UN-GGIM: Europe
GRF-Europe

UN-GGIM EUROPE

UNITED NATIONS
COMMITEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

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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

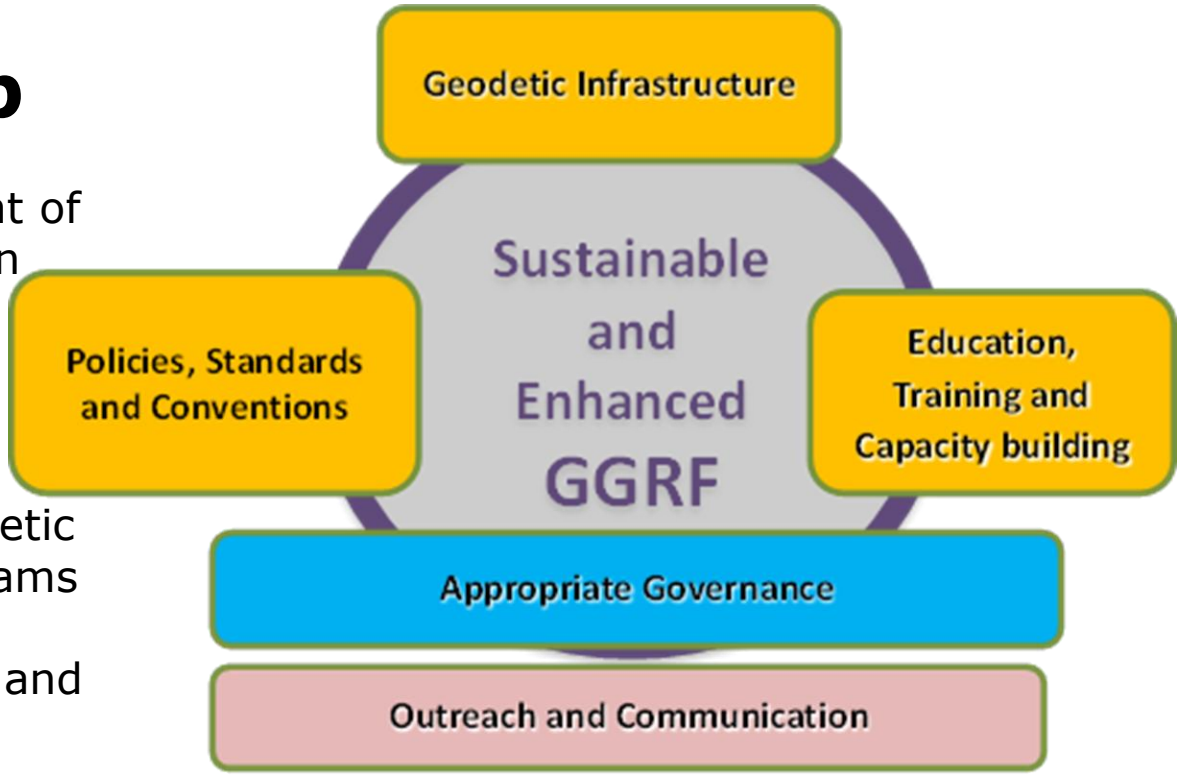
- Global geodesy is dependent on contributions from nations all around the globe
- No single country can maintain the global geodetic reference frame alone
- We aim to change from the current system where contributions to the development of the global geodetic reference frame are undertaken on a ”best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

GGRF: from a working group to a sub-committee on geodesy

- At the UN-GGIM sixth session in New York in August 2016, the UN-GGIM endorsed the GGRF Roadmap and decided to establish a permanent sub-committee on geodesy.

➢ The GGRF roadmap addresses each of the key areas of action described in the UN General Assembly resolution.

GGRF Roadmap



- ***Data sharing***: Development of geodetic standards and open geodetic data sharing are required to enhance and develop the GGRF.
- ***Education and capacity building***: Appropriate geodetic skills and educational programs are essential for the development, sustainability and utilization of the GGRF.
- ***Geodetic infrastructure***: A more homogeneous distribution of geodetic infrastructure is needed to develop and utilize an accurate GGRF.
- ***Communication and outreach***: It is imperative to develop communication and outreach programmes that enable the GGRF to be more visible and understandable to society.
- ***Governance***: The development and sustainability of the GGRF is reliant on an improved governance structure.

Implementation Plan

Focus groups

- Geodetic Infrastructure
- Policies, Standards and Conventions
- Education, Training and Capacity building
- Outreach and Communication
- Governance

Report to UN GGIM 7th session
Geodesy Side event at UN GGIM 7th Session

Planning for the Inaugural Sub Committee on Geodesy meeting (potentially alongside the Fifth UN-GGIM High Level Forum in Mexico City, November 2017)

GGRF Vienna
27.4.2017

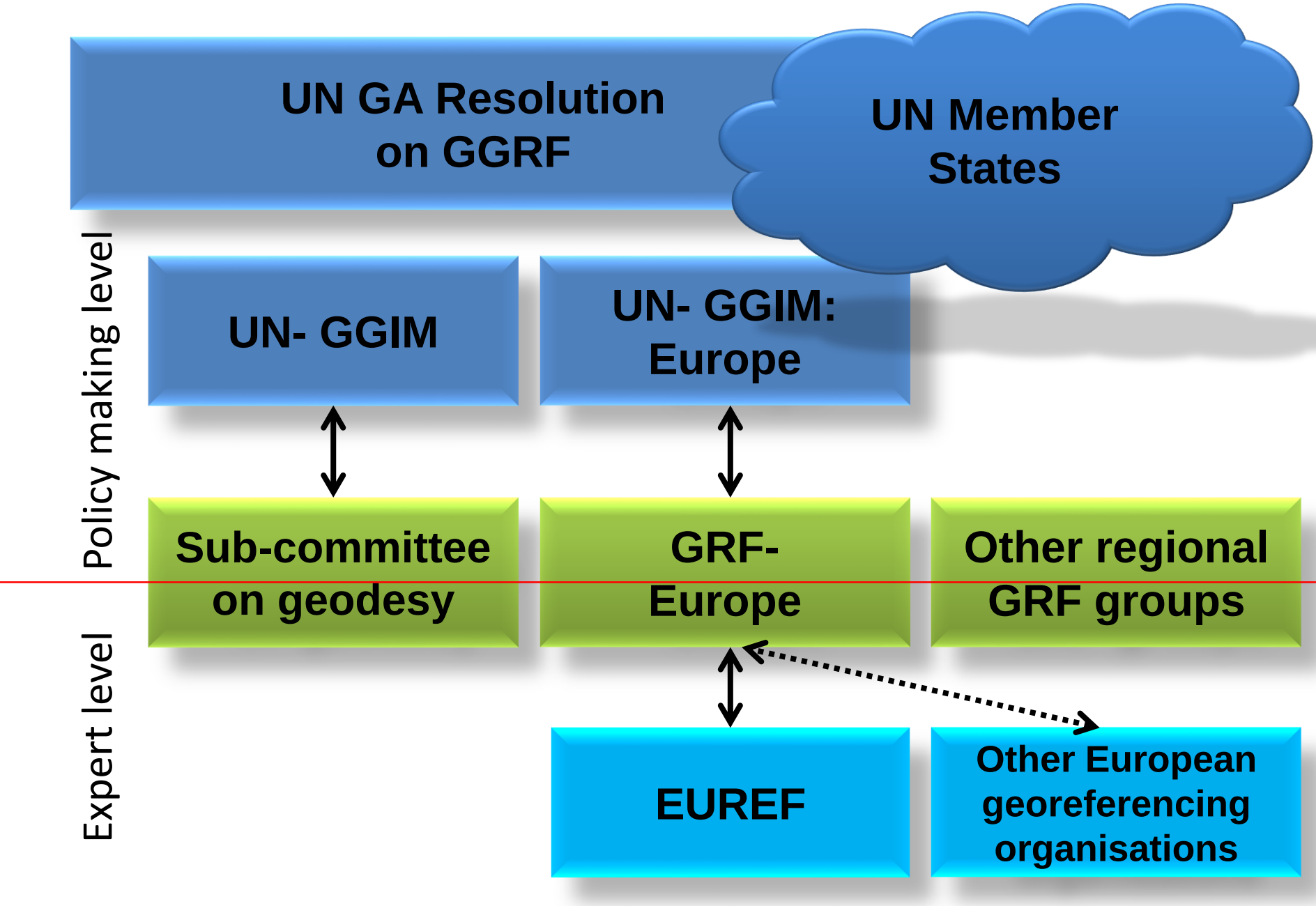
Global Geodetic Reference Frame for Sustainable Development - the European Contribution: "GRF-Europe"

Position Paper on the UN-GGIM: Europe Working Group:

Geodetic Reference Frame (GRF-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.

Basic principle: No new layer or entity is needed but we need an interface and expert group between different actors in the field and the UN-GGIM: Europe

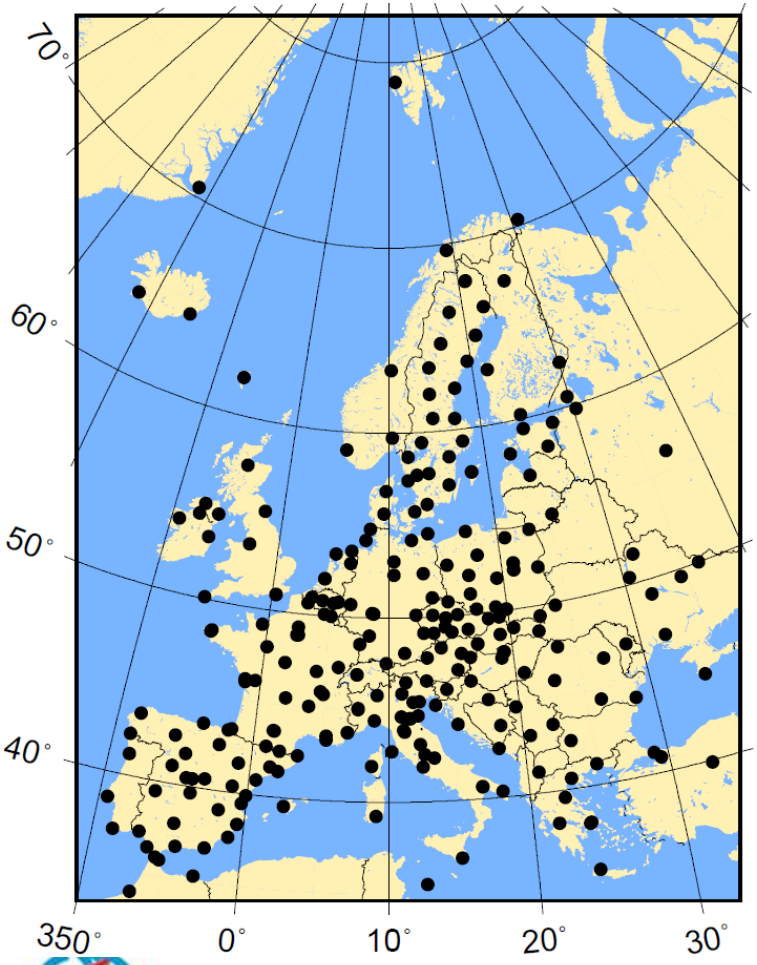

UN GA Resolution on GGRF
UN Member States
Policy making level
UN- GGIM
UN- GGIM: Europe
Sub-committee on geodesy
GRF- Europe
Other regional GRF groups
Expert level
EUREF
Other European georeferencing organisations

Geodesy and georeferencing related organizations in Europe

- **EUREF**
- EuroGeographics
- EUPOS
- International Federation of Surveyors (FIG)
- Council of European Geodetic Surveyors (CLGE)
- European Plate Observing System (EPOS)
- Network of European Regions Using Space (NEREUS)
- Local or sub-regional entities, like the Nordic Geodetic Commission

- EUREF is the provider of data and reference frames, it defines and maintains coordinate reference systems, deliver products,…
- Others are mostly customers and users, not prominently providers

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

Goals

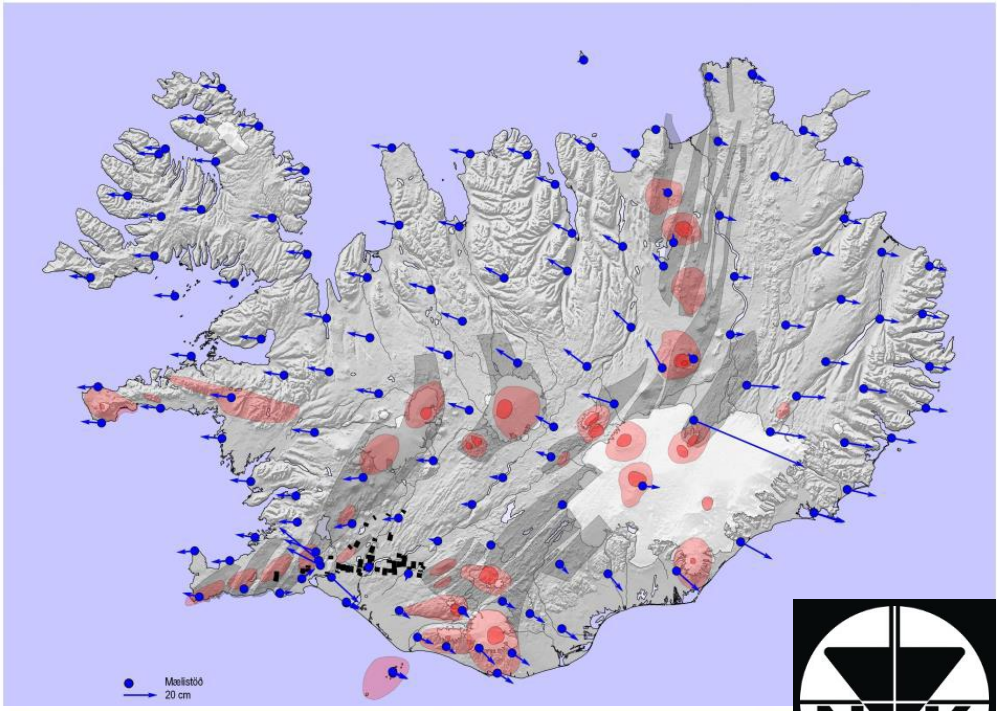
- GRF-Europe will be working as a geodesy expert group within the UN-GGIM:Europe with close connection to the geodesy-related organizations in Europe and actively contribute to the work of the sub-committee on Geodesy.
- **GRF-Europe will provide a link between the geospatial community, scientists and policy makers**.
- Aim is to provide a common forum for those involved in maintaining and enhancing national geodetic infrastructures throughout Europe and the users of this infrastructure and the data supplied by it.
- A close co-operation with **EUREF** and other organisations, research institutes and National mapping authorities

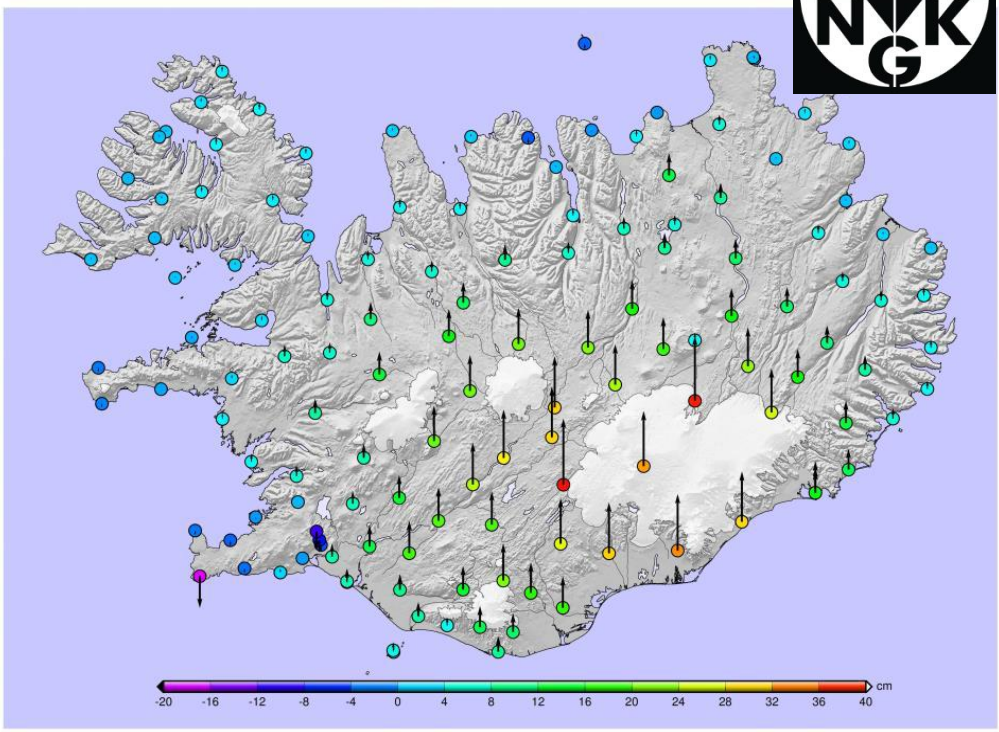
Objectives

- Support European countries to respond to the General Assembly Resolution on A Global Geodetic Reference Frame (GGRF) for Sustainable Development and implementation of the GGRF Roadmap
- Develop promotion and outreach programmes to make the geodetic reference frames (coordinates, height, gravity) more visible and understandable to the society, support open-data policy and foster the usage of geodetic products in geo-referencing tasks
- Support and foster geodetic capacity building within Europe when improving and maintaining appropriate national geodetic infrastructure

Case Iceland

- Directors of Nordic Mapping Authorities asked the Nordic Geodetic Commision (NKG) to study a possibility to create a dynamic refrence frame for Iceland
- Large crustal movements, traditional refrence frames do not fulfil requirements and needs of modern positioning
- Started April 2017 with planning a pilot project in Iceland as a Nordic co-op.
- Fulfils UN resolution request
- Needs of regional GRF





Task Force (status 05/17)

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Jaroslav Šimek	Cz	(EUPOS)
Wolfgang Söhne	D	(EUREF)
Adrian Wiget	CH	(NMA/RI)

NMA/RI = National Mapping Authority or Research Institute
NKG = Nordic Geodetic Commission

Actions

- ✓ A short status report and position paper has been delivered
- ✓ **Invitation** to organisations, research institutes, NMAs or individual researchers interested in **to participate** the work of GRF-Europe
- ➢ To define the **structure** and **governance** of the GRF-Europe

Based on progress in UN GGRF:

- ➢ Creating objectives and a more detailed **working plan** to identify the specific needs
- ➢ To find the ways to do the work **without duplicating** existing structures or repeating the work already done, **filling the gaps** and **identifying the existing structures** or entities which can be used for GRF-Europe

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