



Acoustic Data Management in LIDO

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LIDO follows a three-stage processing routine:

Stage 1

Detection of acoustic events, e.g. impulses (sonar, engine noise), frequency modulations (whistles), constant tonals (shipping). This stage runs in real-time close to the acquisition system (or autonomous) and performs a first filtering of the data.

Stage 2

Classification in real-time of detected events, localisation and tracking of sources. Is expected to always run on-shore ('unlimited' resources).

Stage 3

Long term analysis of events, runs off-line and off-site. Collects data from all connected platforms.



Data management protocol needs to define at each stage :

- What data needs to be collected.
- What format is used for distribution and storage.
- How long is the data kept.



For each analysed segment (~22 s at the NEMO site)

- Raw acoustic data
- Single channel mp3 stream (in RT mode); mp3 is widely supported but patented, alternative could be ogg vorbis.
- Low resolution spectrogram (in RT mode); jpeg, widely supported, but patented ? alternative jpeg2000
- Acoustic events, type of event and its location



For each analysed segment (~22 s at the NEMO site)

- Statistics from data segment (rms, peak frequency, etc)
- Raw data only needs to be sent to second stage processing if events of interest were detected, or if there is a specific research interest in the background noise.
- Data stored locally when running in autonomous mode.

This stage (and data) will not be directly accessible by third parties.



DATA MANAGEMENT STAGE 2



- Incoming data from stage 1 (raw data, mp3, spectrogram, events, statistics)
- Classification of events; localisation of sources; tracking of sources
- Raw data that arrives at this stage was tagged 'interesting' and will be stored locally as PCM inside a WAV container, compressed with FLAC.
- Textual information is stored in XML format



- All RT public data is made available through an SOS layer; only very basic support for the mandatory commands (GetCapabilities, DescribeSensor, GetObservation) will be required.
- Event notification was planned to use the Sensor Alert Service, which has been replaced by the Sensor Event Service, which is not yet finished. We will look into using RSS feeds.
- RT data is stored for 30 – 60 minutes, depending on available memory (ramdisk)



DATA MANAGEMENT STAGE 3



- Incoming data from stage 2 (event/sources/statistical information)
- Detection of trends on occurrence of events
- Correlation between events

All data from each platform is permanently stored.

Export of analysis results from the global database following O&M specifications (same as RT distributed data).

Long term storage of important data sets will be handled by the World Data Center for Marine Environmental Sciences (WDC-MARE).

