

Data Access Made Easy: flexible, on the fly data standardization and processing*

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**For research automatic weather stations(AWS)*

Sharing is encouraged

Why? Do we need something?

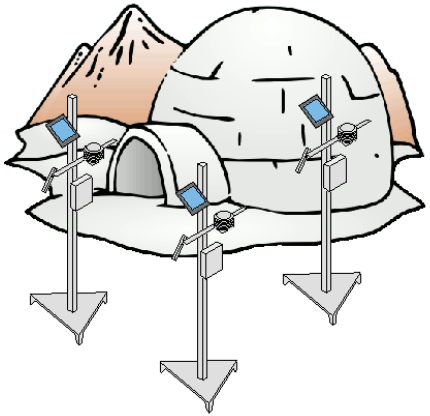
Research AWS: stations installed to answer a specific scientific question, not standardized like in monitoring networks

Challenge: diversity

- Measured parameters, sampling rates
- Sources of data (database, webservice, files)
- Data formats (all variants of csv, …)
- Changes in the station setup during the station's lifetime (all of the above)

Principle of operation

Research stations



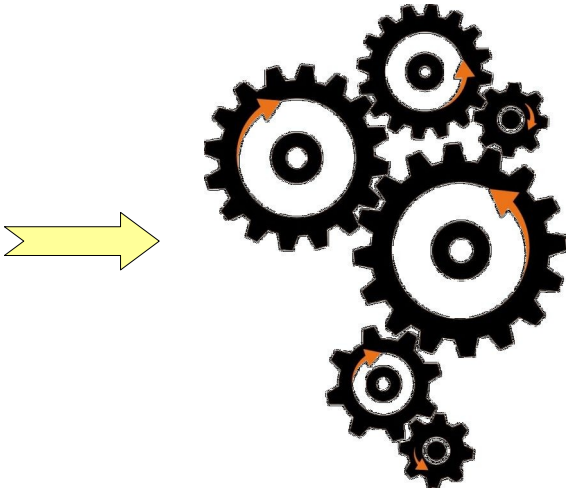
Findable

Accessible

Interoperable

Reusable

Goal: standardization



- Handle the various input formats
- Same output format
- Same parameter naming
- Same metadata standard (including ACDD search metadata)

Goal: reproducibility

- tracking the history of changes;
- no manual editing of data, generated on the fly;
- for any period of the station's lifetime!

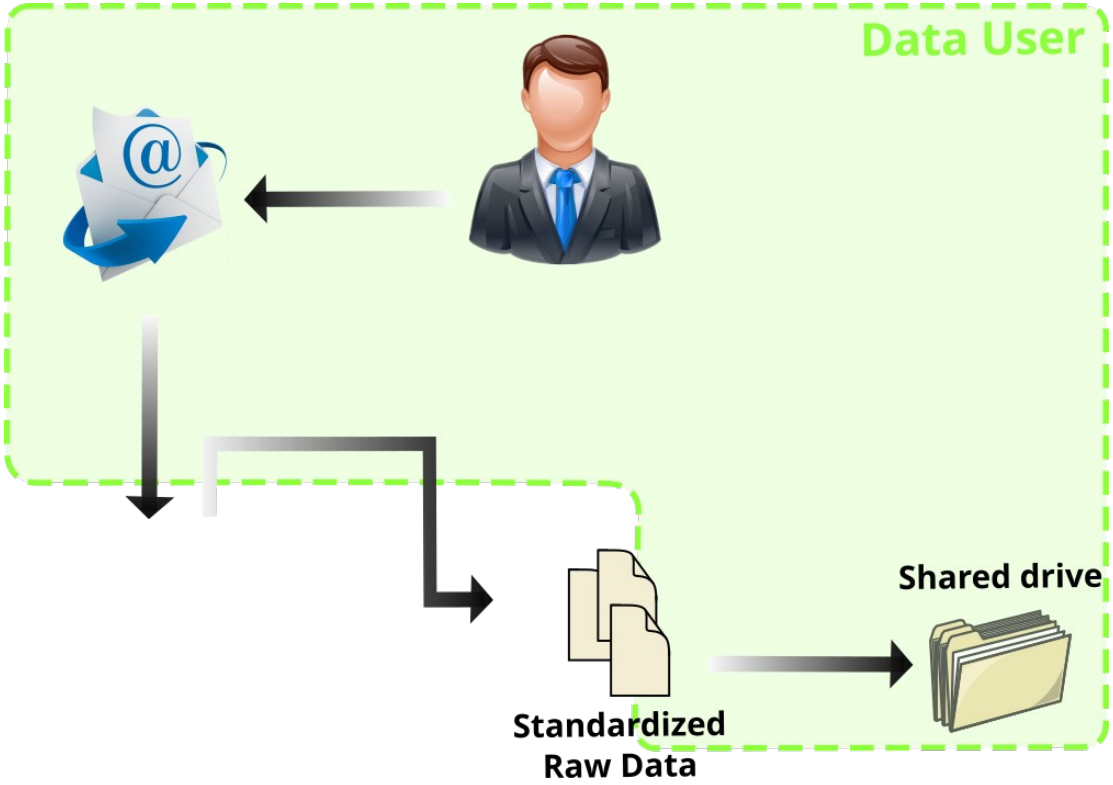
=> The whole processing is described in a single configuration file (per station), track changes to this file

Three actors

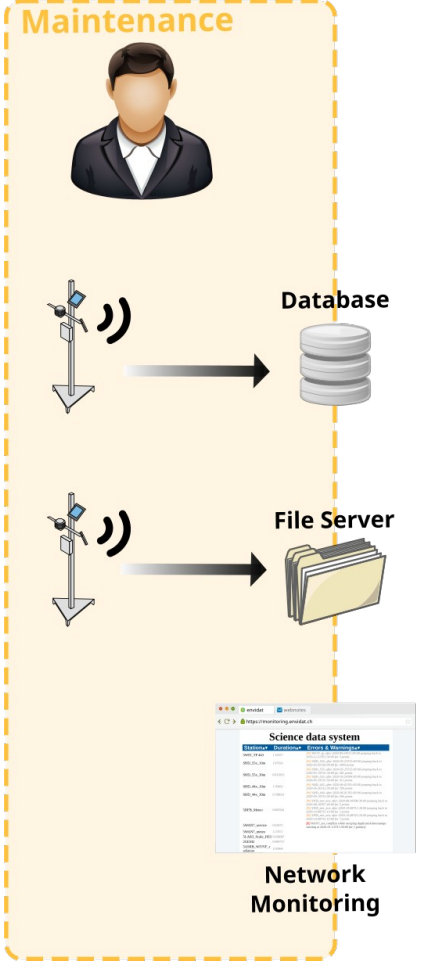
Data user

Maintenance team

Data owner

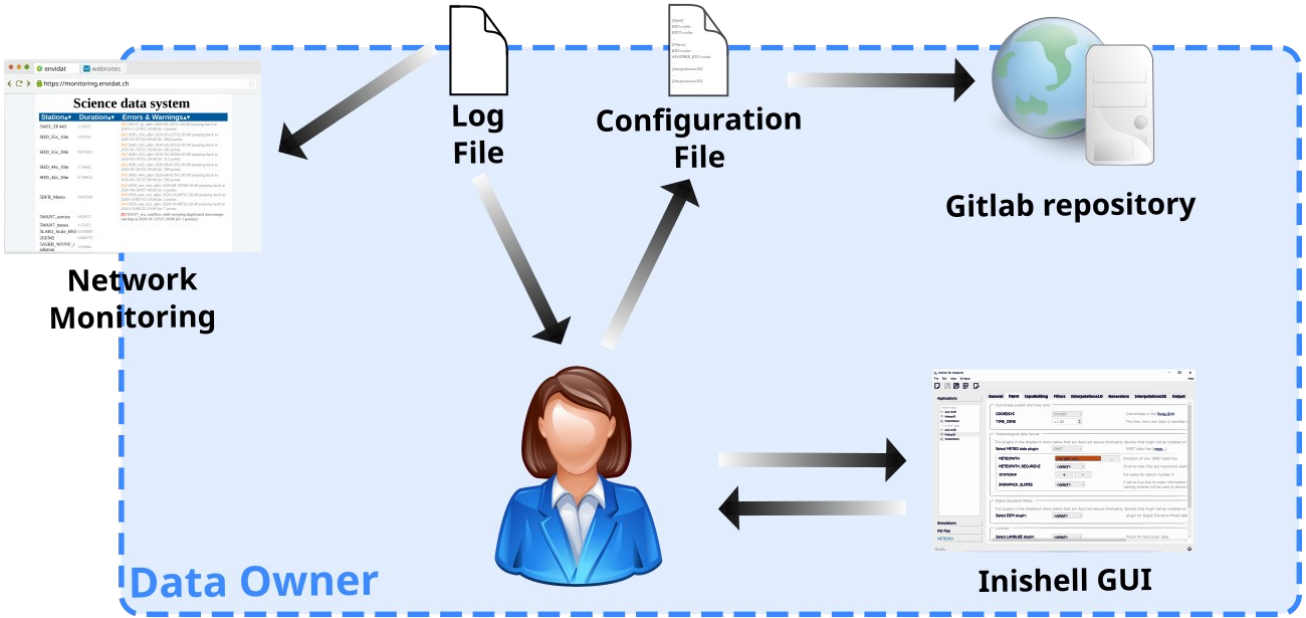


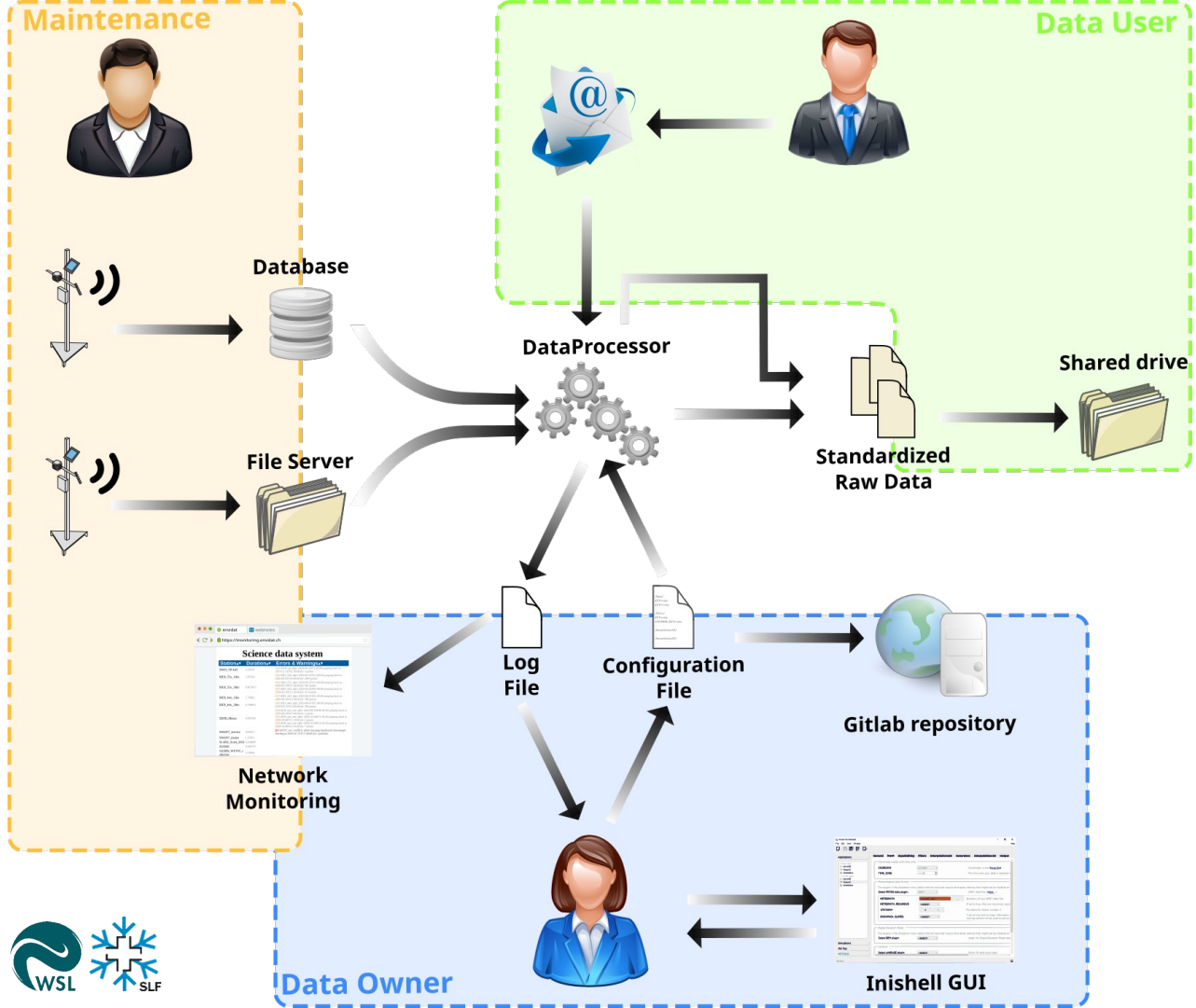
- Requests data on demand or get pre-computed data sets
- Data is FAIR and can easily be used without external help



- Installs & maintains the stations
- Ensures data transmission is running well
- Informs the data owner of maintenance operations

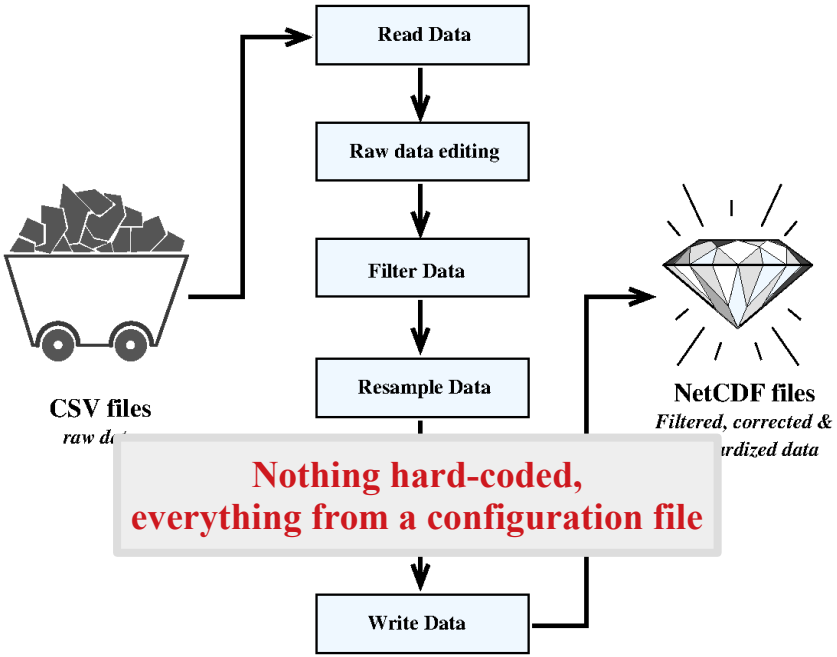
- Configures the raw data access in the configuration file;
- Declares relevant maintenance operations in the configuration file;
- Configuration file editor: Inishell GUI
- Checks data quality, configures filters and corrections as needed (monitoring tool provided)
- Every new configuration file committed to a gitlab repository





- The data processor connects the three actors
- It interprets the configuration file to convert unstandardized data into FAIR data sets
- It generates detailed logs that are parsed by monitoring tools

Data processor



- MeteoIO meteorological data pre-processing library (started in late 2008)
- In operational use for avalanche warning applications
- Many input formats to choose from, several output formats (through plugins)
- Many editing / filters / corrections to choose from

More information

- Data processor: MeteoIO pre-processing library, see (Bavay & Egger, 2014, gmd) https://doi.org/10.5194/gmd-7-3135-2014

- GUI for configuration file: Inishell see (Bavay et al., 2022, gmd) https://doi.org/10.5194/gmd-15-365-2022

- Earlier version for the WMO Global Cryosphere Watch, see (Bavay et al., 2020, dsj) http://doi.org/10.5334/dsj-2020-006

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