

RELEASE NOTES

NAVIPAC 4.6

Last update: 12/10/2022 Version: 4.6



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1 Release notes NaviPac 4.6

NaviPac 4.6 builds on top of NaviPac 4.5.8 but introducing Windows 11 compatibility and a new NaviPac supported flight mode for ScanFish ROTV users.

The history of all service patches for NaviPac 4.5.x and 4.6 is presented – starting with the most recent.

This version is named 4.6 to keep number compatibility with NaviModel.

Where noted, reference the EIVA tickets for details.

1.1 Formatting conventions

Items formatted in **bold** are properties, buttons, or other elements in the NaviPac software. Numbers in [] refers to Fresh Desk support ticket.

2 NaviPac 4.6

NaviPac 4.6 is a major release from October 2022 that primarily implements Windows 11 compatibility for NaviPac, introducing 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 remote operated towed vehicle (ROTV), as well as several new features and fixes to Helmsman.

2.1 ScanFish Vessel-aided Terrain Follow mode

Traditionally EIVA's **ScanFish** (remote operated towed vehicle (ROTV)) uses a built-in altimeter to follow the seabed and obstacle avoidance. This method potentially detects steep obstacles like shipwrecks and rocky outcrops later than is 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 smooth DTM (a digital terrain model corrected for smoothly avoiding the sudden steep incline/decline).



This new surface takes obstacles in front of the ScanFish into account earlier on than an altimeter and by corrections send to the ScanFish Flight software, it changes altitudes accordingly. This results in safer operations and improves the quality of the data.



Figure 1 NaviPac example: Vessel-Aided Terrain Follow mode. In yellow, the calculated smooth DTM shows the corrected route for the ScanFish made by Vessel-Aided Follow Terrain mode

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.



Vessel-Aided Terrain	Vessel-Aided Terrain Follow $~$ \neg \Downarrow \times							
Correction								
ି ମ ପ	2 1	n						
0,0	∠ I	••						
✓ View								
Correction	Hide	Show						
Profile	Hide	Show						
Corridor	Hide	Show						
Overlay	Hide	Show						
✓ Settings								
Surface	Active sun	vey (DTM)						
Width	5 m	- +						
Slope	15 deg	- +						
Forward looking	50 m							
Backward looking	50 m							
✓ Configuration								
ScanFish connection								

Figure 2 Layout of the Vessel-Aided Terrain Follow View

To guide the ScanFish safely and optimal 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 3 Corridor corrections visualized as a smooth DTM (yellow)

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



Please request dedicated manual for the topic.

2.2 New features in Helmsman

- 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:



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





- 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]

→ Ҭ ×	nter	Distance Cour
Reset Reverse	Pause	Start
Vessel	r	Heade
0.00 m	e	Distanc
16/08/2022 09:46:14	į	FTime
0.00 m	ice	FDistan
499672.75 m	asting	FPosition.E
6000143.31 m	orthing	FPosition.N
16/08/2022 09:46:14	i	LTime
0.00 m	ce	LDistan
499672.75 m	asting	LPosition.E
6000143.31 m	orthing	LPosition.N



- Added ability to change colour of all waypoints [22321]
- Added center height from NaviScan to be displayed in Helmsman [2632]
- Added option to turn off confinement overlays [22365]
- Added Live data overlay for Vessels, overlay attached to cluster name [22261]





/essel			60/212	Marca
Provider	Name	Category	Unit 🔺	None
Filtered vessel position	Header	Label		Label
Filtered vessel position	CMG	Vessel		Position Da
Filtered vessel position	Gyro	Vessel	10 A	
Filtered vessel position	Heading	Vessel	•	Vesrel
Filtered vessel position	Heave	Vessel	m	05
Filtered vessel position	Height	Vessel	m	Official
Filtered vessel position	Latitude	Vessel	deg	Dynamic
Filtered vessel position	Latitude [D:M:S]	Vessel		
Filtered vessel position	Longitude	Vessel	deg	Cursor
Filtered vessel position	Longitude [D:M:S]	Vessel		System
Filtered vessel position	Merid.conv	Vessel		System
Filtered vessel position	Pitch	Vessel		Data
Filtered vessel position	Position.Depth	Vessel	m	-
Filtered vessel position	Position.Easting	Vessel		Distance
Filtered vessel position	Position Northing	Vessel	m	Waupoint
Filtered vessel position	Roll	Vessel		waypoint
Filtered vessel position	SMG	Vessel	m/s	Waypoint
Filtered vessel position	Stddev	Vessel		
Filtered vessel position	Valid	Vessel		Waypoint
Vessel	A1 (10)	Data Acquisition		
Vessel	A2 (10)	Data Acquisition		
Vessel	A3 (10)	Data Acquisition	-	
•			*	

• Added filters to list **Select window** as well as using current theme

• Allowing user to turn off AIS arrows, also make them more transparent [22296]

- Allowing user to show fixed length for the Heading attribute [2633]
- Allowing 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]
- Persisting Disable warning in Live data (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



- Not showing wizard 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, should also deselect the line, stop logging, after it is 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 behavior
- Fix to confinement zones

2.3 Minor fixes and improvements

- Windows 11 compatibility (using the new Eiva Time Service)
- Updating 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]
- Allow unlimited number of remotes for NaviSuite Kuda Pro [22427]
- Otherwise fully matching NaviPac 4.5.8

3 NaviPac 4.5.x Patch History

NaviPac 4.6 includes all fixes and patches to NaviPac 4.5.

3.1 NaviPac Patch 4.5.8

A small hotfix from September 2022 including minor modifications to the kernel side of NaviPac.

- NaviPac is now accepting spaces in the installation path (Mobula)
- Fixed surface navigation for POSMV Group 1 (II) [22351]
- Revised HNAV interpreter (PosQuality (HDOP) clamped to max 25)
- Added 2 extra Free ASCII dynamic position drivers [22215]
- GPSTide time in local time (also averaged GPSTide) [22237]
- Fixed wrongly formatted motion data in custom NPD output [22105]
- Vehicle (Tug) headings for dynamic remote objects [22252][22188][22326]



3.2 NaviPac Patch 4.5.7

A small hotfix from June 2022 including minor modifications to the kernel side of NaviPac.

- Online (and GPSstatus) showing (X) (Y) [22208]
- NaviPac Single User allow for single remote client [22244]
- Vehicle headings for dynamic remote objects [22252] [22188]
- Depth as height for SPRINT-Nav (mini) surface navigation
- Revised raw play back modules (NPRawLog, NPRawPlayback, NPPBDio), handling larger NaviPac databases (>100kB) [22212]

Beside that a series of improvements and bug fixes have been added to the HMD.

- Data view and video overlay can show lat/long in degrees/minutes/seconds with symbols [22190]
- Runlines run-in and run-out always visible [22232]
- Vehicle control Added Next segment distance/length and heading in true and grid [22222]
- Helmsman Remote/Local Waypoint Edit [22226]

3.3 NaviPac Patch 4.5.6

A small hotfix from March/April 2022 including new drivers and minor modifications to the kernel side of NaviPac.

- All Sonardyne SPRINT-Nav (LNAV) port drivers have been rewritten, now supporting 512 bytes packeted messages (UDP) as well as full TCP support (new)
- Added port driver and interpreter for instrument SPRINT-Nav Mini (HNAV)
- Added surface navigation for SPRINT-Nav and SPRINT-Nav Mini
- First draft: added surface navigation for POSMV Group 1 (II) and PHINS/ROVINS
- Added 10 extra User Defined Outputs
- Added 'On Deck Location' for PHINS driver [21990]
- TMX_WD module warm start delay (same as timeout period) [22066]
- Fixed bad interval/rate of data item 'Raw Instrument' in User Defined Output [22079]
- Ignoring User Defined Outputs not set to ON
- Fixed possible crash when starting an external module from NaviPac.exe
- Revised and updated LegMon module plus drivers to be NaviPac 4.5 compatible
- Added prism offset for Remote Fanbeam and Topcon Totalstation [22048]
- Changed default driver type to NMEA for Remote GPS 1-10 [22029]
- Updated leap time to 18s [22071]
- Creating (updating) the ..\Setup\PHINS.INI file at start-up with port no. [22078]
- Increased merge timeout to 60s in NaviPac installer (navipac.ini) [22107]
- Datamon/IODesigner reconnect issue [22120]
- External trigger can trig (as short interval as) 2x cycle time [22171]
- Added decoding of pos.item (transponder no) in PSIMSNS [22177]



- Remote dynamic objects now also part of NP 4's combined object solution [22188]
- Fixed wrong KP (seen in DataMon) if KP factor is not equal to 1.0 [22185]
- Fixed wrong DOL in custom logging [21907]

Beside that a series of improvements and bug fixes have been added to the HMD.

- Added support for creating parallel runline using digitized line on both sides and use digitized or displayline as boundaries [22142]
- Fixed exporting along runline in an USFt project [22090]
- Fixed/added missing runline data values, needed by the kernel [22185] [21907]
- Added selection of newly added event [22122]
- Expanded no. of decimals to 3 for KP in the Vehicle Control view

3.4 NaviPac Patch 4.5.5

A small hotfix from November 2021 including driver and minor modifications to the kernel side of NaviPac.

- UDP drivers extended to support multicast recommended for use of Sonardyne SPRINT-Nav (LNAV data input). Multicast uses address space from 224.x.x.x to 239.x.x.x
- Driver problem for Sonardyne LBL TP code fixed
- Bug in data handling from GECO GPS driver fixed
- Data output to external navigation system (eg NaviPac tug/barge) allow selection of POI [36843]
- Possible to send secondary vessel position in user defined data outputs [37476]
- Support of Kongsberg PSIMSSB M code transponder
- NaviPac config better open/close of subprograms
- NaviPac config added default path for 3D models [36528]
- NaviPac config fixed an issue where multiple instruments could end up with the same unique setup id
- Improved alignment of icons in Input Monitor
- Improved header information H6 for prioritized navigation
- Read and display of VORF height files could possibly be wrong in config
- Telemetry multiplexer improved help text
- Telemetry multiplexer watch-dog support up to 3 instances
- Telemetry GPS status share sending updates more frequently

Beside that a series of improvements and bug fixes have been added to the HMD.

- Optimization of CAD file loader
- We can now select a runline from map view. Select the line on the map view and the Select column in the vehicle control changes to the runline name, if correct click





the select button in the vehicle control, that relates to the corresponding vehicle:

Figure 4 Runline selected at map



Figure 5 Runline activated

- Allow keyboard shortcuts to be used for the Vehicle Control
- Easier to see font colour in tree view



- Improve remote synchronization
- Prevents Remotes from making a track
- Improved master/remote sync of Vehicle Control [39891]
- Fix crashes
- Fix to Autozoom
- A new Easy rectangle Event type is available
- Now it is possible to block shift multiple events to pipe by meters/usft from the event window
- Enter position... has been fixed to allow different number formats, and allow lon/lat.
- Range/Bearing view true bearing fix and clear indication between Grid and True bearings
- Improved ETA calculation and display for Range/Bearing views
- Online eventing possible to add live data
- A fix to event collection, that can help the user edit the GUIDs of an event collection, if an event collection already exists in the project with those same GUIDs
- Eventing fix to date export
- Can export event table grid to CSV
- Events can now record live data
- Eventing Highlander mode reintroduced into Helmsman.
- Barge runlines protect against inverting [41696]
- Position information in the lower right corner of the 3D view is now printing using a font setting that makes each numeric digit equally wide. This way, the overall appearance of the position information is jumping a lot less
- The "Follow object" algorithm has been improved to minimize jumping. This produces a calmer image

And especially related to RIGMove and tug management.

- Flexible tug view settings including change of tugboat
- Show runline DOL instead if Tug is navigating a runline
- Fix to intended position gyro
- A new view called the Runline view has been added
- Runline, Range/Bearing and tug views are more consistent with each other, and improvements made to the views
- Tugs remove runlines when requested to by Barge
- Fix to range bearing info
- Allow name change to intended position
- Improve move anchor/proposed position/intended position

3.5 NaviPac Patch 4.5.4

A small hotfix from June 2021 including driver and minor modifications to the kernel side of NaviPac.

- Sonardyne LNAV datainput default telegram length adjusted
- Problem saving USBL Calibration data fixed [21827]



- Position fix calibration save timestamp in ASCII data log
- Stopping RIGSetup when stopping NAVIPAC [J21827]
- Telemetry polling better explanation in help text and bug fixed for no 2 and 3
- Critical bug fixed in template tracking failed when having unused transponders
- Improved debug trace log
- Custom log setup scroll-bar for long item names added
- Added manual on HMD safety zones
- Updated help file NaviPac Online
- Updated help text on NAVIPAC remoting

The Helmsman's Display have been undergoing a series of tests and improvements especially in relation to remote and remote supervision.

Remotes

- · Remotes syncing has been improved and optimized
- Syncing 3d objects and 2d shapes has been improved
- Fixed AIS object shapes to properly reflect the AIS properties
- AIS objects can be allowed into exclusion zones without causing alarms, from the AIS node properties
- Exclusion zones and Inclusion Zones as well as all attributes are synced to remotes
- Remotes can add and create objects and will be marked with a blue sphere indicating it's a local file
- Remotes can delete all local files, so if a file is deleted off the master, and the autodelete function doesn't work, the remote will show it as a local file
- Remote service can limit files according to file size, and filter according to name and type, and location to help prevent unwanted files from being synced:

roperties	· · · · ·
General	
Name	Distribution Remote 192.168.1.101
Information	
GUID	
Distribution Path	
Remote	
Warning	
Master ServiceVersion	
Remote ServiceVersion	
Status	
Master IP Address/Computer Name	
Port	
Services	
Master Service	
Remote Service	Running
Edit Filter	Filter
Update Master/Remote connection	ReSync
Remote Sensors	
Info HTTP URL	
Max File Size	4
Max File Size Limit	Edit max file size limit
Supervisor IP Address	
My IP Address	10.12.0.6

• A new visibility feature has been added to the remotes, found on the context menu of the distribution node. It allows the user to lock, or unlock an objects visibility from the master, so items like drawings can be dictated by the master, whilst certain



			Selected Locks	Visibility to Master				×
			<search filter=""></search>					
			Name					
			✓ 3D Models					
			✓ 3D Models					
	-		✓ 3D Models	/mine.3DS				
Project Iree	▼ 4	X	✓ 3D Models					
a12.hmp			Digitized Lir					
V Nummes			Digitized Lir	nes / Digitized_line				
Toppings			🗹 Digitized Lir	nes / Digitized_line				Ξ.
V Events			🗹 Drawings					
Waypoints			Drawings /	208725-JUST-CONTAC				
Digitized Lines		**• .	Drawings /	208725-JUST-CONTAC				
V Online	on 192 169 1 101	°••.	Drawings /	208725-JUST-CONTAC	TS / AVOIDANCE_ZONE			
Distribution Pom	oli 132.100.1.101	· · · · ·	✓ Drawings /	208725-JUST-CONTAC	TS / DEFPOINTS			
✓ Vehicles	Remove Del	*°•,	✓ Drawings /	208725-JUST-CONTAC	TS / GEO-SONAR			
Vess	ReSync With Master		✓ Drawings / ✓ NaviPac Co	208725-JUST-CONTAC onnection 192.168.1.101	TS / INDUSTRIAL-BARRE / Fairleads	LS		
 USBL	One Distribution Law Mindaw		V NaviPac Co	onnection 192.168.1.101	/ Fairleads / W1			
🗹 Towf	Open Distribution Log window		NaviPac Co	onnection 192.168.1.101	/ Fairleads / W10			
🗹 Towfi	Choose Sync Visibility 4		NaviPac Co					
offse	Force Into Supervisor	1	NaviPac Co	onnection 192.168.1.101	/ Fairleads / W12			
offse	Refresh Vehicle Control		NaviPac Co					
✓ offset	Get NaviScan Files From Master		NaviPac Co	onnection 192.168.1.101	/ Fairleads / W14			
Priori	Refresh MasterProject		🗹 NaviPac Co					
Palettes Color modes	CreateDiagnosticsFile	2020 1030 1159	NaviPac Co	onnection 192.168.1.101	/ Fairleads / W3			
Properties ⊟ General	Silent Mode	× Depth (m) ▲ -1.62	Select all	Select none	Save as CSV	<u>DK</u>	Cancel	

lines, NaviPac Objects and runlines visibility can be set locally:

- Auto-filtering on the master is longer done to drw1 files, and thus these will always be distributing unless user filters manually
- DTMs are no longer synced and are expected to be put on a common shared network drive, and marked external

Supervisor:

- Supervision has been improved and optimized
- Supervisor can let user know if remote is not currently fully synced with master prior to starting supervision
- Uploading objects with 3d objects and 2D shapes has been improved

Operational

- If an object has both a 2D/3D model attached, the 2D shape will be shown in 2D and the 3D model will be shown in 3D
- NaviPac shape files close the polygons correctly now
- Geojson exports of runlines waypoints, lines and exclusion zones





• Confinement Zone is highlighted when breeched:

- RIGMove Intended position Name gets name from NaviPac messages
- Initial loading of ACAD files have been optimized for speed
- Crash and bug fixes

3.6 NaviPac Patch 4.5.3

A small hotfix from April 2021 including driver and minor modifications to the kernel side of NaviPac. Note – Helmsman's Display is identical to version 4.5.2

 Template tracking [38087] Calculation of heading based on two or more USBL transponders failed in v 4.5.2



- Dynamic positioning via total station (AGA/Leica expanded) so user can define:

- Prism offsets (to enable multiple prisms on target)
- Data latency
- Tracker mounting
- Enable/disable roll/pitch compensation
- Teledyne DVL extended to support Schilling CDL format
- NMEA Win driver direction and speed were swapped around
- Enabled selection of recording data units
- Bug in interpreting Topcon total stations for dynamic positioning
- Improved installation of Crystal Reports used by EIVAStat
- Protecting against double starting NaviPac from the start button
- Updated manuals and help files

3.7 NaviPac Patch 4.5.2

This small hotfix patch from March 2021 includes a series of bug fixing.

- Combined positioning [36744] The final position calculations of eg USBL based input had a weakness in the offset calculation when using large offsets and lars roll/pitch values Related to consistencies in **Euler** vs **Tait–Bryan** angle handling. This is also included in upcoming NaviEdit release
- M-type transponders Fixed gyro/heading issue with (HiPAP) M-type transponders (internally being increased with 300, e.g. 43+300=343)
- Uninstall
 Protect against removal of user files [36548]
- Configuration
 - Warning added when removing POI [36529]
 - Select the POI after adding it [36257]
 - List all transponders on USBL system (right click on master) [20503]
 - User defined output: wrong handling of double click on arrow [36447]



- Allow use of underscore in names [36360]
- Improved use of vehicle number [36353]
- Helmsman's Display
 - Support for System 34 geodetic setup
 - Exclusion zones enabled on live data (eg range/bearing connections)
 - o Improved NaviScan reconnection
 - o Video overlay not shown on top of pinned views
 - Allow export of events
 - Improved handling of Alarm list only keep most recent item of each alarm
- Interfaces
 - Port towards Sonardyne SPRINT-Nav improved to include reconnection in case of lost link
 - Bug in online change of transponder codes fixed
 - o I/O Monitor faster update of status parameters [36444]
 - Distance shooting linked events: Extended to use separate event numbers
 - Potential bug in Phins gyro fixed [37414]
 - Extended Leica Autotrac 1 to also support 789 protocol
- Telemetry watchdog is also stopped by Stop NaviPac
- Online event setting: Removed buttons that only apply in configuration mode
- Event log files allow longer vehicle names
- Updated documentation

3.8 NaviPac Patch 4.5.1

This small hotfix patch includes some bug fixing.

ITRF

The user interface for selecting ITRF in the NaviPac configuration tool were shown blank despite selections made in the project – which could result in setting it faulty the second time

- Helmsman's Display
 - Fixed crash in Remote helmsman due to anchor handling tool
 - Fixed remote objects visibility not persisting after loading a saved project
 - Adding data items in the tug view means to show/unshow (untick and tick) items
 - Removed the remotes' ability to sync range bearing, dashboards, data views, and anchor handling views
 - When using Manage safety zone, and selecting an object, the settings don't persist when reopening the project
 - Other minor crash reports fixed
- More reasonable warning given when missing admin rights
- Sensor data
 - Kongsberg PSIMSSB ignoring special case for M nodes (workaround)
 - PHINS interfacing did not always remember status after restart
 - Possible dual event trigger added



- Added FAE LS1501 laser acquisition driver
- Signing of ATTUMon

3.9 NaviPac 4.5

3.9.1 Rig Move and Tug Management

A huge part of NaviPac 4.5 consists of the Rig move / anchor handling tool. We have implemented all components from version 3 – and made sure that the new way of behaviour fits with the previous version so the move over should be easy – you will recognise the terms and settings.

Enabling the setup is done via the NaviPac I	Project Settings:
--	-------------------

Project Settings			×
NaviPac	Rig/Barge Move or TMS		
Warm Start	4		
GPS	Enable Rig/Barge Mov 🔽		
Filters	Use as TUG Boat		
UW and Remote Navigation			
Advanced			
Survey Parameters			
Rig/Barge Move or TMS			
Telemetry Multiplexer 1			
Telemetry Multiplexer 2			
Telemetry Multiplexer 3	Enable Dig/Darge Meye or TMC		
NaviScan	Put NaviPac into Rig/Barge Move mode or TMS (Tug Management) mode.		
	ОК	Cance	4

Figure 6 Enabling use of Rig move

You can configure the barge and up to 16 anchors, as you could in version 3.



🔀 RIGSetu	p					×
XY View sc	ale (1 cm = x m) 20	0 Drag cursor in order to re-centre the vessel.	Load Setu	ир	Save S	etup
	ନ୍ଦୁ	8		Rese	t !!!	
6226	6400		Number of	Winch po	oints:	3
37	Z I		To use Aut Define wind	o Calcula ch points	te all Ancł clockwise	nors: IIIII
	\sim		Winch	×	Y	z
			Winch 1	10.00	59.00	0.00
0000		Q	Winch 2	26.00	57.00	0.00
6226		WWWWWWW 12	Winch 3	26.00	-42.00	0.00
			Winch 4	5.00	-42.00	0.00
\$ 6		A ALAMATIC - LED	Winch 5	-20	-42.00	0.00
			Winch 6	-41	-42.00	0.00
			Winch 7	-41	57.00	0.00
581289	5600 0 <u>9</u> 55 189	Q. 89	Winch 8	-25	59.00	0.00
- Big/Barge	a Lauout	-54	Placemer	at Che	uu Anohor	
r ng/bargo	s Eayout		V.Z.II.	A adama	W Anchor	5 💌
Outline/S	hape file:	Select Edit	Well:	Aarnus		
C:\EIVA\	NaviPac\Setup\Viki	ng.shp	Easting:		581600	
Name:	Svanen		Northing:		6226000	
Client:	Company		Grid Hea	ding:	10	
Close	Apply		A	nchor Po	sitions	

Figure 7 Configuring barge and fairleads

The interfacing between barge and tugs can take place using telemetry or IP based media (WLAN or mesh network), and NaviPac sends a combination of data to external navigation system, data and commands to tugs boats and remote NaviPac control:



Vehicles						÷		Properties	~ û
							l	nstrument	
🛥 Barge					\oplus \otimes	-		Misc	
SurfaceNavigation	ø	Gyro	ଷ	DynamicPositioning	(0)			Name	Data to tug boats
				Describe describe a bis sta	1 (1)			System Name	
GPST (NMEA)	_	Octans gyro (ixsea)		Remote dynamic objects				Instrument ID	
								I/O Mode	ON 🗸
DataOutput) ()	Misc	0					Info	
Data to ext. nav. system		From Remote NaviPac	- control					Setup Id	
								I/O	udp://127.0.0.1:5000/
Data to tug boats								Format	EIVA NaviPac - NaviPac 🗸
Remote NaviPac - Control								File based output	
								Recording path	C:\EIVA\NaviPac\Data
•					$(\mathbf{+})$			File splitting	NONE
									100

Figure 8 Configuring barge outputs

Vehicles						=	Properties	~ ù
Tug1					$\oplus \otimes$		Instrument	
SurfaceNavigation	ø	Gyro	8	DynamicPositioning	(i) (ii)		⊿ Name	Tug2 - TP32
							System Name	
GPSI (INIMEA)		Octans gyro (ixsea)		Remote dynamic objects	S1 2		Instrument ID	
							Info	
DataOutput	æ	Misc	0				Setup Id	
Data to ext. nav. system		From Remote NaviPac -	control				TP Code	
OpamicPositioning Barge - TP30	(0)	⊕⊗			Đ			
· ·	_	÷				- 11		
DynamicPositioning	(0)	\oplus \otimes						

Figure 9 Tug1 receiving barge and other tugs from the barge

Vehicles						Ŧ	Properties	~ û
						<u> </u>	Instrument	
Tug1					$\oplus \otimes$		⊿ Misc	
SurfaceNavigation	ø	Gyro	8	DynamicPositioning	(0)		Name	From Remote NaviPac - co
				Design to the local	1 1		System Name	
GPSI (INIVIEA)		Octans gyro (ixsea)		Remote dynamic object	51 2		Instrument ID	
	With a		1042				I/O Mode	ON 👻
DataOutput	œ	Misc	0				Info	
Data to ext. nav. system		From Remote NaviPac -	control				Setup Id	
							I/O	udp://127.0.0.1:5020/
0					Ð		🦼 String details	
					\odot		N 1 1 1	100

Figure 10 Tug receiving commands



You can use up to 3 telemetry radio modems – individually configured and thus enabling the use of a huge number of tugboats (15-20) or other external receivers.

Project Settings				×
NaviPac	Telemetry Multiplexer 1			
Warm Start	Active Multiplexer 1			
GPS	Enable Multiplexer			
Filters	I/O	com://COM1:9600/?StopBits=1&DataBits=8&Parity=None		
UW and Remote Navigation	Input (Tug side)			
Advanced	Surface Navigation data			
Survey Parameters	Surface Navigation port			
Rig/Barge Move or TMS	Remote Navigation data			
Telemetry Multiplexer 1	Remote Navigation port	5010		
Telemetry Multiplexer 2	Runline Info/Control d			
Telemetry Multiplexer 3	Runline Info/Control p			
NaviScan	Tug Management data			
	Tug Management port	10507		÷
	A Output (Barge side)			
	Grab Data from All Ou			
	All Outputs port	5000		
	A Multiplex Mode			
	Multiplex Mode	Asynchronous		•
	Rx/Tx Overhead			
	Max Reply Bytes			
	Echo Received Navigat			
	Send Cmd Between Po			
	TMS Assigned Freque			
	TMS Default Frequency			
	Polled tugs	31		
	Send Slave Receipt			
	I/O Select COM/serial port			
		ОК	Cance	el 🛛

Figure 11 Multiplexer setup

The rig move operation will be controlled by the RigMon module (as in NaviPac 3), but all operations are performed from the Helmsman's Display.



-	Position Barge definition	East, North, Heading	Position	
	Anchor pattern	Full anchor spread Update on change		
	Tug commands Runline etc	Pick-up anchor no 7 Anchor 9 dropped at E,N	Tug actions	
		4		

Figure 12 Barge/tug information exchange



Figure 13 NaviPac Helmsman's Display with tracking tugboat





Figure 14 NaviPac Helmsman's Display with assigned tugboat

NaviPac 4.5 do also include a simple barge anchor drop/pickup position tool via eventing



Figure 15 Lightweight anchor drop/pick up from barge



3.9.2 Remote Supervision

We see more and more companies wanting to control the survey operation from a control centre at land, both for unmanned service vehicle operations as well as more advanced vessel surveys where they have limited expertise onboard.

NaviPac have been well prepared for this, as our internal NaviPac module communication is based on networked TCP/IP (and have been for a long time), and with the introduction of NaviPac 4 the final step was taken by simplifying file and folder structure used by the software.

It has been possible to run onshore monitoring since the first modern version of NaviPac 3 – and in version 4.5 we introduce the final step – taking control from shore via Remote Supervision.



Figure 16 Remote supervision flow

3.9.2.1 Remote Survey Supervision

The first level of the remote supervision is done from the Helmsman's Display, where the standard software can connect a NaviPac system running on your internal IP range network.



lame	IP	Port	Description	Protocol	Search
leepleaming.eiva.com	10.6.0.63	443		NaviSuiteDeepLeaming	Connect
)olores.DeepLearning.eiva.loca	10.10.110.250	80		NaviSuiteDeepLeaming	Connect
)olores.DeepLearning.eiva.loca	10.10.110.250	443	(Secure)	NaviSuiteDeepLeaming	
laviPac_APJ-AW15	10.10.180.50	50549	NaviPac Kernel	NaviPacRemoteAccess	
laviPac_RJL-M6800	10.10.113.5	49812	NaviPac Kernel	NaviPacRemoteAccess	
JCA	10.10.180.50	50539	landscape8112.xyz	SceneServer	
JCA Hardware	10.10.180.50	50551	DataMon	SceneServer	

Figure 17 NaviPac - auto connection service

As soon as you connect to the server, the Helmsman's Display (HMD) will start as any ordinary remote, that is, download all necessary files via a file synchronisation service (project, runlines, waypoints etc) based on HTTPS and receive the live data on the ordinary TCP/IP connection (port 4884). You can hereafter switch to become the supervisor:



Figure 18 Helmsman's Mode

The HMD modes are:

- 1. Master
 - The main computer on board the vessel
- 2. Remote
 - Any remote connection
- 3. Local
- Not connected to NaviPac previously known as Line Planner
- 4. Supervisor The onshore (or remote) station taking control
- 5. Supervised The onboard Master downgraded to Supervised



You will now operate the HMD as on the ordinary master; creating runlines, display lines etc – and when complete upload it back to the onboard system:



Figure 19 Upload to master

The HMD will now list all files changed since you took control and allows you to select what to upload:

Select Items to Upload	Select Items to Upload To Master					
<search filter=""></search>				5/5		
Name						
Runline 1.rtxp						
Runline 1_1.rkp Runline 2.rkp						
✓ Waypoints 1.wp3						
Select all Select	none	Save as CSV	DK	Cancel		
					.:	

Figure 20 Upload selection

The file and project will then be uploaded to the barge and available to use right away.

3.9.2.2 MBE Survey specific (USV)



If you are using the setup on an unmanned vessel or want to take control over a setup using MBE data for dynamic route planning (our Coverage Assist tool), then we have two special functions enabled:



Figure 21 Coverage Assist

• Build Online DTM

Start making terrain model on the onboard master HMD with selected cell size:



Start Coverage assist
 Initiate the submetic rupling hendling incide the selected

Initiate the automatic runline handling inside the selected boundary (defined as



digitized line)				
Select boundary				×
<search filter=""></search>				
Name				
Digitized Lines				
Digitized Lines / SurvArea				
	Save as CSV	ок	Cancel	

3.9.2.3 Remote Configuration Supervision

It is furthermore also possible to take remote control of the entire configuration process, valid for both USV operations and supervised survey operations with onshore expert control.

The onboard solution must be set up to allow supervision via the **Options > Remoting** tool and change mode from **Stand-alone** to **Master**.

💸 NaviPac (Remote control enablec	d 10.10.144.108) - Test config	guration	
File Options Tools Help			
🖞 🖆 🖆 🔤	0		
Controls 👻 🗸	/ehicles		.
	Remote Settings		□ ×
а О а	Remoting		
Restart Stop Reset	Surf	/	
Tree = 0	GP Master IP	tcp://127.0.0.1:6547	
d Project	Mode	Master	
B Geodesv	Remoting Port	6547	
🛱 Project Settings			
∡ Vehicles	Data		
👂 🛶 Vessel	Atl		
👂 🛥 Towfish			
	•		
	3D Vis		
	57		
			OK Cancel

Figure 22 Enabling remote control



At the remote end you just use a standard NaviPac installation and start NaviPac and go into **Options > Remoting** tool and select mode to be Supervisor and identify the IP address of the vessel system.

Re	emote Settings			×
Re	emoting			
4				
	Master IP	tcp://10.10.144.108:6547/		
	Mode	Supervisor		•
	Remoting Port			
		ОК	Cance	el 🔰

Figure 23 Taking remote control

NaviPac will first of all download the entire project file and load it into the tool, so you can monitor and change any settings.



🐝 NaviPac (Connected to: tcp://10	0.10.144.108:6547/ - testpc8) - Test configuration		_ = ×
<u>File</u> Options Tools Help			
1 🖆 💾 🍲 ē 🔒	<u>P</u>		
Controls 🗸	Vehicles 🗢 🗢	Properties	~ 4
	^	Vehicle	
	Vessel 🕀 🛞	A Misc	
	SurfaceNaukastion 🕅 Guro 😕 MationSensor	Object ID	20
Simulate Stop		Name	ROV - inspect
Tree 👻 🕂	GPS1 (PRIM) NMEA1 Gyro TSS DMS05/TSS 335	Vehicle Type	Vessel v
▲ Project	GPS2 (SEC)	3D Model	\Setup\ROV.3ds
Geodesy		Model Scale	0.00999999977648258
🛱 Project Settings	DataAcquisition V DumanisBasilianing (4)	Use Kalman	
∡ Vehicles	DataAcquisition v Dynamicrositioning v		
Vessel	Atlas Deso 20/25 Sonardyne USBL (\$PSONUSBL) 1	A Depth source	
A ROV - inspect		Use Z from navigat	
▶ 22 Gyro	♥ offset1 offset2 offset3 offset4 (+)		
▲ (••)DynamicPositioning			
[Sonardyne USBL (\$PSONUSBL)] Ve	ROV - inspect (+) (X)	Weighted position	
	Gyro 🛛 DynamicPositioning 🕪	Weight navigation	
	Octans ovro (Ivsea)		
	Ŷ (+)		
	3D Visualisation		
	K3		
		Name	
<	X		

Figure 24 Configuration program in control

The upper left part of the configuration program includes a series of special control tools for the remote operation:

- Start/Stop •
 - Start and stop navigation onboard the vessel
- Upload Upload your configuration to the vessel Download
- Download new copy from the vessel Simulate •
 - Run the entire setup on your local pc all in simulated mode





Figure 25 Remote control tools

3.9.3 Time & distance eventing

NaviPac 4.5 has all the time and distance event settings that NaviPac 3.10 had. The entire setup is now handled as part of Project settings in the setup phase:

- Event format and data storage
- Time based events
- Distance shooting
- Events triggered by external events
- Event trigger output (eg to NaviSuite Seismic Trigger)



Project Settings		□ ×
NaviPac	Event Settings	
Warm Start	∡ General Settings	
GPS	First event number	1
Filters	Increment event numb	1
UW and Remote Navigation	Controlled by object	Ship bov (0,44,-5.92)
Advanced	Use event log file	
Survey Parameters	Event log file path	C:\EIVA\NaviPac\Data
Rig/Barge Move or TMS	Event log file name	Events.log
Telemetry Multiplexer 1	Use long event format	
Telemetry Multiplexer 2	Updated by operator	EIVA-1
Telemetry Multiplexer 3	⊿ Time Events	
Event Settings	Enable time events	
NaviScan	Time events pre-time [s]	0
Naviscan	Time events interval [s]	60
	Number of linked time	1
	Delta ramp [s]	0
	Distance Shooting Events	
	Enable distance shooti	
	Distance shooting mode	Projected distance (KP along the line)
	Distance between eve	150
	Max. time between ev	0
	Running up events	4
	Events multiplier	
	Enable automatic even	
	Event number at KP 0	
	∡ External Events	
	Enable external events	
	Ring indicator (pulse)	
	Enable automatic even	
	External input port	
	⊿ Trigger	
	Enable trigger	
	Trigger message	
	Trigger pre-time [ms]	0
	Trigger output port	
	Enable time events	
	Enable (linked) time events. N linked time events if distance	laviPac will generate events with the defined interval (and as special events is enabled).
		OK Cancel

Figure 26 Eventing setup



The distance shooting algorithms have been updated so they can be used when performing NaviPac cycles with high frequency updates – previously only working at 1 Hz.

3.9.4 2D seismic

NaviPac 4.5 includes the 2D seismic operations - including:



Figure 27 Streamer positioning

NaviPac 4.5 supports up to two streamers (version 3 was limited to 1), and all setup is done in the main instrument page:



😻 NaviPac - M11						_ = ×
File Options Tools Help						
	ρ					
	<u>-</u>					
Controls	Vehicles			÷	Properties	~ ₽
				A	Instrument	
	SeisEIVA		(+		A Misc	<u>^</u>
	SurfaceNavigation 🛛 🖉	Gyro 💋	MotionSensor	6	Name	Digicourse
Restart Stop Reset		Concert Harding	C		System Name	Digicourse
Tree 🔻 🕸	Ashtech GPS1	Seapath Heading	Seapath KPH		Instrument ID	406
▲ Project					Info	Binary or ASCII forma
Geodesy	DataAcquisition 🗸	DataOutput 🕞			Offset	0,-14.5,-0.27
🛱 Project Settings	Simrad EA600	Data to ext. nav. system			Setup Id	90
▲ Vehicles		Have defined as days			I/O Mode	Simulated 🗸 🗸
Seiseliva		Oser denned output			1/0	com://COM8:19
⊿> TB	•			\sim	Magnetic Deviation	•
(•)DynamicPositioning	P0 p1 Ship bov			(+)	A String details	
Digicourse					Number of bytes	800
	E IB	(\pm)			Telegrams per cycle	
	DynamicPositioning (•)				Driver type	CRLF: Normal / ~
	Digicourse				Swap input	
					Zero based input	
					Interrogated by NaviPac	
	Q	(+)			NaviPac interrogati	
	2D Manufaction			- 0	J First Receiver Group (FRG)
	SD Visualisation			* *	Enable First Receiv	
	к и					
					Common Mid Point (CMF	0
	1				Enable Common	
	-Tr-			-32-	Birds	
		•			Number of Pirds	
	ζ 🥯 🗆		-		Bird 1	
	y 🛶 k					*

Figure 28 Defining streamer positioning

The streamer position is shown at the Helmsman's Display and the tail position can be used like any other vehicle object.





Figure 29 2D streamer display

As a new feature in version 4.5 you can also show the cable depth information both graphically in Map View and numerical in the Data Views – as well as in the sideview mode (S).



Figure 30 Streamer depth information



3.9.5 Real time data cleaning

NaviPac version 4.5 extends the real time data cleaning tools – so all EC-3D features known from NaviModel can be used during online acquisition and recording.

🔯 Project - ETVA Helmsman 4.5 *						
File View Settings Tools Help	DEBUG					
i 🕜 🕘 🕲 💉 📙 · 🕰	b• 📑 3	D 2D S	1 2 8	I 🐨 - E		$/ \wedge$
					2020_11	11_114519
Nº3					FRA	ME 7683
					Packages per sec	
Online DTM Filters: Echosound Scan based Filters	ler 0		-			
Merlian denth		E Miso				
Apply scale	Move Up	Easting scale Northing scale				
	Nove Down.	Depth scale				
	A44					
		Easting scale				
1		Scale applied to bailing				
EC.3D Eltern						
Number of points within a solu		E Misc			A Second Se	
		Min. neighbours Max. neighbours	20			
	More Down	Sphere diameter				
	henove					
		Sphere diameter				
Contraction .						
Online DTM						
Children Child						
	Henove					Sili-
						- 110
Import Export						2
					503	833 09 m
					0145	0,01 m
E=593 783.46 m N=6 149 375.60 m Z=0.00					lde,	800

Figure 31 Real time EC-3D

You can enable one or more tools using the combination tools, and the result will be applied to the DTM generated in the HMD.

The system saves status information identifying all points flagged as noise. After import of the raw SBD files in NaviEdit, you can choose to use the online cleaned or simply keep using the raw data. If you choose to use the online cleaned, you can afterwards do further cleaning or undo some of the cleaning.





3.9.6 Multiple surrounding circles in Helmsman

Figure 32 Multiple surrounding circle/ellipse display of waypoints

3.9.7 Dashboard data views

In NaviPac 4.5 we introduce a new data display type – dashboard and widgets, replacing the old Data View types. A widget is a value, a text or a graphical display unit, and you can combine them in one view or have multiple or free-floating views.





Figure 33 Helmsman layout combining different widget types



Figure 34 Use for live and time series data display





Figure 35 Widget dashboard for ROV pilot display

3.9.7.1 Video overlay

You can – as before – interface IP cameras into HMD and use it for display and recording. The overlay is done by combining any live data (from NaviPac, NaviScan or external inputs) into text or graphical widgets – including logo images.

The widgets are defined as free floating images on top of the video image (as well as other views) and can be made transparent to minimize the image's distortion.



Figure 36 Video overlay - shown outside image





Figure 37 Overlay inside view as semi-transparent

We do not save the overlays as part of the video frames – but treated instead like subtitles. This means that the overlays can be viewed (and changed) in NaviModel and viewed in a standard VLC player.

3.9.7.2 Exclusion zones

NaviPac 4.5 re-introduces and extends the no-go zone alarming you know from NaviPac 3.10.

Lines, and waypoints can have no-go zones, which can be enabled via right-clicking the object and selecting **Attributes > Exclusion zone**.



🔯 c.hmp	o - EIVA I	Helmsma	n 4.5.	1								
File	View Se	ettings	Tools	Help								
	<mark><</mark> () * *	M	• 🔂 •				• ~			к У К У	
Project Tr	ee											
	Maps Runlines Surveys Toppings Events Waypoints	s points 1.wr	3									
 > IN IN > IN IN > > > > > 	Wayp Way Digitized L Digitized L Measures Online NaviPac C Palettes Color modes <i>fiews</i>	opints 1.wg aypoint 1 Lines	×	Move to Remove Visible Info Windo External ref Edit Enter positi Attach 3D N Attach Shaj Attach Shaj Waypoint P Add Runlin	w ferences Model pe for 3D pe for 2D Profile To re Profile	M Del H • E						
				Attributes			Þ	Г	Remove	Attribut	te(s)	
									Add Seat Add Safe Add No(iloor dis ty zone io zone	tance	:

Figure 38 NaviPac Helmsman's Display showing No-Go zone related options

Enabling this introduces some attributes of the waypoint/lines.



Properties		- ₽ X		S. C. P. P. Cont.	
🖃 General		A BULL SAME		R. W. S. W. S. Phys. 195	
 Visible	✓ True	1 8 4 4 M 8 4			
Name	Waypoint 1	18. S. M. M. S. S.		C. CARLES	
Ellipses				any marine	10,00
Number			States of the second second		
Ellipse 1					
Name			and a state of the		A 4
Name Visible	× False				\$ S
Visible	✓ True		200 C 27	50 m	
Radius	20 m				
Ellipse	50, 50, 0	Ar Andrews		3	
Style					
Colour	Red			• • •	
Thickness	3				63.4
DTM Drape	✓ True		A CONTRACTOR OF THE	man and and	
3D Object				ALLANDARA AL	
⊟ NoGozone			1	a second and	
Name	NoGo zone	CALL STREET	A ACCOUNT OF		
Show No Go Zone	× False		A A GALLER	· · · · · · · · · · · · · · · · · · ·	- 23
Border Style Settings			1	Constant	
Style					1.5
Colour	Red	5 5 76 % X 4 X 6 F		State Briterie	
Thickness	10				
					1.0

Figure 39 Waypoint Properties view showing Exclusion zones

As default all vehicles will be prohibited from entering the zones – but you can overrule this manually via **Manage Exclusion zone** of the waypoint (by right clicking).





Figure 40 Manage an exclusion zone



Figure 41 Waypoint tracking – potentially entering zone



3.9.7.3 Planning

It is prohibited for a vessel not listed on a no-go zone whitelist to navigate a runline that passes through that no-go zone. An alarm will sound.

It is prohibited for a vessel not listed on a no-go zone whitelist to navigate a waypoint that passes through that no-go zone. An alarm will sound. Navigation to a waypoint is continuously monitored and if the route passes through a no-go zone, the alarm will sound.

 Image: State of the state

In both cases the Exclusion zone will be shown.

3.9.7.4 Alarms

Alarms are shown as warnings in the Alarm window. The alarm window can have sounds set to go off when an alarm is triggered. An alarms snooze time can also be set in the Alarm Window settings. Alarms can be removed and snoozed.



Figure 42 Exclusion zone alarms

For this reason, a popup message box can be made to pop up if entering a no-go zone.

3.9.7.5 Confinement zones



We have also (as a spin off from the no-go zones) introduced monitoring for staying within a zone – called Confinement zones. This feature is enabled at waypoints, where a selected vehicle (dynamic or offsets) can be selected, and then alarms can be generated for each waypoint's radius.

000**	3D 2D S		0/ mmm / 9 / 0 8 1 = + 0 0	1-6-1	EIVA
Birrp Mage Mage Surveys		4:	Rounde z FRANCE FRANCE	5774 S 378 Header	• 1 x
Toppings Events		-		Barge -	\rightarrow Waypoint 1
Waypoints 1.wp3 Wite point 1 Digitized Lines				Waypoint Name	
Drawings Online NeviPac Connection 127.0.0.1 Palettes			A3 Filtered vessel position		Waypoint 1
 Color modes Views Map View 				Range 2D	
Range Bearing: Barge Ways	uer: 1				6.09 m
Properties		+ 1 ×		Range 3D	
Track Ellipses	* False	*	A3-MLB1		6 00 m
Number 1 Filiner 1	3				0.09111
Name	find confinement zone				
Name Visible	× False			Grid Bearing	
Radius	5m				
Elipse	5.5.0				176 59°
Style	E Dat				170.05
Thickness	1				
DTM Drape	✓ Tue		40 m	True Bearing	
		· · · · · · · · · · · · · · · · · · ·	DCC 3 620 32	44 m	
Name			575 638	67 m	176 61°
			6 225 28	42 m	170.01
Whicle Control		- 1 ×	Alarm Window	2 ×	
			Errors Warnings O Messages O Settings Open on warnings - Clear all 4 Mute	ETA	
Name Status Mode	Navigation Object		fige 0	_	10 11.21.26
Barge · Recon			Confinement Zone Violation Barge is outside 10m		10.11.31.30
Fitered vessel position · Param	- 8		Confinement Zone Violation Barge is outside first confinement zo	Degrees Off Target	
Priority 2 - Autom					
					$2.40 \rightarrow Port$
Ex 575 643.13 m No 6 225 273.58 m Zz - 1	L42 m (KP -2343.079) (DOL 3 620.33	(Mar)	¢	,	W-000

Figure 43 Alarm on Confinement zone

3.9.7.6 Barge runlines

NaviPac 4.5 includes the advanced creation of barge runlines, that is the route a lay barge should follow to hit the cable or pipe route.



Figure 44 Creating barge line

The barge line can be based on fixed layback or dynamically positioned by selected a vehicle (Offset).





Figure 45 Original and barge line (barge is the funny shape)

3.9.7.7 Recording monitor

The new Log Monitor keeps an eye on changing files. This window tells you if a specific file type is being logged or not, simply by looking at the last write time for a specific extension in a specific folder. This extends not only to EIVA file types, but also to monitoring any other file types currently being logged.





Figure 46 Monitoring file status

3.9.7.8 Sonar data display

The Helmsman's Display acts as the data display frontend for NaviScan – and often this results in a huge amount of data are send across from NaviScan. You can control this from NaviPac, as you can reduce the number of points per swath:

- Along
 - Take every n'th swath
- Across Take every n'th beam
 Across with boundary
- Take a number of beams select where data changes (efficient on flat seabed or wall)
- A combination of across and along



🔯 Project - EIVA Helmsman 4.5.	0.67514 RC0 *				_ 0 ×
File View Settings Tools					
🛛 🕙 🕲 💉 🖪	🚯 📄 🚮 2D S	ا 😨 🕄 🕹 🛦	≣ V ⊕	🔟 💿 🛷 🕂 🛧 🛣 🛣 Mbel_Norbit RawRange 7027 Last_VLP-16	EIVA
Project Tree		+ U X			
A Past Barrows Control May Ver May Ver May Ver May Ver Control Control Control May Ver May Ver Control Control Control May Ver May Ver Control Control Control Control May Ver May Ver Control Control Control Control May Ver May Ver Control		2		CRP CRP	
Properties D. General		• • ×			
Visible	MaviScan OKR-YPS15		×		
Name Beam display Beam cache	 NaviScan_okkeyr315 NaviScan 			and the second sec	
Point size					
Invert	Log sbd file				
Online DTM Online DTM	Shift she	d file			
Only if logging					
Online closning Eachly Chara	mbe reduce method	across2			
Coline filter setup					
B Miso	mbe along downsample				
Draw echos	mbe across downsample				
	🔵 laser skip				
	Mbe1 Norbit RawRaw	ge 7027			
Draw ochos	Las1_VLP-16				575 455 71 m 6 223 391 07 m 8 02 m
E=575 439.40 m N=6 223 399.65 m Z					ldie 🥵 🕲 🚇

Figure 47 Sonar data control

The data reduction is applicable for:

- MBE sonar data
- Laser data
- Forward looking sonar
- Sidescan data

You can choose different methods for each sonar.

This tool is especially useful for the remote supervision over low bandwidth network.

You can also direct Start/Stop logging of NaviScan from the Helmsman's Display.

3.9.7.9 Position to KP calculator

NaviPac 4.5 includes an extended version of the KP to position calculator, which enables you (for an active runline) to convert position between line coordinates and world coordinates, map preview and waypoint creation.





Figure 48 KP/DCC to world coordinates

3.9.8 IT

The structure of NaviPac 4.5 have changed, so the user no longer needs to make modifications to UAC (user account control) when running NaviPac – that will make the usage much safer as seen from an IT security perspective.

Installation still requires admin rights, including both the setup of NaviPac and the Wibu-key dongle security system, but the operator will not be prompted at each start-up.

4 Known limitations

4.1 Compatibility

The new version of NaviPac uses a new data structure for the configuration, so the old combination of Gensetup.DB and NAVIPAC.INI are no longer supported.

4.2 Classic Helmsman's Display

Direct access to the classic Helmsman's Display (generation 3) is no longer supported.



4.3 Admin rights

The user of NaviPac needs to have administrator rights at installation time, as we need to have full control over the PC clock and the availability to give certain processes and services higher priority. However, at execution time standard user rights are sufficient.

4.4 (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 or USGS Topographic maps or the WMS solution from SevenCs.

4.5 Geodesy

NaviPac 4 supports the same amount of predefined and EPSG-based geodetic solutions as version 3 - they are now just much easier to configure.

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Ellipsoid and Projection								
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	22523	Corrego Alegre 1970-72 / UTM zone 23S	Corrego Alegre 1970-72		Braz			
Ellipsoid	22524	Corrego Alegre 1970-72 / UTM zone 24S	Corrego Alegre 1970-72		Braz			
EPSG: 7022 (International 1924) 🔹	22525	Corrego Alegre 1970-72 / UTM zone 25S	Corrego Alegre 1970-72		Braz			
Semi Major Axis 6378388 m	22991	Egypt 1907 / Blue Belt	Egypt 1907		Egy			
Inverse Flatening 297	22992	Egypt 1907 / Red Belt	Egypt 1907		Egy			
Semi Minor 0530911.94012794	22993	Egypt 1907 / Purple Belt	Egypt 1907		Egy			
Projection	22994	Egypt 1907 / Extended Purple Belt	Egypt 1907		Egy			
EPSG: 16032 (UTM zone 32N)	23028	ED50 / UTM zone 28N	European Datum 1950		Eurc			
Scale factor at natural origin 0.9996	23029	ED50 / UTM zone 29N	European Datum 1950		Eurc			
Longitude of natural origin 09° 00' 00"	23030	ED50 / UTM zone 30N	European Datum 1950		Eurc			
Latitude of natural origin 00° 00' 00"	23031	ED50 / UTM zone 31N	European Datum 1950		Eurc			
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OK Cancel				Items: 2558	/ 2558			

Figure 49 NaviPac 4 geodetic settings

There is a limitation in the Helmsman's Display: if you are using web-based charts, then they are most often defined in WGS84, while we are currently only supporting methods based on the Transverse Mercator system.



4.6 Master Helmsman's Display

When operating with multiple Helmsman's Displays the one running on the main NaviPac computer must be the master.

4.7 \$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.