NAVIPAC 4.13

RELEASE NOTES

Last update: 16/02/2026
Version: 4.13

Contents

1 Release notes NaviPac 4.13

1.1 Introduction

NaviPac 4.13 is a major release from February 2026, mostly consisting of a revised Helmsman 4.13 update with new features, changes and bug fixes, as well as minor improvements and bug fixes to the NaviPac core and utilities.

The release history from NaviPac 4.6 and up is included in this document.

1.2 Formatting conventions

Items formatted in **bold** are properties, buttons, or other elements in the NaviPac software. Items in *italics* represent literal strings or file paths.

Numbers in [] refer to Freshdesk support tickets [FD], internal JIRA tickets [J] or internal DevOps tasks/tickets [DO].

1.3 Compatibility

NaviPac 4.11/4.13 builds on top of NaviPac and EivaCore git main code revision which means this version potentially differs a lot from the previous NaviPac 4.6 series versions.

2 NaviPac 4.13

NaviPac 4.13 comes with critical bug fixes and minor improvements to the software suite. These changes are spread across multiple applications and are listed by the relevant module.

2.1 Bug fixes and minor improvements

2.1.1 Kernel

- Increased maximum instruments (ports) to 256 [FD-79154][DO-13196]

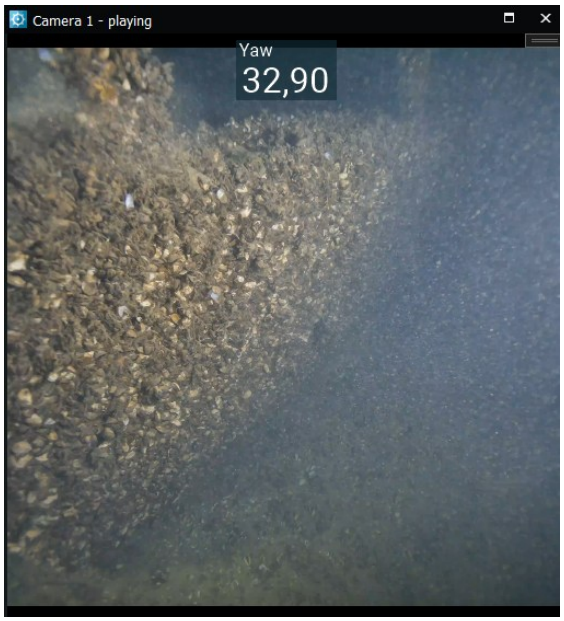
2.1.2 NaviPac Config (NaviPac.exe)

- Fixed: Crash in TMS licence check when having no valid licence [FD-78690][DO-12541]
- Fixed: Crash when opening the app. icon context menu and then clicking outside the menu as if to regret the selection [FD-78459][DO-12230]
- New option **Max std.deviation** for a subsurface vehicle. If enabled (value > 0) and exceeded an alarm will be triggered [FD-74122][DO-7806]
- Better handling of editing **User Defined Datum Shift** [FD-78272][DO-12040]
- User defined output: unchecking/checking Time/Date fixed-format box will enable/disable Time/Date format box [FD-78285][DO-12041]
- Set default NADCON file to conus in the common transformation files folder [J-23991][DO-3491]
- ScanFish.3ds model added to 3D models list [J-22242][J-24191][DO-11830]
- Several meta (.met) data files added for various 3D models (.3ds drawings) to prevent the 3D models from being rendered upside down in Helmsman 4.13 [DO-13772]

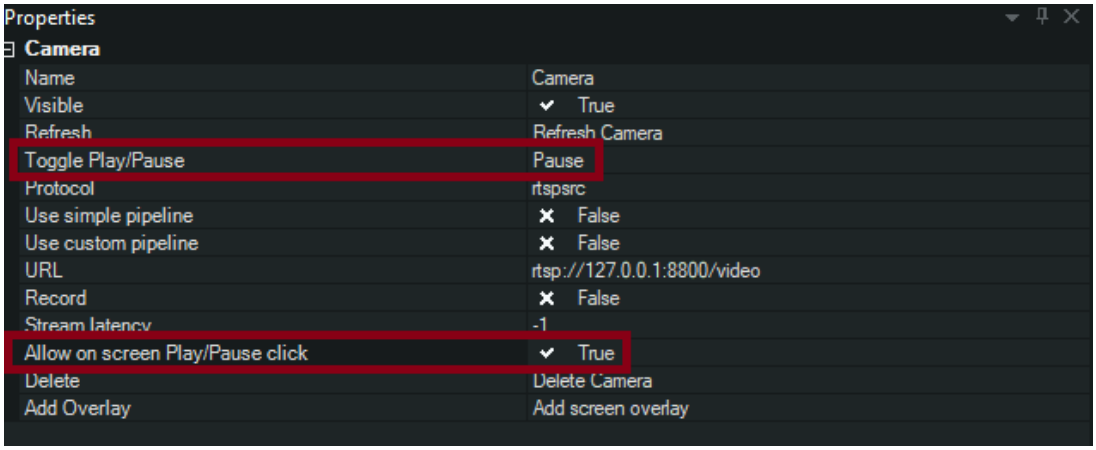
2.1.3 Helmsman 4.13

- [Critical]Fixed: Very high memory usage (memory overload or leak) on Remote side, triggered by a redundant project file loading and eventually resulting in a sudden freeze [FD-78482][FD-79083][DO-13136][DO-13168]
- Fixed: Issue where Helmsman unintendedly is becoming a Remote even though it is a Master [DO-12111][DO-12224]
- Fixed: Wrong visual size of 2D shape when unit is *USft* [FD-78834][DO-12747]
- Fixed: Issue where waypoint positions are not being properly updated in **LiveData** (or **Range/Bearing** view) when moved through the UI [FD-78838][DO-12748]

- Fixed continuous storing (doubling) of 2D shape files (.shp), preventing proper distribution of shape files to Remotes [FD-79237][DO-13758]
- Fixed: 3D model can be rendered upside down due to missing associated meta (.met) file [DO-13772]
- Removed duplicate **Clear trackplot** option in **Object** menu [FD-77863][DO-11704]
- **Position Fix** tool: Report is now made in *USft* unit [DO-12314]
- Revised ETT/ETA **Range/Bearing** view [FD-78623][DO-12445]
- Video overlays now work on camera views [FD-78797][DO-12665]



- Camera stream can now be paused, both from the property view and by clicking on-screen when "Allow on screen Play/Pause click" is true [DO-14616]



2.1.4 Helmsman Classic

- Fixed: Crash on Remote Helmsman Classic side when performing distribution of runline files. This fix likely also fixes a similar crash on Remote side, but slightly different in reported behavior [FD-79764][DO-13851]
- Fixed: Crash when receiving AIS data [FD-78238][DO-12155][DO-12464]
- Re-enabled the **Waypoint Move** feature in the **Edit Waypoint Dialog** [FD-79066][DO-13095]

2.1.5 Other modules

- Geographical Calc (Geocalc2000.exe): added support for NADCON datum shift [DO-13453]
- Data Monitor (DataMon.exe): average heading in interval [0;360[degrees [FD-79256][DO-13490]
- Phins/Rovins aiding output (PhinsOut.exe): GGA string upgrade to show live, instead of hardcoded, GGA fix number [J-23995][DO-3352]

3 Known limitations

3.1 Classic Helmsman's Display

Direct access to the classic Helmsman's Display (generation 3) is no longer supported. However, the classic Helmsman's Display module is still included and can be easily started by manually adding a shortcut to the desktop.

3.2 Admin rights

The user of NaviPac needs to have administrator rights **at installation time**, as the software needs to have full control over the PC clock and the availability to give certain processes and service(s) a higher priority. However, at execution time, standard user rights are sufficient and recommended.

3.3 Worldwide language support

For installations on non-western (Asian) language computers, we recommend enabling worldwide language support. This setting helps auto-generated file paths work correctly; they may contain unexpected characters if not enabled.

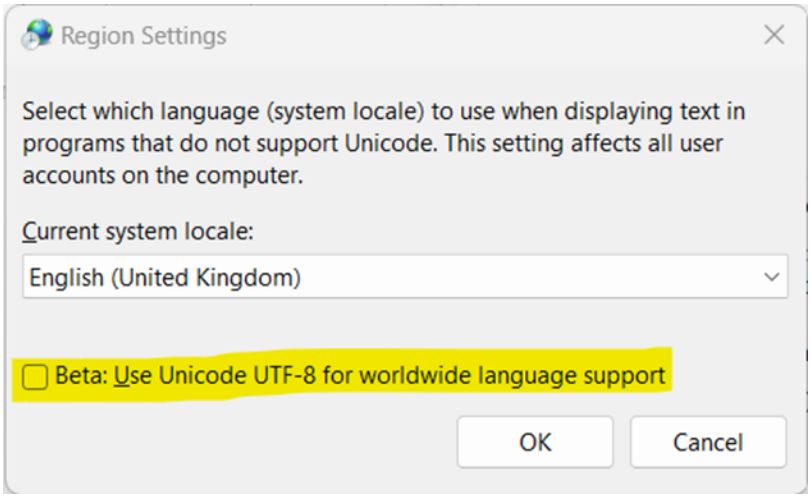


Figure 1 Region settings to enable worldwide language support

3.4 Master Helmsman 4

When operating with multiple Helmsman instances, the one running on the main NaviPac computer must be the master.

3.5 Remote Helmsman 4

Newer 3D Models (which consist of different files) in Helmsman will be distributed to the Remotes when selected in the Master but they will never get a green dot under Models node in the Project tree as a part of the models (.pcdb component) will not be transferred by the distribution process by design. This results in the 3D model not being visualized within the Remote map view.

3.6 (S)ENC charts

NaviPac 4 does not support third-party (S)ENC charts from SevenCs and C-Map anymore. Instead, you may use an extensive library of free web-based background maps from the internet – like Bing, USGS Topographic maps or the WMS solution from SevenCs.

3.7 $PSIMSSR

NaviPac supports Kongsberg raw USBL telegram $PSIMSSR, but the data is assumed to be roll/pitch compensated, which isn't always the case. Therefore, we recommend that you instead use the standard $PSIMSSB telegram.

3.8 Ellipse confinement zone

When adding an ellipse confinement zone to a waypoint in Helmsman, the system will crash if you go directly from editing the confinement zone radius to clicking the **Add Ellipse** button. Clicking anywhere else will allow you to add extra ellipses and does not cause a crash.

4 Release history

4.1 NaviPac 4.11.x release history

NaviPac 4.11 comes with a large number of bug fixes and minor improvements to the software. These changes are spread across multiple areas and are listed by the relevant module.

4.1.1 NaviPac 4.11.1

A small hotfix from December 2025, mainly including modifications to the kernel side of NaviPac. It has been officially included into NaviPac 4.13 release.

4.1.1.1 Bug fixes

4.1.1.1.1 NaviPac kernel (kernelNT.exe)

- [Critical] Fixed incorrect timestamp calculation, i.e. in general rendering the timestamp for combined object correct, and in particular preventing the PHINS/ROVINS driver from crashing [FD-78577][DO-12510]
- Using fixed decimals for scale and bias for instrument analog magnetometer (708,865) [J-24002][DO-8721][DO-11828][DO-3492]

4.1.1.1.2 NaviPac config (NaviPac.exe)

- Revised TMS licence check [FD-78690][DO-12541]
- Tools/Project Manager
    - fixed a freeze when compiling an archive (backup) [FD-78648][DO-12475]
    - added missing nullsoft script files, i.e. .\Scripts\ProjectManager.ico, etc. [FD-78648][DO-12475]

4.1.2 NaviPac 4.11

4.1.2.1 Minor improvements and bug fixes

4.1.2.1.1 NaviPac installer

- Certain sub-modules have been moved from the.*NaviPac**Bin* folder to their own subfolder .*NaviPac**Bin*\<*modulename*>. This gives faster loading, and primarily applies to these modules:
    - DataMon, DataOutputControl, EIVAStat, GPSStatus, PipeBundle, ReportGenerator, and more

4.1.2.1.2 NaviPac config (NaviPac.exe and RunNP.exe)

- Fixed remoting mode issue (crash) when remotely uploading a project from Supervisor to Master [J-23663][DO-149]
- Added error message when max number of instrument instances has been exceeded [J-23704][DO-1059]
- Fixed possible crash when formatting user defined outputs [DO-1059]
- Highlighted **Create** button as default when adding new vehicle [J-23852][DO-1328] and changed background colour [DO-10081].
- The port number in the **I/O Selector** dialog will be replaced/overridden if the field has focus and a new number is typed [J-23850][DO-1329]
- Revised channel number description text between driver and depth source [FD-67896][J-23920][DO-2906]
- New driver *Dynamic Position Offset* (452), originally titled *Enshore RapidScan* [DO-5466]
- Ensure start-up of Rig/Barge option with valid licence [J-23990][DO-4782]
- Revised description text for Mida driver (782)(783) [J-24142][J-24148][DO-5225]
- Mouse hover over a dynamic positioning source shows the linked TPs in green [FD-72549][J-24222][DO-6501]
- Re-introduced types *Secondary* and *Circular average* for relative offset drivers (844-848) [FD-72263][DO-8882]
- Driver *MAG G-880* renamed to *MAG G-88X* (708) [DO-8710]
- Added option for setting number of **Heading decimals** for instruments NMEA 1-5 (624,625,626,650,651) [FD-75523][DO-9047]
- Increased max instances for Phins/ROVINS Binary Position driver to 2 (460) [FD-73691][FD-75465][DO-7450]
- Re-enabled instrument highlight in **3D view** [DO-10982]
- Listing of current setup now shows correct .NPP project file and version number [DO-11287]

4.1.2.1.3 Kernel processes and drivers

- NaviPac Pro licences in **Tug mode** now allows max number of remote clients [J-23980] [DO-3266]

- Use time in packet for PHINS/ROVINS *$PHOCT* driver (238) [FD68016][J-23954][J-23953][DO-2880]
- Fixed obsolete offset output value (+10000) for the *Mag 708* driver [J24002][DO-3492]
- Added EPSG methodology for the *Hotine Oblique Mercator Projection* [DO-10678]
- Fixed NMEA output GGA string error [FD-75312][DO-8878]
- Fixed missing initialisation of User defined input [1-10] drivers (710,711,etc.) [FD-73160][J-24286][DO-7137]
- Added support for GECO V4 *$WGPOS* format (049-053) [FD-69125][J-23999][DO-6760]
- Change of TP-code handling for Kongsberg HiPAP gyro ($PSIMSNS) driver (102) [J-24032][DO-4693]

4.1.2.1.3.1 Data Monitor (DataMon.exe)

- Allow adding multiple sensor instances [J-24089][DO-4705]
- The **File Writer** component can access (re-open) a referenced file after restart of DataMon [FD-73855][DO-7556]
- Can now delete user-defined groups [J-23829][DO-1331]
- Fixed issue of AVG Heading box not opening, triggering an *out of bounds* error message [FD-74990][DO-8658]
- Inactive NaviPac instruments have been removed from the sensor-list [FD-73684][FD-72506][J-24226][DO-7445]
- The **NaviPac IO** component now has the sensor-list sorted alphabetically [DO-7445]
- OPC licence updated [DO-7793]

4.1.2.1.3.2 GeoCalc (Geocalc2000.exe) aligned with GeoCalc stand-alone installer version

- Corrected bad 14 parameter ITRF shift [DO-7081]
- Corrected bad Datum Transformation for North Sea [FD-74823][DO-8446][FD-77045][DO-1068]
- Renamed EPSG Method Label to *Mercator Variant B* [DO-10417]

4.1.2.1.3.3 Data logging utility (LogdataC.exe)

- Extended the interval limit (*Reduced sampling*) of NPD C file [J-24170][DO-523]

4.1.2.1.3.4 UKOOA exporter (UKOOAExp.exe)

- Fixed incomplete P294 output file [J-21312][DO-2149]

4.1.2.1.3.5 Bundle Monitor (PipeBundle.exe)

- Re-enabled bottom profile creation [DO-10544] [DO-10459]

4.1.2.1.3.6 AIS interface module (AISIF.exe)

- Fixed non-working centre gating [FD-71605][J-24181][DO-6582]

4.1.3 Helmsman 4.12

Helmsman 4.12 is included in the NaviPac 4.11 release.

4.1.3.1 New features

- New embedded **Position Fix** tool, substituting the former position fix module (XYZCal.exe) in NaviPac
  - The **Position Fix** view (form) is dockable [DO-9185]
  - Position fix details (meta-data) can be added
  - Also works with USft
  - Bugfixes and improvements [DO-9033][DO-9183]

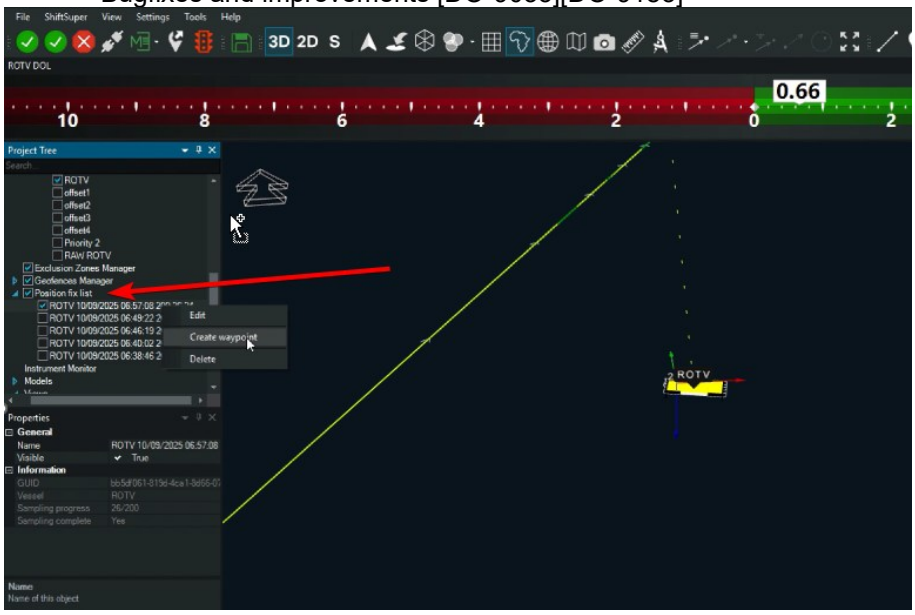


Figure 2 Position fix tool integrated into NaviPac 4.11

This version of Helmsman introduces the Helmsman workspace customisation option. See the guide found on our knowledge base.

- New simplified Helmsman workspace designer feature
  - Switch between personalised workspaces, allowing tailor made menus and toolbars
  - Simplifies navigation and tool access for different use cases/applications
  - Reduces UI clutter by relocating tools to context-relevant tasks
  - Enhances workflow efficiency through workspace customisation

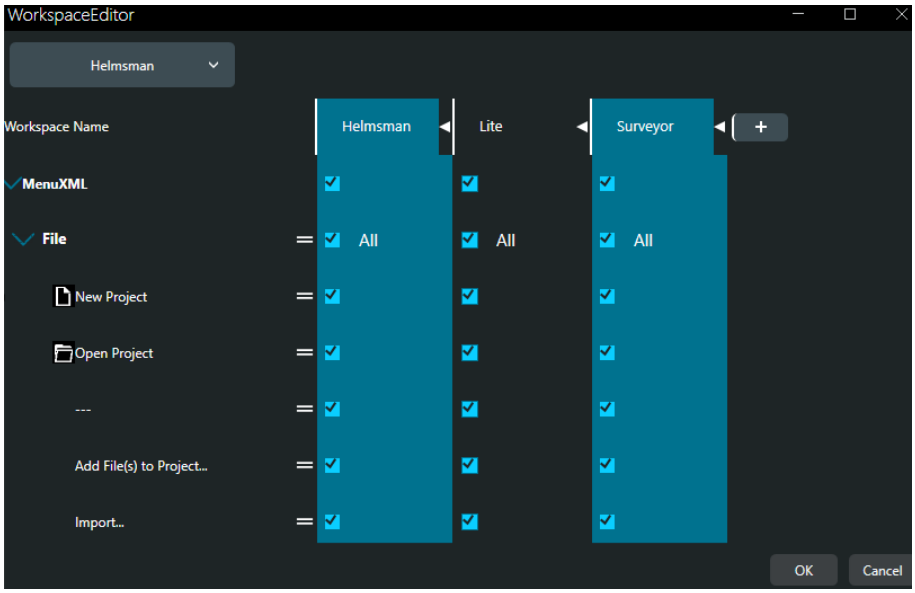


Figure 3 Helmsman workspace editor

- New simplified overlay toolbars [DO-8716]
  - Enables icons and controls to be overlaid directly on the map view
  - User configurable overlays, adjusting settings and icons, directly from the map view

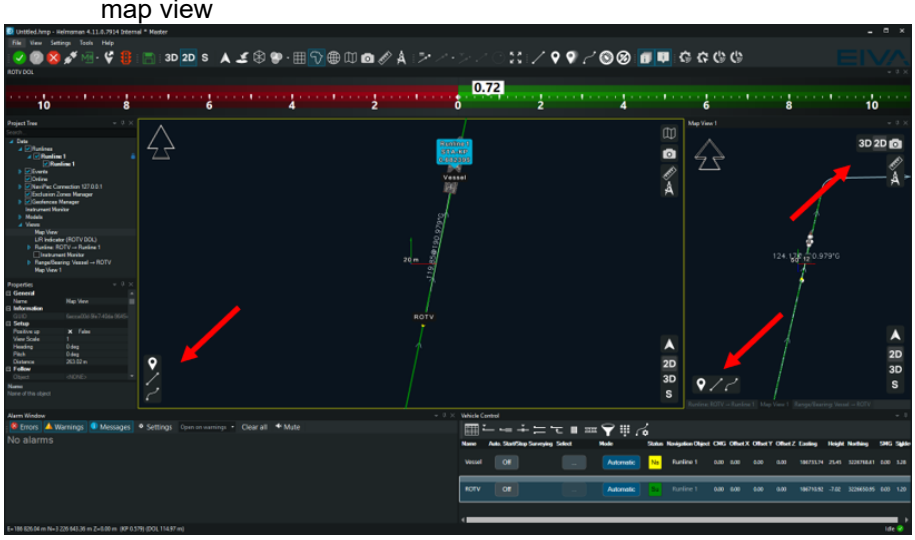


Figure 4 Toolbar tools overlaid directly on the map view

4.1.3.2 Major changes

- New file and project structure, introducing project folders
  - Backward compatibility with older Helmsman projects (project files)

- Improved overall synchronization (of files) between Master and Remote(s) (File Distribution Scheme, embodied by the 2 services EivaMaster and EivaRemote)
    - Distribution of 2D-shapes, keeping (not removing) 2D-shapes set to be local on Remote(s) [J-23529]
- Revised AutoCAD engine (DWG/DXF/DGN)
    - Added better support (rendering) for large CAD files
    - Support for AutoCAD layer status (on/off/freeze) when importing CAD files [FD-61531][J-23543]
- Improved Exclusion and Confinement zones
    - Clickable **Go-To exclusion zone** [DO-8284]
    - Lawn mower pattern with exclusion zones [J-24060]
- Left/Right Indicator view
    - Now in red and green (port and starboard respectively) [J-22953][J-22042]
    - Added filters, including DCC and DOL place holders [FD-75336][DO-8881]
- Support of data upload to the Terradepth AbsoluteOcean viewer
    - Login to AO (including GUI for customers PW) [DO-4075][DO-7826]
    - Upload selection of files to selected AO project [DO-4077][DO-7839][DO-8725]
    - Download file from AO project [DO-4079]
- Eventing and Eventing Tablet improvements
    - Allows groups in groups
    - Allows multi-levelled event collections and very simple ones
    - Improved selection and filtering
    - **Properties view** is now available
    - Linked length of the free span events is populated with the values [FD-68737][J-23977]
- Vehicle Control view
    - Renamed *Dx,Dy,Dz* to *Offset X,Offset Y,Offset Z* [DO-8602]
    - Icons showing correct active/inactive status [DO-8603]
    - No double **Clear Track** option in the context menu [J-24163]
    - Added Range and Bearing data [FD-71688][J-24184]
- Bug fixes for runline(s) handling
    - Physically inverted runline can be navigated/surveyed [J-24126]
    - Follow runline-up mode follows active runline as opposed to last generated runline [J-24147]
    - Run-in/out lines are not mutually exclusive [J-23777]
    - Increased visibility of run-in/out lines (cropping to a boundary and removal of opaqueness) [J-23795][J-23645]
    - Cropping runlines to a (closed) digital line (displayline) boundary [J-23619][J-2354]
    - Creation of parallel runlines gets similar functionality as creating parallel digital lines (displaylines) [J-23581]
    - Correct labelled KP markers (numerics) on runline [FD-64942][J-23768]
- Beginning implementation of transition into support for data exchange based on DDS
    - Improved communication between NaviPac and Helmsman
    - Created subscriber for Laser (Scan/LiDAR)

4.1.3.3 Bug fixes and minor improvements (from 4.8+)

- New option **Origin At Zero** when importing (drag and drop) 3D models [FD-70755][J-24125]
- Re-introduced listing of NaviPac alarms in the **Alarm Window** [DO-8572]
- AIS Object's **Blue Arrow** can be hidden using the **Show Arrow** settings in properties [FD-70469][J-24086]
- Follow object in 2D will keep camera at depth 0 (use the shortcut Shift-R to manually move the camera to 0) [DO-9035]
- Added gyro display shows values between [0-360[degrees [FD-75079][DO-8743]
- Added support for.KMALL files for a new point cloud [J-23364]
- Added option of different GStreamer pipe protocols, for example RTSP [J-23206]
- Fixed no display line displacement when running live DTM from online connection to NaviScan with the MBES off [J-24173]
- **Full NaviModel Window** renamed to **Full Helmsman Window** [J-23988]
- Added enabling DTM surface type and colour modes during online creation [J-23297][J-23353]
- Added custom position units in accordance with NaviPac project units [FD-66870][J-2387]
- Fixed persisting Live Point Cloud scalar [FD-63475][J-23671]
- Filter out objects in the Live Data View [FD-65361][J-23794]
- Adapting a change of object (or transponder) names in NaviPac [J-23859]
- Fixed live updating the Range and Bearing (R/B) view after restart [FD-63034][J-23636]
- Fixed persisting Auto follow zoom mode [FD-55918][J-23071][J-20734]
- Fixed snapping of measure tool for a database point cloud [J-23718]
- NaviScan GPS Time icon is only green when connected [DO-8319]

4.2 NaviPac 4.6.x patch history

The history of all service packs (patches) for NaviPac 4.6.

Note: The latest service pack replaces (supersedes) all previously released service packs!

4.2.1 NaviPac patch 4.6.7

A small service pack from May 2025, mainly including modifications to the kernel side of NaviPac.

4.2.1.1 Changes to NaviPac kernel and utility modules

- Fixed ITRF shift error in the application of the height component with multiple GNSS receivers with different Quality indicator values [FD-73478][DO-7518]
- Remote NaviPac.exe: fixed bad un-assigning of assigned waypoint on Tug side (simple rig move) [FD-62973][J-23648]

- EIVATide.exe: fixed a situation where the usage of a WSA socket was not properly initialized (failing connection to NaviPac) [FD-73542][DO-7449]
- Removed Unicode character from instruments.xml (NaviPac.exe) [FD-74723]
- Allowed multiple instances of Valeport Bathy2 driver [FD-74893][DO-8539]

4.2.1.2 Changes to Helmsman 4

- Included support for the Oblique Stereographic projection (EPSG 9809). The implementation used in the Netherlands is sometimes known as “RD New” or “RD Stereographic” [FD-73118]

4.2.2 NaviPac patch 4.6.6

A service pack from February 2025, mainly including modifications to the kernel side of NaviPac.

4.2.2.1 Changes to NaviPac kernel and utility modules

- Aligned the definition of the 'Meter to Foot Conversion' in both NaviPac and Helmsman. It is now defined as the 'Meter to International Foot' conversion as specified by EPSG & ISO 1000 1998 [FD-71588][J-24178]
- Revised Template tracking based on Leica Total stations and with no gyros attached [FD-66757][DO-2639]
- EIVATide.exe: missing tide argument added to output [FD-67863][J-23918]
- Re-enabled Schilling Autofollow (691) for PHINS/ROVINS (444) and multi-positioned/combined objects in general [FD-66783][J-23883]
- DataOutputControl.exe: revised injected output (port) delay [FD-68206][J-23938]
- Fixed bad interpreting (resetting) of NMEA GST and GSA NMEA datagrams, introduced in v4.6.5 [J-23845]
- Fixed skipped NMEA GST and GSA telegrams for multi-string (GGA) based surface nav. instruments (56,57,58) [FD-69499][J-24038]
- Fixed crash when using AGA Geodimeter (38) [FD-69628][DO-4160][J-24050]
- Re-enabled ATTU protocol for RDI instruments [FD-69398][J-24022]
- Fixed USft issue with User Datum > WGS84 calculation [FD-70107][J-24068]
- GeoCalc module: fixed a transformation issue from User Datum with Cartesian Coordinates input [FD-70639][J-24109]
- InsMon.exe: increased input buffer from remacc (improved handling of UDO packets) [FD-69862][DO-4706][J-24042]
- Added the Valeport Bathy 2 driver (878) [FD-63076] [DO-1130][J-23641]
- EIVAMill.exe: re-enabled loading of interpreter for instrument *GPSx (NMEA)* (44)
- Fixed missing depth (inverted altitude) in instrument *PHINS/ROVINS Altitude (NAV BINARY)* (877) [FD-71376][J-24171]
- DigiShot data (from kernel) and DataLink data (from Rigmon) are now sent to InsMon.exe (the Instrument Spy monitor)

4.2.2.2 Changes to Helmsman 4

- Now accepting negative (W/S) lat/long coordinates when editing a waypoint position [FD-66417][J-23848]
- No longer allow remote viewers to sync when silent [FD-66769][J-23870]
- Improved barge runline creation [FD-70776][J-24124]
- Fixed crash due to received invalid object id (eg *-1*) from NaviPac kernel [FD-71009][J-24139]

4.2.3 NaviPac patch 4.6.5

A service pack from August 2024, mainly including modifications to the kernel side of NaviPac.

4.2.3.1 Changes to NaviPac kernel and utility modules

- Added drivers for Kongsberg KM Binary (.kmall) data format (163:Gyro, 263:RPH, 363:DVL, 463:Pos, 883:Depth). Support for COM, TCP and UDP port types
- Revised the MAG G-880 driver (708). Now supporting floating point values in data string
- Fixed datum shift issue (introduced in NP v4.6.3) by re-applying height for all position telegrams and implementing the IOGP / EPSG published algorithms [FD-66949]
- Added (missing) special settings for driver 'EIVA PipeBundle' (420) [DO-153]
- Added missing waypoint at start of arc of Kongsberg DP waypoints extraction [FD-67855][J-23916]
- Fixed GPS height not updating when geoidal separation is empty in the GGA string. This has been done for all GGA based drivers! [J-23845]
- GeoCalc module: removed the dependency on the projection when performing a Datum Shift based on Geographical Coordinates [FD-67920][FD-67854]
- Added decoding of a $INGGA message in instrument 'User defined Remote Position' (431) [FD-67628]

4.2.3.2 Changes to Helmsman 4

- No changes (same version as in NaviPac v4.6.4)

4.2.4 NaviPac patch 4.6.4

A service pack from June 2024, mainly including modifications to the kernel side of NaviPac.

4.2.4.1 Changes to NaviPac kernel and utility modules

- Added 3 new drivers 'Logging and cloning of raw data' (520/521/522). The drivers can log (clone) binary data from a COM/TCP/UDP port onto disk (file(s)), as well as copy (clone) data to another UDP port, ex. for a user defined input. The file(s) can be split by file size in kB, by timespan in minutes or hourly (by full 1-24 hours). The drivers are running independently of NaviPac's cycle time, thereby supporting a lot more Hz of data updates
- Reverted $HSATIT and $PHOCT heave changes, wrongly introduced in NaviPac v4.6.3 (238)
- GeoSubSeaPipe.exe: fixed bad GUI update [FD-63516][J-23677]
- DataOutputControl.exe: added the SPRINT-Nav C&C commands 'SUSBL TPDR <0|1> <[0;99]>' and 'SUSBL LATENCY x.x'
- Now handling up to 25 User defined outputs [J-23703]
- Logdata.exe - Custom logging: fixed bad <N/A> logging for data acquisition types (DAQs) having multiple instances of same instrument (ex. DIGIQUARTZ) [FD-64274][J-23707]
- Fixed bad altitude in instrument 'PHINS/ROVINS Altitude (NAV BINARY)' (877)
- DataOutputControl.exe: added options for auto. polling settings and for suppressing alarm (warning) bit(s)
- Revised the TeleMultiX.exe module – added extra exception handling, hopefully making it more robust [FD-64481][J-23730]
- TMX_WD.exe module improved to auto-start possibly crashed TeleMultiX.exe module, i.e. a not running TeleMultiX.exe module which is setup to be active
- NP_TMSMaster.exe module now stores a timeout value in navipac.ini, compatible with the TMX_WD.exe module (section [Telemetry] TMX_WD=5)
- Adaptation of instrument 'Teledyne RDI DVL' (300) to be handling new size (725 bytes) of the RDI PD0 format [FD-62870][J-23628]
- Re-enabled adding (one) POI (offset) for the instruments 'EIVA 3D Display' (610), 'Navigation Data Server' (683) and 'Subsea 7 $ACGDAT' (697) [J-22355]
- USBLfix: revised order of radius sources
- Magnetometer G-880 (+ Rawdata) revised (708) [FD-65157][J-23786]

4.2.4.2 Changes to Helmsman 4

- Better handling of 2D shape file distribution/sync. [FD-63970][J-23693]
- Improved anchor handling tool (enabled de-assigning an anchor from Tug) [FD-64613][J-23735]
- Improved generation of a barge track/runline (arc part) [FD-64614][J-23734]

4.2.5 NaviPac patch 4.6.3

An extensive service pack from February 2024 including modifications to the NaviPac installer, kernel and Helmsman.

4.2.5.1 Changes to NaviPac Installer

- An attempt has been made to prevent the NaviPac installer from instantly rebooting the PC. An embedded Microsoft component has been flagged with /norestart [FD-59157][J-23345]
- The embedded add-on installer 'C-Map's CM93v3 ECDIS kernel' has been removed as we do not support C-Map (S)ENC charts anymore (instead use/connect to a TMS Map Server in HMD4)

4.2.5.2 Changes to NaviPac kernel and utility modules

- New PHINS/ROVINS NAV BINARY drivers and instruments for Gyro, Motion and Dynamic positioning (160/260/460)
- Inverted the pitch from the $PIXSE,ATITUD motion input (238) [FD-56215]
- Inverted the heave from the $HSATIT and the $PHOCT motion inputs (238)
- Added checksum for the EMRI SEM200 autopilot $PESSX output
- EMRI EM200 autopilot now complies with the 'Two steps stop' scheme [J-22528]
- Better distinction between a drive letter and a domain address for a logging file path in the DataOutputControl.exe driver
- Added sword length for MiniCon instrument (857) [FD-57147][J-23173]
- Fixed wrongly classified HUGIN FFI pos. instrument (412) [FD-57449][J-23201]
- Re-enabling Remote (NaviPac) Gyro/Motion/DAQ for a Remote dynamic object driver (421)
- Expanded the IMCA interpreter (421 / Remote dynamic object) to handle sign prefix (N/S/W/E) for latitude/longitude degrees [FD-57965][J-23252]
- Accepting SEAPATH status byte 0xA0 for both gyro (158) and motion (200) instruments [FD-57121][J-23170]
- Prompting for setting 'Simulate all' flag if any ON instruments and no (soft) dongle [FD-48440][J-22364]
- Test for bad syntax (missing gyro value/column) added for NMEA2 (105) and NMEA3 (106) gyro instruments [FD-42210][J-22037]
- Fixed wrong US Ft conversion (display) in Online, Object Monitor and other modules [FD-57742][J-23229]
- Added detection for DCD in instrument 'Trimble UTC Time + PPS' (505)
- Fixed a projection discrepancy between NaviPac and GeoCalc (southern Transverse Mercator mistakenly recognised as Gauss-Krüger)
- The max. number of columns for custom logging in LogData has been expanded considerable (>>180)
- Fixed bad distance event info when running USFt [FD-56795][J-23148]

- Re-enabled entering negative positions in Simdata
- Fixed bad handling of anchor names with spaces in Remote NaviPac [J-23109]
- Added scale A+B+C for inst. ‘Special A/D Converter’ (742) [FD-38154][J-21814]
- Allowing definition of up to 40 DAQs [FD-51830][FD-59062][J-23317][J-23341]
- Improved Vorf (.vrf) based geoid/height reduction TIN-model [FD-58929][J-23331]
- Fixed missing surface nav. in the ReportGenerator report [FD-56703][J-23140]
- The ReportGenerator now supports screenshots/snapshots from HMD4 [J-21465]
- Re-enabled query and listing of NaviSuite licences from the ReportGenerator
- Re-enabled (fixed) setup of Dual Transceiver HiPAP [FD-59870][FD-57521][J-23213][FD-59935][J-23419]
- The USBLfix.exe module is now parsing the boxin samples in different (multiple) orders (if the samples do not converge in the first parse)
- Fixed bad 3D models re-scaling (re-load of .met data) [J-22870]
- Added module NPRawLog.exe to the warm start section
- Added display of Ellipsoidal Height to the Geocalc2000.exe module [J-60039]
- AISIF.exe module heavily revised, preventing a potential crash due to bad threading management (also added option for entering a gate-out center) [FD-60783][J-23474][FD-38189][J-21817][FD-60783][J-23474]
- Old GeoSubSeaPipe.exe module (NaviPac v3.10.5) updated and re-added [FD-55642][J-23417]
- Applying EPSG revised Helmert 7-Parameter scaling for datum shift transformations
- Introducing Height in the derivation of the ITRF transformation
- Omitted instrument ‘AIS targets’ (514) – use the AISIF.exe module instead
- Old NaviPac v3.10.5 option ‘HMD Cycle Period’ re-introduced
- Re-introduced/re-enabled the following surface navigation instruments: 'Kongsberg HiPAP/APOS' (4), ‘Fanbeam’ (9), ‘Fanbeam - driver 2’ (16), ‘Artemis’ (7), ‘Artemis - driver 2’ (15) and ‘Artemis - MK4’ (8) [FD-43468][J-22099]
- Revised NaviScan center-depth connection in HMD classic – better re-connection
- Added 2 extra User defined remote position drivers (447,448) [FD-45715] [J-22215]
- Added additional (second) surface navigation SPRINT-Nav driver
- Fixed wrong bearing sent to the Schilling auto.follow device [FD-61545][J-23548]
- Added 3 extra (= 6 in total) User defined remote position drivers (449,450,451) [FD-61475] [J-23550]
- Heavily expanded the no. of custom log item types in the Logdata module [FD-61763][J-23556]
- Fixed a Surveying->Navigation logging issue of kp/dal/dol data [FD-62108][J-23583]
- DataMon/IODesigner: added header info for user defined output [J-22230]
- EIVAStat: ‘Final Positioning Report’ requires an active waypoint in HMD4 ([FD-62311][J-23591])
- Helmsman’s Display (HMD classic): revised tooltip (text overlay) for anchor (and waypoint) move

4.2.5.3 Changes to Helmsman 4

- HMD4 now complies with the ‘Two steps stop’ scheme for autopilot [J-22528]

- Re-enabled the use of non-metric units (US Survey Feet) [FD-55758][J-23060]
- Added option for setting # of decimals for the Numeric widget (KP)
- Revised supervisor mode (better sync. of runlines and waypoints with supervised master)
- Fixed R&B-view to display correct data of same object [FD-56932][J-23160]
- 'New Waypoint…' dialog can default to other than Target [FD-57244][J-23190]
- Notifying HMD simulator is not meant to work with NaviPac [FD-57212][J-23188]
- Improved sync. of the Toppings folder (file deletion on remote) [FD-56548][J-23116]
- Added an optimization for large runlines
- Added the ability to create a WP in either UD or WGS84 [J-23532]
- Don't show name and visibility twice in runline properties [J-23578]
- Fixed crash when adding a confinement or exclusion zone
- Fixed Z error in 3D Geodetic Transformation & Location of Background Maps when changing Geodesy

4.2.6 NaviPac patch 4.6.2

A service pack from June 2023 including modifications to the NaviPac kernel and Helmsman.

4.2.6.1 Changes to NaviPac

- Restored setup of ITRF [J-22851]
- Re-introduced setting the User ID (Project Settings; NaviPac; User ID) [J-21992]
- Fixed possible crash when handling an invalid MyEiva licence string [FD-53638]
- Fixed a possible crash of kernel due to a timed-out pulse from DataIO
- Fixed bad formatting of Geodesy items in User Defined Output [FD-51813]
- Fixed start-up error when WGS84 is selected in User Defined Output [FD-51288]
- Re-enabling support of draught sensor [FD-51294]
- An attempt is made to fix a possible corrupted objects.txt file [FD-48307]
- An attempt is made to fix a possible Helmsman classic crash [FD-48382]
- Added extra control options for GGA based instruments (Simdata – see simulate.ini)
- Fixed wrong port no. in LLVideoOverlay.exe [FD-51883]
- Added new (official) format for Kongsberg DP waypoints (WP version 4) [FD-39947]
- Added option for sending WPL before RTE (Kongsberg DP Waypoints) [FD-51276]
- Added transponder offset X, Y, Z to Remote Dynamic Objects [J-21550] [FD-51869] [FD-49921]
- Fixed issue with template tracking when having no attached gyro [FD-52783]
- GUI support for 20 gyros/motion sensors and 15 DVLs (Attitude module) [J-22814]
- POSMVIF and POSMV GPS driver 2: added navigation status 16 as DGPS
- Fixed WGS84 position issue in the Final Fix report, generated by EIVAStat [FD-53763]
- User defined output: Recording path removed as path is set in IO selector [J-22974]

- Added edit of IMCA Ids in project settings Survey Parameters [J-21941]
- Added edit of navipac.ini in project settings Advanced
- Added check for applied datum shift for 'Surface Navigation' systems (GPS) [FD-39557]
- Added Location (Source) to several 'Data Output' drivers [FD-34007] [FD-54837][FD-54837]
- Added extra SPRINT-Nav C&C commands to the DataOutputControl.exe driver
- Revised POSMV Group 1 (II) driver – added support of group 10 [J-22530]
- Fixed leaking of Windows handles in watch-dog module TMX_WD.exe
- Less rigid acceptance of packet 21 ('E') in module AISIF.exe
- Fixed Missing Datum Shift method North Sea (No) in NP 4.6 [FD-53492]
- GeoCalc uses scale factor in ppm [FD-52831][J-22785]

4.2.6.2 Changes to Helmsman 4

- Added extra DP waypoint control of the DataOutputControl.exe driver

- Added options to the digitised line. The user can now move a digitized line to target, drag and drop and rotate it. This is done by a right-click on a digitised line and press the **Edit** option:

Figure 5 A selected digitised line with options to move and rotate

- Added **Single Waypoint** tool to the **Toolbar:**

Figure 6 Toolbar with Single Waypoint tool

- Added latitude / longitude formats, for example in the **New Waypoint** option:

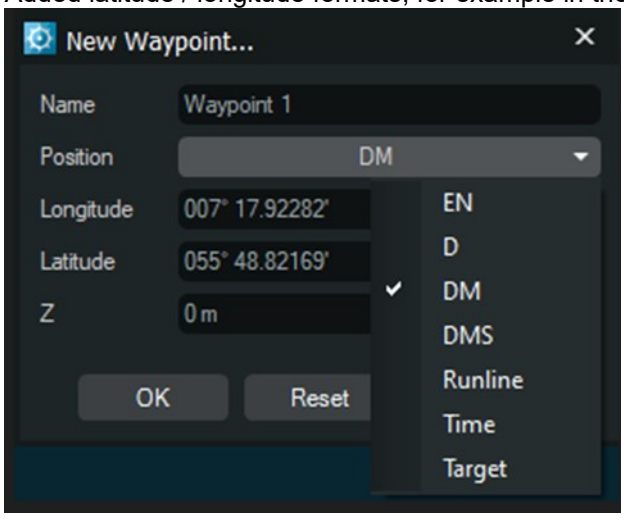


Figure 7 New Waypoint view with longitude and latitude format

- The new **Vehicle View Window** has been improved to save its setup. Multiple **Vehicle View Windows** can be added:

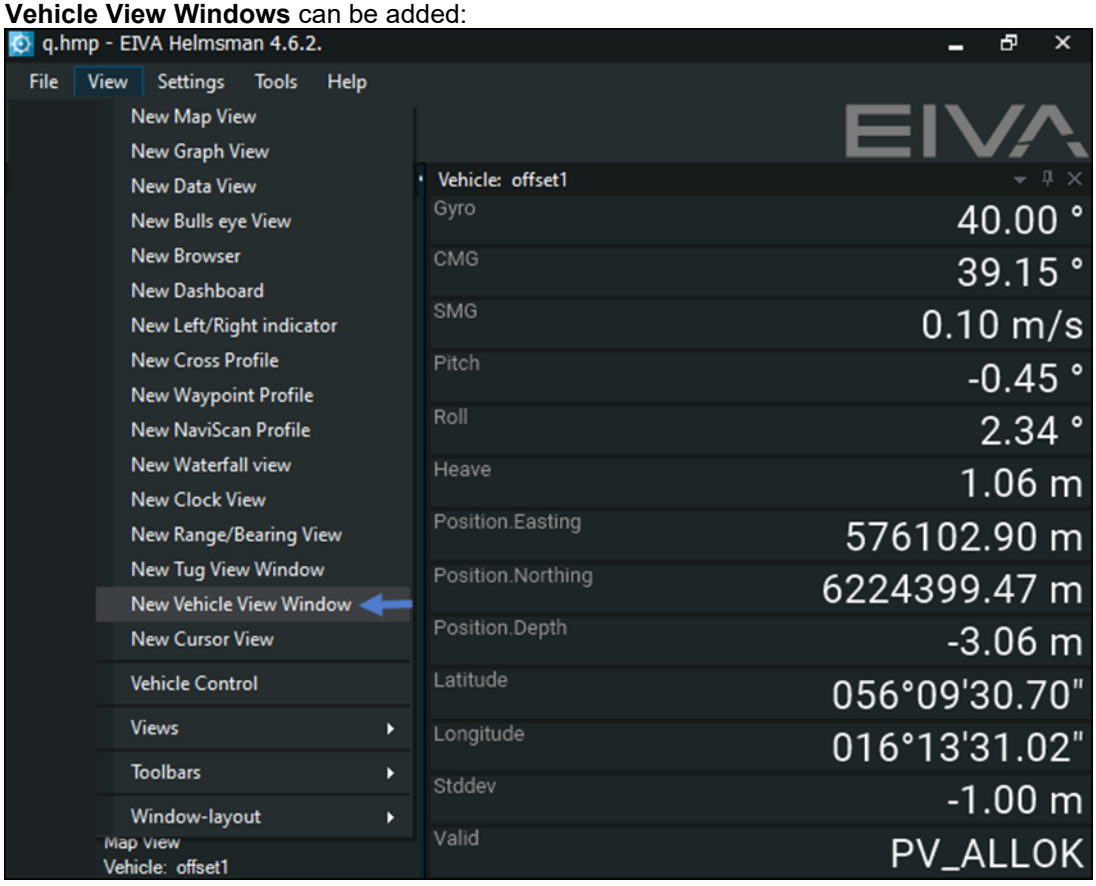


Figure 8 Option to open a new Vehicle View window

- Helmsman saves automatically if there are changes. There is no need to save Helmsman projects manually anymore
- In **TMS New Tug View Window**, where the operators should have a clean and minimalistic screen, the user can autohide the **Project tree** and **Properties** views. The settings persist after restart [FD-51744]
- Remote computers (Remotes) are automatically synchronized if the user removes a **3D Map** view on the main navigation computer (Master)
- The Helmsman visibility checkbox settings on remotes are synchronized with the settings on the main navigation computer (Master)
- DP waypoints are transmitted from the supervisor computer to the vessel
- The user can have multiple background maps at the same time (NaviModel 4.6) [FD-50197]
- Fixed issue with vertical intensity artifacts shown in the NaviModel and Helmsman 3D Map view [FD-50483]
- The **Vehicle track line** style can be changed to unconnected dots [FD-52185]
- Helmsman does not crash when the track is set to True and zero minutes is used for length [J-22729]
- Improved surveyed range display to highlighting the line for the surveyed length
- The Raster export-, LAS export and charts settings persist [FD-52117]
- In **Vehicle Control** view: **Auto. Start/Stop Surveying** works also with inversed runline direction
- The runline has now the option **Physically Invert** so that KP0.000 is switched to the other end. This is the same as in Helmsman Classic [FD-52534]
- Improvements to the Lawn mower pattern (to use bulge turns as dictated by the turn radius)
- New export format (Line-Longitude DDD:MM:SS.SSSS) from a digitised line. The export works with local and WGS84 Geodesy [FD-52189]
- Confinement zone: alarm sound should stop when the vessel is inside the confinement zone [J-22192]
- Tried fixing a general position latency issue

4.2.7 NaviPac patch 4.6.1

An internal service pack (ie not officially released), from December 2022, mainly including modifications to the kernel side of NaviPac.

- Sprint Nav Mini HNAV depth telegram using -depth as antenna height [22529]
- Allowing zero translation values for User Defined Datum Shift (ITRF) [22621]
- Allowing starting-up with transponder code = 0 (zero) (not recommended)
- Re-enabled the DataOutputControl.exe driver [22628]
- Re-enabled **Use Z from navigation source** option (NaviPac.exe)

4.2.8 NaviPac 4.6

NaviPac 4.6 is a major release from October 2022 that primarily implements Windows 11 compatibility for NaviPac. It introduces a new time service that allows the kernel to set the PC clock when appropriate without the need for admin rights to the hosting user account.

This release also implements a new flight mode for users of EIVA's ScanFish remotely operated towed vehicle (ROTV), as well as several new features and fixes to Helmsman.

4.2.8.1 ScanFish Vessel-aided Terrain Follow mode

Traditionally, EIVA's ScanFish ROTV uses a built-in altimeter to follow the seabed and obstacle avoidance. This method potentially detected steep obstacles like shipwrecks and rocky outcrops later than ideal.

To further decrease the risk of steep obstacles causing sudden movements (or, in the worst case, collision), EIVA has developed the **Vessel-Aided Terrain Follow** mode. With the help of a multibeam echo sounder (MBES) mounted on the towing vessel and NaviPac's calculated real-time digital terrain model (DTM), a new surface for ensuring a smoother vertical route is calculated in the form of a DTM that smoothly avoids the sudden steep incline/decline.

This new surface takes obstacles in front of the ScanFish into account earlier than an altimeter and, via corrections sent to the ScanFish Flight software, it adjusts altitudes accordingly. This results in safer operation and improves the quality of the data.

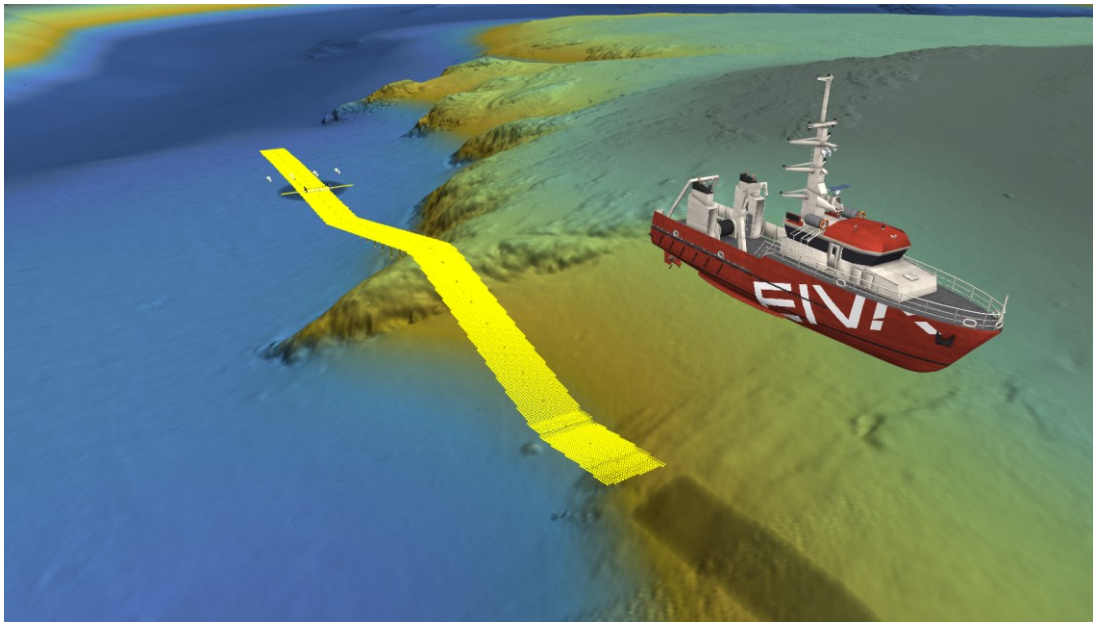


Figure 9 NaviPac Vessel Aided Terrain Follow mode – In yellow, the calculated smooth DTM shows the route now corrected for by the Vessel Aided Follow Terrain mode feature

This flight mode is found in to NaviPac's **Menu Bar**. there click **Tools** > **Misc**, and after establishing a connection to the ScanFish it opens the **Vessel-Aided Terrain Follow** view. The view can be freely docked and will show a **Correction** value in the top. The correction is calculated from the active surface based on the user defined **Settings**. This correction is the output sent to the ScanFish to avoid any obstacles. Details on settings and how they affect the correction will follow in the next sections.

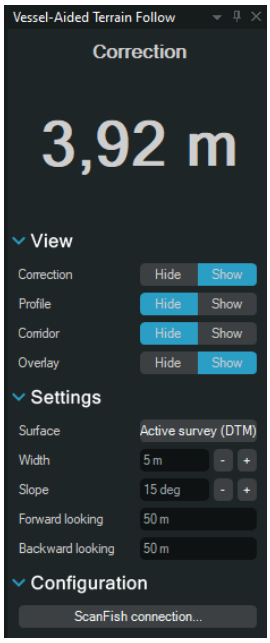


Figure 10 Layout of the Vessel-Aided Terrain Follow View

To guide the ScanFish safely and optimally along the route, the **Vessel-Aided Terrain Follow** mode uses the position of the ScanFish and either a live or historical terrain model, as well as a corridor and smoothing factor.

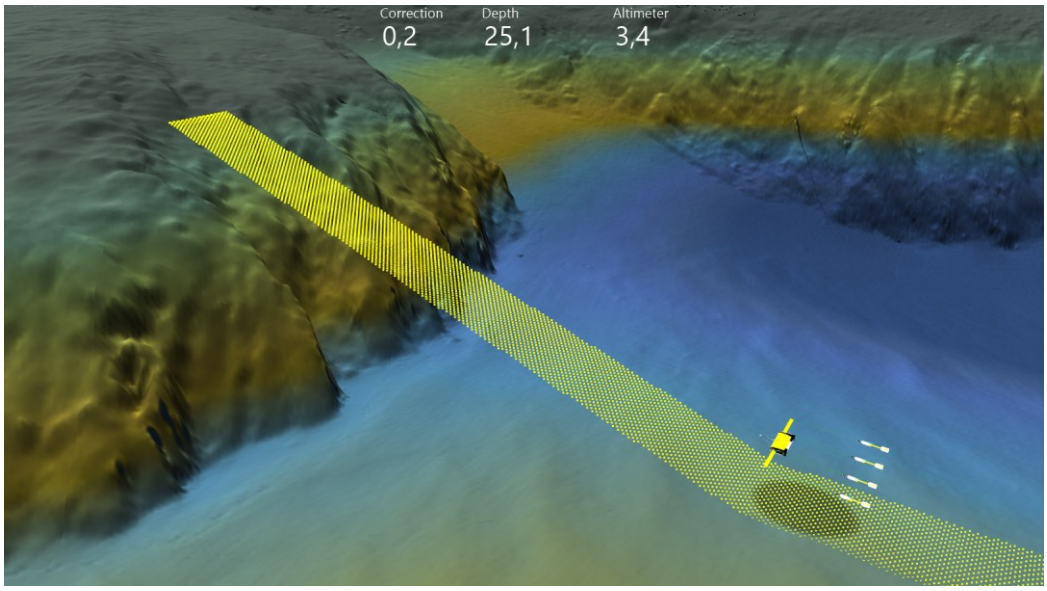


Figure 11 Corridor corrections visualised as a smooth DTM (yellow)

This functionality requires that you are operating the most recent version of the ScanFish Flight software.

4.2.8.2 New features in Helmsman 4

- Added new **Snapshot** tool [22236]
- Added new feature **Optimal parallel runlines**:
  - Use partial pre-survey of boundary and potential cross lines to generate optimal route plan:


Figure 12 Pre-survey boundary

The design tool will generate optimal parallel lines to ensure coverage with minimum number of lines:

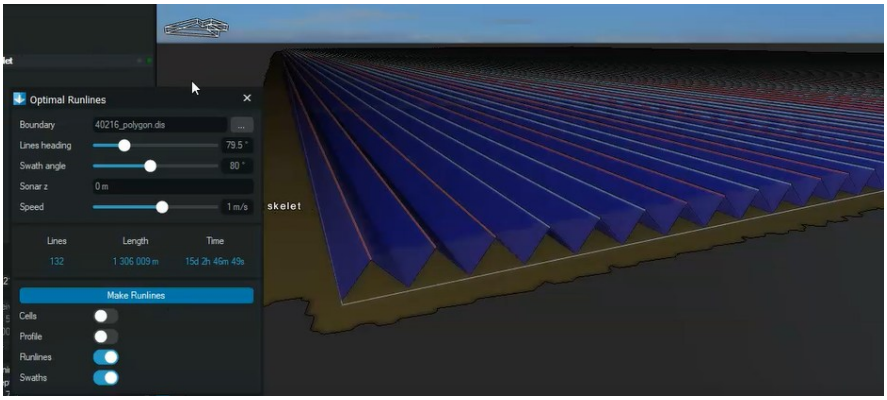


Figure 13 Generated optimal parallel runlines

- Added degree units and next segment heading after arc in Live data [22318]
- Added runline length to **Live data**
- Added highlight of fully/partially surveyed (completed) runlines

- Added new **Distance Counter** option [21942]

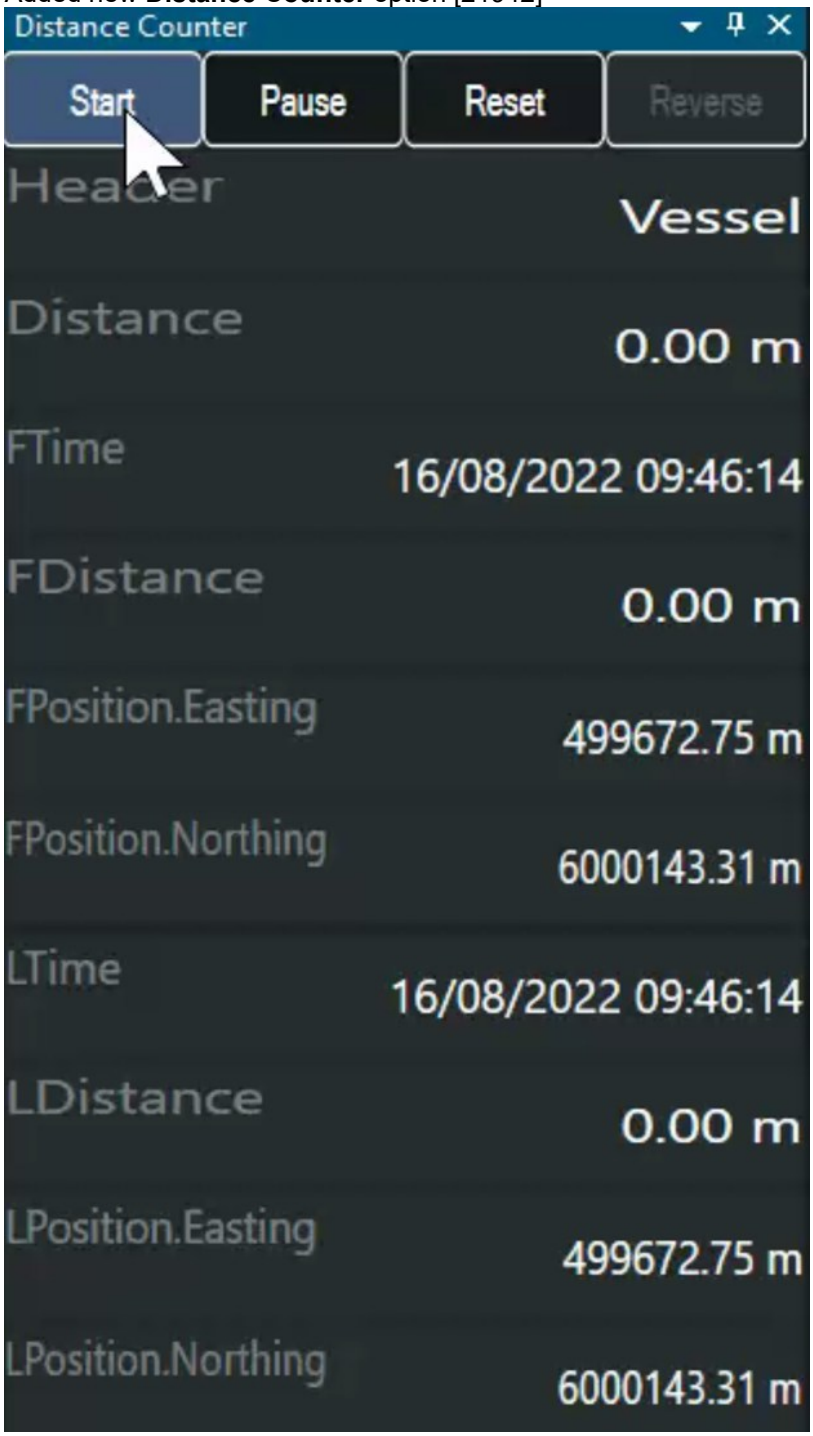


Figure 14 Distance Counter option

- Added ability to change colour of all waypoints [22321]

- Added centre height from NaviScan to be displayed in Helmsman [2632]
- Added option to turn off confinement overlays [22365]
- Added **Live data** overlay for Vessels with overlay attached to cluster name [22261]

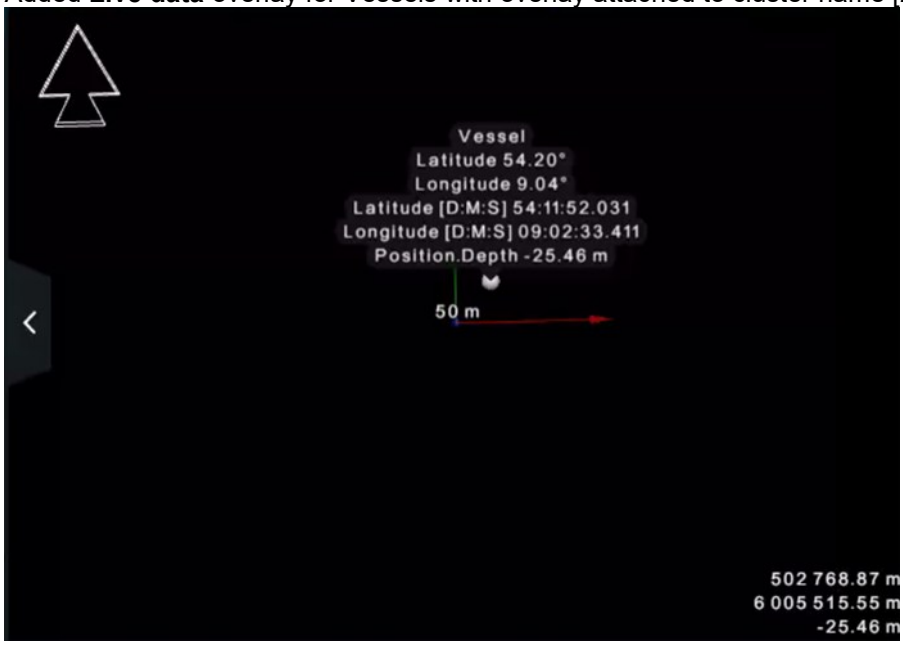


Figure 15 Vessel with Live data overlay

- Added filters to **List select** window as well as using the users current theme

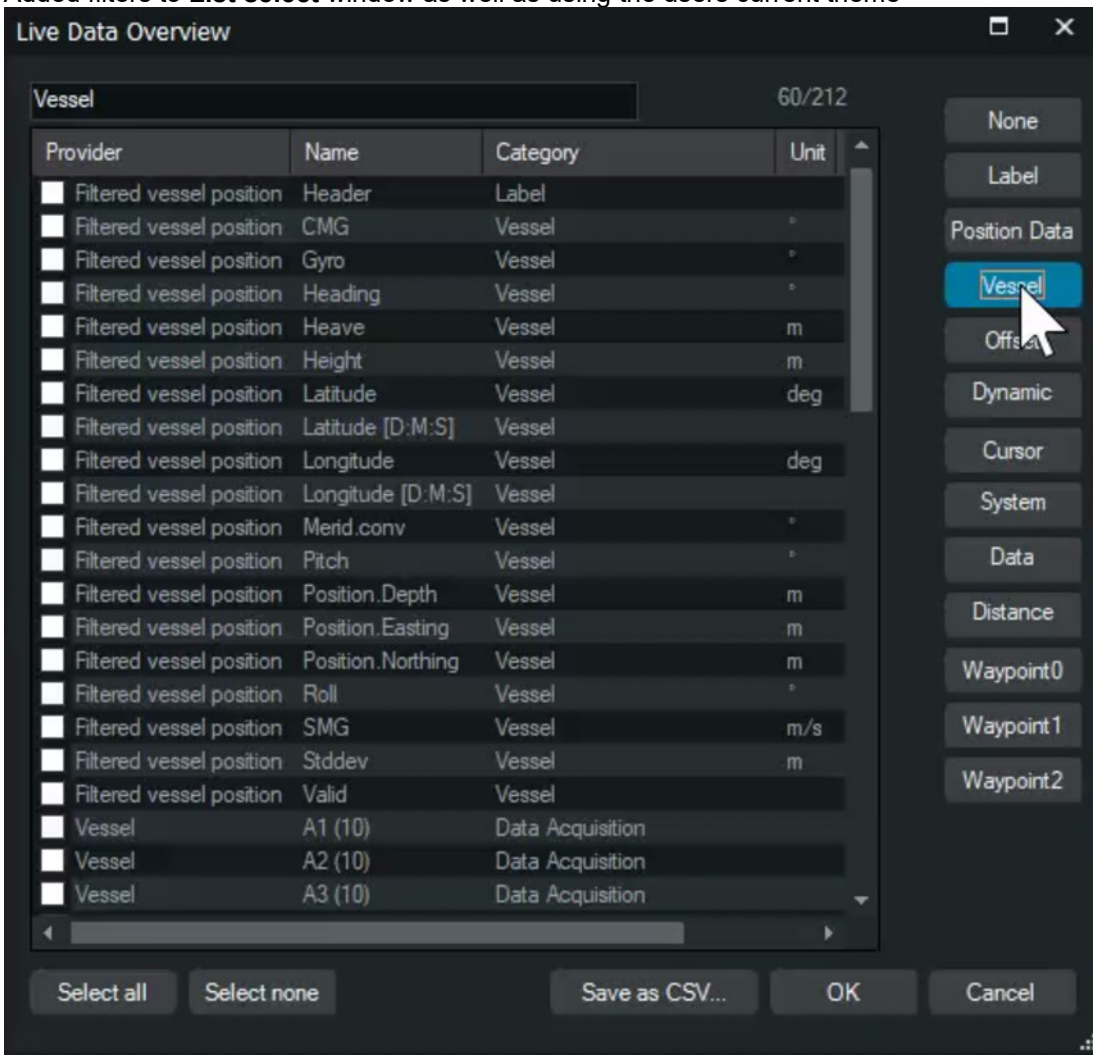


Figure 16 Live Data Overview with filters

- Allows user to turn off AIS arrows or make them more transparent [22296]
- Allows user to show fixed length for the **Heading** attribute [2633]
- Allows changing name in **Data views** and the **Vehicle view** [22272]
- Split **Position Data** into categories, such as **Vessel**, **Offsets**, **Autonomous Vehicles**, and **AIS** so that mistakes are less likely in high pressure situations [21836]
- Fix to **Updating tug view** window when changing object [22327]
- Fixed **Track plot clear** option [22289]
- Fixed wrong ETA-EOL for inversed direction [22254]
- Fixed DD:MM.mm in dashboard to DD:MM:SS in accordance with legend [22256]
- Applied meridian convergence for segment true heading and bearing [22255]
- Disable warning in Live data now persists (depth data item) [22271]
- Improved **Tug view** [22202]

- Improvements to Remote syncing
- Improved **Vehicle control** to always have the first item selected, and by default all icons work with the first item
- Wizard no longer shows if recent project has been activated for Helmsman only
- Improved sync of remotes when changing projects
- Improvements to sequential runline stepping
- Auto stop / start logging, deselects the line and stops logging after it has run out of the line
- Only commit exclusion zones with mission, not singular mission items
- Fix to GeoJSON for Drix
- Fix to NaviPac connection and references, improved connection behaviour
- Fix to confinement zones

4.2.8.3 Minor fixes and improvements

- Windows 11 compatibility (using the new Eiva Time Service)
- Updated log headers after Online change of Offsets/POIs [13046]
- NPConfig has been deprecated [21877]
- Fixed potential blocking of kernel when running 10Hz [22432]
- Fixed USBLfix, XYZCal, FileAsc and other modules, potentially showing empty map views [15514]
- Re-enabled differential USBL (dUSBL.exe) [22070]
- Improved pairing of original TP code with edited counterpart in Online [22447]
- Upgraded the DataOutputControl.exe module with SPRINT-Nav Command & Control capabilities (only manual C&C)
- Added gyro and motion sensors for LBL combined object [22339]
- Allows unlimited number of remotes for NaviSuite Kuda Pro [22427]
- Otherwise fully matches NaviPac 4.5.8