manager

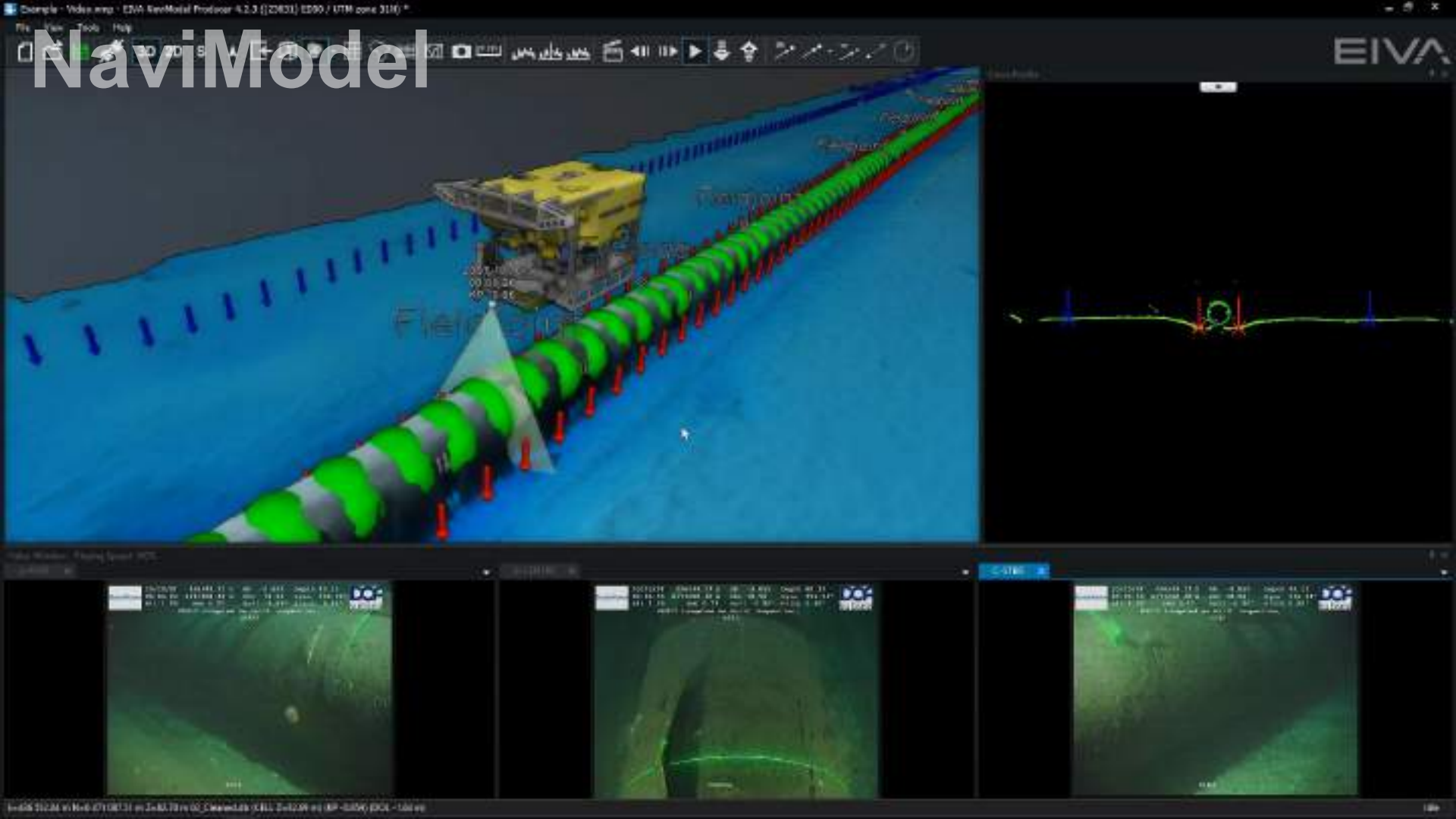
The screenshot displays the Workflow Manager interface. On the left, a file tree shows a folder named 'Process *All Files' containing several files with names like 'em2040-0021-ofgcab-20170118-094333.af'. Below this, a 'Properties' window shows details for the selected files, including 'AttributeSmooth', 'AxisID', 'CTDBlocks', 'Directory', 'PositionSmooth', 'ProcessBlock', 'PressureSmooth', 'SWFBlocks', and 'TileBlocks'. The main area is a table with columns for file names and various processing steps. The 'All Input' column shows green checkmarks for all files, while the 'Set Property' column shows green checkmarks for most files and blue triangles for others. The 'NewLab Data - All' column shows blue triangles for all files. Other columns include 'NewLab Pressure', 'Link Job', 'Link Style', 'Link Pressure', 'Recalc Bathy', 'Create DTM', 'Call Stats before Cleaning', 'Missed Jobs to file', 'Copy file', 'Scanline', 'Call Stats after Cleaning', 'Write after stats to file', 'Introduce', and 'Export function'.

Name	All Input	Set Property	NewLab Data - All	NewLab Pressure	Link Job	Link Style	Link Pressure	Recalc Bathy	Create DTM	Call Stats before Cleaning	Missed Jobs to file	Copy file	Scanline	Call Stats after Cleaning	Write after stats to file	Introduce	Export function
em2040-0021-ofgcab-20170118-094333.af	✓	✓	▾														
em2040-0022-ofgcab-20170118-094332.af	✓	✓	▾														
em2040-0022-ofgcab-20170118-094343.af	✓	✓	▾														
em2040-0022-ofgcab-20170118-094348.af	✓	✓	▾														
em2040-0023-ofgcab-20170118-094753.af	✓	✓	▾														
em2040-0025-ofg1-20170118-095306.af	✓	✓	▾														
em2040-0025-ofg1-20170118-095318.af	✓	✓	▾														
em2040-0027-ofg3-20170118-095728.af	✓	✓	▾														
em2040-0028-ofg4-20170118-095943 - Copy.af	✓	✓	▾														
em2040-0028-ofg4-20170118-095943.af	✓	✓	▾														

Developed in collaboration with Swire Seabed for the Ocean Infinity project

Automatic processing of massive amounts of sensor data

NaviModel



Real Life

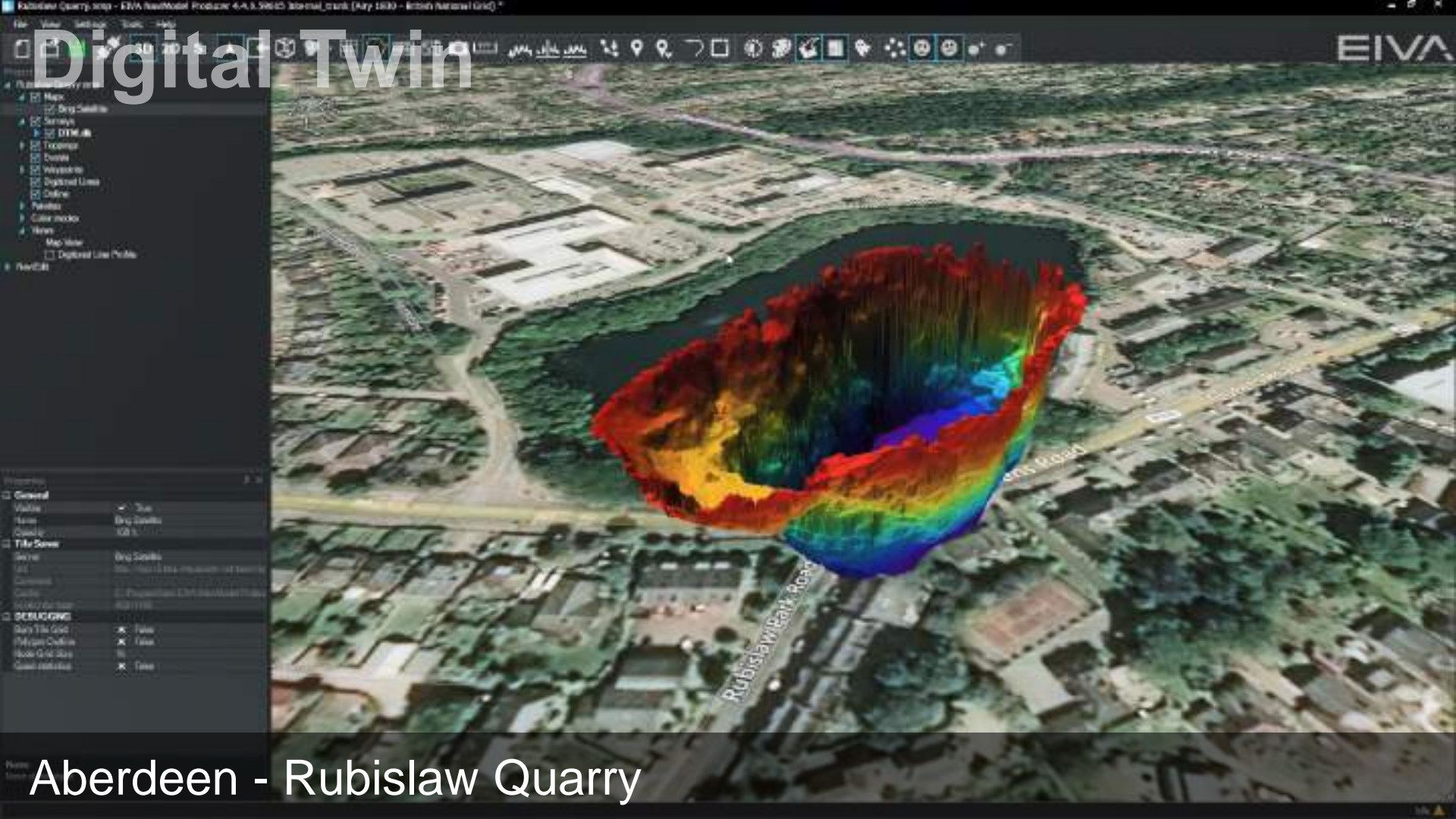


Aberdeen

Real Life



Aberdeen - Rubislaw Quarry



Digital Twin

EIVA

Aberdeen - Rubislaw Quarry

Real Life



Dunnottar Castle



Digital Twin

EIVA

- Map
- Drop Controls
- Surveys
- Topography
- Point Clouds
- Drone
- Interactions
- File Upload
- Resources
- Output
- Favorites
- Collaboration
- 3D Models
- Views
- Map View

- General
- Width: 400
- Height: 500
- Camera: 100%
- Tile Service
- Service: Bing Streets
- URL: https://www.bing.com/...
- Debugging
- Open Tile Grid: [x] False
- Open Clusters: [x] True
- Open Grid State: [x] True
- Open Textures: [x] True

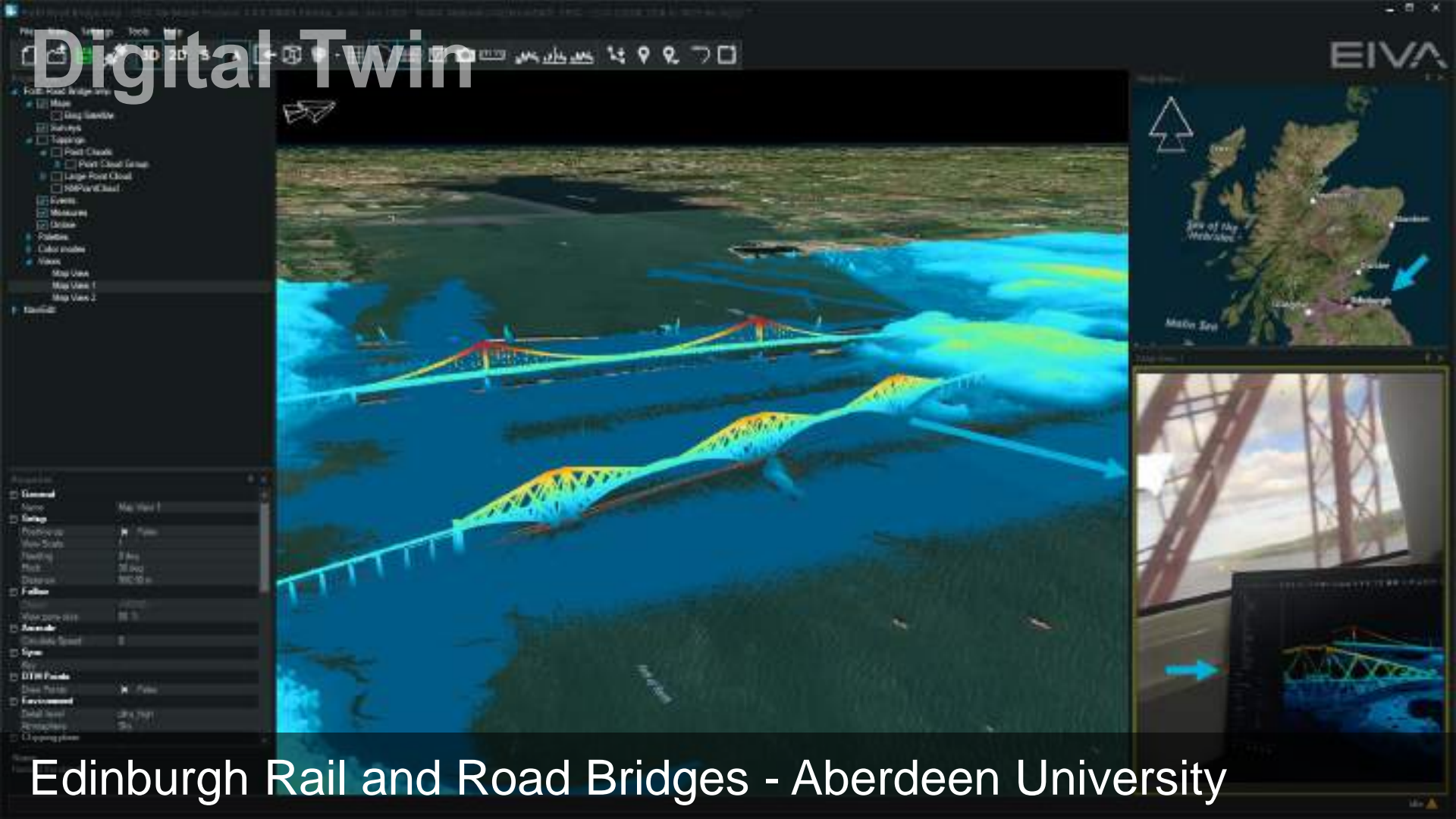
Dunnottar Castle - INNOVAIR

Real Life



Edinburgh Rail and Road Bridges

Digital Twin



Edinburgh Rail and Road Bridges - Aberdeen University

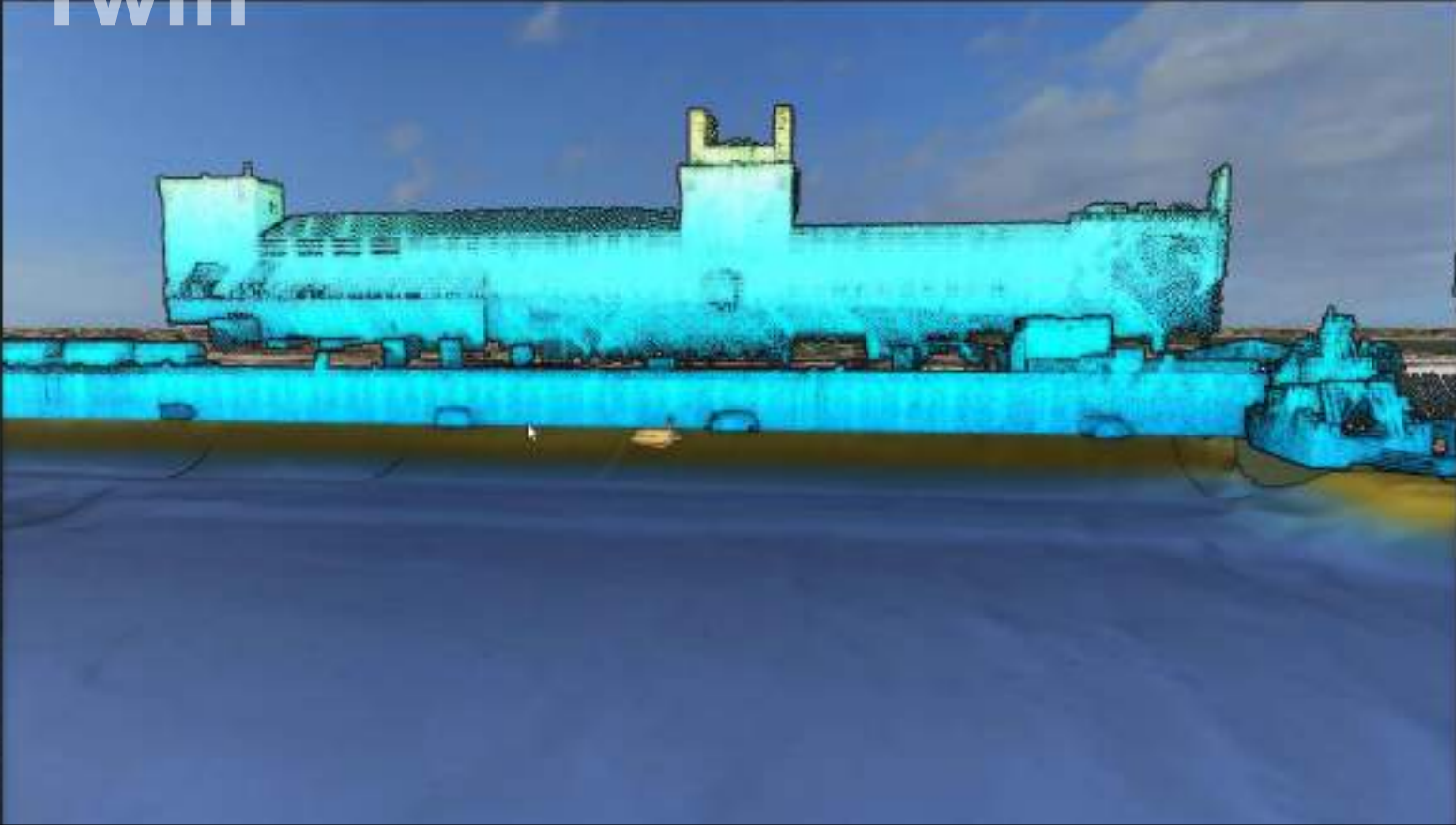
Real Life



National Oceanography Centre

Digital Twin

EIVA



Properties

Ground	0.04 m
Distance	0.04 m
Height	0.04 m
Normal	0.04 m
Appearance	
Surface Type	Smooth
Position	0.04 m
Position Color	0.04 m
Position Color	0.04 m
Color Mask	0.04 m
Opacity	0.04 m
Visible View	
Surface Color	0.04 m
Position	0.04 m
Draw Mode	0.04 m
Filter Color	0.04 m

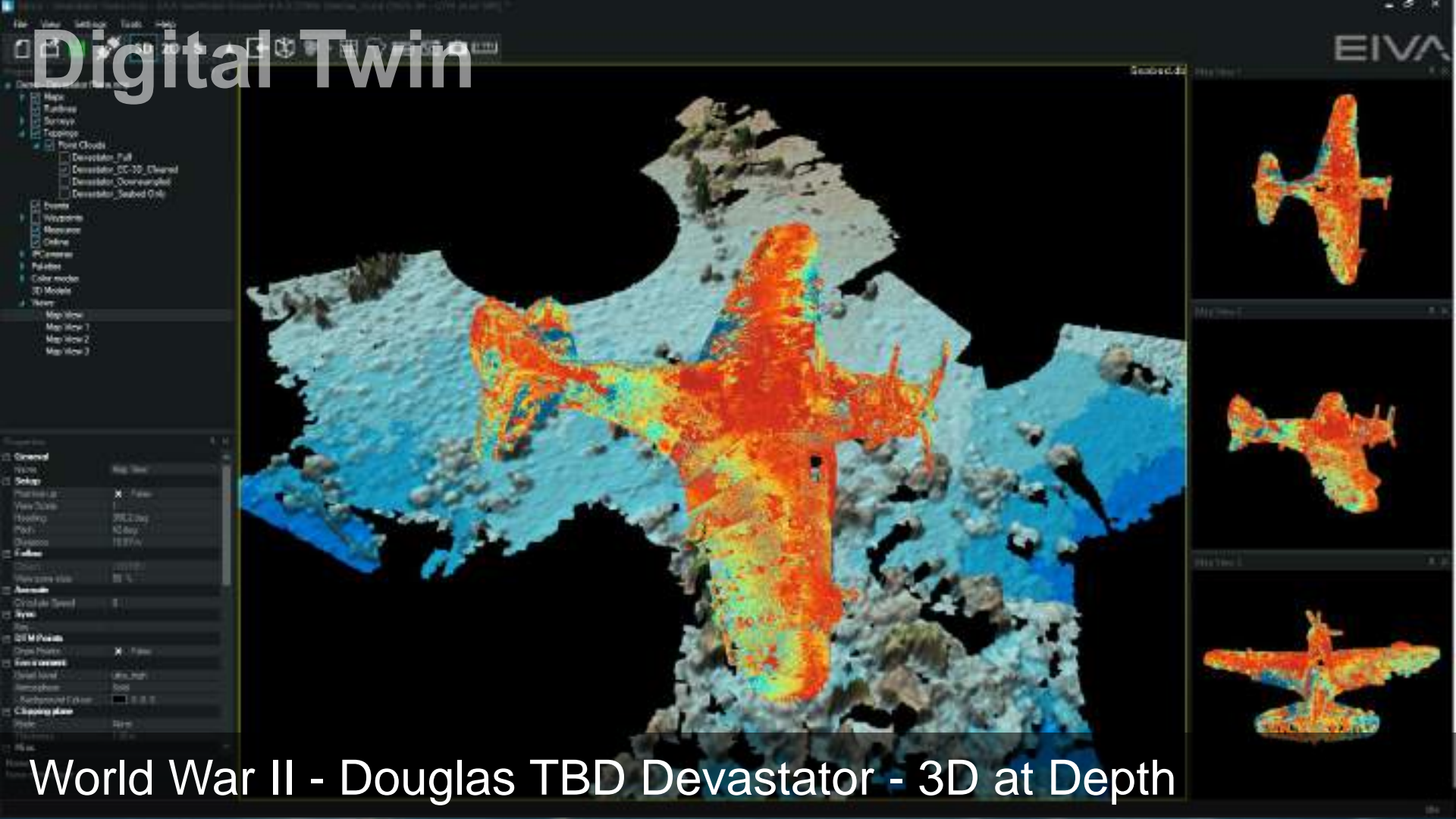
National Oceanography Centre - L3HARRIS

Real Life



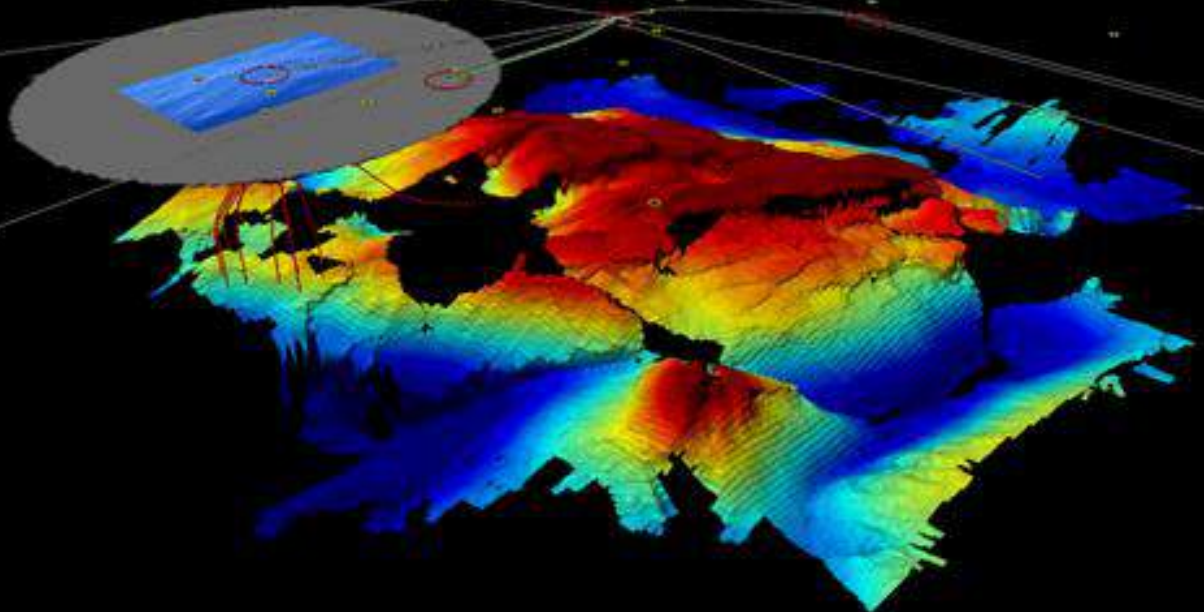
World War II - Douglas TBD Devastator

Digital Twin



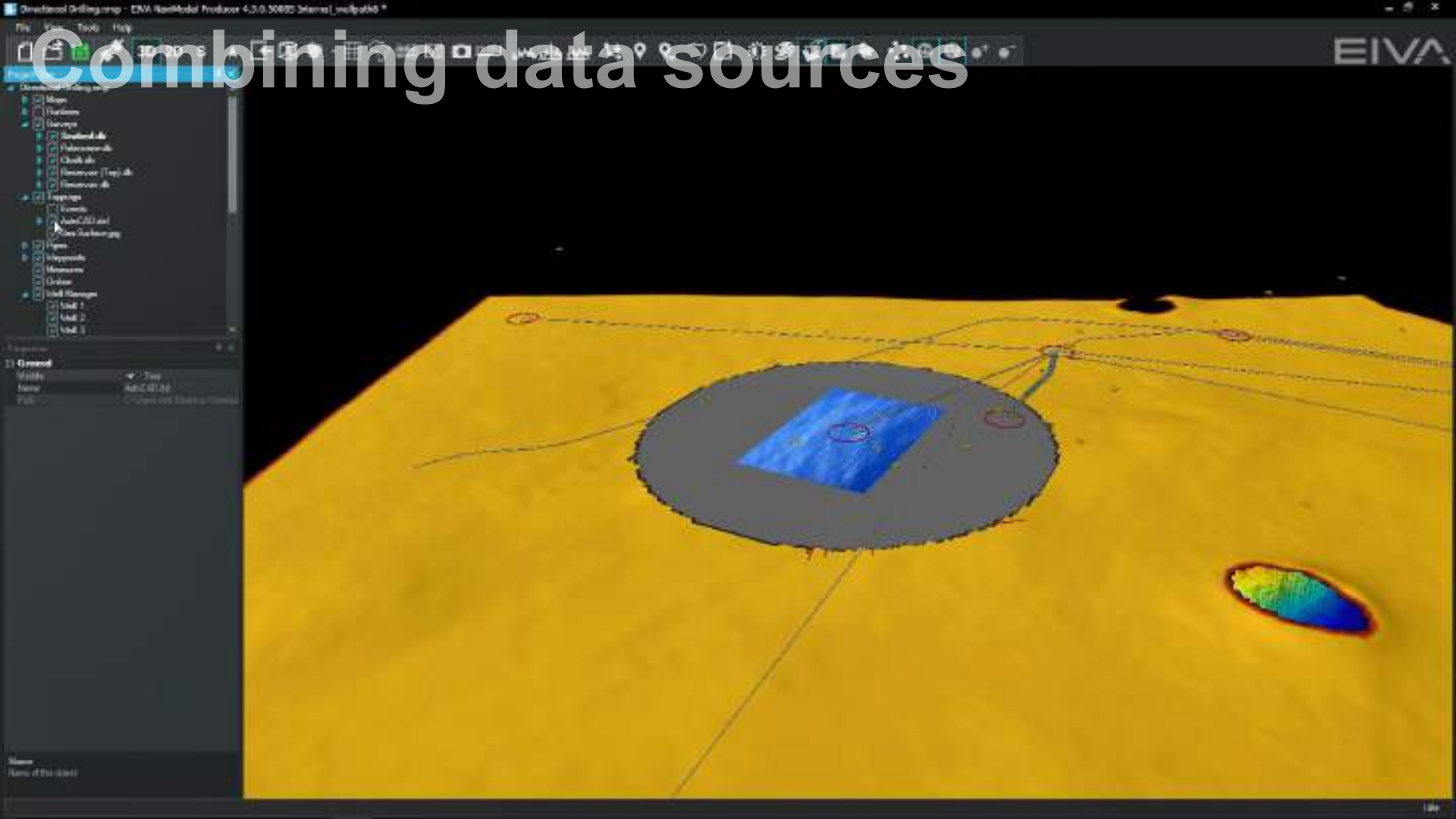
World War II - Douglas TBD Devastator - 3D at Depth

Combining data sources

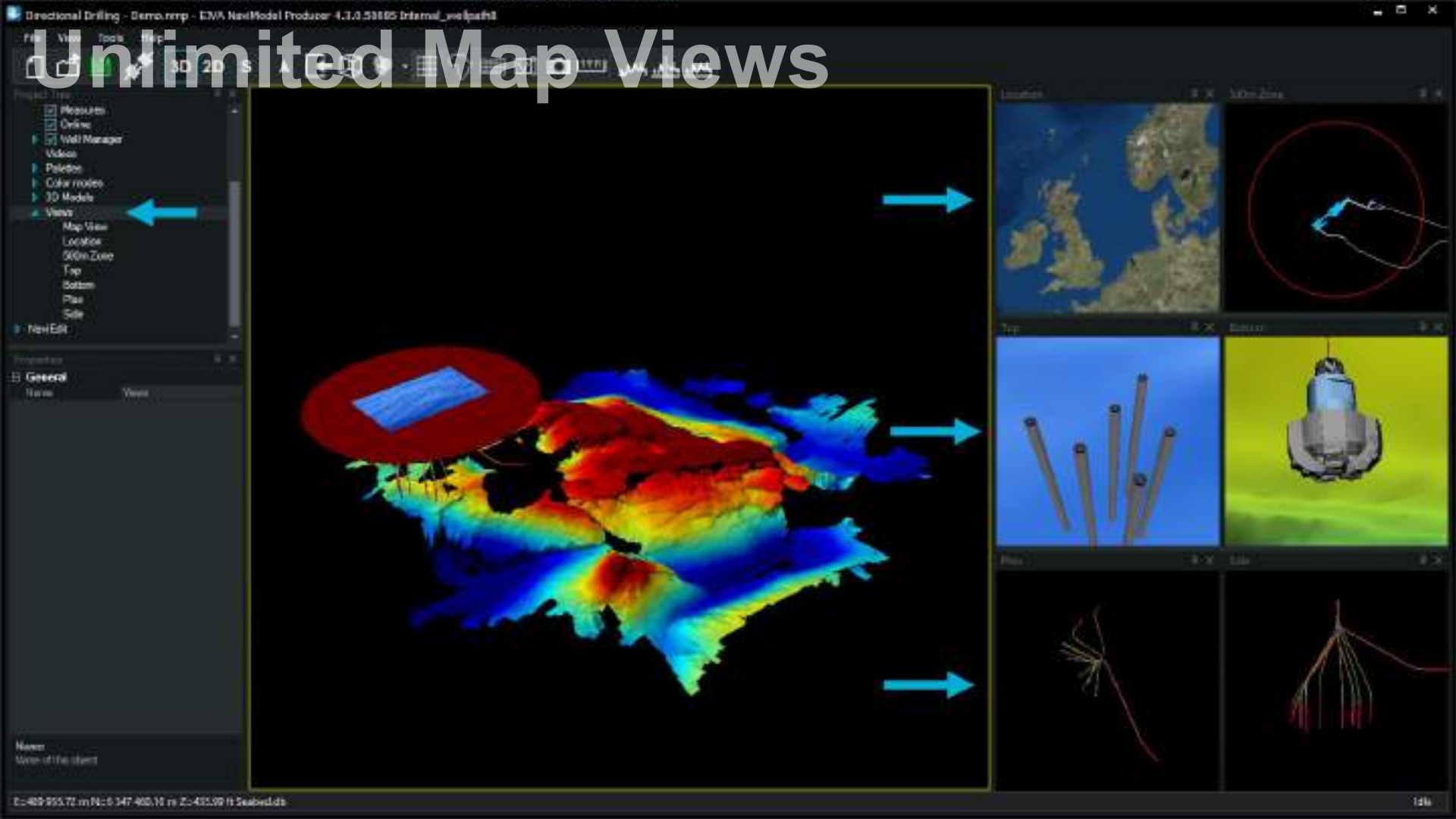


Wellpaths, AutoCAD, surface, seabed and reservoir

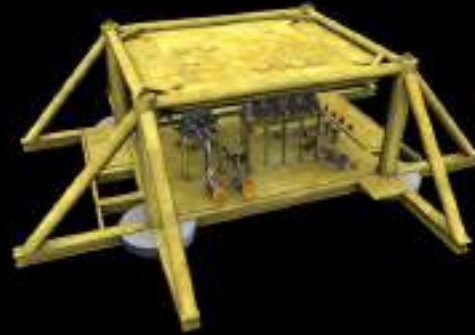
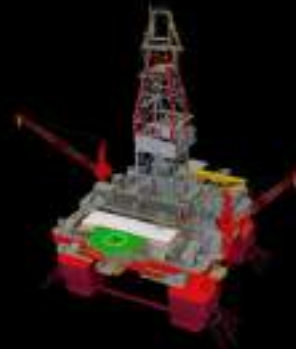
Combining data sources



Unlimited Map Views

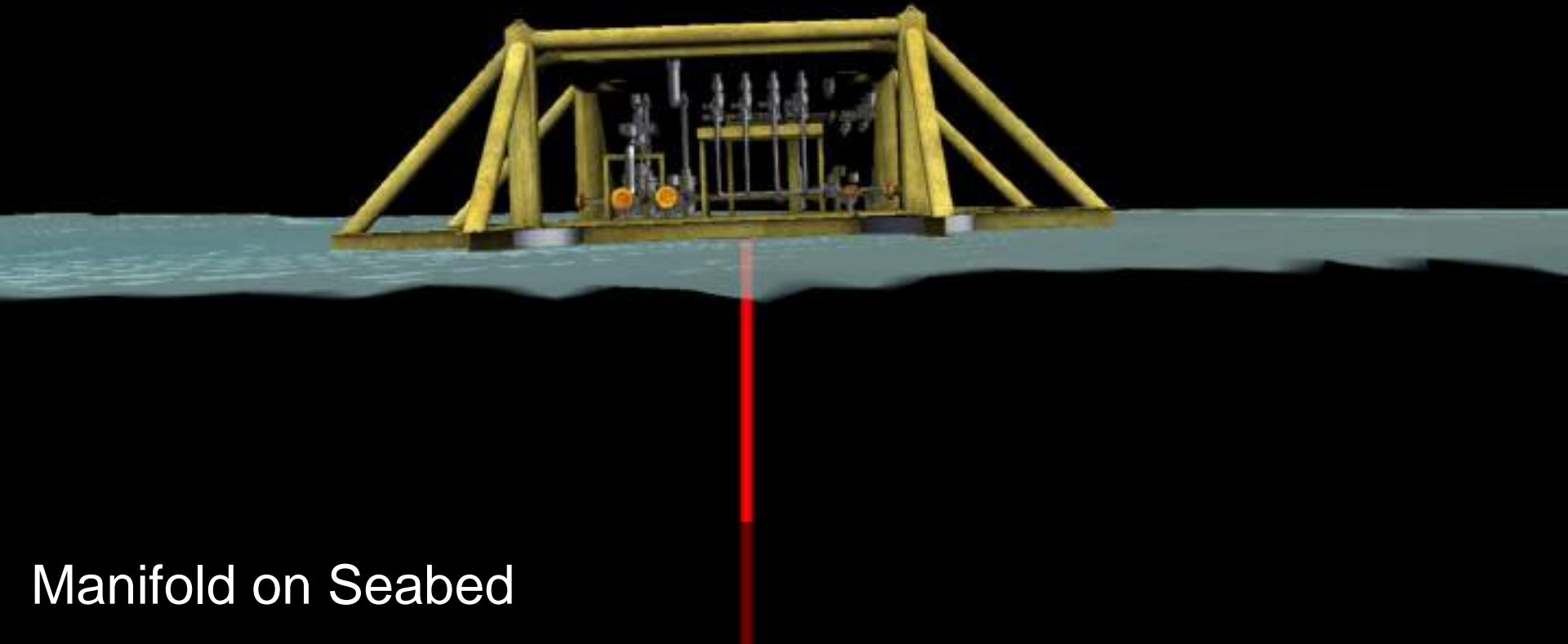


3D Engineering Models



*.3ds *.obj *.fbx

3D Engineering Models



Manifold on Seabed

Map Support

We support the following:

- Web Map Services (WMS) – tile / raster
- Web Map Tile Services (WMTS) - vector
- Electronic Navigation Charts (ENC's)

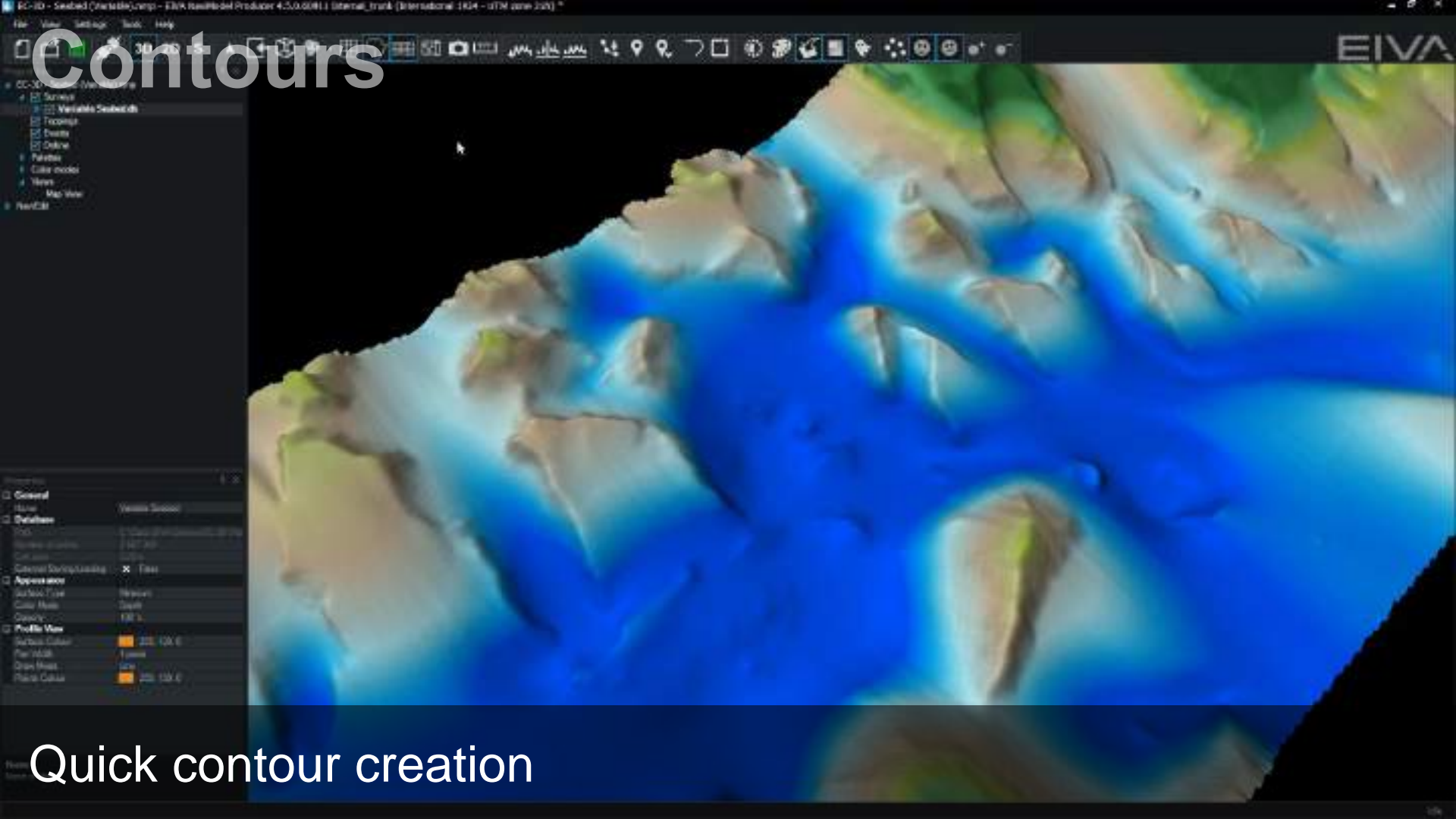
SevenC's S-57 and OpenStreetMap recently added



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MARINE SURVEY SOLUTIONS

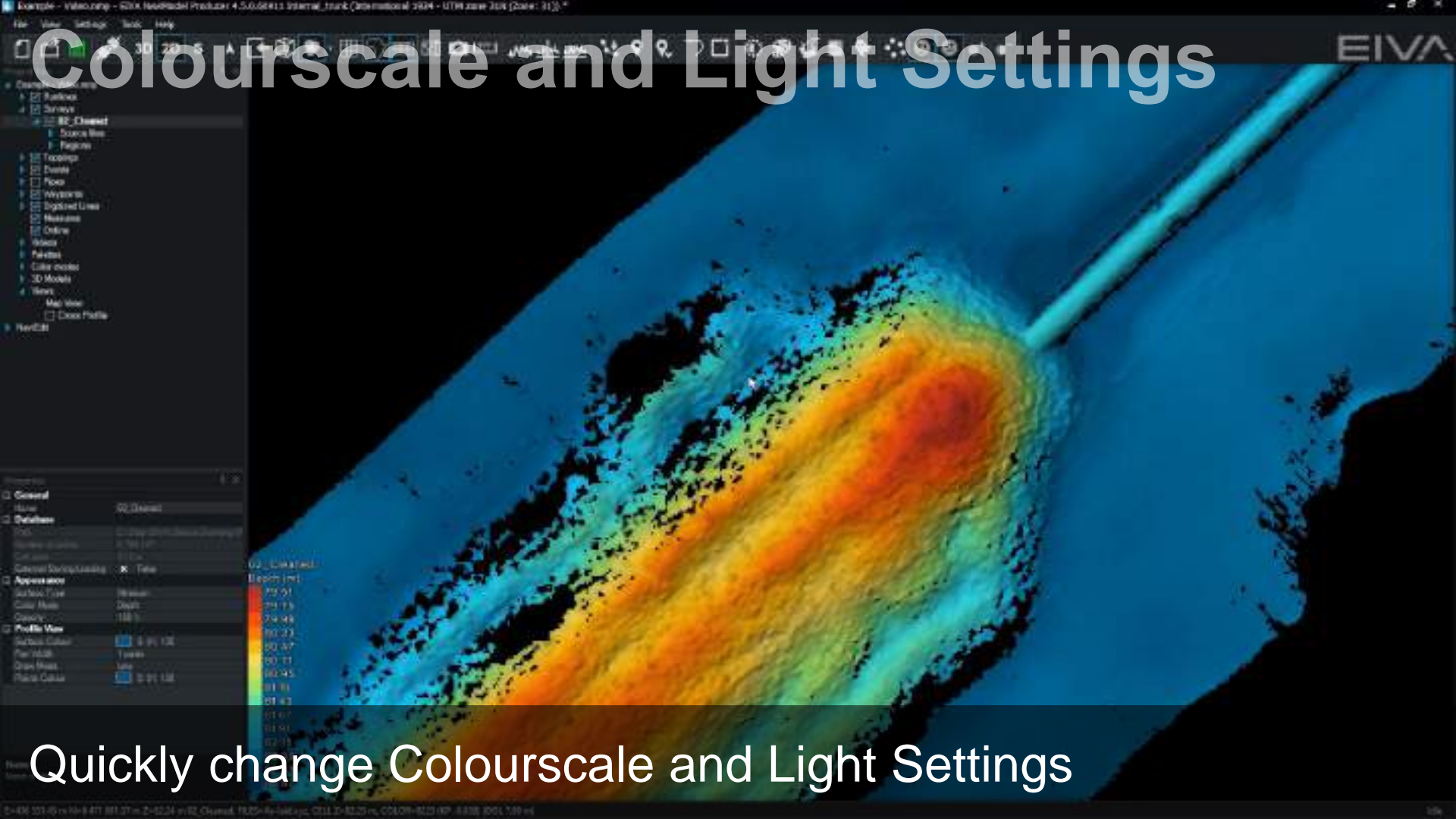
Interpretation

Contours



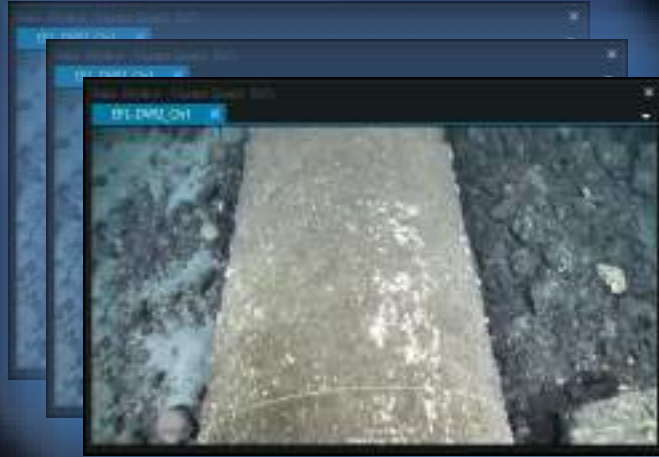
Quick contour creation

Colourscale and Light Settings



Quickly change Colourscale and Light Settings

NaviSuite Deep Learning



Images analysed and
classified one-by-one



Objects Identified:

Seabed	100%
Pipeline	97%
Anode	0%
Fieldjoint	0%
Flange	0%

Deep Learning is faster than real-time:

15 minutes of video = 1 minute processing time (Cloud Server)

Deep Learning - Classifications



Deep Learning is trained on diverse data sets...

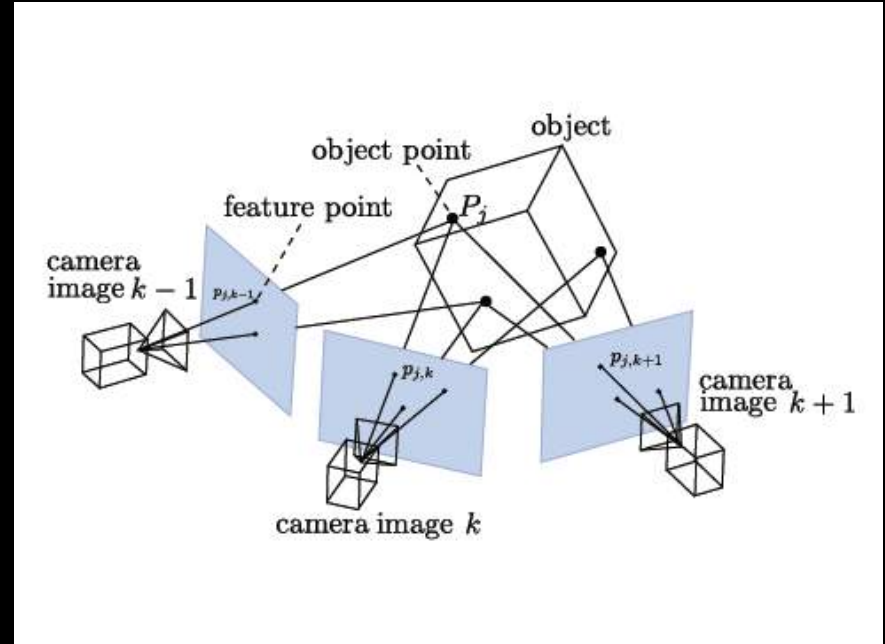
VSLAM

Simultaneous Localisation And Mapping

“The computational problem of constructing or updating a map of an unknown environment while simultaneously keeping track of an agent's location within it”

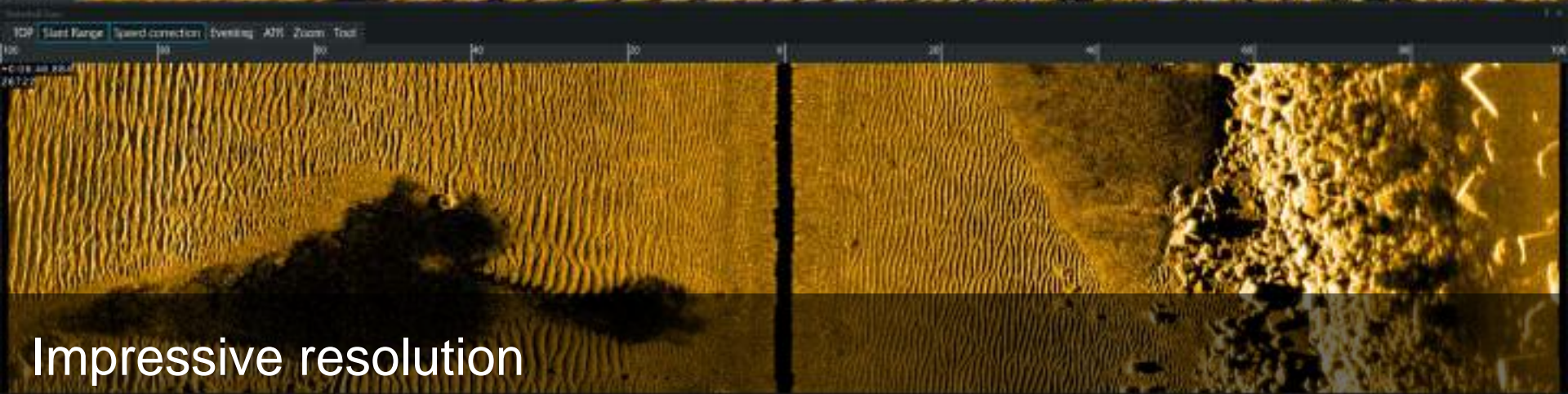
Photogrammetry will just compare features in all images – this is why it is so slow....

If we track recognisable features in moving images, it is possible to calculate the position of the camera and the position of features.



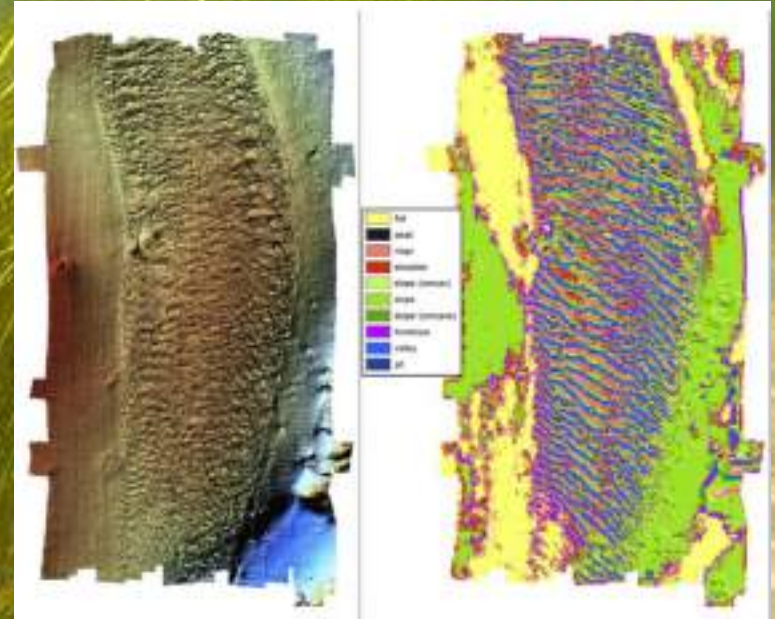
What is SLAM?

Sonardyne Solstice



Impressive resolution

Deep Learning - Geotiffs



We are now training to identify habitat and seabed classification