



**UN-GGIM:Americas**

REGIONAL COMMITTEE OF UNITED NATIONS  
ON GLOBAL GEOSPATIAL INFORMATION  
MANAGEMENT FOR THE AMERICAS

# 9° SESSION

## UN-GGIM: Americas

### The Implementation of GGRF in the Americas

### Global Geodetic Reference Frame for the Americas

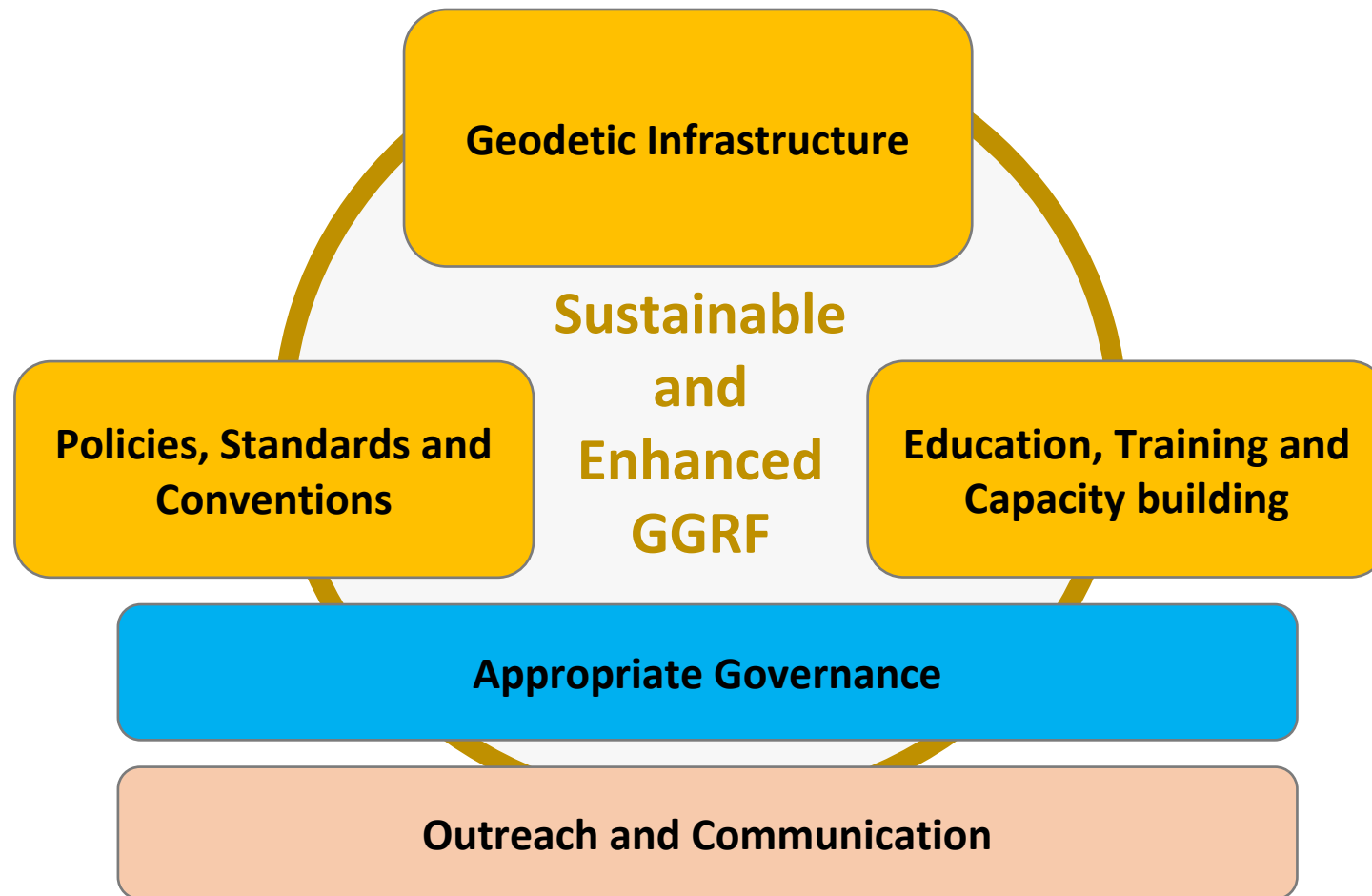
### WG GRFA

Sonia Costa

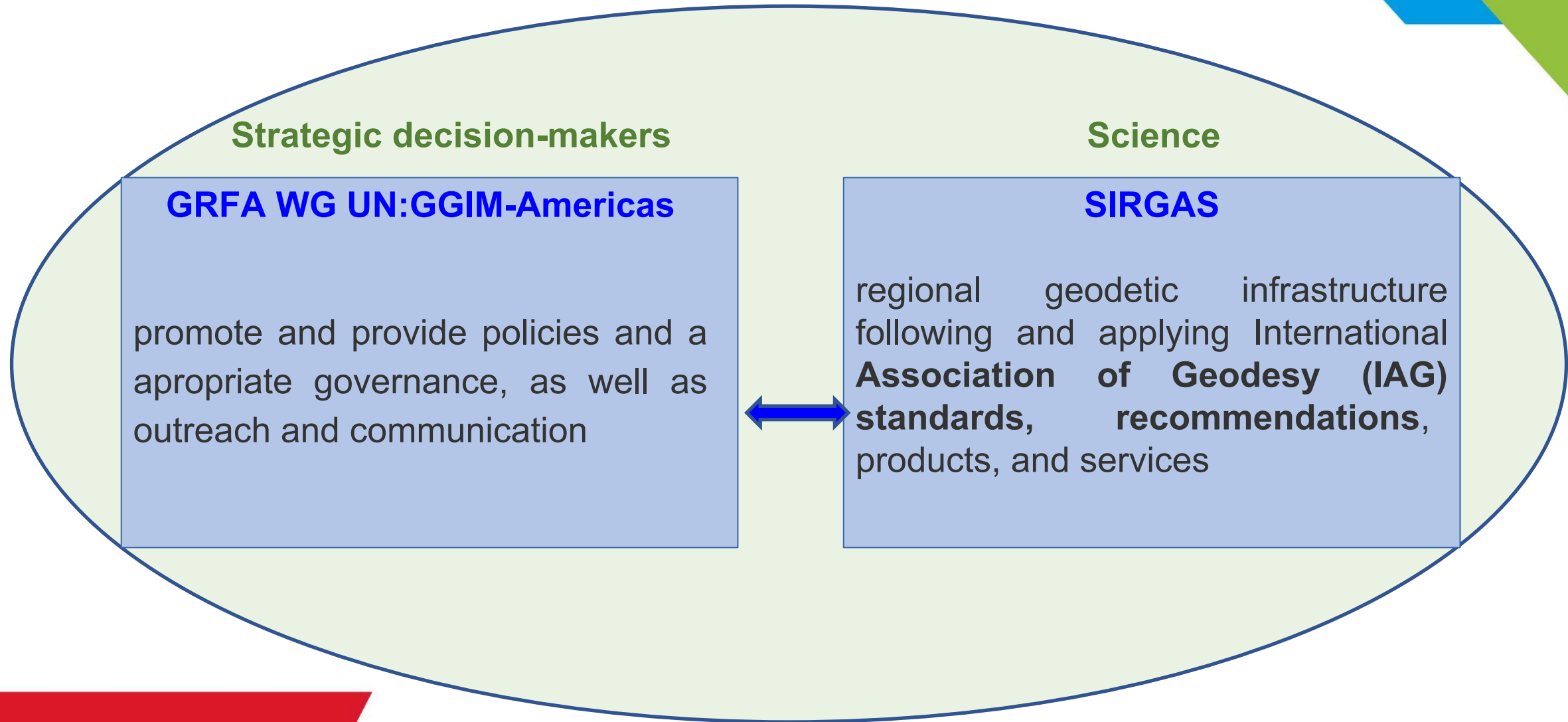
Session 9

November 28, 29 and 30  
Santiago de Chile, ECLAC

**“Road Map for the Global Geodetic Reference Frame  
for Sustainable Development Implementation Plan”  
UN-GGIM Eighth Session, New York, 1-3 August 2018**



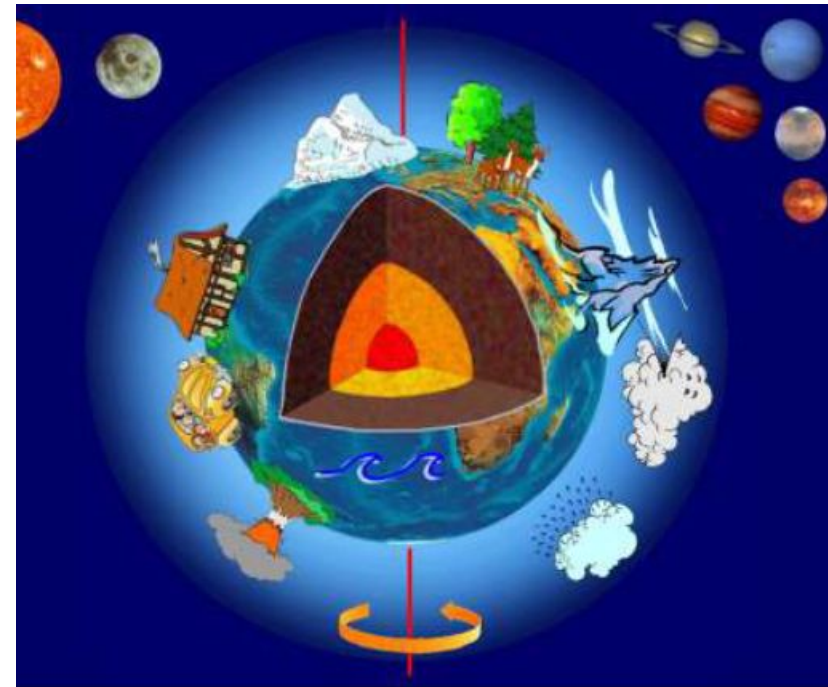
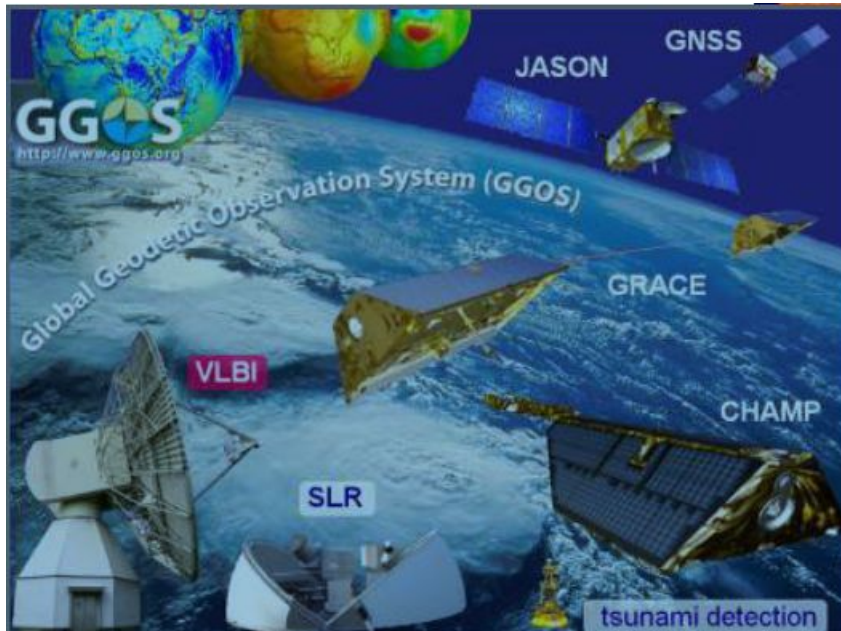
Actors for the implementation of the Global Geodetic Reference Frame (GGRF)  
in the Americas for sustainable development.



# Global Geodetic Observing System of the IAG

*For the monitoring the Earth system and global change research*

The combination and integration of all available observations like physical measurements and geometric techniques can improve our understanding of the interactions in "System Earth"



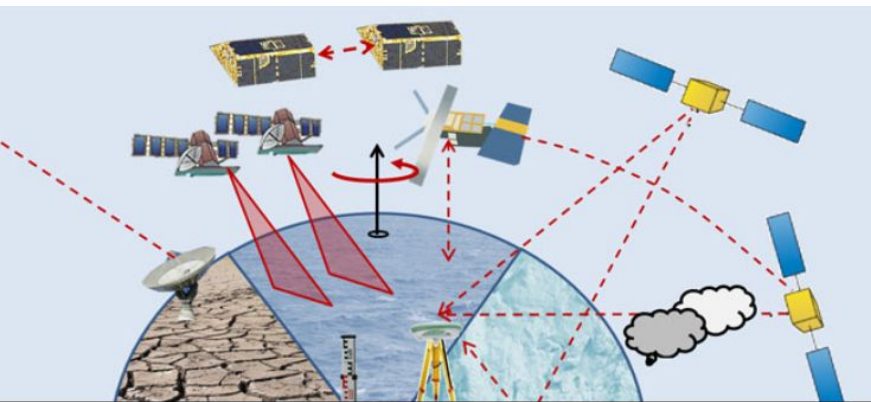
IAG Services: Geometry, Gravimetry, Ocean, Standards



# International GNSS Service – 2021/9 Resolution

The IGS collects, archives, and distributes high-quality GNSS data to meet the objectives of a large number of scientific (Earth observations and research) and practical (position, navigation, and weather) applications for the benefit of science and society.

GNSS data are essential for processes monitoring that occur on our planet, contributing to a better understanding of climate change and disaster prevention.



Focus on the application of IGS data and products towards three specific areas:

- 1) Global and Regional Air Quality,
- 2) Climate Monitoring and
- 3) Improving Weather Prediction.

**IAG Inter-Commission Committee on Geodesy for Climate Research (ICCC)** to enhance the use of geodetic observations for climate studies.

# Challenges in the region

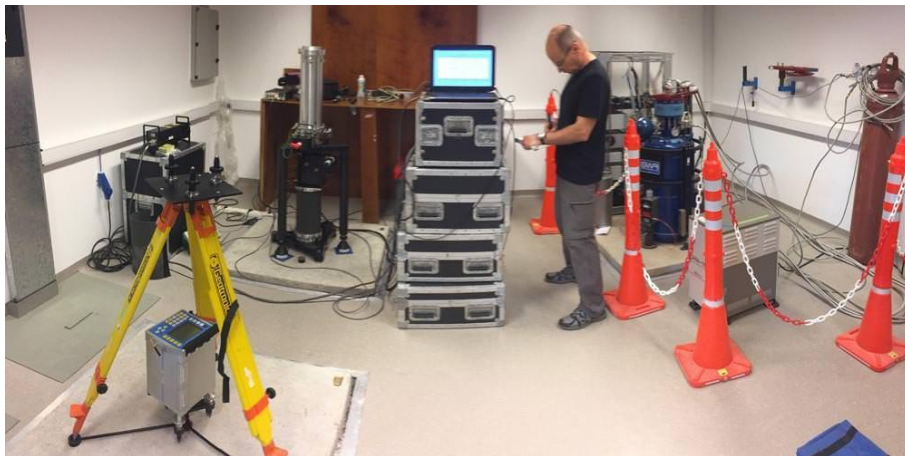
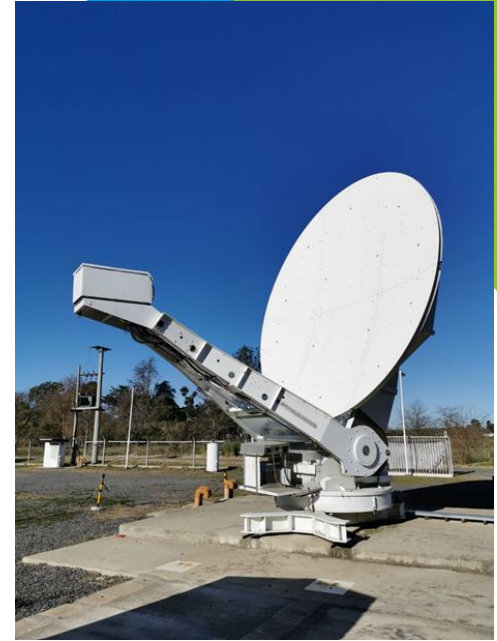
- The **heterogeneous situation** in the countries of the región - what needs to be achieved is different in each country;
- **Coordination and funding must be intensified for better national Geodetic Infrastructures;**
- Lack of coverage in the Regional Geodetic Infrastructure;
- Restrictions regarding open data sharing;
- Need to expand capacities through Education and Training to make the best use of the GGRF;
- **Better understanding of decision-makers regarding the importance of geodesy for the societal development**



We need to build a strong international cooperation

## Actions: Geodetic Infrastructure

- **Implement a national reference system and frame aligned to GGRF**
- Develop educational materials (guidelines) to help countries densify their geodetic infrastructure
- More Geodetic Observatories in the region



## Actions: Policies, Standards and Conventions

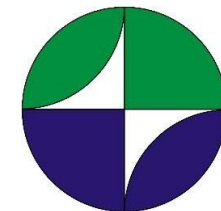
- Implement a data sharing strategy and promote open geodetic data
- Apply standards, policies and conventions for the generation of consistent geodetic products
- **Publish official definitions and transformations of reference frames in the ISO Geodetic Register (and other similar registers)**





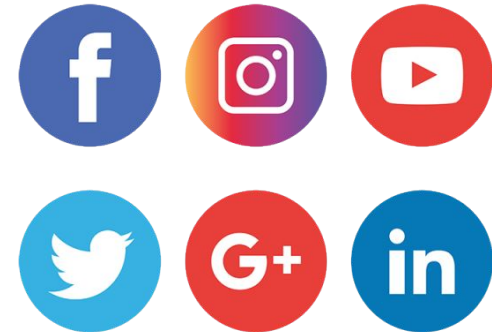
## Actions: Education, Training and Capacity Development

- Carry out capacity assessments and educational demands of the countries to establish training needs in geodesy
- Develop a capacity development program based on the guidelines of the United Nations Development Program, the United Nations Subcommittee on Geodesy, the IAG and SIRGAS
- **Develop collaboration agreements with scientific institutions / academia / government to develop and distribute geodesy educational resources**
- Participate and collaborate with SIRGAS to expand geodesy educational resources and distribute them to the entire community through its website

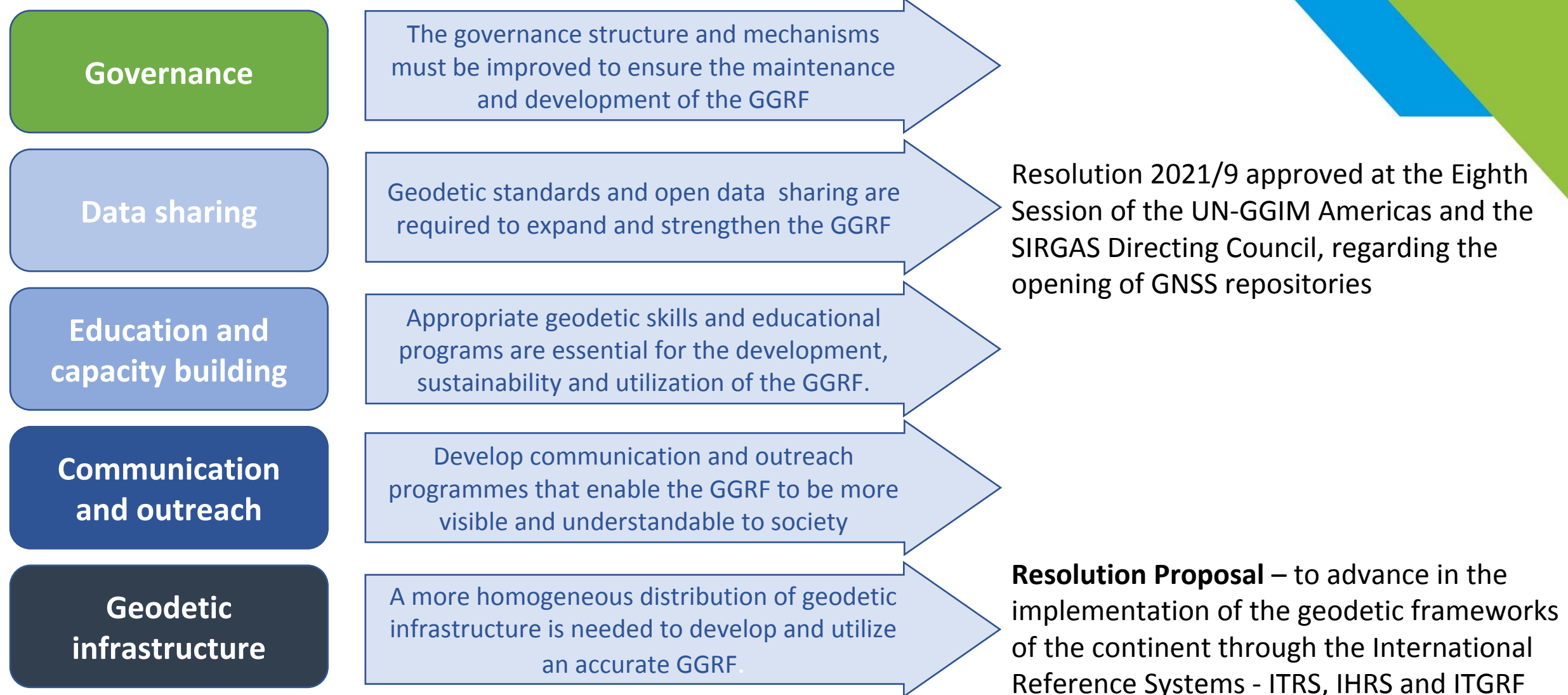


## Actions: Communication and Dissemination

- Develop and implement a communication and outreach strategy
- Create strategic messages and develop communication methods, including social media
- **Demonstrate how geodesy can play a key role in solving social, environmental and economic problems**



# UN-GGIM: Global Geodetic Reference Frame (GGRF) for Sustainable Development - GGRF Roadmap – key areas of Action



# Resolution 1

To advance on the implementation of the United Nations (UN) General Assembly Resolution on the Global Geodetic Reference Frame (UN-GGRF) for Sustainable Development in the Americas and Caribbean region

- Recognize the realization of the International Terrestrial Reference System (ITRS), the International Height Reference System (IHRF), and the International Terrestrial Gravity Reference System (ITGRS), the basis of the GGRF, is given by their respective reference frames ITRF (International Terrestrial Reference Frame), IHRF (International Height Reference Frame) and ITGRF (International Terrestrial Gravity Reference Frame);
- Recognize the most common way people access the GGRF for geometric positioning is via Global Navigation Satellite Systems (GNSS) and its receivers, now embedded in cellphones and mobile devices around the world;
- Recognize the limited access to the WGS84 (World Geodetic System) reference frame and its poor geometric compatibility (at the decimeter level) relative to ITRF, the reference frame adopted for the GGRF;
- Recognize to improve the accuracy and accessibility of the GGRF, more and better instruments are needed, as well as sustainable financing for data processing and analysis that enable the generation of products and services;



# Resolution 1

To advance on the implementation of the United Nations (UN) General Assembly Resolution on the Global Geodetic Reference Frame (UN-GGRF) for Sustainable Development in the Americas and Caribbean region

- Urge the Member States to develop geodetic capabilities within the Americas and the Caribbean for the establishment and maintenance of a high-precision geocentric network **as densification of the ITRF, IHRF, and ITGRF on the continent;**
- Urge the Member States to make the necessary efforts to link and **align their national geodetic infrastructures towards the ITRF, IHRF, and ITGRF**, to ensure the development, sustainability and promotion of the GGRF;
- Support the countries of the region **to include GNSS stations in the SIRGAS continuous operating network, as well as height and gravity stations throughout the Americas and the Caribbean**, with the objective of GGRF implementation in all member states;

## Resolution 2

The support of American Nations for the establishment of the GGCE in Germany

- Took note of decisions 11/104 and 12/106 of sessions 11 and 12, respectively, of the Committee of Experts on Global Geospatial Information Management (UN-GGIM), regarding the importance of creating and strengthening a Center of Excellence Global Geodesic (GGCE) of the nations United Nations, to achieve the implementation of the GGRF at the world level.
- Urge the Member States and relevant regional organizations to support the strengthening of the United Nations Global Geodetic Center of Excellence (GGCE), located in Bonn, Germany, and participate to ensure the exchange of experiences and best practices to facilitate the implementation of the GGRF globally.



**Thank you**  
for your attention