UN-GGIM: Europe
GRF-Europe

UN-GGIM EUROPE | UNITED NATIONS COMMITEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

Markku Poutanen
Johannes Ihde, Wolfgang Söhne, Daniela Thaller
With contributions of
Zuheir Altamimi, Anne Jørgensen, Laila Løvhøiden

Global Geodetic Reference Frame – GGRF

- The UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) decided in July 2013 to formulate and facilitate a draft resolution for a Global Geodetic Reference Frame.
- The United Nations General Assembly adopted resolution 69/266 on a Global Geodetic Reference Frame for Sustainable Development in February 2015. Total of 53 Member States sponsored the resolution.
- This decision reinforces the importance of the GGRF

UN Resolution on GGRF

UN General Assembly urges the sharing of geospatial data to benefit People and Planet

- To ensure development and sustainability of the GGRF
- To enhance global and multilateral cooperation
- To provide technical and knowledge-based assistance for developing countries in need
- To promote open sharing of geodetic data, standards and conventions
- To commit the Member States to improving and maintaining geodetic infrastructure (out of currently used “best-effort” maintenance of geodetic infrastructure)
- To develop outreach programmes

PHOTO: BJØRN-OWE HOLMBERG

Natural hazard and disaster management

Decision makers need an accurate and stable global geodetic reference frame to make good decisions for the future and to identify areas under threat of flooding, earthquakes or drought and to adopt preventive measurements to protect them. Geodesy provides the location basis for such decisions.

PHOTO: ANNE JØRGENSEN

Climate change and sea level monitoring

Climate change is a global challenge that puts stronger requirements on the precision of the global geodetic reference frame. Geodesy provides information about sea level changes, plate movements, land uplift, and ice sheet and glacier changes. Global society requires information about current trends at a scale measured in millimeters to detect changes of the Earth system with sufficient accuracy, for local, regional and global planning.

To be able to monitor and estimate future sea level variations, significant improvements in both geodetic infrastructure and data analysis are needed.

PHOTO: MORTEN BRUN

Geospatial information, mapping and navigation

'Location-based' services are becoming increasingly important in modern society.

The global geodetic reference frame supports satellite positioning technology and is a critical enabler of geospatial information interoperability and applications such as surveying, defining sea baseline, engineering construction, precision agriculture, intelligent transport and navigation.

GGRF – Global collaboration

- Global geodesy is dependent on contributions from nations all around the globe
- No single country can maintain the global geodetic reference frame alone
- We aim to change from the current system where contributions to the development of the global geodetic reference frame are undertaken on a ”best efforts” basis to one where they are made through a multilateral collaboration under a UN mandate

GGRF Working Group

- The United Nations Global Geospatial Information Management (UN-GGIM) Working Group on the Global Geodetic Reference Frame (GGRF) is now drafting a roadmap for the enhancement of the Global Geodetic Reference Frame.
- The Global Geodetic Reference Frame is fundamental for monitoring changes to the Earth including the continents, ice caps, oceans and the atmosphere. It is also fundamental for mapping, navigation and universal timing.

GGRF Objectives

- To provide an intergovernmental forum, for communication and cooperation on issues relating to the maintenance and enhancement of a GGRF;
- To develop a roadmap for a collaborative global geodetic observation network and the associated infrastructure, with sustainable funding and investment, as well as strategic partnerships between mapping, space and other interested agencies;
- To encourage open sharing of geodetic data and information that contribute to regional and global reference frames;
- To advocate for guidelines and standards to advance the interchangeability and interoperability of geodetic systems and data;
- To address various technical, institutional and policy issues related to the implementation of a GGRF.

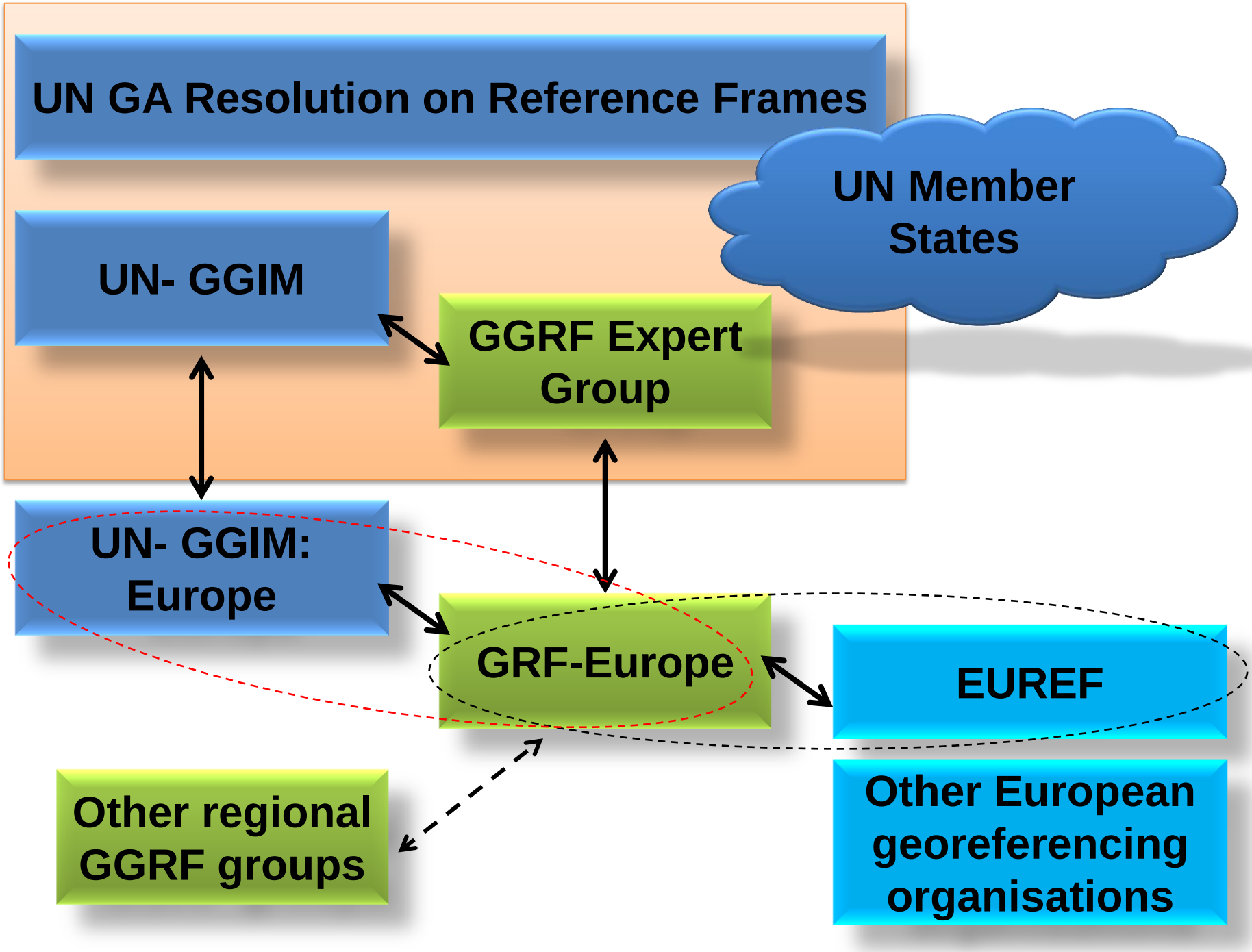
Global Geodetic Reference Frame for Sustainable Development - the European Contribution: "GRF-Europe"

Position Paper and Work Plan 2016 – 2018 on the UN-GGIM: Europe

Expert Working Group: Geodetic Reference Frame (GRF-Europe)

Basic idea: No new layer is needed but an interface and expert group between different actors in the field and the UN-GGIM: Europe

Why: GGRF covers topic globally but cannot act detailed enough on regional level. Continental/regional group is needed. Current georeferencing-related organizations in Europe either do not have political or economical power or they are not expert organizations in Geodetic Reference Frames.


UN GA Resolution on Reference Frames
UN Member States
UN- GGIM
GGRF Expert Group
UN- GGIM: Europe
GRF-Europe
EUREF
Other regional GGRF groups
Other European georeferencing organisations

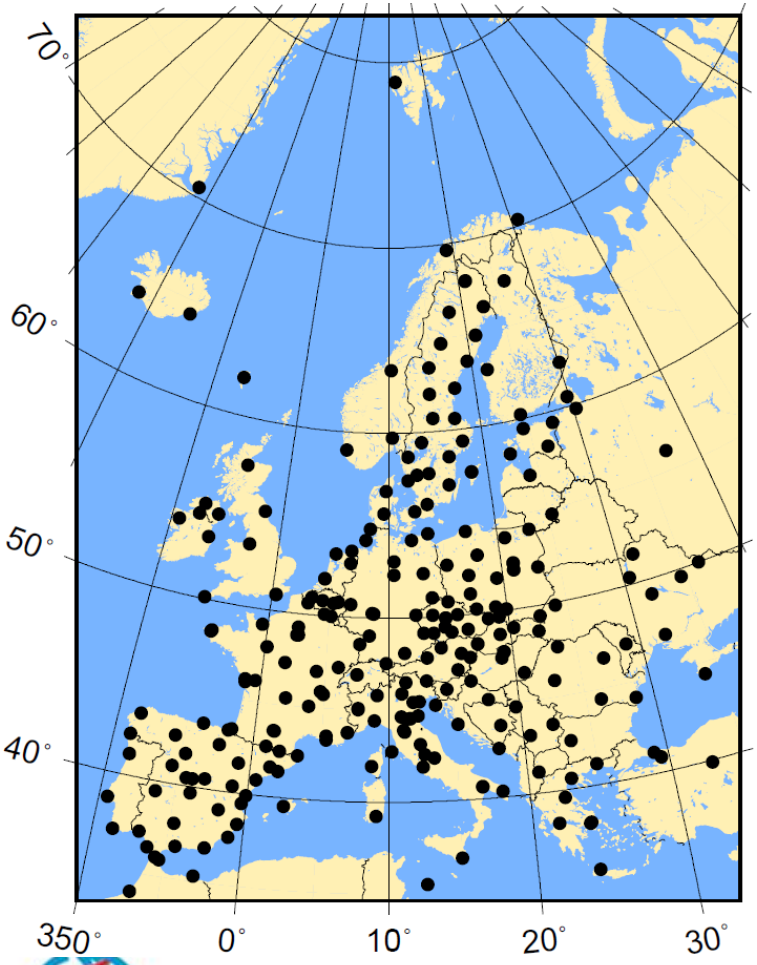
Geodesy and georeferencing related organizations in Europe

- **EUREF**
- EUPOS
- EuroGeographics
- International Federation of Surveyors (FIG)
- Council of European Geodetic Surveyors (CLGE)
- European Plate Observing System (EPOS)
- Network of European Regions Using Space (NEREUS)
- …

➢ EUREF is the provider of data and reference frames, it defines and maintains coordinate reference systems, deliver products,…

➢ Others are considered mostly as customers and users

EUREF – IAG Subcommission for Reference Frames in Europe



- Definition, realization and maintenance of the European Reference Frame, height system and gravity
- Promotes the adoption of the reference systems in Europe (ETRS89, EVRS)
- Coordinates the geodetic infrastructure and analysis to maintain refrence frames
- A part of global reference networks, and contributes to the IAG services
- The key infrastructure: EPN EUREF Permanent GNSS Network; voluntary federation of over 100 self-funding agencies, universities, and research institutions in more than 30 European countries with more than 200 GNSS permanent stations

Scope of the GRF-Europe plan

- To act as an interface between UN-GGIM: Europe, EUREF and the user community to share information and expertise, and to improve communication between the society, policy/decision makers and scientific community
- To act as a link for intergovernmental communication and cooperation on issues relating to the maintenance and enhancement of Geodetic Reference Frames within Europe.
- Following the UN GA Resolution, commitment to support improvement and maintenance of national geodetic infrastructures to enhance the global and European geodetic reference frames as a part of IAG and EUREF networks
- To promote share of open geodetic data, standards and conventions in coordination with the IAG and with central actors in Europe, foremost EUREF as the provider of European Reference Frames.

Objectives and Goals

- The existing georeferencing organizations in Europe can form the core of stakeholders' platform for the implementation of GRF within the UN GGIM-Europe.
- The best-effort commitments to IAG Services and European geodetic infrastructures may in the future transform into an obligatory commitment of governments. European needs and, on the other hand, European contribution to the UN-GGIM and GGRF can be improved via a common forum.
- Contributions to GGRF and capacity building for small countries or countries with insufficient or missing geodetic infrastructure can be eased under the umbrella of high-enough mandates, like UN.
- Applying IAG and EUREF products in all georeferencing work in Europe will be improved.

Objectives and Goals

- To work for promoting on common standards and open data policy in georeferencing to be adopted by the UN Member States in Europe as stated in the UN GA Resolution
- Foster capacity building in developing countries/areas. This involves efforts to raise the capacity through conferences, meetings, geodesy schools, exchanging tools, sharing observing facilities and data holders and exchanging staff done within the existing organizations, and structures on all levels.
- Strengthen and clarify the role of EUREF as the European provider of geodetic infrastructure with its existing networks, operational analysis centres and database. Improve connections to and between other georeferencing organizations in Europe as the key users of geodetic products, as well between nations.

Actions / Proposals

- Take note of the European contribution to the Global Geodetic Reference Frame, in particular the GGRF roadmap which is to be completed in 2016
- Recognize the insufficient connection between the existing geodetic infrastructure and social and political components within nations when applying the UN GA Resolution and coming GGRF roadmap recommendations also on European level (-> GGIM:Europe).
- Constitute an Expert Working Group on Geodetic Reference Frames GRF-Europe within the UN-GGIM: Europe such way that work of GGRF and on the other hand EUREF and other georeferencing organizations in Europe are taking into account to avoid duplication. It would be natural to recognize the role of EUREF in a similar way the IAG has in UN-GGIM.