



Software Tools and Services for chrono and psycho physiology

PRANA Tools

The PRANA® software for biosignal processing has convenient tools to rapidly access essential programs and change the software settings.

Software Setup

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The software setup interface allows:

- specifying the software suite default directories,
- specifying the default reviewing montage and calibration files,
- specifying the default software recording file format filter,
- activating the software suite password-protected user identification and audit trail.



Software setup window

In compliance with standard requirements for computer use and electronic records in the context of good clinical and laboratory practise (ICH - 21 CFR Part 11), the PRANA software for biosignal processing provides audit trail recording and signing components for non-repudiation of results:

- audit trail recording all software operations and plug-in settings,
- date, time and user stamping,
- centralised identification and password validation.

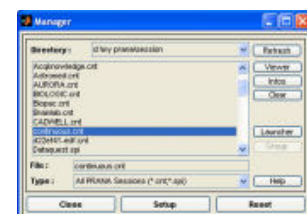
Software File Manager

The software file manager interface features a serie of functions for:

- browsing files from any user-selectable or default software directory,
- sorting and selecting software suite-related files depending on their type or extension,
- executing several software suite commands according to the selected file type.

The software manager is a convenient and powerful tool allowing:

- quickly overviewing the software suite-related file contents,
- directly launching the software suite main programs (Viewer, Profiler, Report Generator) and executing in a single batch a selection of optional plug-ins,
- exporting and visualizing as text and graphic files the results from any software suite optional or user plug-ins.



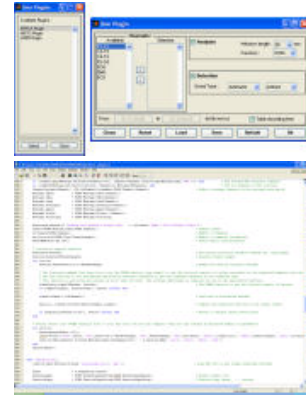
Data manager window

Software Developer Kit

The software developer kit allows users with a basic knowledge of MATLAB to easily and quickly integrate their own algorithms to create additional software plug-ins featuring new signal analysis or detection methods.

The software developer kit contains the source code and prototype interface allowing to:

- display, edit and register the settings configuring any user plug-ins from a graphical interface,
- access the requested signals as a workspace data matrix with time and channel as input parameters,
- quickly integrate any algorithms without the need to handle input/output compatibility,
- implement, test and optimise any algorithms for signal processing or event detection,
- save the results of the integrated algorithms either as time serie or event files compatible with the software suite programs and export funtion.



Developer kit: graphical interface and source code

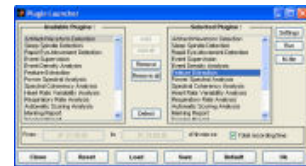
Software plug-ins developed by users are automatically detected and can be launched and executed independently of the file format used to stored recordings.

Software Plug-in Launcher

The software plug-in launcher is a convenient time-saving tool allowing the selection, configuration and single-run execution of multiple software suite plug-ins.

The software plug-in launcher allows:

- selection of a list of optional or user plug-ins to be executed,
- access to selected software plug-ins interface for configuration,
- adjustment of the recording time interval for all selected software plug-ins,
- launching and executing in a single run all selected software plug-ins.



Plug-in launcher window

Software Audit Trailer

The software audit tools offer convenient functions to keep track of all software operations made by different identified users.

The software audit trail allows:

- Creation and selection of password-encrypted user accounts,
- Authenticating into registered user account,
- Keeping track of the software operation history into protected user log files.
- Exporting the software log history into human visible text format.

Screenshot of PRANA Software Audit Trail

Audit trail window

The software, in partial compliance with the standard requirements for computer uses and electronic records in the context of good clinical and laboratory practise (ICH - 21 CRF Part 11), ensures audit trail recording of all software operations and plug-in settings and non-repudiation of results with date, time and user stamping and centralized authorisation.

Software Import/Export Tools

The software contains a set of internal import/export functions allowing input/output interoperability

with external data from various hardware acquisition and software analysis systems.

Here is a list of the available plug-ins for importing results data stored under various file formats:

Single-row ASCII scores (*.txt).

Endymion scores (*.txt) from the **Hopital Erasme, Bruxelles**.

Zurich System scores (*.vis) from **Zurich Pharmacology Institute**.

Somnomogica export scores and events (*.txt) from **Flaga-MedCare**.

Nihon-Khodon export scores (*.txt) from **Nihon Kohden**.

BrainLab export scores and events (*.xls) from Schwartz/OSG.

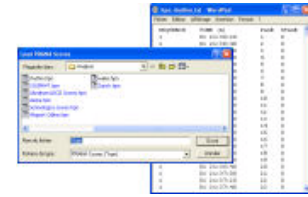
Medatec binary scores (*.don) from **Medatec**.

Biosleep EDF scores (*.wrs) from **Oxford Instruments, Inc**.

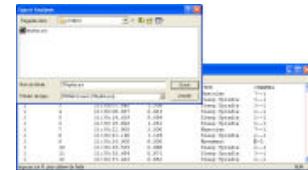
Actiwatch & Actiwatch Plus actigrams (*.awd) from **Cambridge Technology**.

Mini Logger Serie 2000 Heart Rate Data logger interbeat intervals (*.hr_) from **Mini Mitter**.

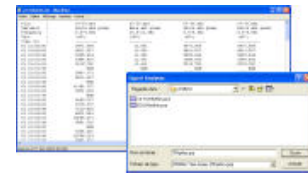
The software also has import/export functions based on software-specific ASCII file formats with tabulation separators and headers containing all the necessary information to encode various data type. These ASCII file formats can be used to export and import the results of each of the software analysis and detection plug-ins. All the results obtained from the software can thus be opened using any text file editor (Notepad, Write, etc.).



Import/export scores



Import/export events



Import/export time series