International Governance for Geodesy

18 June 2026, 12:00 to 13:00 UTC, Online

Concept Note and provisional agenda

Context

Modern society depends on satellites, and satellites depend on geodesy. The accurate positioning, precise timing and stable reference frames that underpin telecommunications, transportation, financial systems, emergency response, climate monitoring, defence and almost every digital service depend on the continuous operation of the global geodesy supply chain — an interconnected system of ground observatories, data centres, analysis centres and product development centres distributed worldwide. Despite its critical importance, the global geodesy supply chain has no intergovernmental governance.

The State of Geodesy 2026 report, the first comprehensive assessment of the supply chain, scored important governance capabilities including mandate development, strategic planning, financial management and risk management at the lowest possible level.

In response, the UN-GGIM Subcommittee on Geodesy, with assistance from the UN-GGCE, has prepared a Background Brief on International Governance for Geodesy, which is circulated as an Annex to this concept note. The webinar provides an opportunity to present the key findings of the State of Geodesy 2026 report and hear perspectives from key partners and stakeholders on their implications for the future of geodesy.

Objectives

The webinar is convened to provide a global, open forum to:

- present the evidence base and key findings from the State of Geodesy 2026 report;
- provide an opportunity for partners and stakeholders to respond to the findings and reflect on their implications;
- increase awareness of the dependencies and vulnerabilities within the global geodesy supply chain; and
- support informed discussion ahead of UN-GGIM 16.

Draft Provisional Agenda

The webinar will run for 60 minutes, from 12:00 to 13:00 UTC, on 18 June 2026.

Time (UTC)	Agenda item	Lead
12:00	**Welcome and opening remarks**	Mr. Zuheir Altamimi, UN-GGIM Subcommittee on Geodesy, Institut National de l'information Géographique et Forestière, France

12:05	**Setting the scene** A brief summary from of the key points from the State of Geodesy 2026 report	Mr. Nicholas Brown, Head, UN-GGCE

12:15	**Stakeholder perspectives on the State of Geodesy 2026 report**
	Each speaker has 3 mins and up to 3 slides to provide their reactions to, and reflections on, the State of Geodesy 2026 report invited stakeholders:
	• Mr. Fernand Bale
	  ○ Co-Chair UN-GGIM Subcommittee on Geodesy, Bureau National d'Études Techniques et de Développement, Côte d'Ivoire
	• Mr. Richard Gross,
	  ○ President of the International Association of Geodesy
	• Mr. Jörg Hahn,
	  ○ Galileo Chief Engineer, European Space Agency
	• Ms. Aleta de Witt
	  ○ Director of Radio Astronomy Projects, South Africa Department of Science and Innovation
	• Mr. Zuheir Altamimi
	  ○ UN-GGIM Subcommittee on Geodesy, Institut National de l'information Géographique et Forestière, France
	Discussion amongst participants
	Questions from Slido
		Moderated by
		Mr. Nicholas Brown, UN-GGCE

12:55	Next steps and closing	Mr. Zuheir Altamimi, UN-GGIM Subcommittee on Geodesy, Institut National de l'information Géographique et Forestière, France

Target Audience

The webinar is designed to be inclusive and to reach a broad audience. The following participants are particularly encouraged to attend:

- representatives of Member States, including national geodesy and mapping authorities, space agencies and ministries with responsibility for space, mapping, defence, critical infrastructure, science, transport and digital infrastructure;
- operators of global navigation satellite systems, Earth observation satellites and other satellite platforms;
- representatives of the International Association of Geodesy (IAG), the International Astronomical Union, and IAG Services;
- United Nations entities, regional commissions and UN-GGIM Regional Committees;
- private-sector organisations, including providers of positioning, navigation and timing services, satellite platforms and ground infrastructure;

- academic and research institutions, including Earth observation, geodesy and Earth sciences departments;
- Indigenous and Local Communities and civil-society organisations with an interest in positioning, navigation, timing and Earth observation services.

Participants are encouraged to read the Background Brief (accompanying this Concept Note) ahead of the webinar.

Registration

Registration is free of charge. Participants must register through the dedicated registration link.

Registered participants will receive an individual joining link, which should not be shared. A reminder will be sent 24 hours before the webinar with the joining link and instructions for submitting written questions in advance.

Organisers

The webinar is hosted by the UN-GGIM Subcommittee on Geodesy, with assistance from the United Nations Global Geodetic Centre of Excellence (UN-GGCE).

Language

The working language of the webinar is English. Speakers will be asked to speak clearly and at a moderate pace to support participants who are joining in their second or third language.

Points of Contact

All correspondence relating to the meeting, including registration queries, accessibility requests and substantive questions about the Background Brief, should be addressed to the UN-GGCE:

Email: un-ggce@un.org
Substantive lead: Nicholas Brown, UN-GGCE, UN DESA

Feedback on the Background Brief is welcome at any time and will be consolidated by the UN-GGCE for the co-authors.

(last update: 2June 2026)

ANNEX: International Governance for Geodesy Background Brief

1 June 2026

Prepared by the UN-GGIM Subcommittee on Geodesy and UN-GGCE

Purpose of this brief

This brief sets out the evidence base for why international governance for geodesy is required. It draws on the *State of Geodesy 2026* — the first comprehensive maturity assessment of the global geodesy supply chain. It is intended to support discussions at the global webinar on international governance for geodesy in June 2026 and at the sixteenth session of UN-GGIM in August 2026, where pathways for strengthening governance will be considered.

The brief does not propose specific governance arrangements. It provides Member States with:

- a shared understanding of the global geodesy supply chain, what it does, and why modern societies depend on it;
- an evidence-based assessment of where the system is weakest, and why these weaknesses can no longer be addressed through current arrangements; and
- an outline of the structural constraints and governance requirements that any future international arrangement will need to accommodate.

KEY FINDINGS

- Modern economies, defence and emergency services depend on a global geodesy supply chain that has no intergovernmental governance.
- The *State of Geodesy 2026* report scored the global geodesy supply chain mandate development, strategic planning, financial management and risk management at 1 out of 5 (the lowest score).
- In October 2024, the operators of GPS, GLONASS, Galileo and BeiDou jointly acknowledged for the first time that weaknesses in the supply chain could threaten satellite services.
- Over half of the world's VLBI and SLR ground stations are ageing without funded modernisation. The largest gaps are in the Southern Hemisphere.
- The supply chain is over-dependent on voluntary, in-kind contributions from representatives of a scientific organisation, the International Association of Geodesy, to perform both science research and operational roles.
- The question before Member States is not whether the supply chain will face a crisis, but whether governance is strengthened before it does.

Understanding the global geodesy supply chain

Society depends on satellites. Satellites depend on geodesy. This is an operational reality. Satellite services drive economic growth and underpin critical infrastructure and national security. These services depend on a continuous, accurate and reliable answers to deceptively simple questions: Where is the satellite? Where is the point on Earth it is observing or sending a signal to? How has the Earth's speed of rotation, shape, and gravitational field changed through time? The answers to these important questions are produced by the global geodesy supply chain — an interconnected system of ground observatories, data centres, analysis centres, and geodetic product development centres distributed worldwide.

There is no intergovernmental governance of this supply chain. There is no mandate, no agreed allocation of responsibility, no sustained funding model, and no body with the authority to ensure the supply chain remains accurate and reliable. The *State of Geodesy 2026* report rated mandate development, strategic planning, financial management and risk management at 1 out of 5 — the lowest possible score on a five-point scale.

Geodesy is unlike other critical global infrastructure of its kind, as it does not have an intergovernmental coordinating body. Civil aviation has the International Civil Aviation Organization, with binding standards. Meteorology has the World Meteorological Organization, with coordinating authority. Geodesy, however, is over-reliant on a scientific membership association — the International Association of Geodesy (IAG) — operating on in-kind, voluntary contributions from scientists and the institutions who pay them.

This governance gap is the central finding of the State of Geodesy 2026. Most of what follows in this brief is a consequence of it.

The global geodesy supply chain has three parts: ground station observatories using techniques such as Very Long Baseline Interferometry (VLBI), Satellite Laser Ranging (SLR), Doppler Orbitography (DORIS), Global Navigation Satellite Systems (GNSS) and gravimetry; data centres that collect, quality-check, archive and distribute observations; and analysis centres that translate the data into geodetic products including Earth Orientation Parameters, global coordinate reference frames, satellite orbits, clock corrections and gravity models. It is global because the required accuracy and reliability can only be achieved when ground observations are optimally distributed across the planet.

These geodetic products underpin satellite services that, in turn, underpin most of the modern economy.

BY THE NUMBERS — THE ECONOMIC DEPENDENCY

- **GNSS services:** Revenue projected to grow at 9.2% annually, reaching €492 billion (US$573 billion) by 2031.
- **Earth observation:** Market revenue projected to roughly double from €2.8 billion to over €5.5 billion (US$6.4 billion) by 2031.

- **Satellite communications:** Market projected at €253 billion (US$297 billion) by 2029, growing at approximately 9% annually.
- All of this revenue depends on accurate, continuous geodetic products.

The dependency extends well beyond commercial services. In 2010, the U.S. Department of Homeland Security identified 15 of 18 critical infrastructure sectors as reliant on GPS, including telecommunications, transportation, emergency services, electrical grids and financial exchanges. In 2020, the U.S. Department of Homeland Security stated that reliance had only grown, and that no meaningful action had been taken to reduce it.

The same point holds globally. Wherever a financial transaction is time-stamped, an aircraft is navigated, a hectare of cropland is precisely positioned, an electrical grid is synchronised, or a tsunami warning is issued, geodetic products are quietly doing the work. Most Member States have not mapped the extent of their own national dependency on the supply chain that delivers them.

Notably, efforts now underway in many countries to develop GNSS-independent and complementary positioning, navigation and timing capabilities — a growing priority for both civil and defence programmes — remain themselves dependent on the geodetic reference frames, Earth orientation parameters and observatory networks of the global geodesy supply chain. Reducing reliance on any single satellite system does not reduce reliance on geodesy.

Where the supply chain is weakest

The *State of Geodesy 2026* report assessed 58 capabilities of the global geodesy supply chain and governance was found to be a cross-cutting constraint. Governance and financial management capabilities received 1 out of 5 scores (the lowest level), indicating these functions are largely absent or operate ad-hoc without formal structures. Specifically:

- **Mandate development (1.0):** Despite over ten years since the UN General Assembly Resolution 69/266, no international organisation has formal authority to develop, implement, or enforce policies for the global geodesy supply chain.
- **Strategic planning (1.0):** Plans exist but lack governmental authority for implementation.
- **Financial management (1.0):** No coordinated mechanisms for assessing needs, developing investment strategies, or allocating resources across the supply chain.
- **Risk management (1.0):** No systematic risk assessment or mitigation at supply chain level.

The governance gaps correlate with lower maturity in several areas including:

- **Ageing infrastructure, no modernisation pipeline:** Over half of the world's VLBI and SLR stations are ageing or degrading without funded replacement. The Southern Hemisphere has the fewest stations and the smallest margin for failure: because

geodetic accuracy depends on globally distributed observations, the loss of a single Southern Hemisphere station can degrade the global reference frame for every user, regardless of location. Elements of geodetic VLBI also rely on infrastructure owned and funded by the radio astronomy community, creating a misalignment between responsibility and control.

- **A workforce approaching retirement:** University geodesy programmes are in decline across multiple regions. The pipeline of new specialists is not keeping pace with retirements. Critical expertise sits with a small number of individuals at observatories and analysis centres, several of whom must spend time writing competitive research grants to fund operational work. Workforce development scored 1.7 out of 5 in the *State of Geodesy 2026* report.
- **Public acknowledgement from the system's own operators:** In October 2024, the operators of GPS (United States of America), GLONASS (Russian Federation), Galileo (European Union) and BeiDou (People's Republic of China) issued a Joint Statement through the International Committee on GNSS acknowledging that weaknesses in the global geodesy supply chain pose risks to continuous satellite services. This was the first time GNSS operators jointly recognised the problem in public, and the first time the supply chain's vulnerabilities have been formally endorsed by the operators most dependent on it.
- **What failure would look like:** Should the supply chain start to fail, it will not degrade gracefully. Without reliable geodetic products users would experience issues within a matter of months, with impacts propagating to every downstream user — air-traffic systems, time-stamping in financial markets, precision agriculture, emergency response, defence operations, autonomous transport — without warning, because the affected parties have no visibility into the supply chain and no contractual basis to receive a fault notification. Failures would surface first as performance anomalies in user systems and only later be traced back to their geodetic origin.

Much of the operational work sustaining the global geodesy supply chain is performed based on in-kind contribution by self-funding agencies, universities and research institutions coordinated under the International Association of Geodesy (IAG). This collaborative model is a remarkable scientific achievement. It is not, and was not designed to be, a governance model for critical infrastructure.

The IAG is a scientific membership association. It cannot receive and disburse intergovernmental funding. It cannot enter into service-level agreements with national governments. It cannot mandate resource contributions, set binding operational standards, or direct Member State actions. It cannot guarantee long-term continuity of data centres or ground observatories. These are not deficiencies of the IAG — they are simply outside its mandate.

Eleven years after the adoption of UN General Assembly Resolution 69/266, no international organisation has been given formal authority to develop, implement or enforce policies for the global geodesy supply chain.

What future governance should consider

There is currently no mechanism for collective action. There is no forum with the mandate to allocate responsibility, agree priorities, or sustain funding for the global geodesy supply chain. Any future governance arrangement will need to navigate a number of structural constraints. They fall into three groups.

- **Sustainability and burden-sharing:** Geodetic products are a global public good, but the costs of producing them are borne disproportionately by a small number of countries and institutions. Existing funding relies on national research budgets, voluntary in-kind contributions and short-term project grants — none of which are suited to the multi-decadal horizons that geodetic infrastructure requires. Member States also differ significantly in geodetic capability, infrastructure and institutional capacity; arrangements that treat contribution and capacity as separate questions risk producing expectations that are unrealistic for many participants and politically fragile for all. Governance must link sustainability with capacity development and diversification, rather than treating them as separate objectives.
- **Political and security sensitivities:** Geodetic data and infrastructure increasingly intersect with national sovereignty, defence, intelligence, navigation and space situational awareness. Some Member States consider parts of this system to be of national security relevance, and restrictions on access, sharing or interoperability can arise. Strategic competition in space and positioning systems can also spill into geodetic cooperation, raising risks of politicisation, intentional degradation, or fragmentation along geopolitical lines. Arrangements that are seen as favouring particular blocs may inadvertently accelerate the fragmentation they are intended to prevent. Any arrangement must respect sovereignty while preserving the open, interoperable character on which the global system depends.
- **Institutional and design requirements:** Geodetic products must remain a global public good — widely accessible, non-rivalrous and reliable. Effective governance will require the meaningful participation of governments, space agencies, the IAG and the International Astronomical Union, the private sector, Indigenous and Local Communities, UN bodies and academia. Geodesy sits across many policy domains — space, climate, disaster risk reduction, navigation, timing, digital infrastructure, critical infrastructure and scientific research — and across multiple ministries within most national governments. Governance must reinforce coordination across these domains without duplicating or destabilising the institutions that already operate within them.

Why action is required now

The absence of international governance has been the central driver of insufficient and inconsistent investment in the global geodesy supply chain. Without a long-term strategy or coordinated funding mechanism, the system risks both the erosion of current capabilities supporting critical infrastructure and the inability to meet the needs of emerging, high-dependency applications in position, navigation, timing, autonomous systems, climate adaptation and defence.

The supply chain still functions day to day. That is what makes the moment dangerous. Mounting technical debt, ageing infrastructure, widening workforce gaps and the increasing reliance of high-stakes applications on accurate positioning and timing are not absorbed by the current model. They are accumulating against it.

Next steps

This brief is intended to support informed discussion at:

- the global webinar on international governance for geodesy hosted by the Subcommittee on Geodesy with assistance from the UN-GGCE on 18 June 2026;
- the meeting on international governance for geodesy organised by the Subcommittee on Geodesy on August 3 in New York alongside the 16th session of UN-GGIM; and
- discussions under the agenda of the 16th session of UN-GGIM.

A range of pathways for strengthening international governance for geodesy are being explored. These will be introduced at the webinar as examples of possible approaches and discussed further at the August session. Feedback on the issues set out in this brief can be directed to the United Nations Global Geodetic Centre of Excellence at un-ggce@un.org.

Sources

- State of Geodesy 2026 — A Baseline Maturity Assessment, United Nations Global Geodetic Centre of Excellence, 2026.
- UN General Assembly Resolution 69/266 (2015), A Global Geodetic Reference Frame for Sustainable Development.
- ICG-18 Joint Statement, International Committee on GNSS, October 2024.
- U.S. Department of Homeland Security, reports on GPS dependency (2010 and 2020).
- EUSPA Market Report 2022.
- Mordor Intelligence, Satellite Communications Market Size, 2024.