Status of the EPN Historical Data Center

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ROYAL OBSERVATORY OF BELGIUM
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LAC/Repro 3 Workshop

Background

- Upgrade of our Data Center to comply to FAIR data principle

- FAIR-GNSS project
  - Partners: **Royal Observatory of Belgium & Ghent University**
  - Funding Agency: **Belgian Science Policy Office (BELSPO)**
  - Duration: **15/12/2020 – 14/03/2023**
  - Goal: **Create an open data portal for European and Belgian GNSS reference station data collections, built upon FAIR guiding principles**

FAIR-GNSS webinar material available at https://fair-gnss.oma.be/webinar.php

OLD database

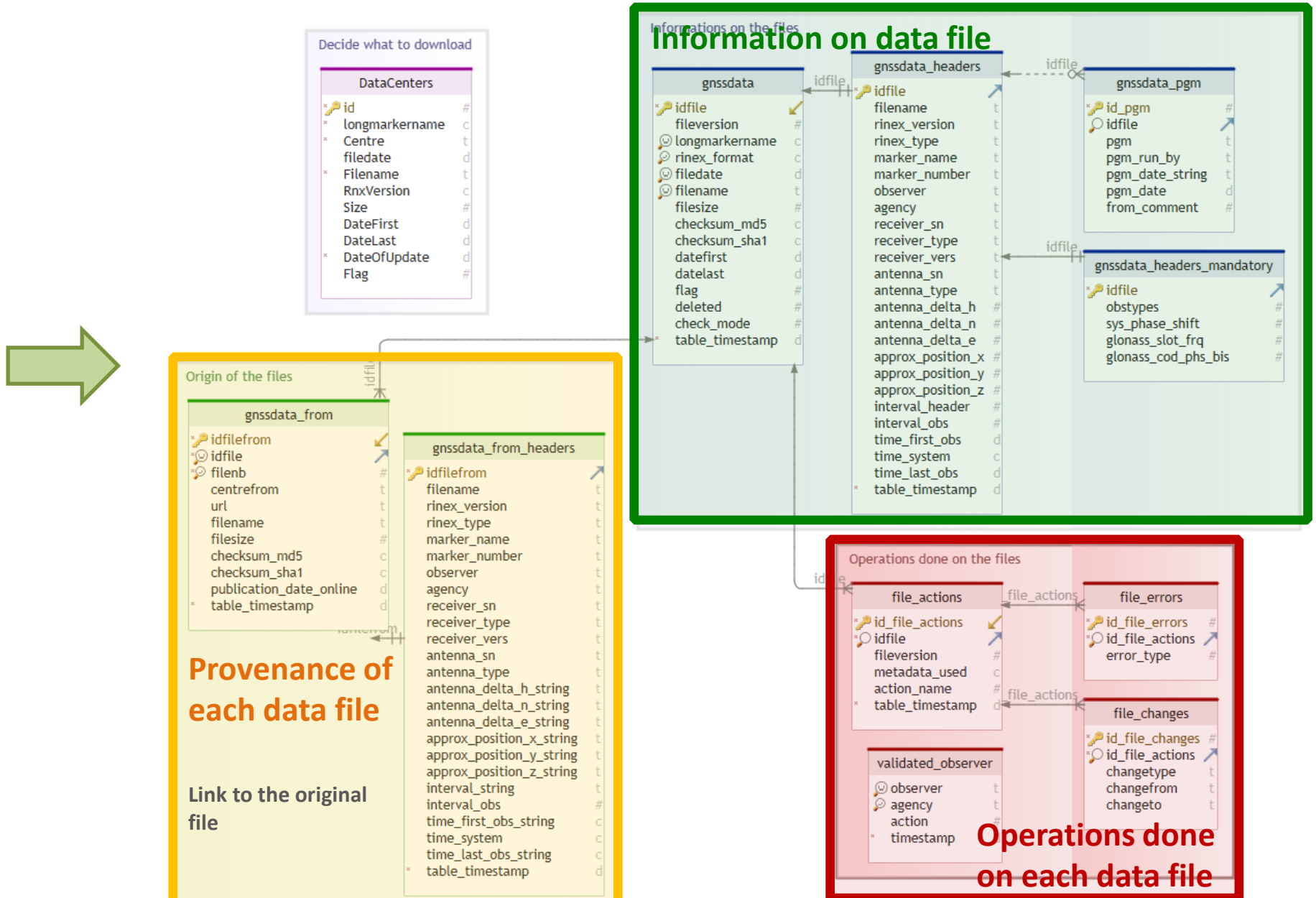
DataCenters

id	#
LongMarkerName	c
Centre	t
RnxDir	c
DATE	d
Filename	t
RnxVersion	c
Size	#
DateFirst	d
DateLast	d
DateOfUpdate	d
Flag	#

ROBDataRepository

id	#
LongMarkerName	c
RnxDir	c
DATE	d
Filename	t
RnxVersion	c
Size	#
DateFirst	d
DateLast	d
DateOfUpdate	d
Flag	#

New database



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Implementation

- Software design and development (started in Summer of 2021)
- Testing on recent data and historical data (since November 2021)
- Re-population of the database with additional required information (since February 2022, restarted in June 2022 after a meeting with the Regional DC)
  - Data after 1st January 2022 + all incoming files (recent or historical)
    ⇒ Full information: provenance,
    changes applied on the files,
    header content,
    warnings and errors
  - Data before 1st January 2022
    ⇒ Limited information: header content,
    warnings and errors
- Cleaning of the flags, enrichment with information from Anubis quality checks, time series monitoring (Not Started Yet)

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Warnings and errors handled

Error cannot be corrected → RINEX file is not published
Station stopped RINEX 2
Duplicated RINEX (e.g. _R and _S)
RINEX 3 long and short exists!
RINEX 3 bad name (not 0000)
crz2rnx or rnx2crz failed
<Site log> indicates a receiver or antenna was removed (or installed) during this day
No site log file for <station> in M3G
Invalid or isolated RINEX 3 data
Incorrect conversion from RNX 2 to RNX 3
Former EPN station
Data are not valid
Incorrect position
Less than 20 epochs with observations
Invalid RINEX 3 data header
Observation sampling rate is <x sec>
Few epochs available
Mandatory line with label END OF HEADER is missing.
Mandatory line with label END OF HEADER is missing.
Misformatted observation epoch
Mismatch between Epoch of first observation <2020 11 12 > and date extracted from the RINEX file name
File contains consecutive observations from two different days
RINEX format in header is not a RINEX 2 or 3 version

File with new Observer → RINEX file is quarantined

Error can be corrected → RINEX file is published
Special character detected and removed
Mismatch between YYYY MM DD in header string TIME OF FIRST OBS and YYYY MM DD of Epoch of first observation
Epoch of first observation is after time in header string TIME OF LAST OBS
Misformatted <YYYY MM DD HH MM SS.SSS> in header string TIME OF FIRST OBS has been corrected
Misformatted <YYYY MM DD HH MM SS.SSS> in header string TIME OF LAST OBS has been corrected
Misformatted header label has been corrected
Removed line with duplicate header label
Missing Mandatory line
Mismatch at the decimal second level between Epoch of first observation <2020 11 12 > and date extracted from the RINEX file name
Epoch of first observation is before time in header string TIME OF FIRST OBS

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Conclusion on the Status of the EPN Historical Data Center

- Upgrade of our Data Center with more information:
  - provenance,
  - changes applied on the files,
  - header content,
  - warnings and errors

- Homogeneous error detection

- Remaining work:
  - cleaning of the flags
  - add external information (Anubis QC, EPN products)

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