ROB's GNSS Contribution to

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http://www.epncb.eu/

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EPOS (European Plate Observing System)

www.epos-ip.org

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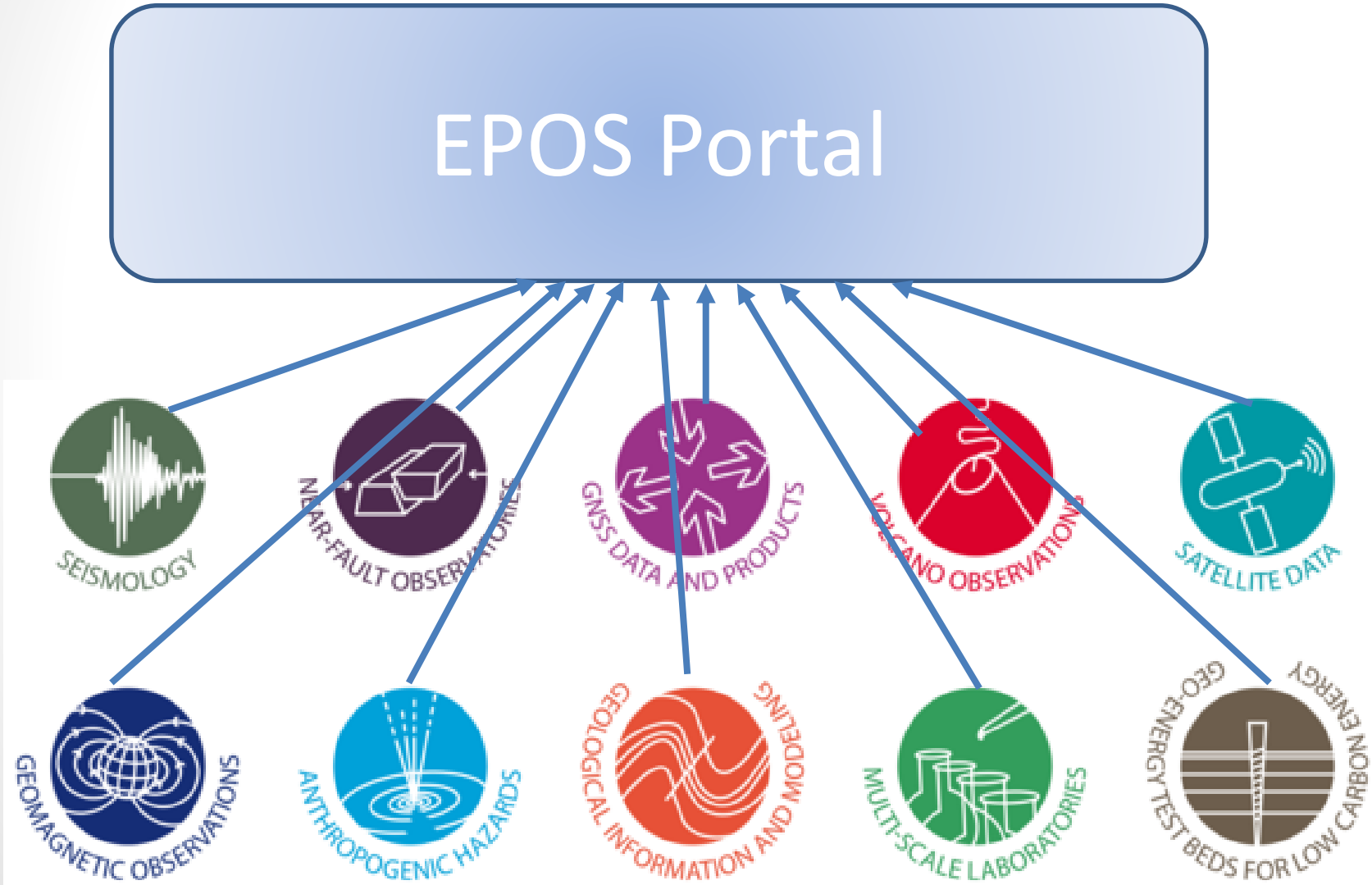
European Research Infrastructure (ESFRI) serving **Solid Earth science** (study the internal structure and dynamics of planet Earth, from the inner core to the surface)

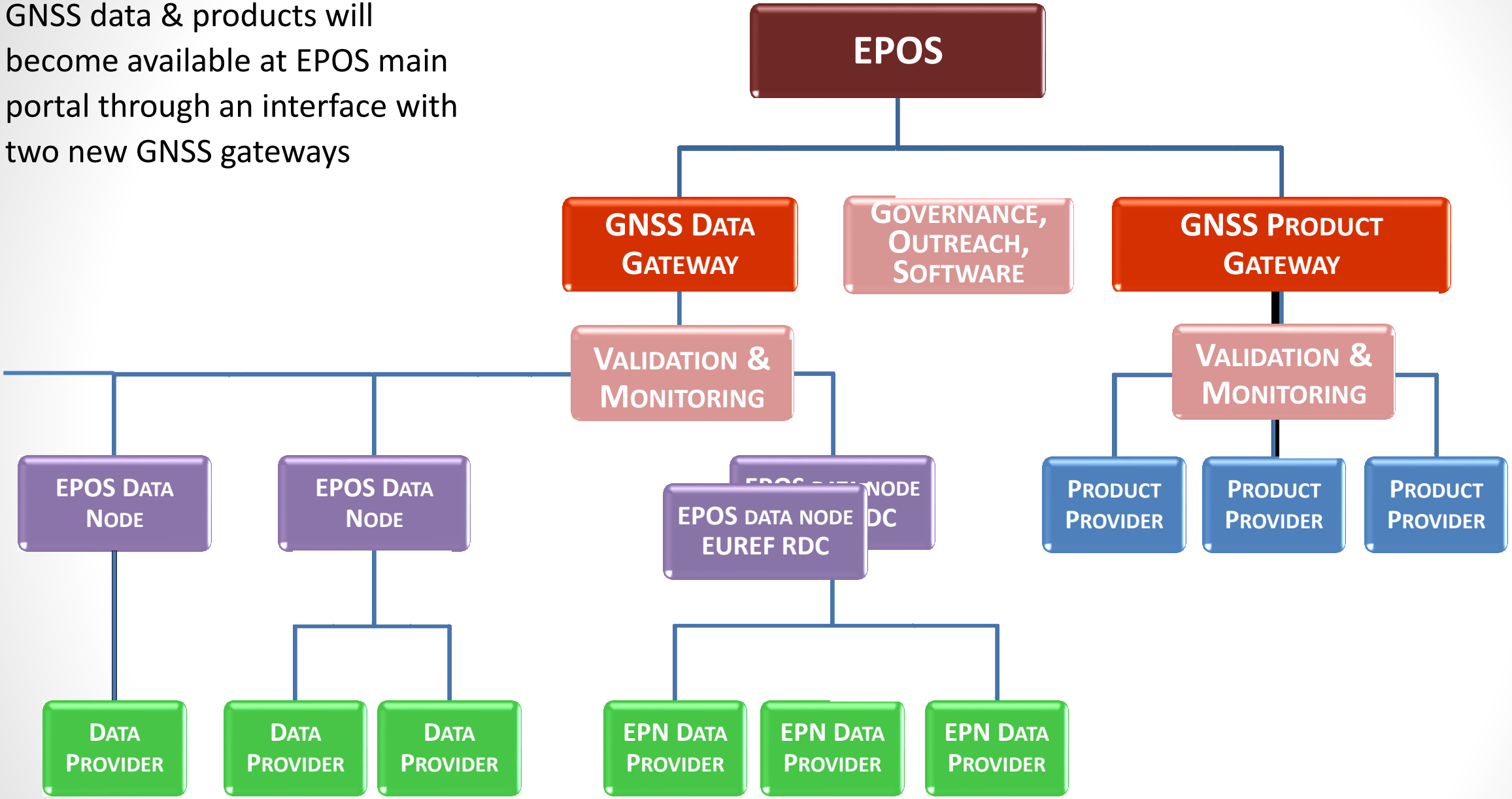
Provide **(open) access** to data and products as well as tools for visualization, processing and analysis through the EPOS portal

EPOS is multi-disciplinary



This presentation: examples of Belgian in-kind contributions provided by ROB to EPOS (focus on GNSS).

GNSS data & products will become available at EPOS main portal through an interface with two new GNSS gateways



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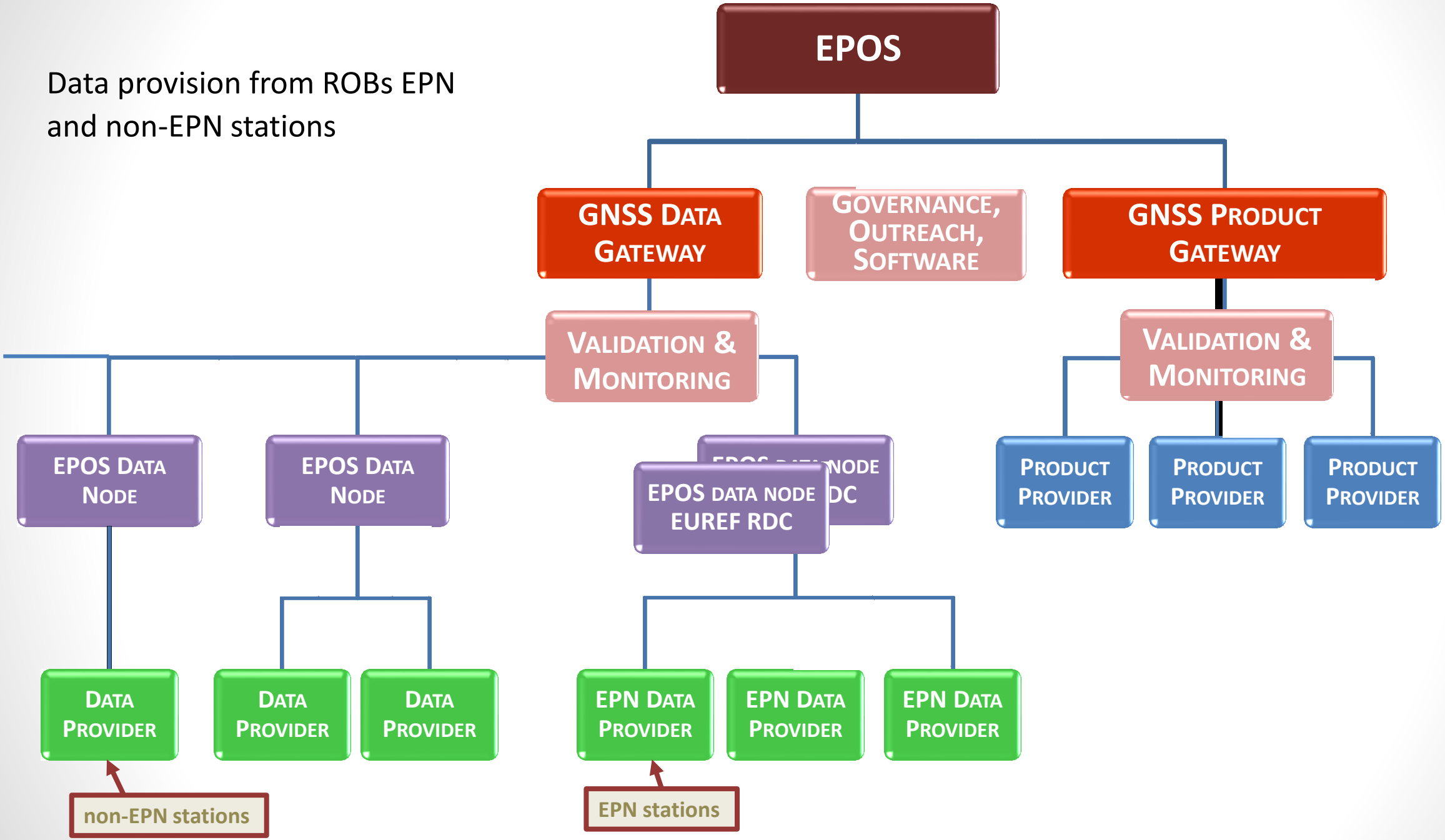
Data provision from ROBs EPN and non-EPN stations



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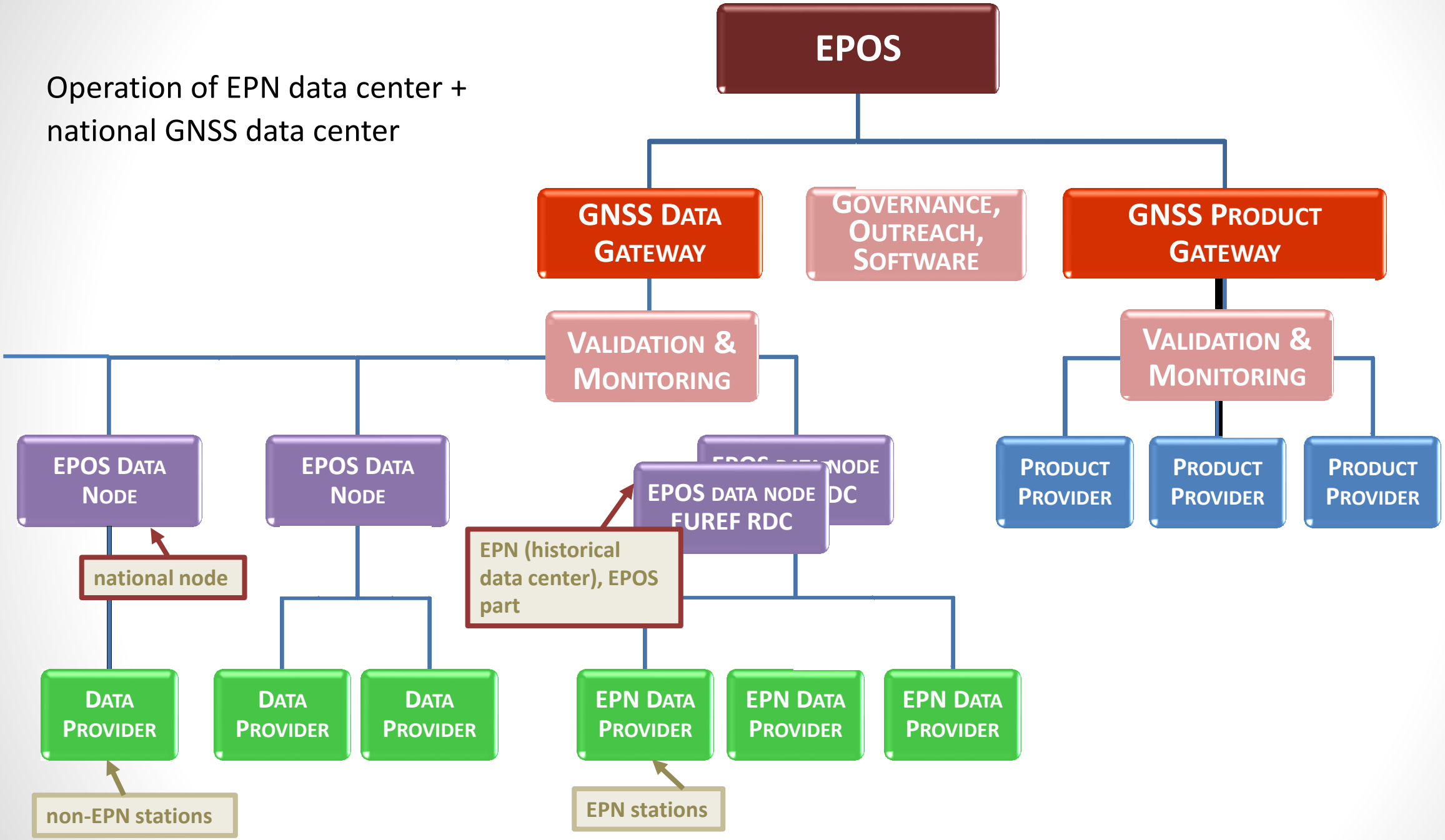
GNSS stations in EPOS

- Signed and submitted EPOS data supplier letter
  - We give EPOS permission to distribute the data from our GNSS stations
  - EPOS can put CC:BY license on our data on ROB's behalf (there is no license on our data)
    - License info will be included in station metadata (extension to the info in the site log)
    - Consequence: people who use our data, must acknowledge ROB!!
  - Initial list of stations: ROB's 4 EPN stations – list can be extended later on-line in EPOS system
- (EPN) Site logs – *nothing to do*
- Get DOI for the data for ROB's GNSS network
- RINEX data (no real-time in EPOS yet) will flow to EPOS through BKG and ROB – *nothing to do - not yet flowing to EPOS – EPOS not yet ready.*
- Under discussion:
  - Provision of non-EPN Belgian GNSS stations to EPOS
  - Contact other Belgian agencies (less aware of EPOS) with GNSS stations to encourage them to submit GNSS data to EPOS?

Operation of EPN data center + national GNSS data center



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EPOS data nodes / data repositories

ROB:

- TBD: Belgian national data node to make non-EPN data available to EPOS?
- Run GLASS software on top of historical EPN data center
  - Data from EPN stations that are also EPOS stations will become visible to the EPOS GNSS data gateway

GLASS node:

- Runs G-nut/Anubis quality checks on data (!)
- Makes the GNSS data and quality check results ‘discoverable’ at the central EPOS GNSS data portal (no upload of RINEX data to the data portal)

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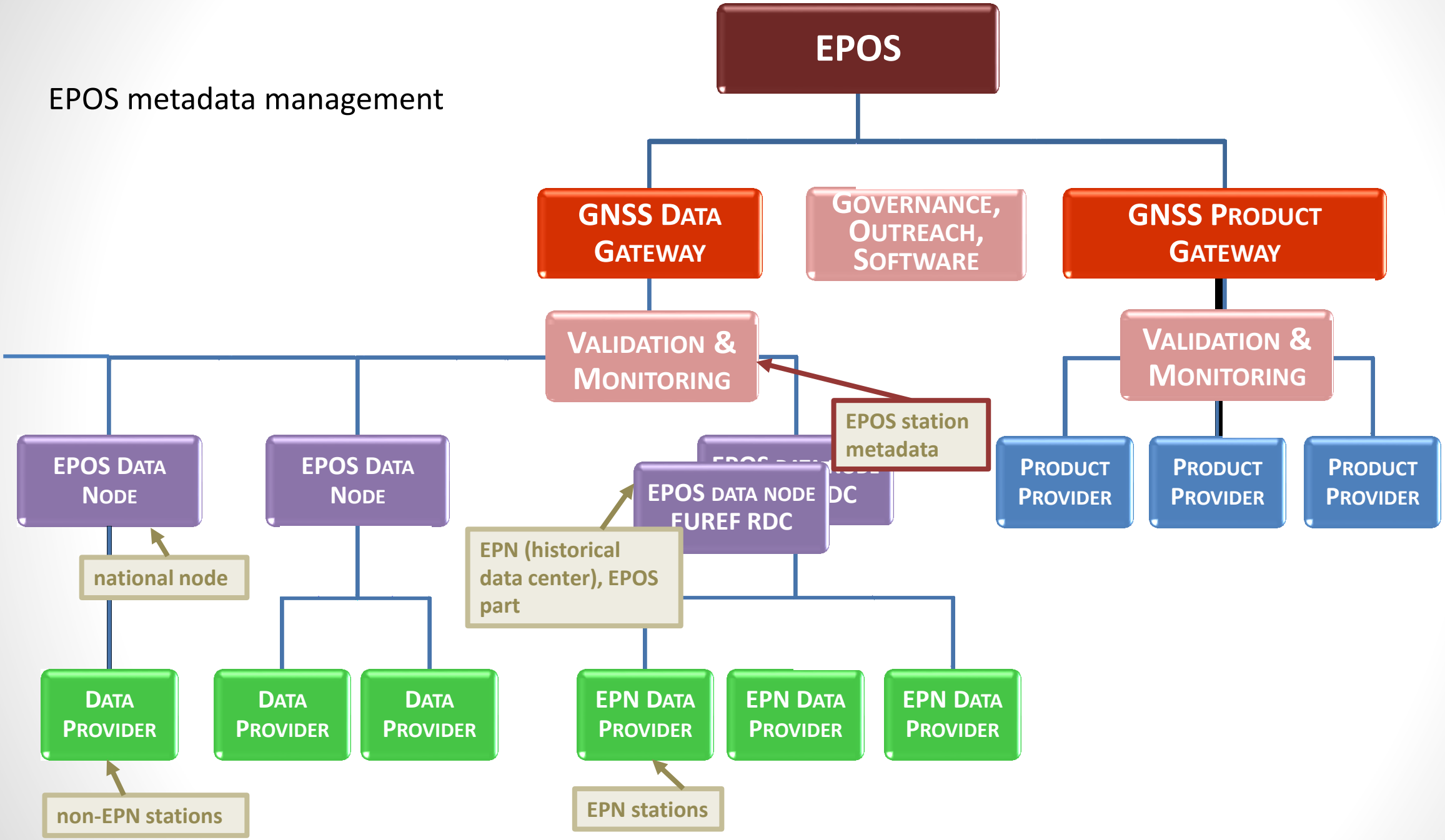
EPOS metadata management



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New EPOS service: Management of station metadata

Unique submission of site log of stations belonging to several international GNSS networks

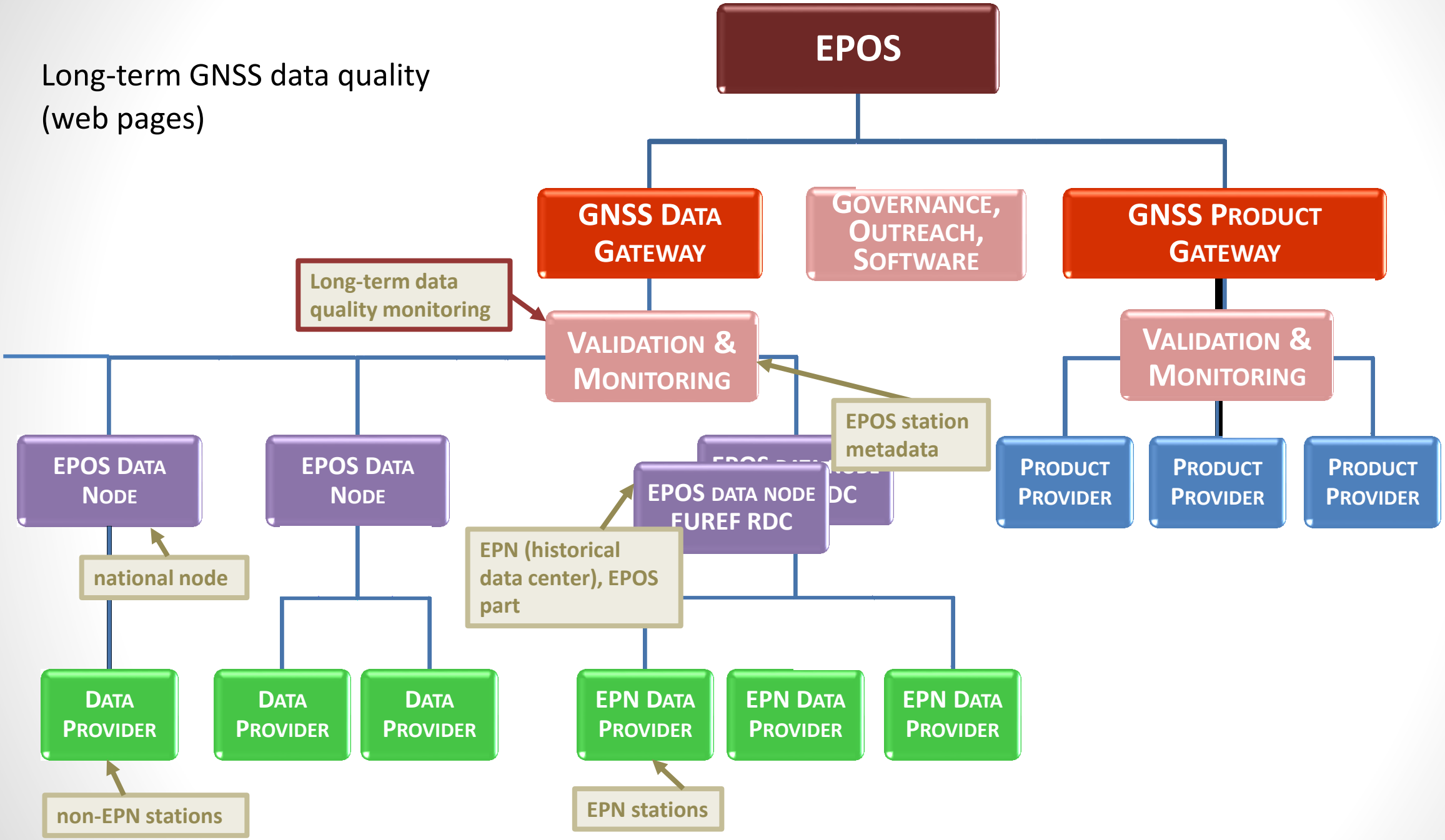
Fully consistent site logs between EPOS and EPN

Natural follow-up of the activities of EPN Central Bureau

ROB will

- Collect and validate EPOS site logs + additional metadata (local network name, DOI, license, …)
- Using the new M3G (Metadata Management and distribution system for Multiple GNSS Networks), see poster by A. Fabian et al.
  - Developed in the frame of EPOS
  - But, to be used for both EPN (migration from previous EPN CB on-line site log submission system is ongoing) and EPOS (in use already)
  - Handles the different site log requirements of different networks
  - After validation, site logs are distributed to the portals of each international network to which the station belongs (not necessary at ROB)
- Collect EPOS data supplier letters

Long-term GNSS data quality (web pages)



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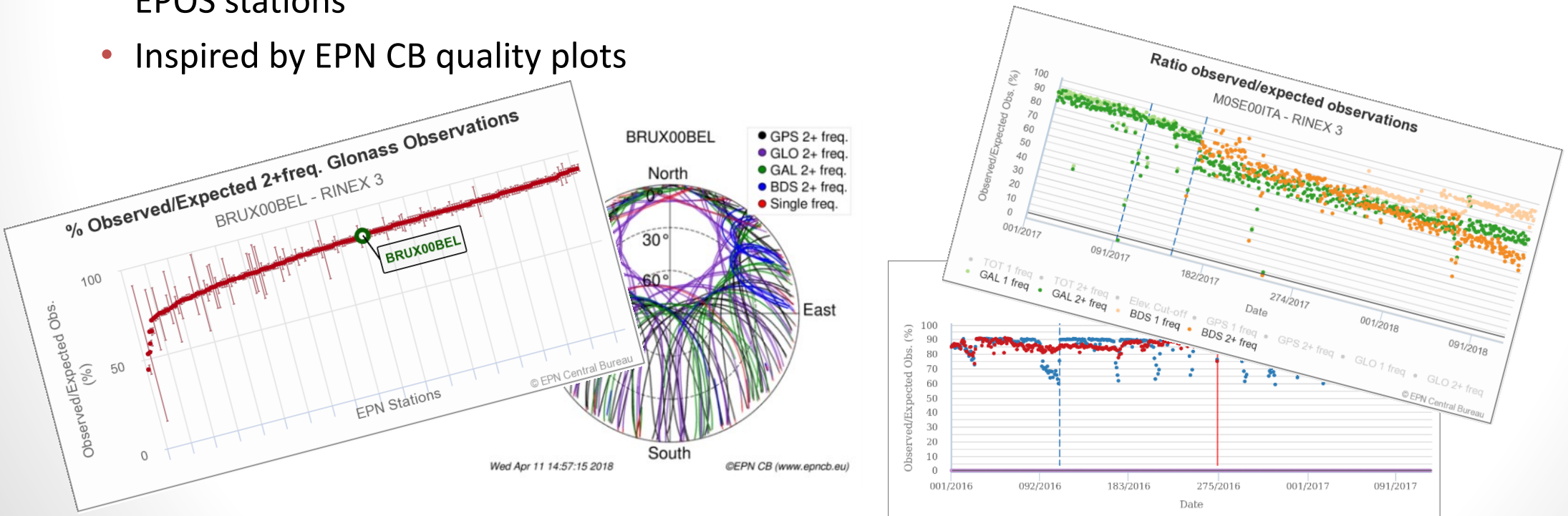
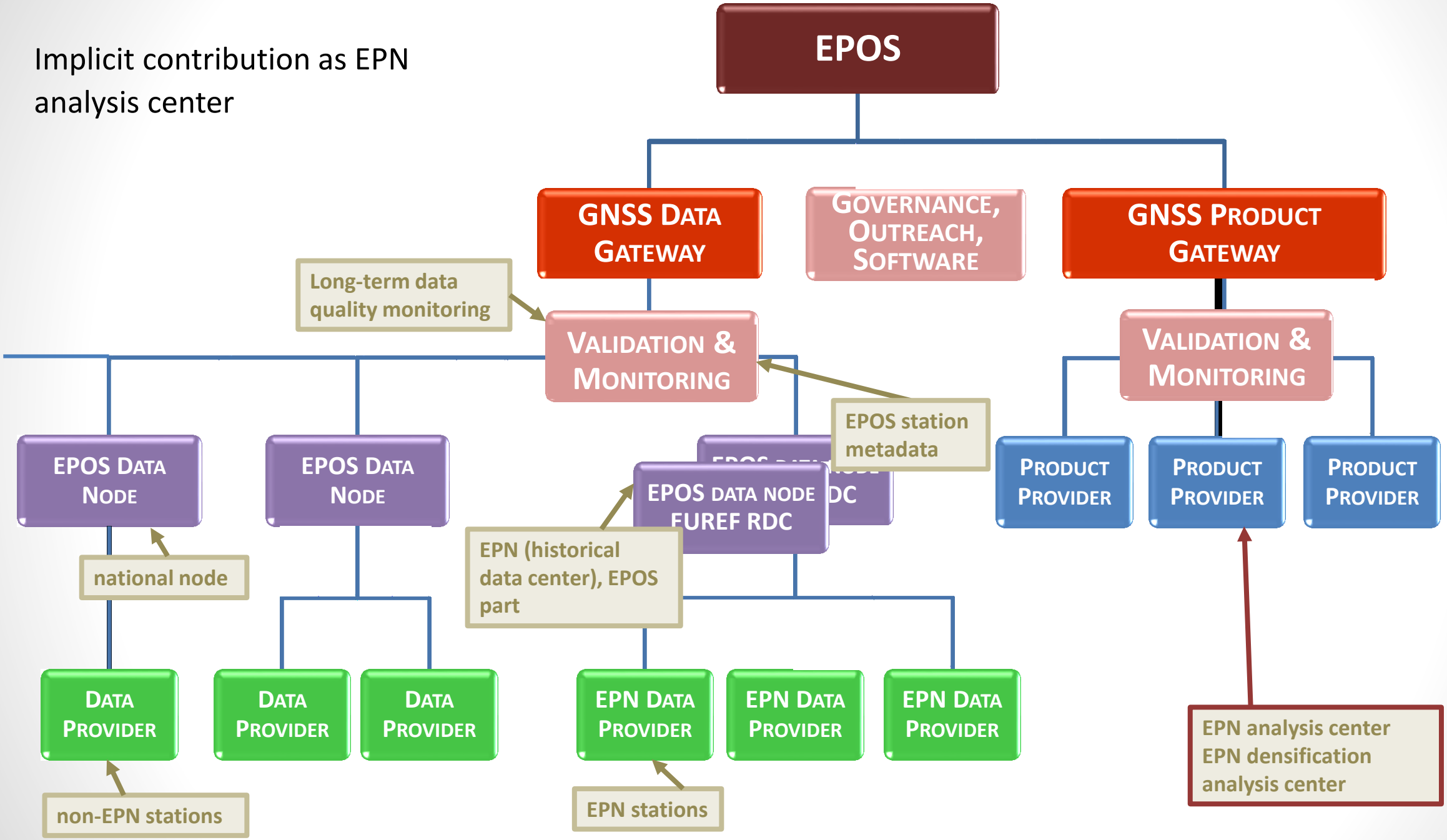
New EPOS service: Long-term monitoring of EPOS data

- EPOS data nodes run G-nut/Anubis quality checks

- Future ROB activity
  - Use key quality metrics to create portal with on-line dynamic data quality plots for all EPOS stations
  - Inspired by EPN CB quality plots



Implicit contribution as EPN analysis center



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EPN Analysis Centre

EUREF uploads to EPOS GNSS product gateway

- Daily/weekly combined EPN SINEX solution
- EPN densification solution (only for ACs that agreed to be included in EPOS submission)

ROB:

- EPN analysis center results implicitly provided to EPOS

- EPN densification analysis center implicitly provided to EPOS (ROB agrees to contribute to EPOS)

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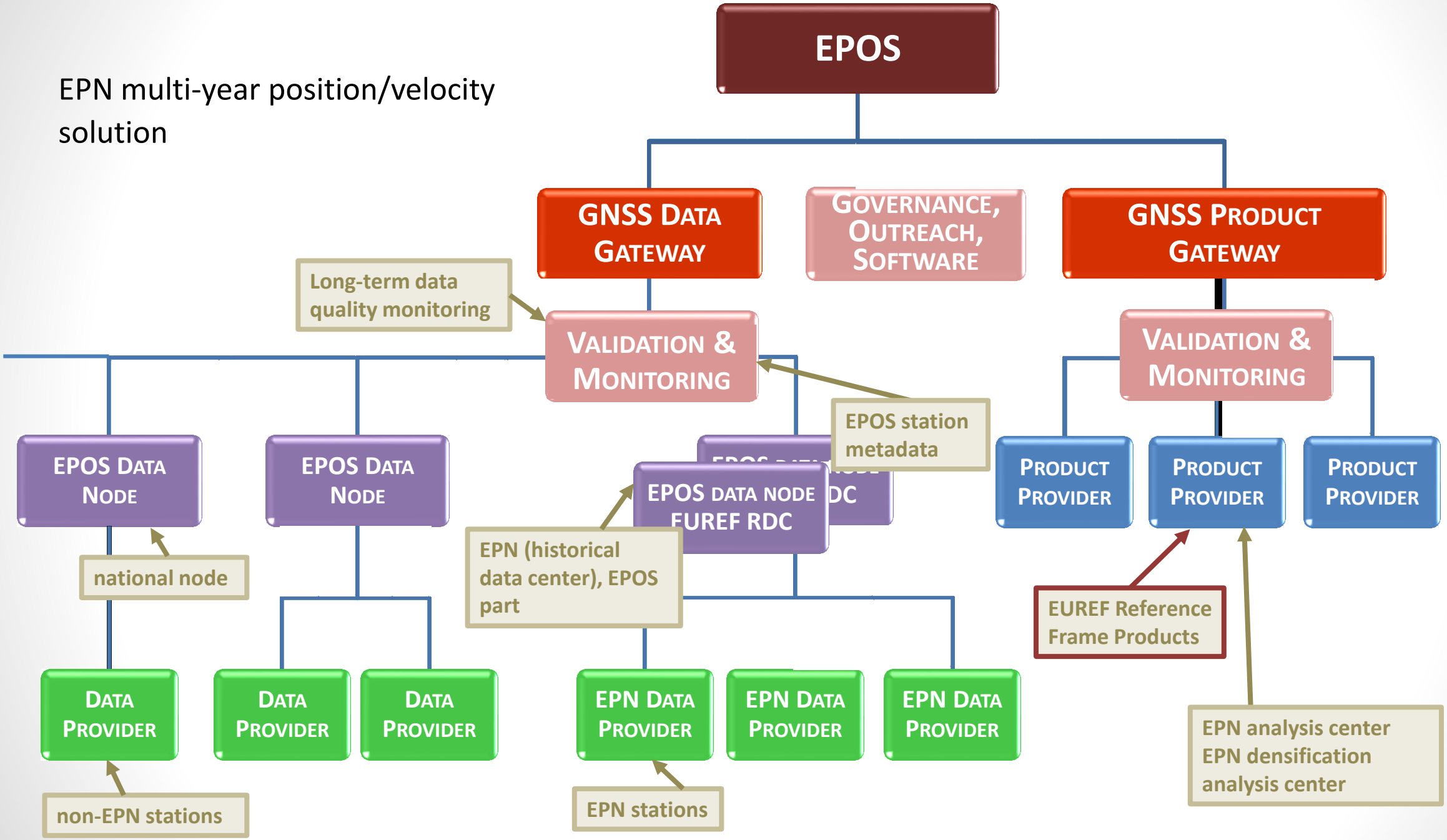
EPN multi-year position/velocity solution



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EUREF Reference Frame Products

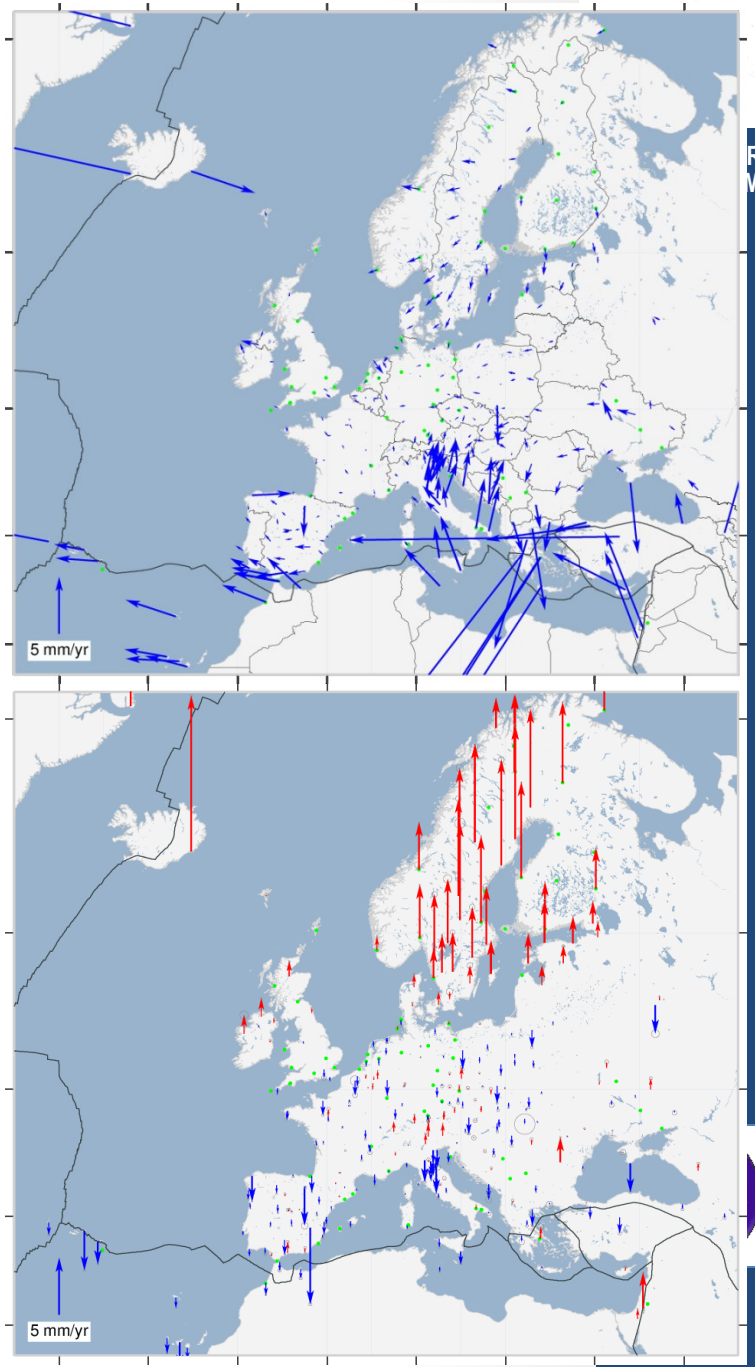
ROB as EUREF reference Frame Coordinator uploads the EPN Multi-year Positions and Velocities to EPOS GNSS product gateway

Some EPN Class B stations are not suitable for reference frame purpose, but are useful for geophysics → submission of velocities to EPOS.

Class B stations with short time span will not be submitted to EPOS

The submission to EPOS will contain:

- Cleaned time series
- Multi-year positions/velocities (SINEX)
- List of discontinuities
- List of outliers



Conclusions

- ROB contributes to EPOS on several levels

- Many contributors to the EPN
  - Could contribute to EPOS
    - EPN data centers: become EPOS data node (wait for GLASS software to become available)
    - EPN densification analysis centers: give A. Kenyeres agreement to include your densification solution to densification solution provided to EPOS
    - EPN station managers: sign data supplier letter
  - Contribute implicitly to EPOS, e.g. EPN analysis centers

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