# Release Notes

## V 1.7.3 (release on 2018-11-23)

**Bug fixes**

- Fixed issue in encevis viewer where EEG file Management forces a unique patient name although the patient label is already different.
- Fixed issue in NeuroTrend that might cause a time shift in the AEEG plot for uneven or non-integer sampling rate of the input data after longer recording times of several hours.
- Fixed issue in Micromed vendor interface where Micromed vendor interface throws an error if tables are missing in the encevis database.
- Fixed random crash on exit of Micromed vendor interface

## V 1.7.2 (release on 2018-10-02)

**Features and improvements**

- The replacement mechanism in Micromed vendor interface for path changes when EEG files are moved to another destination was improved and now works after restart of the vendor interface
- Micromed vendor interface is now more robust against database and network loss
- The validation of the configuration in Micromed vendor interface was improved. The results are now easier to read
- The configuration dialog of Micromed vendor interface does now only open when user clicks on the configuration button
- aEEG visualized within NeuroTrend now shows a tick and a label at 5 uV
- encevis is now raising a security awareness hint for the user when configuring a remote database
- The communication between AITInterfaceDLL and Distributor is now secured by an SSL connection
- The support for reading EMS files and available annotations was improved.
- encevis now supports the reading of NihonKohden EEG data.
- Import of annotations of type 'DVideo' from Micromed files to the Viewer marker list was removed.
- The distance between EEG channels visualized in the EEG plot can now be configured by the user
- encevis now allows to open files containing up to 260 channels
- encevis now handles review licenses correctly.
- encevis Viewer, NeuroTrend and SeizureDetection are now storing the current marker type selection

**Bug fixes**

- The synchronization mechanism of the marker lists between encevis Viewer and plugins (NeuroTrend, EpiSpike and SeizureDetection) was rewritten.
- Fixed an issue where the AITInterfaceDLL sometimes returned an error without reason
- The button "Jump to EEG" is now working properly in all circumstances
- Fixed a crash occuring in SeizureDetection when the configured MySQL database was not reachable
- Fixed an issue where encevis Viewer showed "-1%" as status below a plugin icon

- Return values in functions are now properly evaluated
- Distributor is now aware when a plugin crashes and sends an error back to the AITInterfaceDLL
- Fixed an issue where a table field within encevis Viewer marker list stayed in edit mode after finishing editing
- The display calibration dialog is now smaller and should also work on display height of minimum 800 px.
- The speed of PureEEG was improved within encevis Viewer by removing unnecessary interface calls to PureEEG
- SeizureDetection GUI is now started properly by vendor interfaces without needing further user interaction
- Fixed an issue, where vendor interface Micromed started a dead NeuroTrend Review plugin process when only a seizure detection license was available
- A single click instead of a double click within NeuroTrend now leads to a 'GoTo' message causing encevis Viewer to show the EEG at the clicked position
- Fixed a crash in encevis Viewer when importing annotations from EEG files when using a Firebird database.
- Fixed an issue in encevis Viewer where the wrong marker within the EEG plot where highlighted when more than one marker occurred within one second.
- Fixed a crash of Micromed interface when files were moved away for archiving
- Distributor is now automatically restored by vendor interfaces Micromed, Neurofile/ITMed/Deltamed if Distributor gets killed
- Fixed an issue where plugins did not recover themselves after database loss when using a MSSQL database
- Fixed memory leak within NeuroTrend when inserting results into the encevis database
- Distributor now kills all orphaned plugins after start up
- Fixed a crash in encevis Viewer when th user tried to switch a montage using the context menu over a marker
- Fixed a crash in encevis Viewer randomly happening when clicking trough markers within the marker list
- Fixed an issue where states of markers where not properly updated for all running instances reviewing the same recording
- Fixed an issue in encevis Viewer where it could have happened that the patient management shows the wrong file list for a recording (the correct files were always opened, though)
- Annotations imported from EEG files by encevis Viewer are now not editable or deletable in the plugins
- Spectrogram is now blocking EpiSource plugin and vice versa
- Fixed issue that two red indicator lines where displayed in the plot when starting Spectrogram if two markers where overlapping
- Removed "Kill a plugin" from Distributor, as it was an obsolete feature
- Starting the Spectrogram now requires a marker with a minimum duration of 100 ms.
- Fixed issue in encevis viewer where marker type filter sometimes showed "All types" although some filter where not active.
- Fixed an issue within Micromed vendor interface which showed an empty error message box to the user.

# V 1.7.1 (release on 2018-05-17)

**Features and improvements**

- Micromed vendor interface: All user input made in the configuration dialog is now verified. The result of both positive and negative checks are collected in a message box and shown to the user.
- Micromed vendor interface: The configured Micromed database is opened right after configuration change, or by restarting of vendor interface. The timeout for opening of the database is independent of the database server settings and is always 3 seconds.

- Micromed vendor interface: The database user of the Micromed database does no longer need write access.

**Bug fixes**

- Micromed vendor interface: User name and password of the Micromed database over ODBC data source can now be configured by the user in the configuration dialog.

# V 1.7.0 (release on 2018-02-16)

**Features and improvements**

- An online interface to Neurofile/ITMed/Deltamed is introduced
- Seizure-Detection now possible with NeuroTrend (EMU and ICU license), providing a marker list displaying detected seizures, and further a new plot showing the markers over time
- new Seizure Detection plugin for reviewing detected seizures detected by NeuroTrend
- Removal of plugin EpiScan (as replaced by new seizure detection capability of NeuroTrend and Seizure Detection Review plugin
- Introduced a spectrogram in encevis viewer, allowing a channel wise time frequency analysis of EEG data.
- encevis viewer supports now the EMS data format
- encevis viewer imports annotations stored within files automatically. The following data formats are supported: Micromed, ITMed/Neurofile/Deltamed, Xltek
- encevis viewer provides now the possibility to calibrate the screen for correct EEG display. This has also effect on the EEG display within plugins.
- encevis viewer provides now user defined montages stored within files of data format Xltek.
- vendor interface Micromed allows now jumping in traces which includes pauses in offline mode
- encevis viewer does now allow review of results of plugins during a running recording monitored by vendor interfaces Micromed and Neurofile/ITMed/Deltamed
- plugins are now storing their settings when closed over AITInterfaceDLL
- marker synchronization between encevis viewer and NeuroTrend and EpiSpike was improved
- vendor interface Micromed and Neurofile/ITMed/Deltamed uses now user name and password from the configured ODBC object
- encevis viewer and online interface to Neurofile/ITMed/Deltamed supports now pause and continue within Neurofile/ITMed/Deltamed files.
- a new plugin specific XML message was introduced, called "isFinished", allowing to tell plugins when they do not have to await more data
- Plugin EpiSpike deletes now empty clusters on recalculation
- GUIs of plugins started by vendor interfaces (Micromed, Neurofile/ITMed/Deltamed) are not opened automatically anymore
- reduced the minimum allowed sampling rate of plugins from 200Hz down to 100Hz
- optimized error handling within Micromed interface
- encevis EEG player scrolls now page wise instead of second wise in auto play mode
- speed up of license check
- new icons in encevis viewer and vendor interfaces (Micromed, Neurofile/ITMed/Deltamed)

**Bug fixes**

- Fixed issue with reading EDF EEG files, on long channel labels it could have happened that the reference label was not correctly read in
- Fixed issue within NeuroTrend were it could have happened that some result data was not loaded and displayed
- Fixed issue where EEG data only containing zeros as values caused burst detections by NeuroTrend plugin
- Fixed issue with colormap nomalization within EpiSource plugin
- Fixed issue which could cause a crash of EpiSource plugin caused due a wrong internal calculation
- Fixed crash in encevis viewer when user tried to open an defected EEG file
- Fixed issue of slow database insertions of markers within encevis viewer
- Misconfiguration of the database within the vendor interface can now be resolved by the user
- Fixed issue in encevis viewer, sometimes the configured database settings were not transmitted to the started plugins
- Fixed issue were it could have happend, that the control UI of a vendor interface gets outside the visible screen space
- Installer properly sets now properly user rights for Group of "Users" within %PROGRAMDATA%/AIT also in Windows 10
- Fixed distorted black triangle (indicating the currently selected marker) within encevis viewer if loaded EEG has very much channels
- Fixed an issue with PureEEG that could lead to a crash in case of electrode setups with very low electrode numbers and irregular configurations.
- Fixed issue with snap to marker functionality within NeuroTrend plugin
- Marker list in encevis viewer is now not loosing focus anymore on deletion of a marker
- Fixed issue in encevis viewer causing a crash when markers were highlighted
- Moving left/right with cursor keys withing the "Goto" field in encevis viewer is now possible again
- Fixed database delete and update issue on BLOBs (causing an query fail on prepared statements when the statement got to big)
- Fixed issue where auto start up could never be deactivated if no valid license was available
- Fixed issue in encevis viewer within the montage editor. Sometimes spaces were not handled correctly.
- Updated logging of operating system for Windows 10
- Fixed crash of vendor interface Micromed on file import in Micromed System Evolution Plus
- Fixed crash of Distributor caused by an opened "running plugins" debug widget
- Fixed issue within plugin EpiSource causing a abort of calculation when the input had an non integer sampling rate
- Fixed issue in encevis viewer where the plot in viewer always jumped back to the first EpiSpike/NeuroTrend marker during analysis of plugins
- Fixed issue where the "Associate files" dialog stayed opened in encevis viewer after adding a new patient/recording/file
- Fixed issue when a not apply able montage was set within plugin EpiSpike during analysis it could have happened that a warning dialog was appearing over and over again.
- It was not possible to add comments to spike markers generated by EpiSpike within the plugin during analysis. Adding comments is now not allowed anymore during analysis.
- Fixed issue which caused duplicate markers in a specific case on import of markers into a new database

## V 1.5.6 (released on 2017-05-17)

- Fixed an issue were none-EEG data were were handled like EEG in MicromedInterface. Data read from the archive database is now filtered by the file ending "TRC", other files like video are ignored.
- Fixed an issue when reading XItek files that could lead to the wrong start time shown in encevis viewer if a file contained more than one study entry.
- Fixed a crash of encevis Viewer when importing data into a new database was canceled by the user.

## V 1.5.5 (released on 2017-04-27)

- Height of encevis NeuroTrend GUI elements was optimized.
- Fixed an issue where NeuroTrend showed BG Frequency and burst suppression when zero-data were sent to the plugin.
- A numerical instability in PureEEG for data with high dynamic range was solved.
- EpiSpike GUI now adapts the review time range automatically to the moving analysis end during online processing.
- Fixed an issue where detection results were not equal when produced with encevis Viewer and MicromedInterface.
- Improved support of EEG data with large DC components.
- Found a bug in micromed's SCORE interface when EEG files contain a pause. This bug causes Micromed SystemPlus Evolution to show the wrong time point in the EEG viewer. encevis now detects if EEG files contain a pause and blocks the "jump to EEG" command. The user gets informed when this case occurs.
- Sigma and XItek files can now be opened by double click or drag and drop in encevis Viewer.
- Montage editor in encevis Viewer is now blocked when plugins are running.
- The recording date read in by a recording in encevis Viewer is now the default value for the Recording label.
- An issue was fixed in AITDistributor causing an unexpected error send to the caller when sending EEG data.
- Montage editor in encevis Viewer now allows the definition of electrode names that contain any ASCII characters.
- A mechanism was implemented which checks the calculation flag for all plugins and all recordings in a regular interval.
- Improved an error message in encevis Viewer if Nicolet COM objects are not properly registered.
- Fixed an issue in AITInterfaceDLL which prevented plugins from starting properly.
- Markertypes defined in encevis Viewer are now deletable.
- encevis NeuroTrend now loads the background frequency results if other license than the full NeuroTrend license is present.
- encevis MicromedInterface is not creating a new recording when a patient is moved in Micromed SystemPlus Evolution.
- Fixed issue when encevis MicromedInterface was running in offline mode and the user started settings immediately after startup of encevis MicromedInterface.
- BSF files below file format version 1.04 are now supported again.
- Fixed an issue where encevis MicromedInterface was not able to reliably detect if the encevis Distributor is still reachable.
- Montage editor in encevis Viewer now does not allow the creation of a montage without name.
- Editing a marker gets aborted if the user changes a setting in a plot.
- "Jump to EEG"-messages from plugins are now ignored while the user is editing a marker.
- A crash was fixed when editing a marker in encevis Viewer.
- Fixed an issue where deletion of results did not work when sending a BeginTime message after startup of a plugin.
- Improved analysis time range suggestions in encevis Viewer when starting encevis EpiSpike.

- Fixed an error message in encevis EpiSource when the first electrode in the channel setup is not an EEG channel.
- Marker selection triangle in encevis Viewer works now properly for markers near the end of a recording.
- Fixed an issue in encevis AITInterfaceDLL which returned an invalid pointer when a plugin was already exited.
- Name of reference electrode in encevis Viewer is now restricted to 15 characters.
- Fixed an issue during patient deletion in EEG file management when the user closes the dialog with the window closing cross
- Fixed a crash occuring when the user tries to close EpiSpike before the GUI is fully initialized.
- Improved validation of selection time range in encevis EpiSpike GUI.
- Fixed a crash in encevis Viewer when a file was removed from the list of files while adding a patient.
- Fixed an issue which caused a jump of the timeline in encevis EpiSpike when calculating online.
- Fixed an issue in encevis MicromedInterface that caused jumps to wrong time points in Micromed SystemPlusEvolution.
- Fixed a query in encevis EpiSpike which did not work properly when using a MS SQL database.
- Fixed an issue in encevis EpiSpike if no EEG electrodes are available after building the montage.
- Close button off split plot in encevis Viewer is now aligned with the remaining menu items.
- Fixed issue which caused a freeze of encevis Viewer when inserting a patient using MS SQL database.
- Changed default reference sent by encevis MicromedInterface from "Remote" to "Unknown".

## V 1.5.4 (released on 2017-03-14)

- Fixed an issue with micromed online interface that could lead to instabilities of encevis
- Path to EEG files in micromed online interface now does not expect "micromed archive" in path name.
- Fixed issue where raised license warning dialog was blocking micromed interface
- Issue fixed in NeuroTrend which sometimes caused a crash on start up of the plugin when GUI was enabled

## V 1.5.3 (released on 2017-03-06)

- Improved the process of adding new bundle licenses.
- Changes in the database handling of Micromed SystemPlus Evolution, based on the experiences in a hospital.
- Fix an issue that plugins might show "active" state after disconnection of network.

## V 1.5.2 (released on 2017-02-24)

- Increased stability of file loading (problem with open file handles fixed, solved possible crash when loading Nicolet files)
- Fixed an issue where the scrollbar in encevis NeuroTrend could stop working
- Fixed an issue where encevis viewer sent two times the same data block to plugins
- encevis EpiSpike is now only setting the reference electrode for channels which are declared as EEG type
- Changing multiple values of a marker in encevis viewer works now properly
- Nicolet files can now be opened via drag an drop from the explorer onto the plot area of encevis viewer
- Significant perfomance increase for high number of results in the database. This was especially an issue on a heavy

use of encevis EpiSpike

- Acknowledge for exitPlugin is now always properly sent by encevis Distributor
- In the montage editor of encevis viewer the order of montage chains can now be properly changed
- Fixed an issue, where it might happen that encevis NeuroTrend was sending its acknowledge for the plugin intial config message before sending the result info message
- Fixed an issue in encevis MoberInterface where the plugins where not properly exited on patient change

## V 1.5.1 (released on 2017-01-30)

- Autostart mode of MicromedInterface can now be disabled
- Distributor can now locate plugins when MicromedInterface is started in autostart mode
- All NeuroTrend results will now be deleted in case of recalculate
- A bug was fixed causing a crash of NeuroTrend in connection with MySQL databases
- In case of database loss, EpiSpike displays a proper process range in the GUI

## V 1.5.0 (released on 2017-01-23)

- Introduced encevis MicromedInterface, for real time calculation of EEG data currently recorded with Micromed System Evolution Plus
- User Interface for MicromedInterface providing information about the current calculation state of encevis plugins
- Added support for Nicolet EEG files
- encevis EpiScan can now be started with a user interface
- encevis Help is now provided as convenient PDF
- If a license is missing, encevis Viewer provides now a direct way to register a license
- Significant performance improvments on hight amount of spike markers detected with EpiSpike
- EpiScan is now not dependent anymore on reference electrode Pz
- Introduced a database loss mechanism, allowing to continue calculation of plugins without any interruption during runtime when the database is not reachable.
- NeuroTrend provides now a heart rate plot (only in NeuroTrend full version)
- The user interface of the LicenseTool was improved
- It is now possible to license and start plugins explicitly for purpose of calculation or for review or for both
- Bugfixes

## V 1.4.1 (released on 2016-10-24)

- Bugfix, black cursor was not correctly displayed when starting NeuroTrend first without shown GUI and then later show GUI

## V 1.4.0 (released on 2016-06-21)

- NeuroTrend aEEG plot improved
- Windows 10 now supported
- Performance significantly improved on high amount of markers in the marker list in EpiSpike and encevis Viewer

- Improved runtime of EpiSource in spike mode
- added XLTEK EMU40 headbox support
- Bugfixes

## V 1.3.2 (released on 2016-05-19)

- Fixed error, when artifact removal was not working properly on EEG including DC component

## V 1.3.1 (released on 2016-04-26)

- Bugfix LicenseTool

## V 1.3.0 (released on 2016-04-11)

- Improved EpiSpike
- GUI for EpiSpike
- Neurofile (ITMed/Deltamed/Coherence) dataformat support
- Network licenses (floating licenses)
- encevis Viewer supports import of data from encevis databases
- encevis Viewer supports MS SQL
- Bugfixes

## V 1.2.2 (released on 2016-02-12)

- NeuroTrend supports now new flags in configureWindow message
- Bugfixes (keep alive MySQL, table creation MySQL)

## V 1.2.1 (released on 2015-11-11)

- DatabaseMigrationTool for transferring data between encevis databases of type Firebird Embedded, MySQL and MS SQL Express
- AITInterfaceDLL allows now string concatenated database configuration
- NeuroTrend has now MS SQL Express support

## V 1.2.0 (released on 2015-09-07)

- overworked user interface in encevis
  - Markerlist in encevis
  - Main UI in encevis
  - added possiblity for montage editing
- Introduced Burst Suppression feature in NeuroTrend
- overworked user interface in NeuroTrend
- Moberg Online Support
- Xltek file format support (beta version)

- allowing usage of central MySQL Server
- Bugfixes (increasing stability)

## V 1.1.1 (release on 2015-08-27)

- Bugfixes (increasing stability)
- added CE

## V 1.1.0 (released on 2014-10-03)

- Bugfixes (improving stability)
- general performance improvements
- Sigma file format support
- Moberg file format support
- Introduced BG EEG features in NeuroTrend

## V 1.0.0 (released on 2014-02-24)

- first release of encevis