EIVA

MARINE SURVEY SOLUTIONS

Automated Hydrographic Surveying and Latest Technology in Eiva NaviSuite

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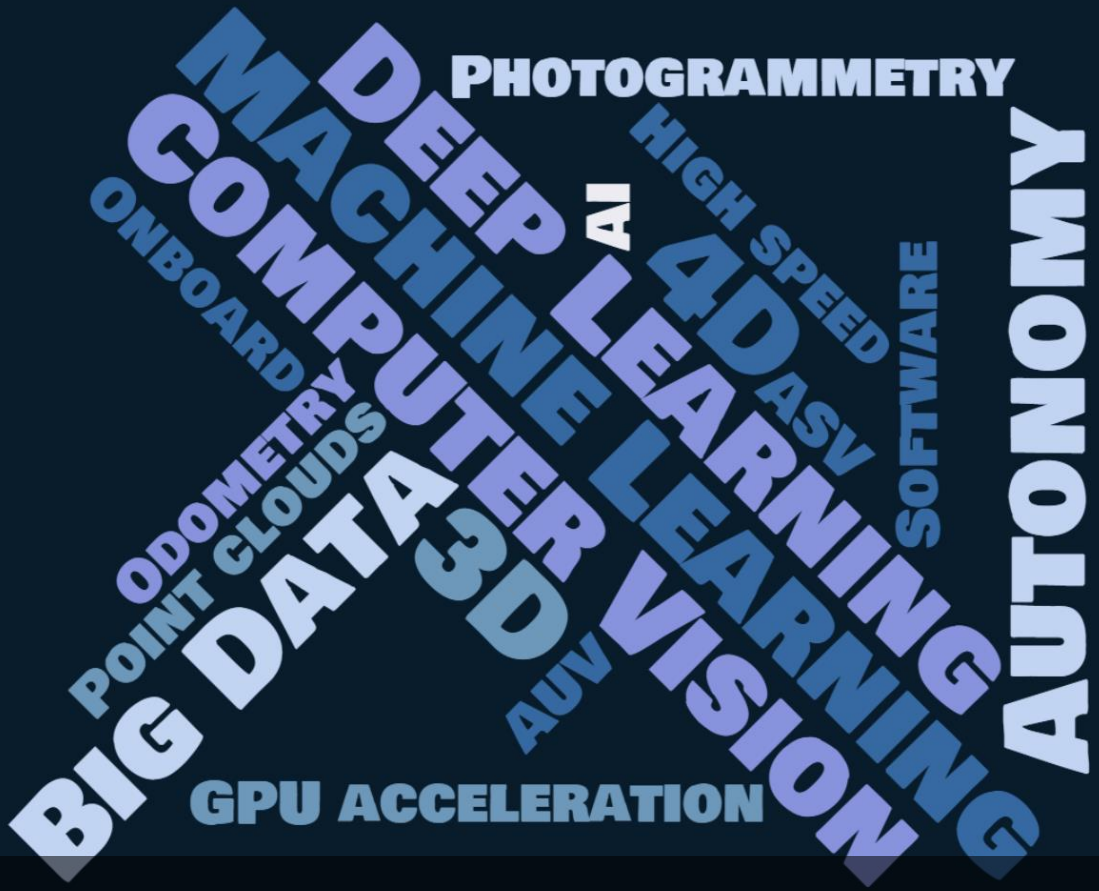
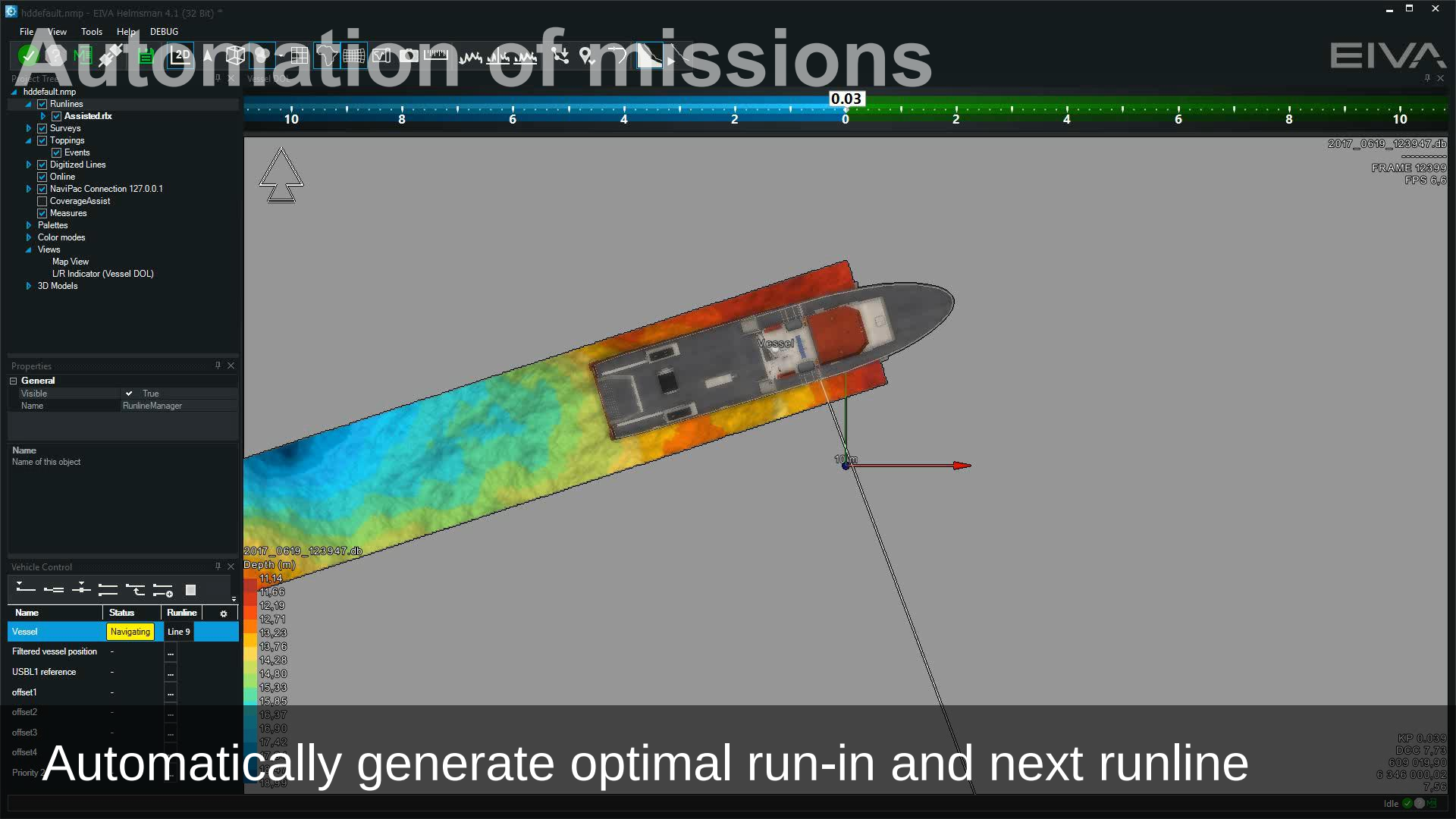


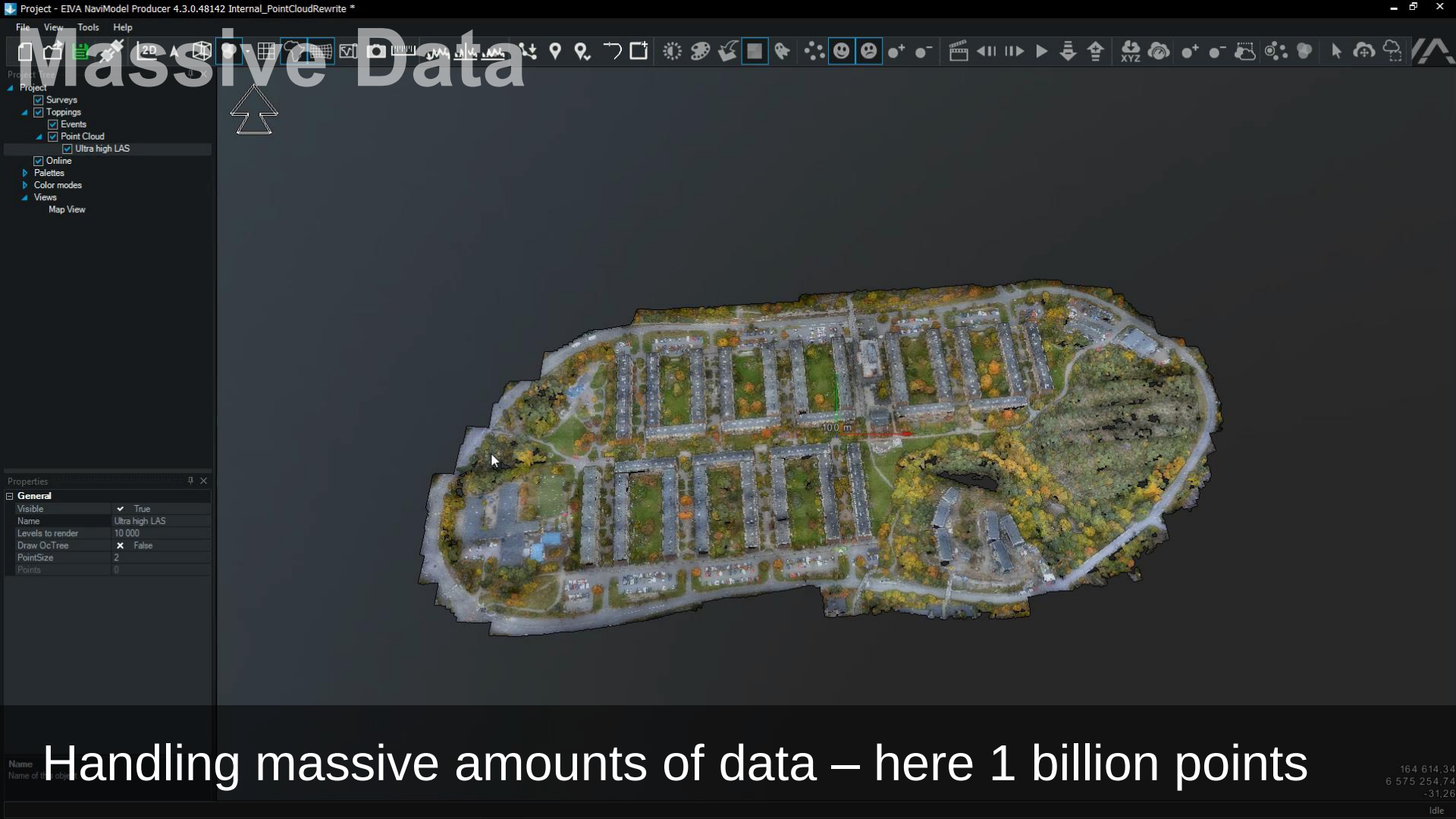
2017 is the year of AUTOMATION

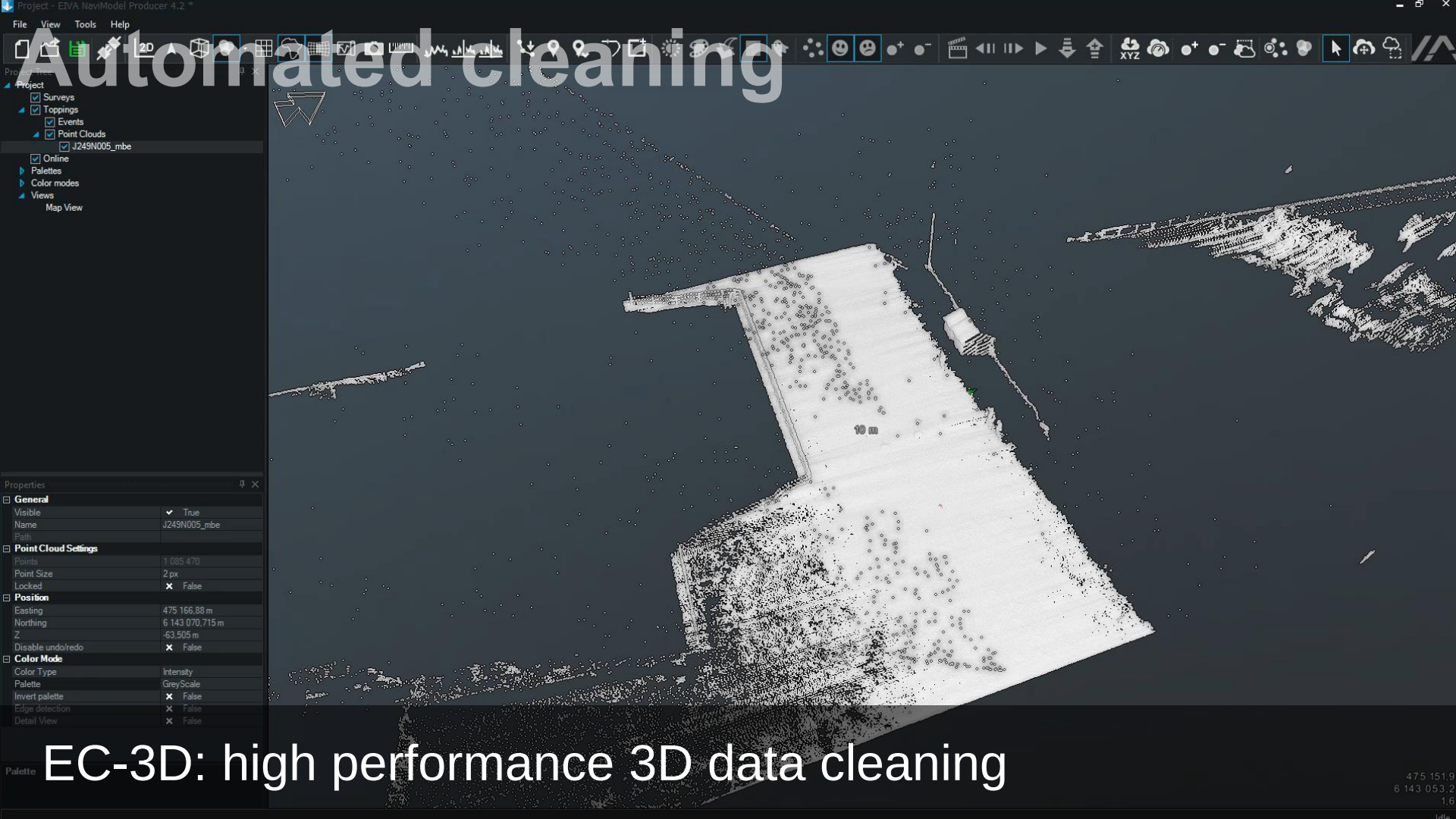

Project - EIVA NaviModel Producer 4.2 (32 Bit) ((32632) WGS 84 / UTM zone 32N) *
File View Tools Help DEBUG
Automation of missions
EIVA
Project Tree
Project
Maps
Surveys
scan4.db
Toppings
Pipes
Events
WaypointManager
Digitized Lines
Online
Palettes
Color modes
Views
NaviEdit
Properties
scan4.db
FRAME 6609
FPS 6.2
scan4.db
Depth (m)
1.32
4.17
7.01
9.86
12.71
15.55
18.40
21.25
24.09
26.94
29.78
32.63
35.48
500 m
The Sound
Hamoaze
Automatically generate optimal runlines based on coverage
-434 492.65
5 661 622.97
25.01
-4.15924464
50.35696760
E=-434 937.98 m N=5 662 075.79 m Z=14.13 m scan4.db
Idle

Automation of missions



Automatically generate optimal run-in and next runline


Project - EIVA NaviModel Producer 4.3.0.48142 Internal_PointCloudRewrite *
File View Tools Help
Massive Data
Project
Surveys
Toppings
Events
Point Cloud
Ultra high LAS
Online
Palettes
Color modes
Views
Map View
Properties
General
Visible True
Name Ultra high LAS
Levels to render 10 000
Draw OcTree False
PointSize 2
Points 0
100 m
Handling massive amounts of data – here 1 billion points
164 614,34
6 575 254,74
-31,26
Idle


Automated cleaning
Project - EIVA NaviModel Producer 4.2 *
File View Tools Help
Project Tree
Project
Surveys
Toppings
Events
Point Clouds
J249N005_mbe
Online
Palettes
Color modes
Views
Map View
Properties
General
Visible True
Name J249N005_mbe
Path
Point Cloud Settings
Points 1 085 470
Point Size 2 px
Locked False
Position
Easting 475 166,88 m
Northing 6 143 070,715 m
Z -63,505 m
Disable undo/redo False
Color Mode
Color Type Intensity
Palette GreyScale
Invert palette False
Edge detection False
Detail View False
10 m
Palette
EC-3D: high performance 3D data cleaning

Automated data processing

Developed in collaboration with
Swire Seabed for the Ocean Infinity project
who operates 6 Hugin AUVs with one crew

50 hours AUV data in less than 2hours

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INTERPRET

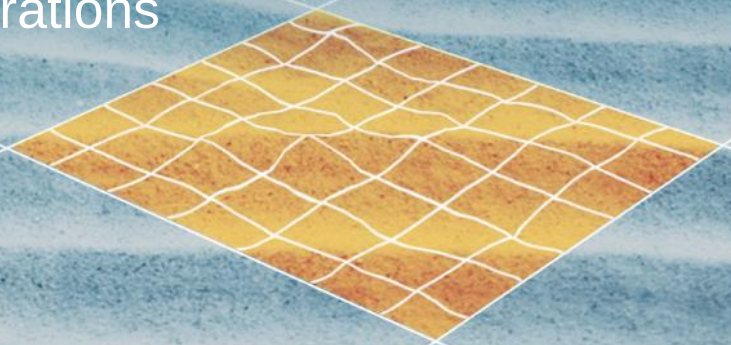
Automate interpretation of data
Data-driven business models

STANDARDISE

Same software for all tasks

SIMPLIFY

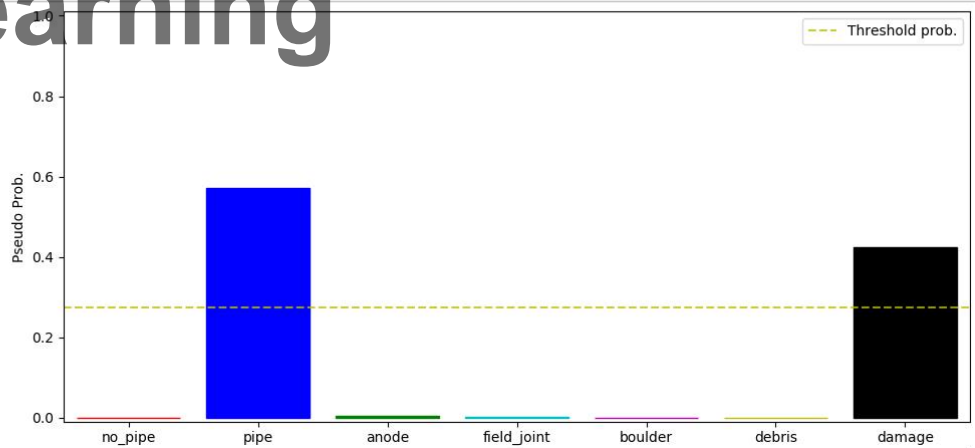
Remove complexity from operations

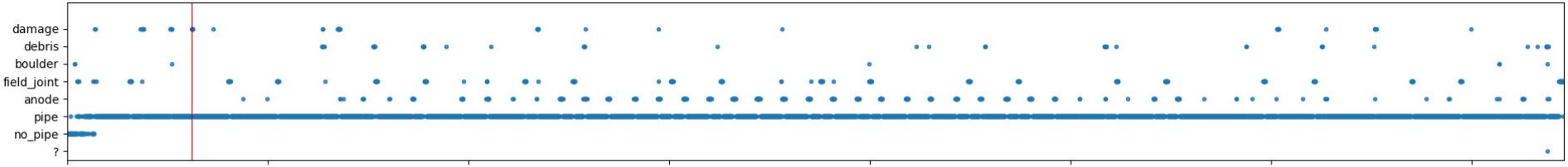


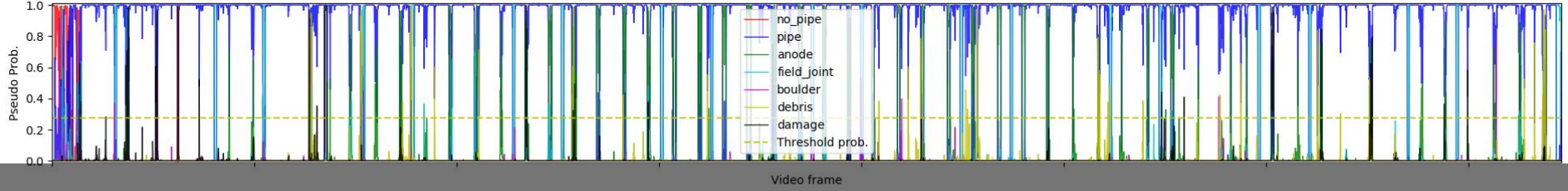
AUTOMATE

Automate and speed up operations

NaviSuite Deep Learning

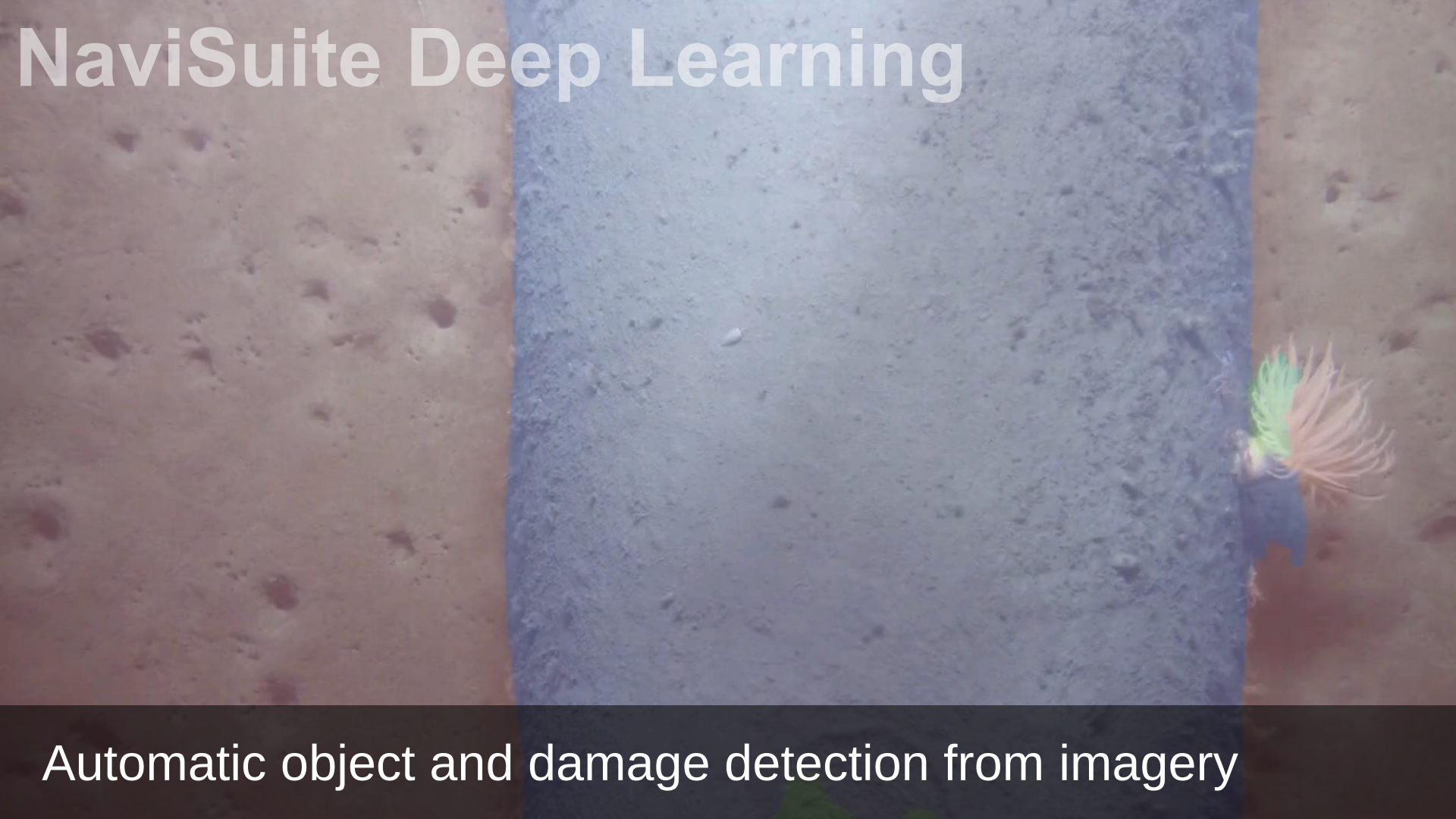






Automated classification of a damage on a pipe

NaviSuite Deep Learning

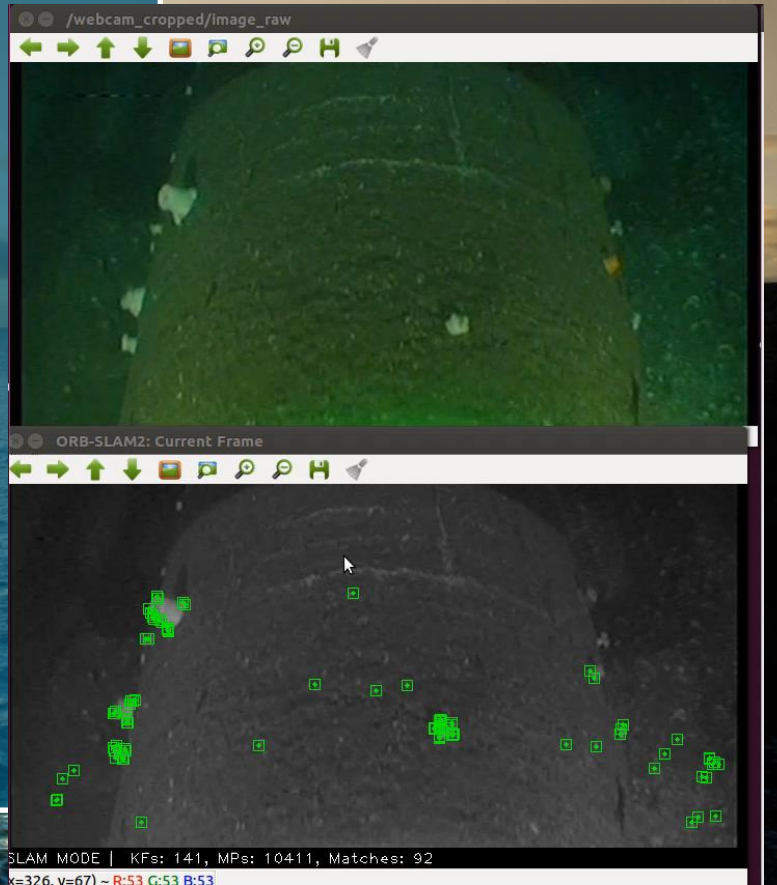


Automatic object and damage detection from imagery

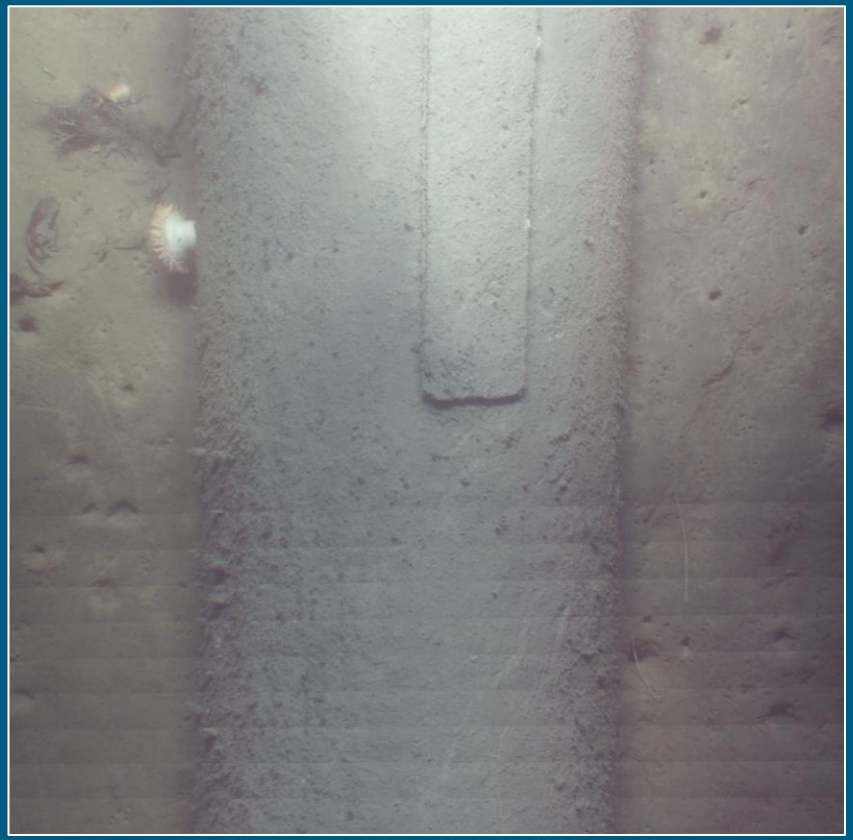
FEATURE TRACKING

- Machine learning based feature tracking gives us a number of things

  - High quality photo mosaics made by finding identical features in subsequent images
  - Navigation track from imagery (no IMU)
  - Real time point clouds from imagery (also called photogrammetry or odometry)
  - The ability to track moving objects subsea



EXAMPLE OF PHOTO MOSAIC



Showing the original image strips

Resulting mosaic from 10 images

LIVE POINT CLOUDS

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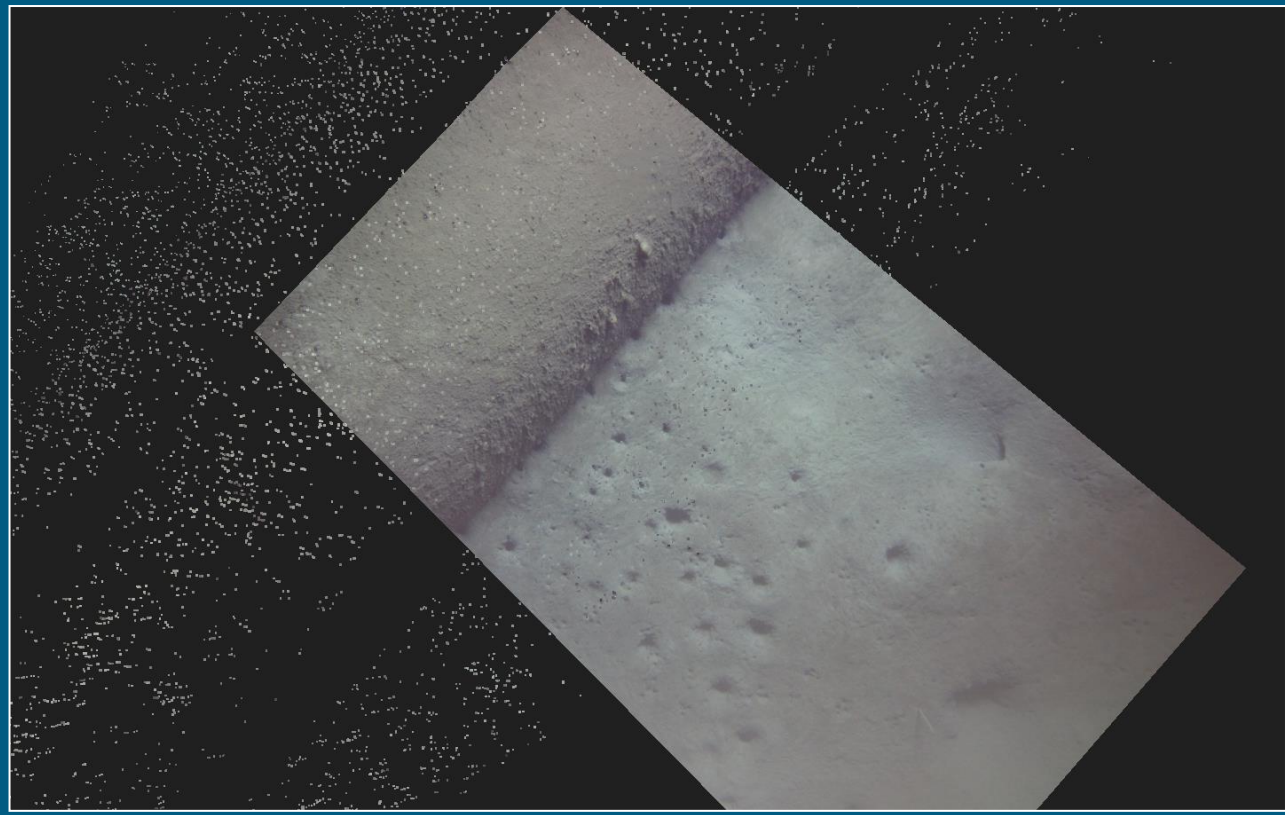
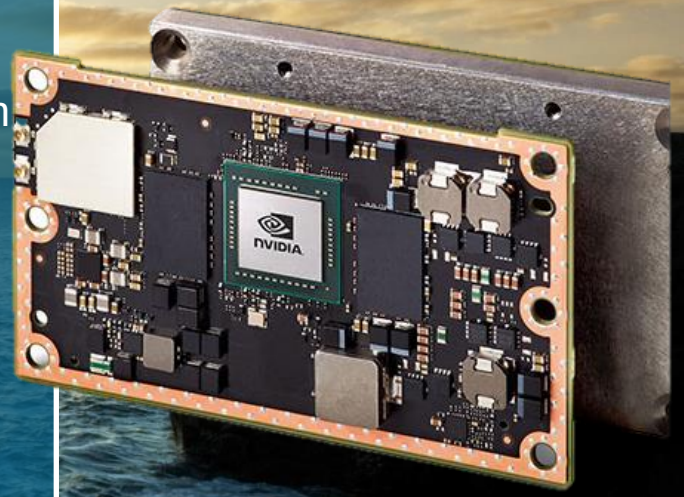
The same technology we use for image stitching also gives us photogrammetry, ie from single images to a 3D point cloud.



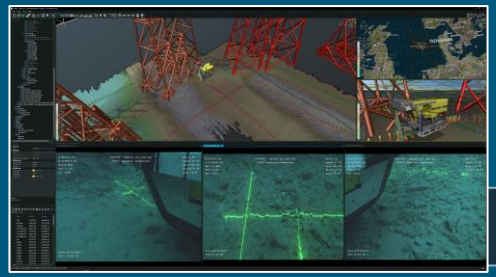
Real time point clouds from imagery

ONBOARD COMPUTING

- Onboard electronics
  - Low power, small form factor, based on NVIDIA
  - NaviScan, ie acquisition and processing of position track, sonar, laser, pipe tracker etc (being ported without UI) including cleaning and QC
  - Deep Learning, ie automated object detection and image stitching (available now)
  - Machine Learning, ie photo mosaics, point cloud generation, navigation track from imagery.
- Use it for onboard processing or mission adjustment based on detected objects



REMOTE COMPUTING



Onshore monitoring
and expertise

Optional number and
location of surveyors
working with the data

Onboard surveyor
and data processer

Streaming data live or even working remotely onshore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WE WILL SEE A LOT OF
CHANGES TO HOW WE OPERATE
IN THE COMING YEARS.
COME SEE US AT OUR BOOTH!