SleepXML - XML Application For Polysomnographic Data Storage And Exchange

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What does SleepXML do?


SleepXML Schema specifies the events’ structure, such as what events are allowed, what types and classes they have, what parameters of what kind they have, etc.

- Converts Event Data between event definitions /displays (XSLT).

- Generates PSG reports statistics by processing Event Data

- Creates and links with databases
**SleepXML**

XML dialect to describe PSG Data

- **What** *SleepXML* does NOT do?

- *SleepXML* does NOT attempt to define a structure of PSG events that all PSG equipment makers and users have to accept. This is hard to accomplish because:

  a) the field of polysomnography is still in developing stage;
  b) every major PSG equipment manufacturer has its own structure of PSG events;
  b) every major Sleep Disorders Research lab has developed a custom set of events and annotations that describe the best that particularly lab’s way of scoring PSG recordings.
SleepXML Schema: XML document defining structure of PSG Events:

- defines PSG channel types (Airflow, SpO2, etc.);
- defines PSG events on those channels (respiratory, arousals, etc.);
- defines event parameters (time, duration, SpO2 drop, stage, position).

Fragment of NYU SDC Respiratory Event Definition.
**Chicago Criteria**
Hypopnea = Reduced amplitude with >3% desaturation or arousal

**Medicare Criteria**
Hypopnea = 30% or more reduced amplitude with at least 4% desaturation

**NYU Clinical Sleep Lab**
Events stored in local format

**Physiobank Database**
Events in Physiobank format.
SleepXML Viewer Implementation

- Uses EDF for raw samples storage and calibration;
- Uses HL-7 for Patient Demographics;
- Loads SleepXML Schema from the PSG study folder and analyzes Event Set structure;
- Loads XSLT template for the current Event Set Presentation;
- Displays PSG Events on the waveforms and as a list;
- The Events could be scored, deleted or edited.
SleepXML
Other Tools Available

• **SleepXML Event Set Schema Tool:**
  - Available online: www.SleepXML.org
  - Allows to create Event Set, add and modify PSG Events;
  - Event Set is downloadable after editing;

• **Conversion Tools:**
  - Respironics Alice Events to SleepXML;
  - Compumedics ProFusion Events to SleepXML;
  - Physionet Events to SleepXML

• **Database upload module:** MS SQL Server-compatible
SleepXML

Advantages

- **Openness**: No proprietary Data/Report formats

- **Flexibility**: No hard-coded Event/Statistic/Report definitions; Event definitions could be designed for a particular Clinical Study or research needs

- **Interchangeability**: Enable Sleep Labs to freely exchange PSG data while maintaining their individuality in defining PSG events

- **Cross-Platform**: Web browser-based data presentation

- **Automatic** report generation

- **Compatibility** with SQL-server for data storage
SleepXML provides an infrastructure for the interchange, reformatting, presentation and archiving of PSG data. It is not a rigid PSG Data standard, but a way to describe any PSG data.

www.SleepXML.org