

## Quality Assurance of EPOS-GNSS metadata provided by the EPOS GNSS Data Gateway

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The EPOS-GNSS Data Gateway disseminates two types of metadata: the station and file metadata for EPOS and gives access to the data.

The **GNSS station metadata** are provided from the “Metadata Management and Distribution System for Multiple GNSS Networks” (M3G). The transferred metadata consists of GNSS station information corresponding to the information contained in the standard ‘site log’ file maintained by the International GNSS Service (IGS) as well as information entered in an online form (network, doi, licence, station-to-node link). Once the GNSS station metadata have been inserted into the EPOS GNSS Data Gateway, they are sent to the EPOS-GNSS Products Portal and the network of EPOS GNSS local nodes. A selection of these metadata is also made available to the EPOS-ICS (Integrated Core Service).

The steps for the Quality Assurance of the EPOS-GNSS station metadata provided by M3G are described in the [M3G Quality Assurance document](#).

The **GNSS file metadata** are created at the local node level. When conforming to a level of quality, they are made available at the EPOS GNSS Data Gateway for distribution. The process for managing quality control is mostly automated. It is based on the generation of quality control (QC) metadata using the [Anubis software](#). Then, they are used to validate the data file and the file metadata following several criteria such as the consistency with the station metadata, the file integrity and completeness. Once the GNSS file metadata have been inserted into the EPOS GNSS Data Gateway, a selection of the GNSS file metadata is made available to the EPOS-ICS.

The detailed steps of the data publication and of the quality control process are the following:

Step 1. The RINEX file is stored in the local node data repository. RINEX is the international storage and exchange format for scientific GNSS Data

Step 2. The RINEX file is indexed, and the generated file metadata are inserted in the database of the local EPOS GNSS Node. A flag indicates that the quality control has not been done on the file.

Step 3. The RINEX file is processed with Anubis to generate QC metadata.

Step 4. File completeness and quality are checked. The header of the RINEX file is compared to the station metadata. In particular, the instrumentation and the observation dates are checked. A score is attributed to the file metadata.

Step 5. If validated the file metadata are synchronized to the EPOS GNSS Data Gateway and are available for dissemination.

Step 6. If not, the RINEX file can be reprocessed to be validated and synchronized to the EPOS GNSS Data Gateway. In the meantime, the RINEX file is available at the local EPOS GNSS node.

Once the GNSS station and file metadata have been inserted into the EPOS GNSS Data Gateway, they are available to the user community through the web client (<https://gnssdata-epos.oca.eu>), the command line client (<https://gitlab.com/gpseurope/pyglass/-/releases>), and the API (<https://gnssdata-epos.oca.eu/GlassFramework>) of the Data Gateway. Station metadata are available for discovery and are provided in 3 different formats (JSON, GeodesyML and IGS Site Log) for download. File metadata (including the url) are provided in two formats (JSON or list of url). The RINEX files can also be downloaded.