GNSS Metadata Management and distribution system (M³G) Andras Fabian, Carine Bruyninx, Juliette Legrand

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Introduction

In response of the new GeodesyML metadata format and the requirements of the evolving EPN and EPOS networks, the Royal Observatory of Belgium is developing an on-line GNSS station site log and other metadata management and dissemination system. The web site of the metadata management system has e.g.

o A completely new design to navigate through the web site and the basic information.
o An improved site log submission system focused on the user's needs.
o A completely new metadata validation system to serve the requirements of multiple networks.
o A new network terminology in order to distinguish International, Virtual and Local networks.
o An additional metadata information for the stations (e.g. datacenters for every international network, license information, embargo time, nominal data submission)

M³G Metadata Management and distribution system for Multiple GNSS Networks

HOME   STATIONS OVERVIEW   STATIONS   PROFILE   REGISTERED AGENCIES/STATIONS   DATA CENTERS   GUIDELINES   APPLICATION VERSION   LOGOUT
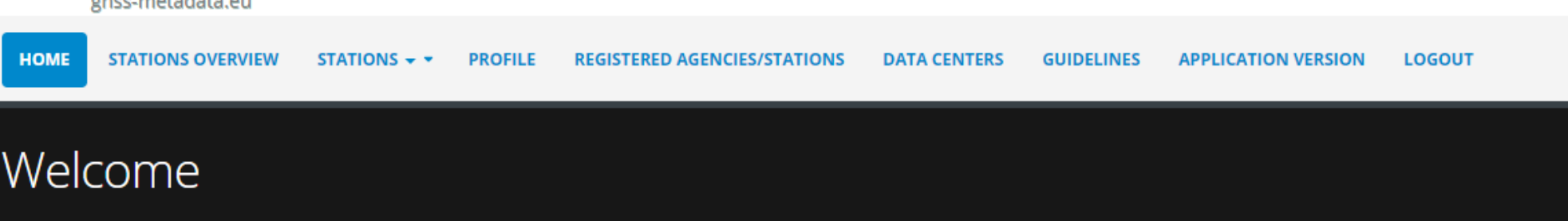
Welcome

Welcome to the M3G web site. M3G stands for Metadata Management and distribution system for Multiple GNSS Networks. The system allows to upload, validate, and distribute GNSS station metadata (e.g. site logs) and has been developed primary to serve the EPOS, EPN, and EPN densification GNSS networks.

USING M3G

Prior to uploading any metadata for a station belonging to the EPOS network, M3G must have in its possession a completed and signed EPOS-GNSS Supplier Letter from the Data Supplier, including the information on the Operational Centre responsible for maintaining the station metadata in M3G. This Operational Centre will then receive a login account on the M3G web site.

For stations only included in EPN or EPN-densification networks, there is no need to provide an EPOS-GNSS Supplier Letter and all EPN Operational Centers will be invited, one at the time, to switch from the present EPN on-line site log submission system to M3G.

Visit the Guidelines section for the responsibilities of Data Supplier and Operational Centre.

Terminology

Network terminology

o **International networks:** A station can belong to more than one international network. Each international network has its own requirements/rules. (e.g. EPN, EPN densification and EPOS)

o **Virtual networks**: The virtual network is just a search keyword used to regroup stations (e.g. Vulcanology)

o **Local/National networks:** When a station is set up in M³G, it can belong to one (or more) national network(s). Each network can have a DOI.

Agency terminology

o **Operational center (OC) :** Agency that has a login in M³G and is in charge of submitting station metadata. Normally the OC is the owner of the station.

o **Station owner (SO) :** Agency that decided to install the station, which can remove it and paid for it. Section 12 "Responsible Agency" of site log.

o **On-site point of contact :** The local point of contact for the site. Section 11 "On-Site, Point of Contact Agency Information".

Site log validation concept

1. M³G allows a unique submission of a site log that belongs to several international networks, while handling the different site log validation rules for each network.

2. After validation, M³G distribute the site log to the portals of each international network to which the station belongs: to EPN CB for EPN stations and to the EPOS-GNSS data gateway for EPOS stations.

New functionalities

Agency/Contact Information in M³G

Contact information is the hardest to keep up to date. Centralizing this information will facilitate its maintenance. The main philosophy in the user interface is to

o Define all agencies and contact information in a centralized place (Associated Agency : The station owner/On-site point of contact, if it is different from OC)

o Link to the Agencies/Contact Information inserted in the "Profile" from all other places in M³G where agency/contact information is required.

Interoperability export/import format (GeodesyML)

The GeodesyML is an extension of the Geography Markup Language (**GML**) and Geographic information (**ISO/TS 19139:2007**) standards

o It is defining how the GNSS metadata transferred to the XML format.

o M³G supports the machine-readable XSD standard for GNSS station metadata.

### Additional information during the station importation

During the station set up, the OC indicates for each station:
o International -, Local – and or virtual network
o Upload datacenters for each international network
o License info, default is "CC:BY"
o Embargo time, default is "none"
o Nominal data submission (e.g. hourly/daily, RINEX 2/3)

Personal Data Policy

M³G will be compliant with the EU GDPR. OC will be asked explicitly if they agree to make their personal data available to the outside word. If not, ROB will keep these data internally in its database.

Philosophy behind the M³G system
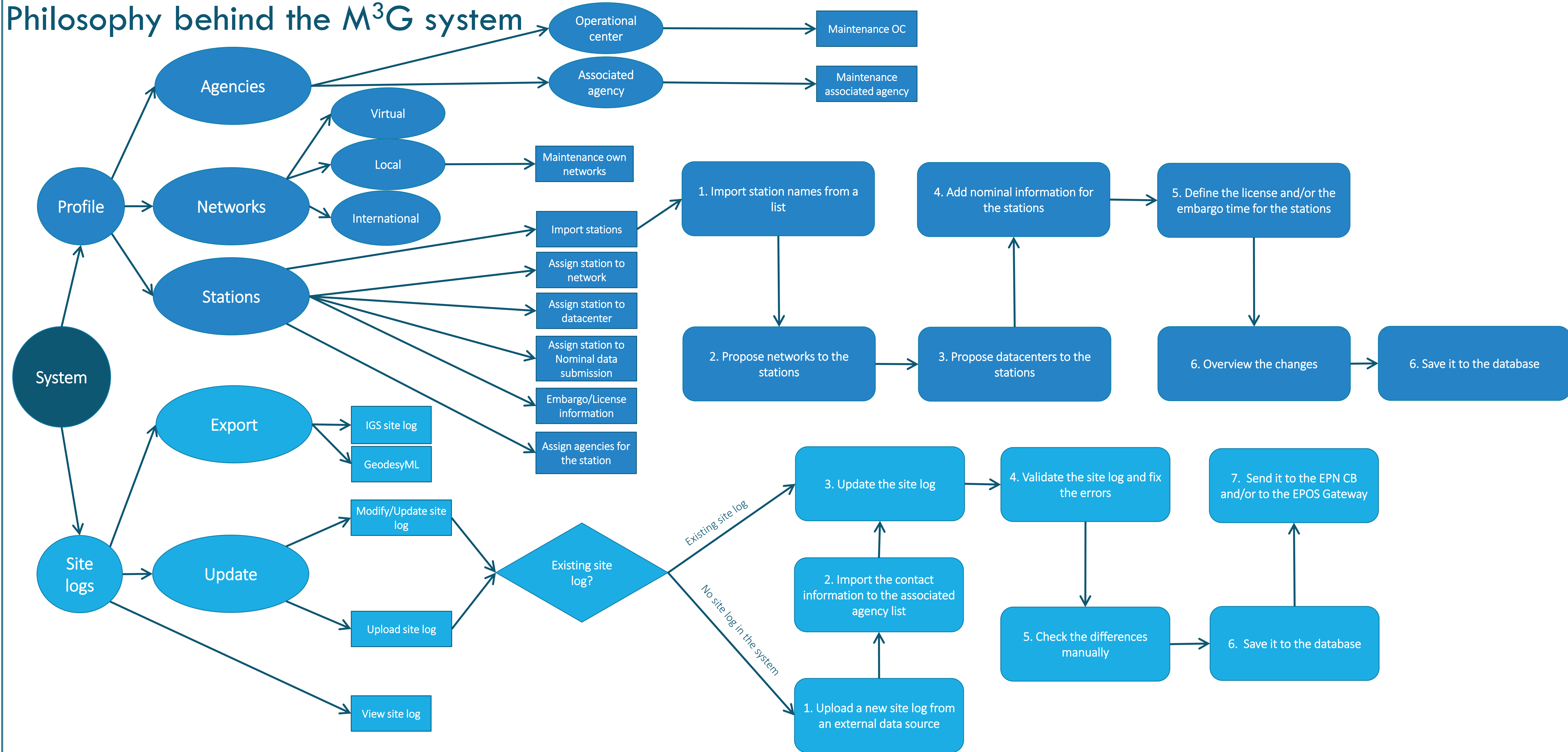
GNSS metadata migration from EPN

M3G was developed in the frame of EPOS, but it is also used in the EPN. Today the EPN CB is migrating the EPN and EPN densification OCs. 29 out of the 99 OCs at EPN CB have already been migrated to the M3G. After the migration, OCs have to use the M3G for the site log submission instead of the old site log submission system.

EUROPEAN PLATE OBSERVING SYSTEM