Third expert meeting of the working group on policy and legal frameworks for geospatial information management, including addressing issues related to authoritative and reliable geospatial data and emergent technologies

07-09 October 2025

Riyadh, Saudi Arabia

Third expert meeting of the working group on policy and legal frameworks for geospatial information management, including addressing issues related to authoritative and reliable geospatial data and emergent technologies

1. Opening of the third expert meeting, welcome and introductions
2. Agenda, organization of the meeting and setting the scene
3. Policy and legal developments – national and regional
4. Workplan and deliverables for 2025 – 2027
5. Awareness, communication, engagement, developing and sustaining legal-policy capacity
6. **Evolving geospatial and technological landscape, artificial intelligence, and its regulation**
7. UN-IGIF strategic pathway on Policy and Legal frameworks
8. Collaboration with partnering international organizations and other functional groups
9. Sixteenth session of the Committee of Experts
10. World Geospatial Information Congress 2026
11. Summary, next meeting and close

UNITED NATIONS
COMMITTEE OF EXPERTS
ON GLOBAL GEOSPATIAL INFORMATION
MANAGEMENT

Positioning the Future Geospatial Information Ecosystem

UN-GGIM Legal and Policy Working Group

The Evolving Digital Landscape
8 October 2025 Riyadh

Presentation on behalf of the Writing team

Background

Future Geospatial Information Ecosystem Writing Team

Background

Decisions 13/104 on "The future geospatial information ecosystem"

(c) Agreed that the **definition and development of future geospatial ecosystems was an opportune activity** for the Committee of Experts to undertake but that it **required further scoping and consensus to identify and describe what the foundations of future geospatial ecosystems would encompass within the purview of the Committee**, and in that regard suggested that further structure and detailed work on defining the Committee's understanding could take place and progress into general principles, and that the further work on the concept should emphasize that geospatial information is an integrated component in different digital ecosystems and in many cases is not an ecosystem in itself;

(d) Supported the proposals to progress with option 2a set out in the report, namely to entrust the Bureau, supported by a writing team, with developing **a position paper on determining the scope and an outline on the fundamental elements and principles of the future geospatial information ecosystem for the consideration of the Committee** of Experts at its fourteenth session, and welcomed the multiple offers by Member States to support the Bureau;

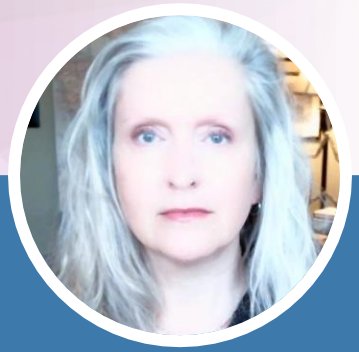
CO-CONVENORS

Future Geospatial Information Ecosystem

Co-Convenors

Mohammad Almabrook

- Executive Director for International Collaboration and Partnerships
- GEOSA (General Authority for Survey and Geospatial Information)
- **Kingdom of Saudi Arabia**



Cindy Mitchell

- Senior Policy Advisor, GeoBase Division
- Canada Centre for Mapping and Earth Observation
- Natural Resources Canada
- **Government of Canada**

Clinton Heimann

- (A) Director General: Land Reform and Rural Development
- **South Africa**

https://ggim.un.org/UNGGIM-WTFGIE/

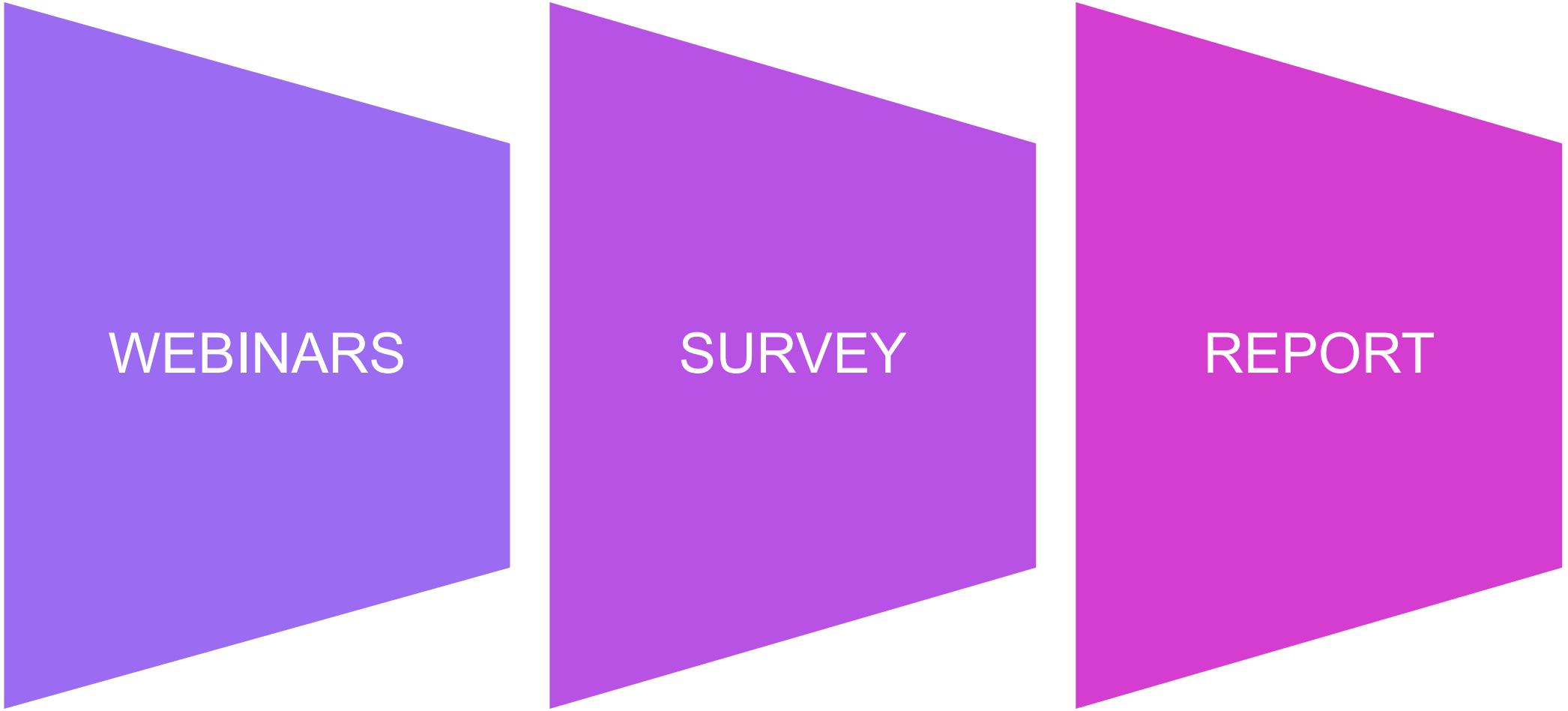
25- Week Future Geospatial Information Ecosystem Programme

The 25-week Future Geospatial Information Ecosystem programme

Designed to:

1. Clarify and advance the concept Future Geospatial Information Ecosystem
2. Enhance Stakeholder Engagement
3. Promote Cross-Sectoral Value
4. Provide Practical Implementation

OUTPUTS



SURVEY RESULTS

Survey conducted online from
12 May to 12 June 2025

Respondent Landscape

Grounded Perspectives

41% of inputs came from public agencies - those closest to implementation pain points

Global South in Focus

Over 70% of responses came from Africa, Asia-Pacific, and Latin America

Diverse Expertise

Technical, policy, civil, and private-sector voices all shaped the findings

Voices from the Field

232 stakeholders in 6 regions have responded to the survey and voiced their opinions

Region	Number of respondents	Percentage
Africa	88	38%
Asia-Pacific	49	21%
Latin America and the Caribbean	30	13%
Europe, North America, Arab States	65	28%
Total	232	100%

- **41% (95 respondents)**: National and local government agencies
- **23% (54 respondents)**: Universities and research institutions
- **18% (41 respondents)**: Private sector geospatial and ICT firms
- **12% (27 respondents)**: Civil society or NGOs
- **6% (15 respondents)**: Multilateral agencies and UN bodies

Respondent Landscape

Figure 1

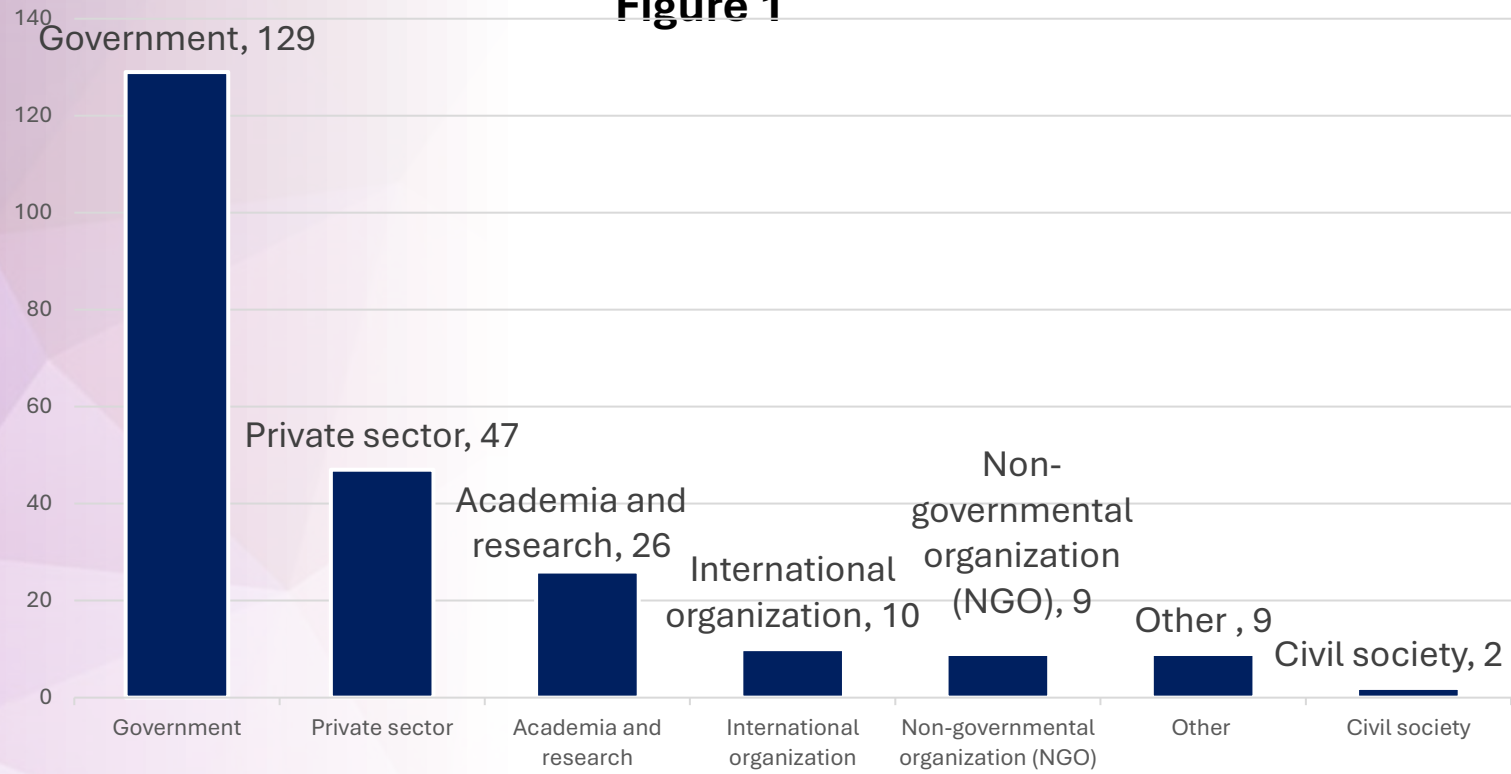


Figure 2

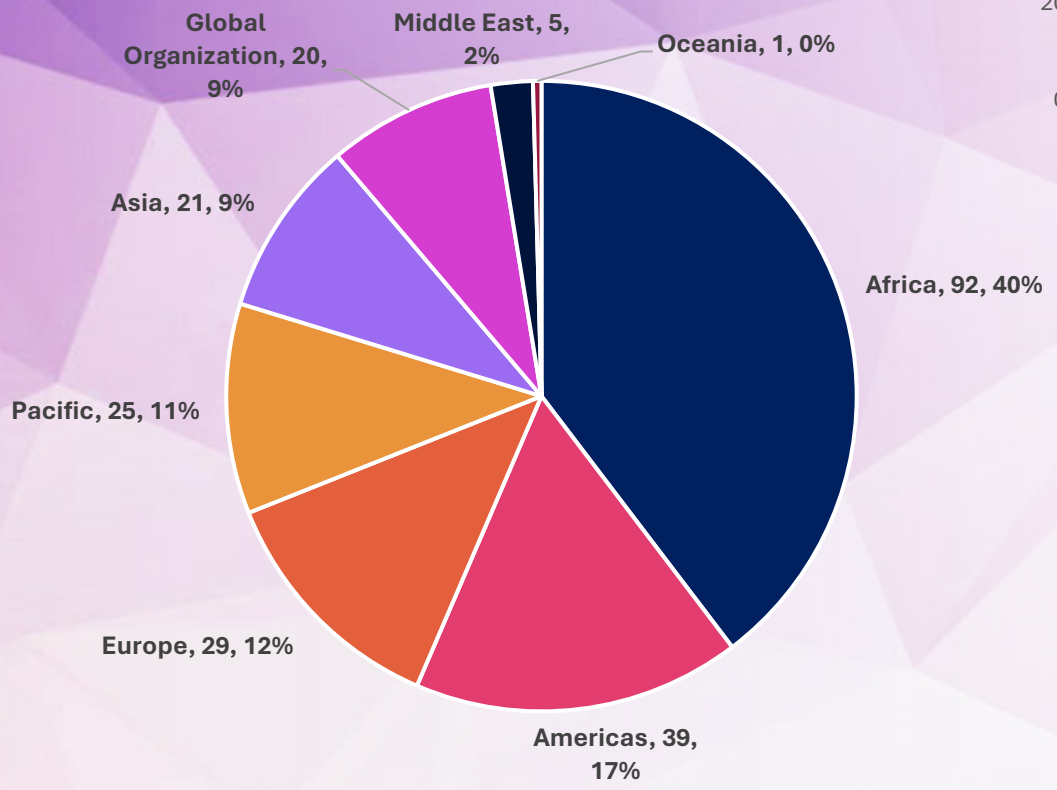
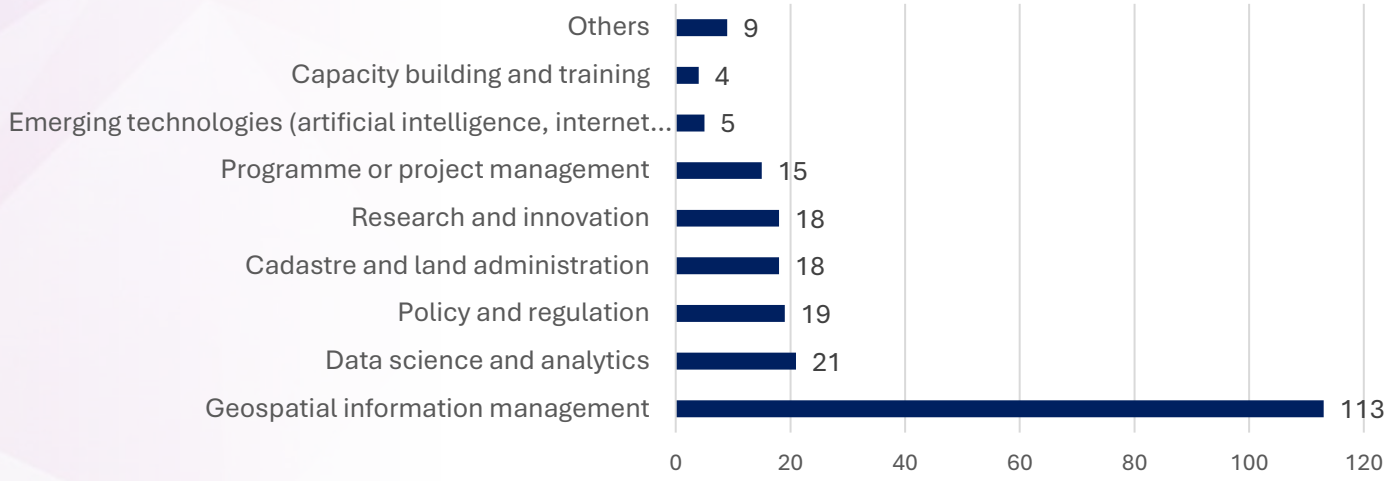


Figure 3 What is your primary professional area?



Key findings (1/4)

What's Broken and What Needs Fixing?

1. Siloed Systems

Fragmentation of institutional architectures across agencies delays decisions and blocks innovation

147 out of 232 respondents (63%) described their national or institutional geospatial systems as fragmented across multiple ministries, sectors, or governance tiers.

2. Missing Legal Guardrails

Legal and normative gaps: No clarity on who owns what data—or who's accountable for misuse

119 respondents (51%) flagged the absence of legally enforceable norms governing spatial data ownership, AI usage in public systems, ethical safeguards, and public accountability

3. Skills Without Systems

Disparities in readiness: Tech exists, but capacity and coordination lag far behind

130 respondents (56%) reported significant disparities in institutional and technological readiness, both across and within countries.

Key findings (2/4)

What's Broken and What Needs Fixing?

4. Value based Governance

Human rights principles need to be Integrate into the design of the future geospatial ecosystem, with safeguards against exclusion, surveillance, and elite data monopolies.

40% of respondents (n=92) explicitly emphasized the need for geospatial systems to embed ethics, rights, equity, and inclusion.. Failure to serve marginalized communities, including: (1) Indigenous populations; (2) Informal settlement dwellers; (3) Rural and underrepresented groups

5. Delivery over theory

A recurring pattern across the survey was a strong sense of frustration with conceptual frameworks that fail to translate into operational tools.

119 respondents (51%) flagged the absence of legally enforceable norms governing spatial data ownership, AI usage in public systems, ethical safeguards, and public accountability. This underscores the need for tools such as budget alignment models, procurement-ready templates, and regionally adapted toolkits.

6. Interoperability

Interoperability must be designed into future geospatial ecosystem, at multiple layers and not only technical, but also legal and procedural.

75 respondents (32%) cited interoperability as an essential but underachieved principle of digital transformation. Government respondents emphasized the absence of shared definitions, inconsistent metadata protocols, and legal fragmentation across departments. Meanwhile, private sector participants called attention to the lack of integration between proprietary platforms and public systems.

Key findings (3/4)

What's Broken and What Needs Fixing?

7. AI and new technologies

25% of respondents cited AI and blockchain as both transformative and risky, with divergent regional priorities and ethical concerns.

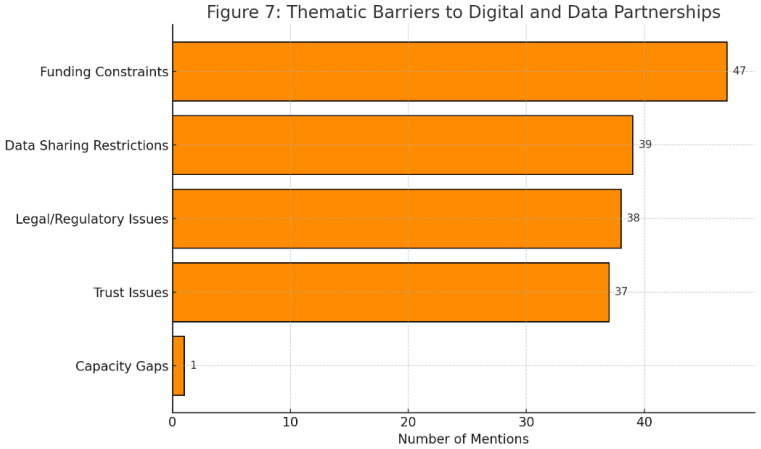
58 respondents expressed a spectrum of positions: (1) Some emphasized potential benefits such as predictive analytics, workflow automation, and real-time data enhancement. (2) raised concerns about ethical risks, algorithmic opacity, and (3) over-reliance on unregulated private-sector platforms.

8. Capacity gaps in key skills

AI/ML, GIS, and legal expertise were most cited; respondents stressed multi-domain training for spatial governance.

9. Barriers to partnerships

Funding constraints (47%), Data sharing restrictions (39), Legal and Regulatory Issues (38). Trust Issues (37). Capacity Gaps (1).



Key findings (4/4)

What's Broken and What Needs Fixing?

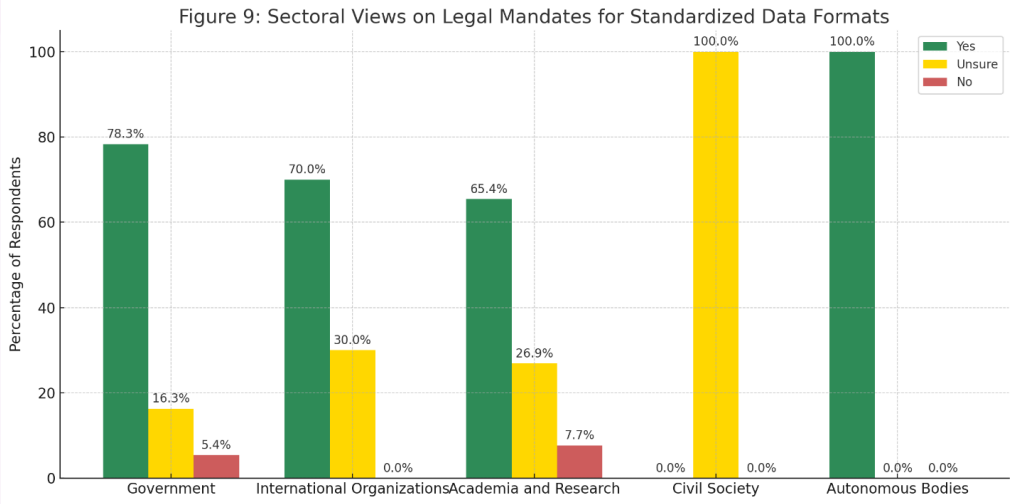
10. Emerging Technologies for impact

AI will dominate the digital geospatial agenda - many of these technologies are not equally accessible or deployable, particularly in low-connectivity contexts

Artificial Intelligence (135) Automation (50), Geolocation & Mapping (49), and IoT (48). Blockchain (28) and Digital Twins (26): Big Data, Remote Sensing, and Cloud Computing each cited by fewer than 20 respondents, suggesting they are now considered enabling infrastructure rather than "emerging" frontiers.

11. Legal Data Format Standardization

Strong cross-sectoral consensus on data standardization, legal enforcement remains a contentious or unfamiliar concept in non-governmental domains.



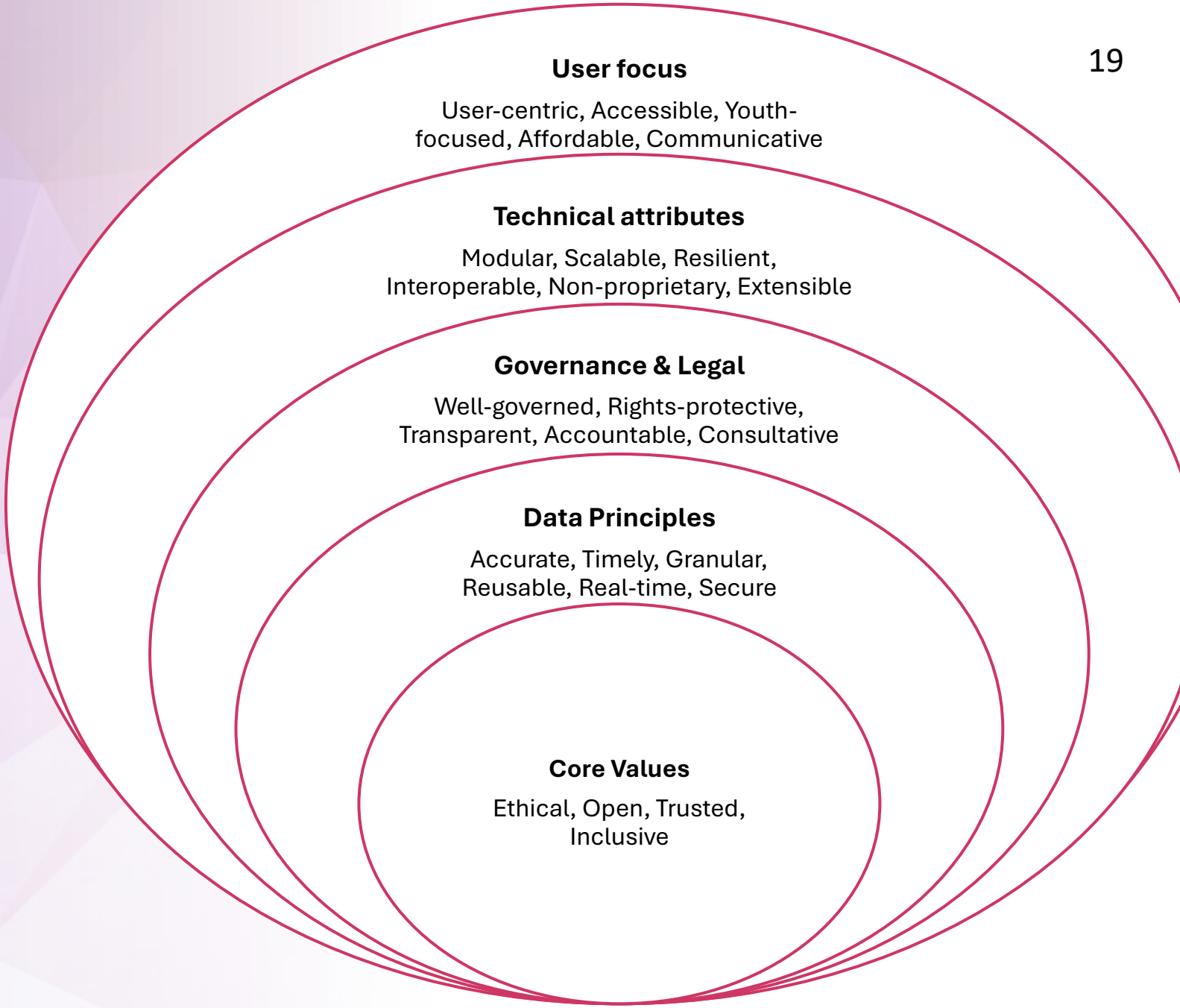
Critical Data Required for Future Geospatial Information Ecosystem Based on Survey Outcomes

Participants highlighted a diverse range of data types essential to shaping the future digital geospatial ecosystem. These include both **traditional sources** such as **geospatial and environmental data**, as well as **dynamic inputs** like **real-time data** and Earth observation data. Integrating these various data streams will enable richer insights, enhanced decision-making, and more responsive digital services across sectors.

Real-time data	Geospatial data	Earth observation data	Environmental data
Sector-related data	Statistical data	Socioeconomic data	Demographic data
Mobility data	Health data	Imagery	Survey data
Administrative data	Geodetic data	Geographic names information	Open data

Principles Based on Survey Outcomes

The **Future Geospatial Information Ecosystem** must be *inclusive, ethical, open, and adaptable*, promoting collaboration across sectors while protecting privacy and rights. It should emphasize accessibility, affordability, and user-friendliness, ensuring reliable and up-to-date data. Grounded in creative commons principles, it should address misinformation, encourage transparency, and support innovation through decentralized systems. Strong legal frameworks and ethical safeguards are essential, alongside fostering youth leadership and providing real-time insights for informed decision-making.



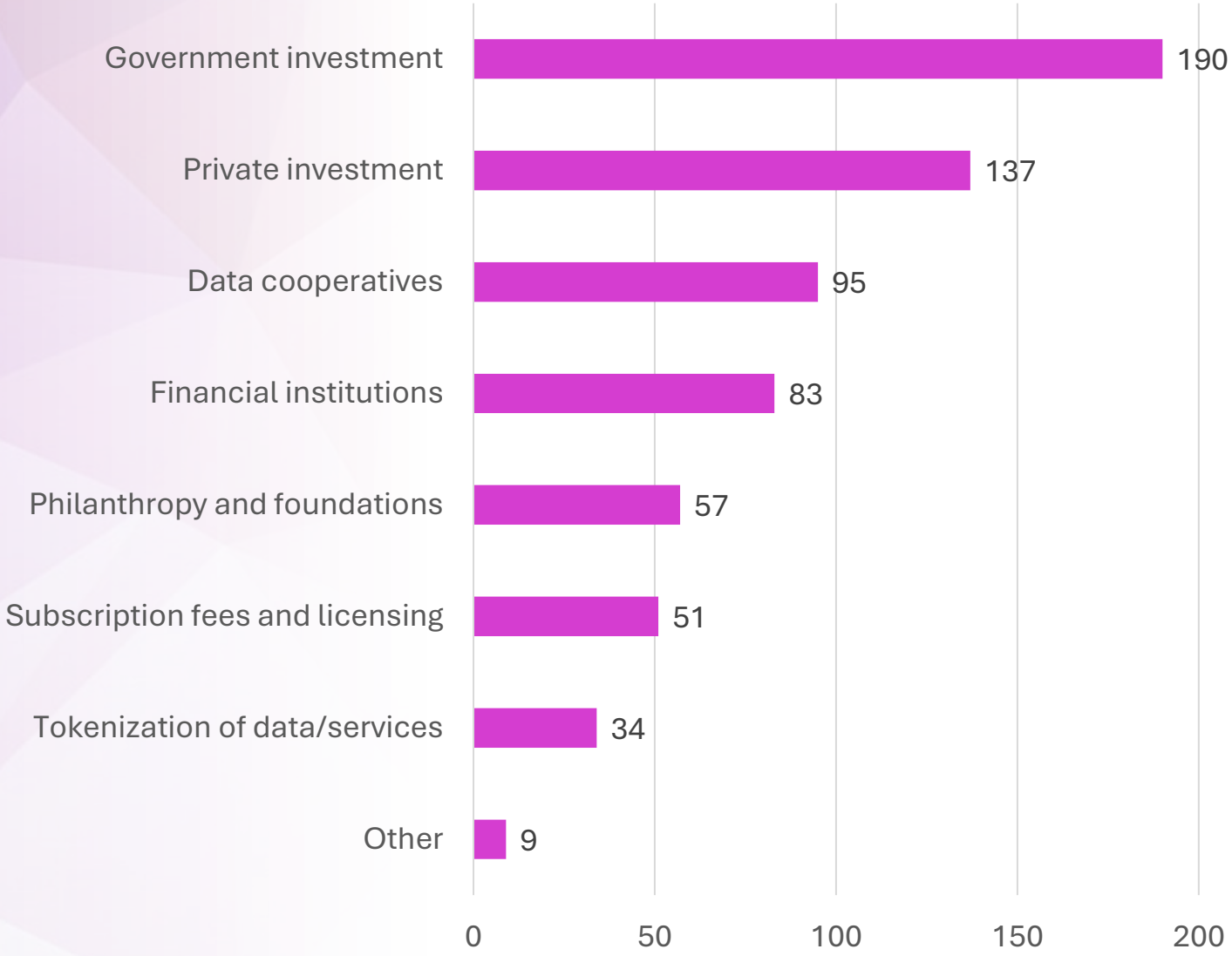
Priorities Based on Survey Outcomes

Stakeholders identified a wide array of critical priorities for investing in a digital ecosystem that is not only technologically advanced, but also inclusive, ethical, and sustainable. Key focus areas include building robust digital infrastructure, fostering digital skills across all segments of society, establishing strong governance frameworks, promoting open standards, driving innovation, ensuring equitable access, and embedding environmental sustainability into digital developments. These priorities aim to create a future-ready ecosystem that benefits all communities and supports long-term resilience.

Priority Area	Focus Points
Digital Infrastructure & Connectivity	Broadband and connectivity, Data centers and cloud infrastructure, Secure, resilient, and sustainable infrastructure
Digital Skills & Capacity Building	Digital literacy and upskilling, Workforce development (AI, EO, geospatial), Public awareness and engagement
Data Governance & Policy	Ethical, participatory data governance, Privacy, cybersecurity, and trust frameworks, Legal and regulatory frameworks
Open Standards & Interoperability	Open data platforms, Open-source technologies, Interoperability and standards
Innovation & Entrepreneurship	Support for local innovation and entrepreneurship, Public-private partnerships (PPP), Community-driven innovation
Equity & Inclusion	Bridging the digital divide (rural, marginalized groups), Ensuring diverse participation and representation, Gender equity and accessibility
Environmental Sustainability	Climate-conscious infrastructure, Green and sustainable technologies

Key Financial Mechanisms Based on Survey Outcomes [21]

A variety of **financial mechanisms** can help increase and **drive data accessibility and capacity within the digital ecosystem**. **Government investment** plays the most significant role, followed by **private investment**. Other important mechanisms include data cooperatives, support from **financial institutions, philanthropy and foundations, subscription fees and licensing models, and the tokenization of data and services**. Additionally, there are emerging, and alternative approaches being explored to further enhance the ecosystem.



Equitable Access and Participation Based on Survey Outcomes

Achieving fair access and involvement in the global digital landscape goes beyond just infrastructure. It necessitates a well-planned approach that addresses connectivity gaps, enhances digital literacy, promotes inclusive governance, and supports marginalized groups. Key areas of focus should include the expansion of affordable digital infrastructure, access to devices and connectivity, and local capacity building through education. Policies must **protect privacy, support open data, and incorporate diverse perspectives** in governance. Platforms need to be **user-friendly, multilingual, and culturally relevant**. **Collaboration among public and private sectors, global partnerships, and open standards are essential** for ensuring equitable access. A just digital ecosystem relies on trust, transparency, and shared advantages.

Affordable & Inclusive Infrastructure

- Expand reliable internet access
- Lower costs for devices & connectivity

Digital Literacy & Skills

- Promote inclusive education & capacity building
- Support lifelong learning for all communities

Inclusive Governance & Policies

- Foster open, transparent, and fair data governance
- Embed equity, ethics, and human rights in policy frameworks

Localization & Relevance

- Provide multilingual, culturally relevant content
- Support community-led platforms & innovation hubs

Collaboration & Partnerships

- Strengthen public-private-community partnerships
- Encourage global cooperation & support for developing regions

Open Standards & Interoperability

- Promote open-source tools & open data
- Ensure platforms are accessible, user-centric & interoperable

Survey Highlights – Key Insights & Summary

- **Top Issues:**
  - Fragmented systems delay decisions
  - Legal gaps in data ownership & AI use
  - Capacity gaps in tech & governance
  - Urgent need for ethics, inclusion, and equity
  - AI & emerging tech: transformative but risky
  - Partnership barriers: funding, legal, trust

- **Future Ecosystem Priorities:**
  - Interoperable, inclusive, ethical, adaptable.
  - Open standards, strong legal frameworks & ethical safeguards.
  - Rooted in creative commons; combat misinformation; promote innovation.
  - Prioritize accessibility, affordability, and ease of use.
  - Support youth leadership and real-time insights.
  - Foster public-private partnerships for equitable access.

- **Equitable Access and Participation:**
  - Beyond infrastructure: digital literacy, inclusive governance, empower marginalized communities.
  - Expand affordable infrastructure, device access, local capacity.
  - Policies must prioritize privacy, open data, diverse governance.
  - Platforms should be user-centric, multilingual, culturally relevant.
  - Public-private partnerships and global cooperation are critical.
- **Invest Priorities:**
  - Digital infrastructure
  - Digital skills
  - Strong governance
  - Open standards
  - Innovation
  - Equitable access
  - Environmental sustainability
  - Financial mechanisms: Govt & private investment, cooperatives, philanthropy.

POSITION PAPER: ELEMENTS

Outline and elements of the position paper on the Future Geospatial Information Ecosystem

Core Concept

- Knowledge-Centric
- Data as Foundational infrastructure
- Ecosystem thinking
- Community engagement
- Systemic reciprocity
- Data values and ethics
- Inclusive innovation
- Semantic and institutional Interoperability
- Resilience and adaptability
- Machine-Readable and actionable by design
- Human-Centric Governance

Strategic Imperatives

- **Digital Transformation and Technological Convergence:** Rapid advancements in digital technologies, including AI, IoT, cloud computing, and advanced analytics, are transforming how data is created, managed and utilized. Geospatial information must evolve to remain an integral component of this wider digital transformation, enabling real-time decision-making, predictive modeling and dynamic service delivery.
- **Climate Change and Resilience:** Climate change presents an urgent global challenge requiring immediate, coordinated action. Location-based data is fundamental to understanding climate impacts, managing risks and building resilient societies. The future geospatial information ecosystem must empower decision-makers with integrated, geospatially enabled insights to drive mitigation, adaptation and resilience efforts.
- **Data as a foundational for Public Good:** Geospatial information increasingly underpins critical public services, from health and transportation to disaster response and resource management. Recognizing geospatial data as a foundational public good promotes equitable access, fosters ethical use, and advances broad societal benefit, strengthening the role of national and global data infrastructures.
- **Bridging the Geospatial Digital Divide:** Despite technological progress, significant disparities in geospatial capabilities persist between countries and regions. The future geospatial information ecosystem must prioritize inclusivity, capacity development and equitable access to technologies and data, ensuring that all Member States, especially developing countries and small island developing States, can participate in and benefit from the evolving ecosystem.
- **Strengthening Governance and Trust in the Digital Era:** As data ecosystems become increasingly complex, maintaining public trust, upholding ethical governance and safeguarding data sovereignty are emerging as critical imperatives. The future geospatial information ecosystem must embed strong governance frameworks that prioritize transparency, accountability, inclusivity, and the protection of human rights, building and sustaining trust in the management and use of geospatial information.

PILLARS OF CHANGE

- **Purpose-driven | Solutions to Global Challenges:**

  Global progress is stalling at a time when compounding crises are pushing development closer to the precipice. Climate instability, economic volatility, political fragmentation, and the lasting impacts of COVID-19 are undermining hard-won gains. The 2024 Sustainable Development Goals (SDG) Progress Report confirms that only 17% of targets remain on track. Reversing this trajectory requires urgent, integrated action - including stronger digital and data collaboration, and the use of geospatial insight to guide sustainable decision-making and resilience planning.

- **People-centered | Equitable Access to Knowledge:**

  The digital economy has expanded access to data and accelerated its reuse across sectors, generating new forms of insight and public value. Yet, access alone is not enough. The ability to work with geospatially integrated knowledge - particularly among underserved institutions and communities - remains uneven. Realizing the full potential of geospatial information depends on sustained investment in capabilities: individuals must be supported through continuous learning, organization's need the tools to interpret spatial intelligence, and governments must be positioned to act decisively on data-informed evidence. This shift is central to making geospatial knowledge relevant, inclusive, and actionable across all areas of society.

- **Partnership-oriented | Digital cooperation and bridging the divide:**

  Partnerships are a foundational element of the 2030 Agenda for Sustainable Development. The geospatial ecosystem itself reflects this logic - its effectiveness depends on cooperation across sectors, disciplines, and Member States. Enabling universal access to geospatial tools and services requires more than technical progress; it demands intentional collaboration to close persistent digital gaps. Bridging this divide is essential to ensuring all Member States can meaningfully engage in, and benefit from, a modern geospatial information ecosystem - advancing the commitment to leave no one behind.

Principles (1/2)

1. **Transformative:** Embraces innovative approaches, technologies and the power of data to drive significant improvements and advancements in geospatial information capacities that help transform society and bridge the geospatial digital divide.
2. **Agile:** Adapts dynamically to the continuously evolving and expanding nature of the wider digital ecosystem by incorporating new ideas, concepts, and elements as technologies and the role of the geospatial information ecosystem change within the broader digital landscape.
3. **Interoperable:** Promotes the development and use of independent yet interoperable systems that enable seamless data exchanges and compatibility across different platforms, applications, and jurisdictions.
4. **Sustainable:** Develops practices, capacities and systems that ensure efficient resources investments and sustainable efficiency gains.
5. **Automated:** Leveraging automation to enhance efficiency, accuracy, and scalability in geospatial information management systems of systems approach, building on SDIs.
6. **Inclusive:** Foster an environment that values and incorporates diverse perspectives and stakeholders and ensures universal and equitable access to geospatial data and information that empowers communities.

PRINCIPLES (2/2)

7. **Reliable:** Promotes authoritative sources and reliable data, services, metadata, knowledge, insights and foresight, and an open, safe and secure ecosystem for the public good.
8. **Ethical and rights-based:** Uphold transparency, accountability, human rights, and ethical stewardship in the generation, sharing and use of geospatial information.
9. **Collaborative:** Encourages cooperation and partnership among various entities while considering the different roles various entities play within the ecosystem, to facilitate the development and availability of geospatial services, knowledge and insights for the benefit of the community, fostering participatory approach, multi-stakeholder and user feedback.
10. **Decentralized**: Engages multiple actors and domains that operate independently yet interactively, allowing each to evolve and influence the broader ecosystem. The geospatial information ecosystem serves as a mediator facilitating communication across these diverse communities while maintaining alignment with shared innovation goals.
11. **Integrated:** Prioritizes interconnectivity and integration weaving together the multifaceted of different systems and ecosystems and facilitating the mutual benefits and interlinkages for the benefits of all users, actors, and reciprocity of services.

ORIENTATIONS AND OBJECTIVES

Objectives towards the Future Geospatial Information Ecosystem

Goal 1| Promote Geospatial Information and knowledge as a Public Good

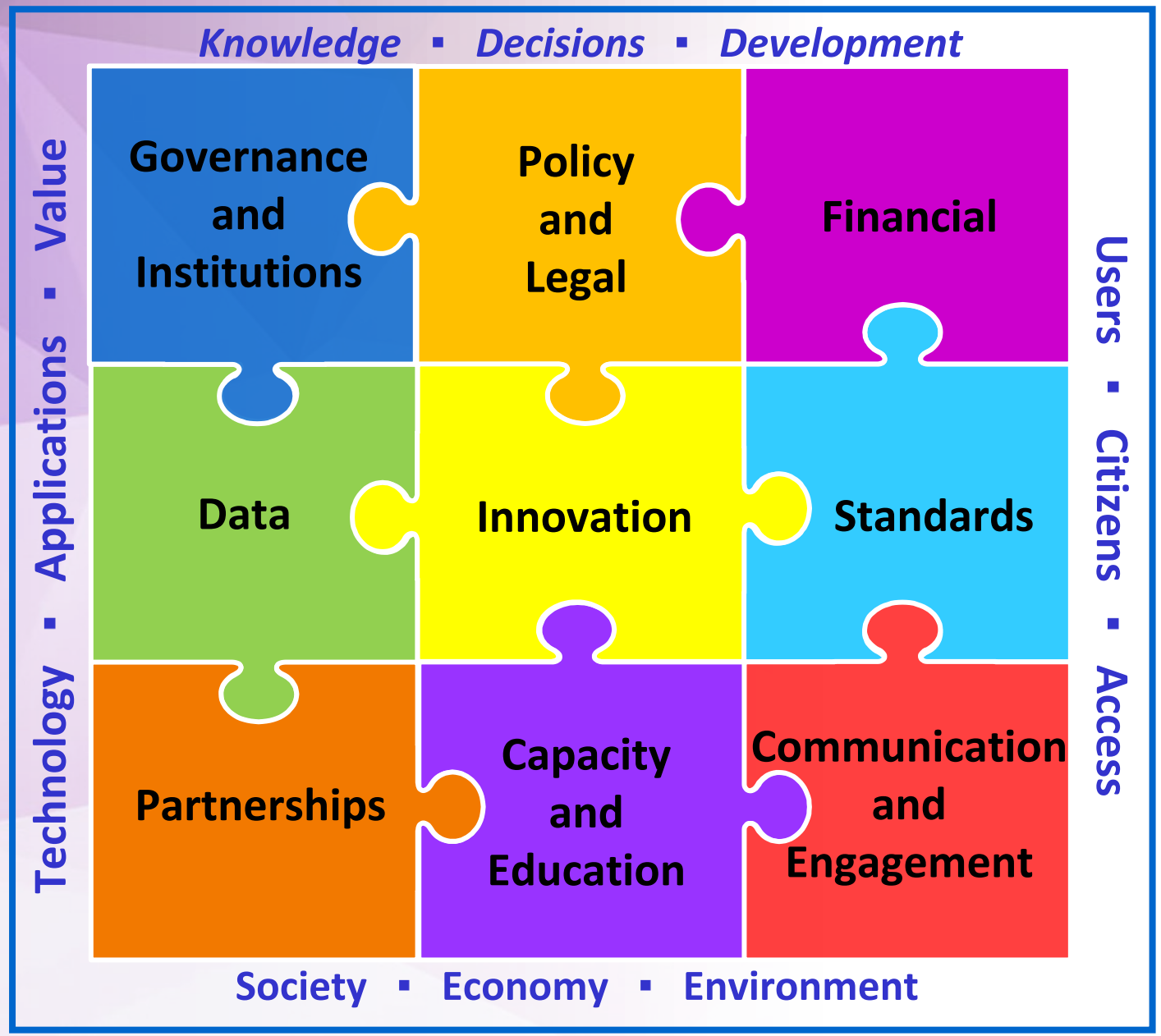
Goal 2 | Foster Digital Cooperation and Innovation

Goal 3 | Bridge the Geospatial Digital Divide

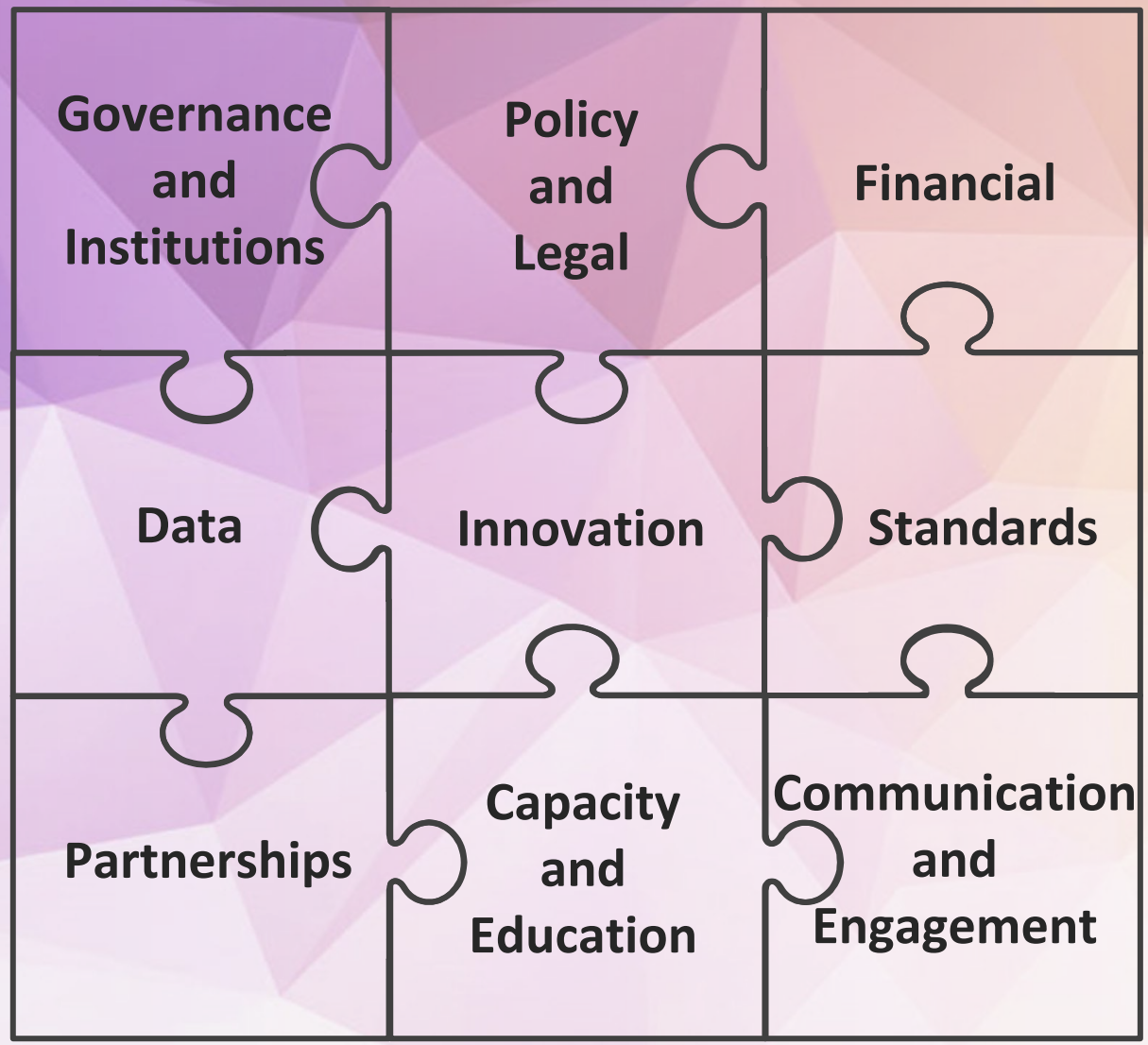
Goal 4 | Embed Anticipatory Governance and Adaptive Decision-Making

Goal 5 | Safeguard Trust, Human Rights, and Ethical Stewardship

BUILDING ON THE UN-IGIF



BUILDING ON THE UN-IGIF



BUILDING ON THE UN-IGIF

Governance

Policy and Legal

Financial

Data

Innovation

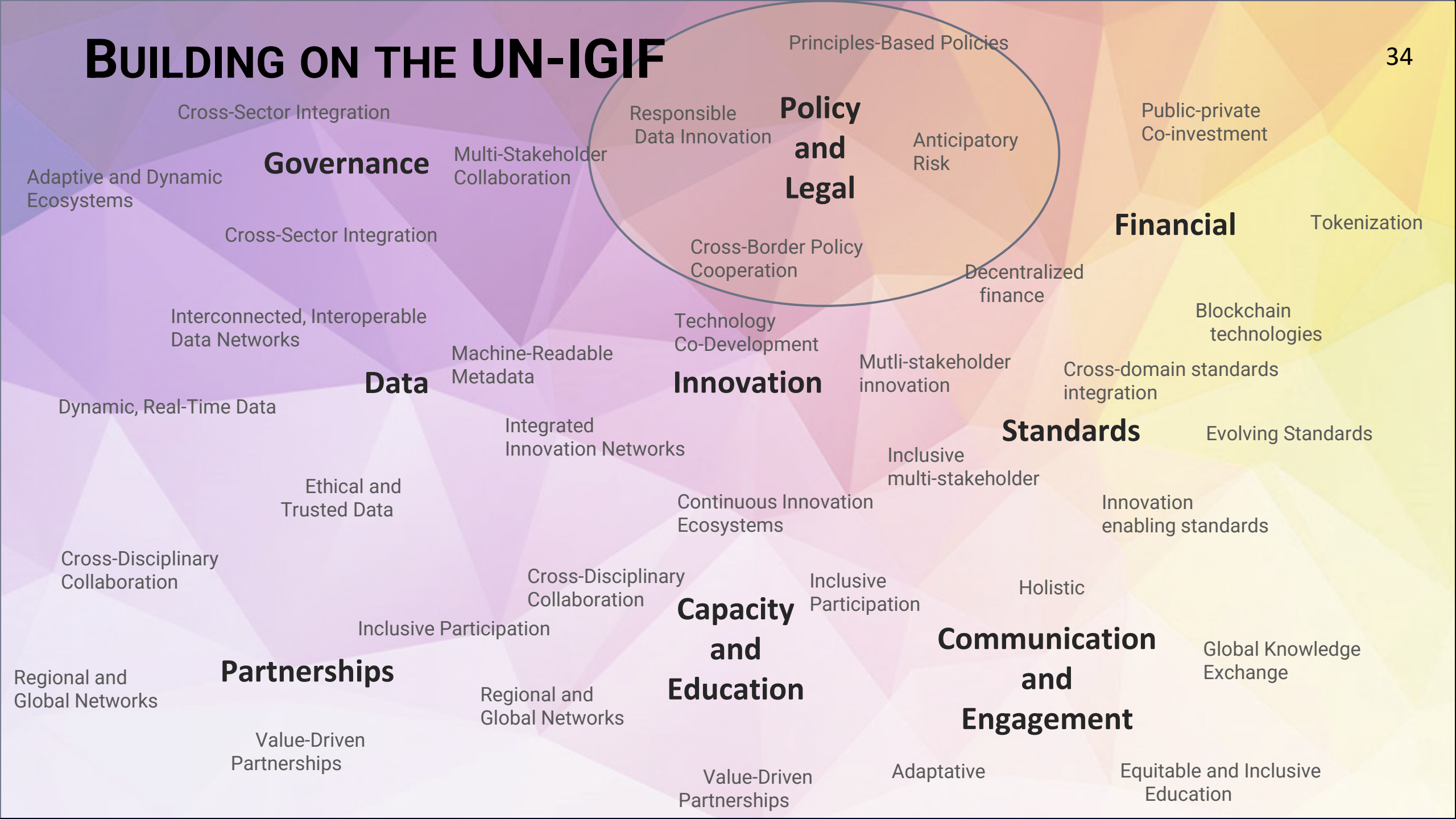
Standards

Partnerships

Capacity and Education

Communication and Engagement

BUILDING ON THE UN-IGIF



Advancing the Future Geospatial Information Ecosystem

Towards the Future Geospatial Information Ecosystem….

Align with broader global digital agendas

Cross-Sector Collaboration

Deepen Engagement and Dialogue

Pilot Innovative Approaches

Develop priority use cases

Strengthen Capacity and Knowledge Sharing

15th Session Decision on the Future Geospatial Working Group

Future Geospatial Information Ecosystem Writing Team

Bureau Decision on the Future Geospatial Ecosystem

"At its Fifteenth Session, the Committee of Experts considered that the next steps outlined in the paper on positioning the Future Geospatial Information Ecosystem should guide the development of a series of coordinated periodic foresight, policy, and research documents that can serve as a comprehensive knowledge resource on future trends, and enable Member States to identify emerging opportunities and challenges affecting the digital ecosystem."

- Established the Bureau's foresight mandate to translate technological change into policy insight.
- Called for coordinated global research on AI, data governance, and emerging digital ecosystems.
- Positions the Policy and Legal Working Group (PLWG) to lead a structured workstream linking law, ethics, and innovation ahead of Riyadh 2026.

POSSIBLE IMPLICATIONS FOR THE WORKING GROUP ON LEGAL AND POLICY

Future Geospatial Information Ecosystem Writing Team

FGIE IMPORTANCE TO THE LPWG

Principle	Strategic Meaning	Legal & Policy Alignment
1. Transformative	Embrace innovation, emerging technologies, and data-driven transformation to strengthen capacities and bridge digital divides.	Aligns with **national digital transformation laws**, AI governance frameworks, and **innovation policies** promoting technology adoption.
2. Agile	Adapt dynamically to technological and societal shifts.	Aligns with **adaptive policy instruments**, regulatory sandboxes, and **agile governance models** under evolving data protection and AI regulations.
3. Interoperable	Enable seamless data exchange and cross-system compatibility.	Requires **legal interoperability** across jurisdictions, harmonized **data standards**, and alignment with **open-data policies** and **cross-border data regulations**.
4. Sustainable	Build efficient, long-term, and environmentally responsible data systems.	Aligns with **sustainability frameworks**, e-governance strategies, and **green digital economy policies**.
5. Automated	Leverage automation for efficiency and scale.	Must align with **AI ethics charters**, **algorithmic accountability laws**, and automated-decision transparency clauses in emerging digital acts.

FGIE IMPORTANCE TO THE LPWG (2)

Principle	Strategic Meaning	Legal & Policy Alignment
6. Inclusive	Ensure universal access and equitable participation.	Reinforces **rights-based development policy**, gender equality frameworks, and **access-to-information laws**.
7. Reliable	Promote trustworthy, authoritative, and secure data ecosystems.	Anchored in **cybersecurity**, **data-quality regulation**, and **state custodianship laws** governing national spatial data infrastructures.
8. Ethical and Rights-Based	Embed transparency, accountability, and human rights protections.	Directly aligns with **human rights law**, **privacy legislation**, and the **UN Global Digital Compact** calling for digital rights equivalence.
9. Collaborative	Encourage cooperation and partnerships across stakeholders.	Supported by **multilateral data-sharing agreements**, **PPP legal frameworks**, and **inter-agency MOUs** promoting open innovation.
10. Integrated	Connect systems and capabilities for mutual benefit.	Relates to **whole-of-government policy integration**, **national digital architecture frameworks**, and **interoperability directives** across sectors.

Legal and Policy Frameworks: Enabling Rights-Based Innovation and Trust

Key policy-legal directions in the report emphasize five strategic shifts:

1. **From static regulatory models to adaptive, principle-based frameworks**

   → Future-proof, non-prescriptive laws that can evolve with emerging technologies.

2. **From data control to responsible innovation**

   → Move beyond custodianship to enable ethical AI, cross-platform data reuse, and transparency.

3. **From national silos to globally coordinated frameworks**

   → Integrate national law reform with **international instruments** such as the **Global Digital Compact** and **UN-IGIF**.

4. **From risk containment to anticipatory governance**

   → Embed **AI-readiness, foresight, and ethics review mechanisms** into national geospatial legislation.

5. **From custodianship to knowledge stewardship**

   → Regulate for equitable access and **knowledge-based decision systems**, not just datasets.

3. Governance–Policy–Law Alignment Map

Governance Domain	Policy Imperative	Legal Foundation
Data Governance	Move from access control to knowledge stewardship.	Data protection acts, open-data directives, FAIR/CARE principles codified in national regulations.
AI & Emerging Tech	Ensure explainability, accountability, and ethical use.	AI Acts, algorithmic transparency provisions, and human-rights-based digital charters.
Digital Cooperation	Enable cross-border interoperability and shared stewardship.	Bilateral and multilateral data-sharing treaties; Global Digital Compact alignment.
Trust & Rights Protection	Build digital trust through safeguards and privacy.	National privacy laws (GDPR-style), cybersecurity acts, and indigenous data rights legislation.
Institutional Integration	Embed geospatial governance in national digital ecosystems.	Statutory mandates of spatial data infrastructure acts and e-government frameworks.

Alignment with UN and Global Frameworks

The principles directly support the **UN Integrated Geospatial Information Framework (UN-IGIF)** and the **UN Global Digital Compact**, ensuring coherence across:

- **Human rights law** (digital rights equivalence).
- **Ethical AI governance** (accountability, transparency).
- **Sustainable development policy** (data as a public good).
- **Digital public infrastructure laws** (interoperability and access).

Operationalizing the Mandate in the Policy & Legal Workstream

1. **Produce concise (3–5) policy and research papers on:**
    - AI and Geospatial Governance – ethics, accountability, and trust.
    - Data Sovereignty and Interoperability – rights-based data sharing.
    - Legal Innovation – enabling frameworks for digital public infrastructure.
2. **Provide coordinated inputs to UN-IGIF implementation and Bureau deliverables.**
3. **Showcase consolidated outputs at the 3rd World UN-GGIM Congress (Riyadh 2026).**

Expected Outcomes:

- A living repository of policy insight and legal foresight on geospatial AI.

- Strengthened Member State capacity for ethical and interoperable data governance.

- Institutional visibility for UN-GGIM as the global convener on AI ethics in geospatial systems.

Discussion - Some Ideas moving Forward

Plan:

1. Draft and circulate Call for Papers (AI governance, data ethics, policy innovation) – Oct–Nov 2025.
2. Disseminate through Regional Committees & Thematic Networks – Nov–Dec 2025.
3. Peer-review and curate submissions (3–5 pages) – Jan–Mar 2026.
4. Compile FGIE Policy Compendium and Foresight Briefs – Apr–Sep 2026.
5. Present best papers at Riyadh 2026 Congress – Nov 2026.

Inclusivity:

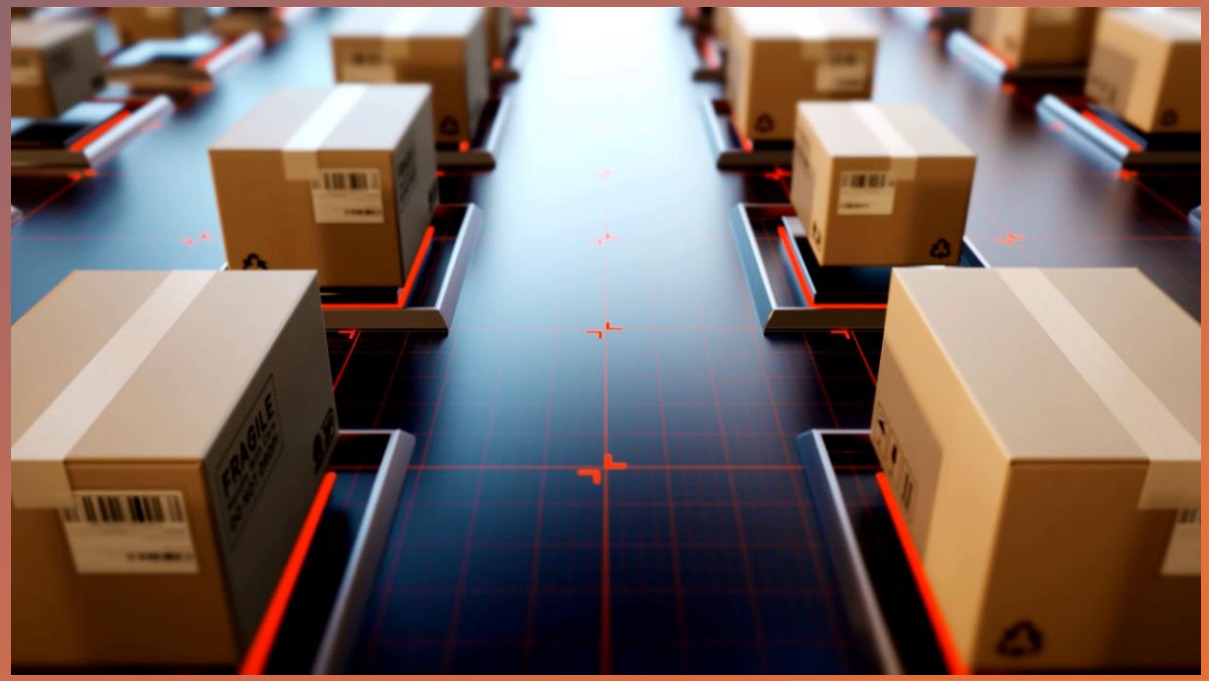
- -Encourage submissions from academic institutions, and national agenciesand the Private Sector Network
- - Riyadh Center can host a parallel foresight showcase using these materials.

UNITED NATIONS
COMMITTEE OF EXPERTS
ON GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

The Future Geospatial Information Ecosystem

Geospatial Information Management:

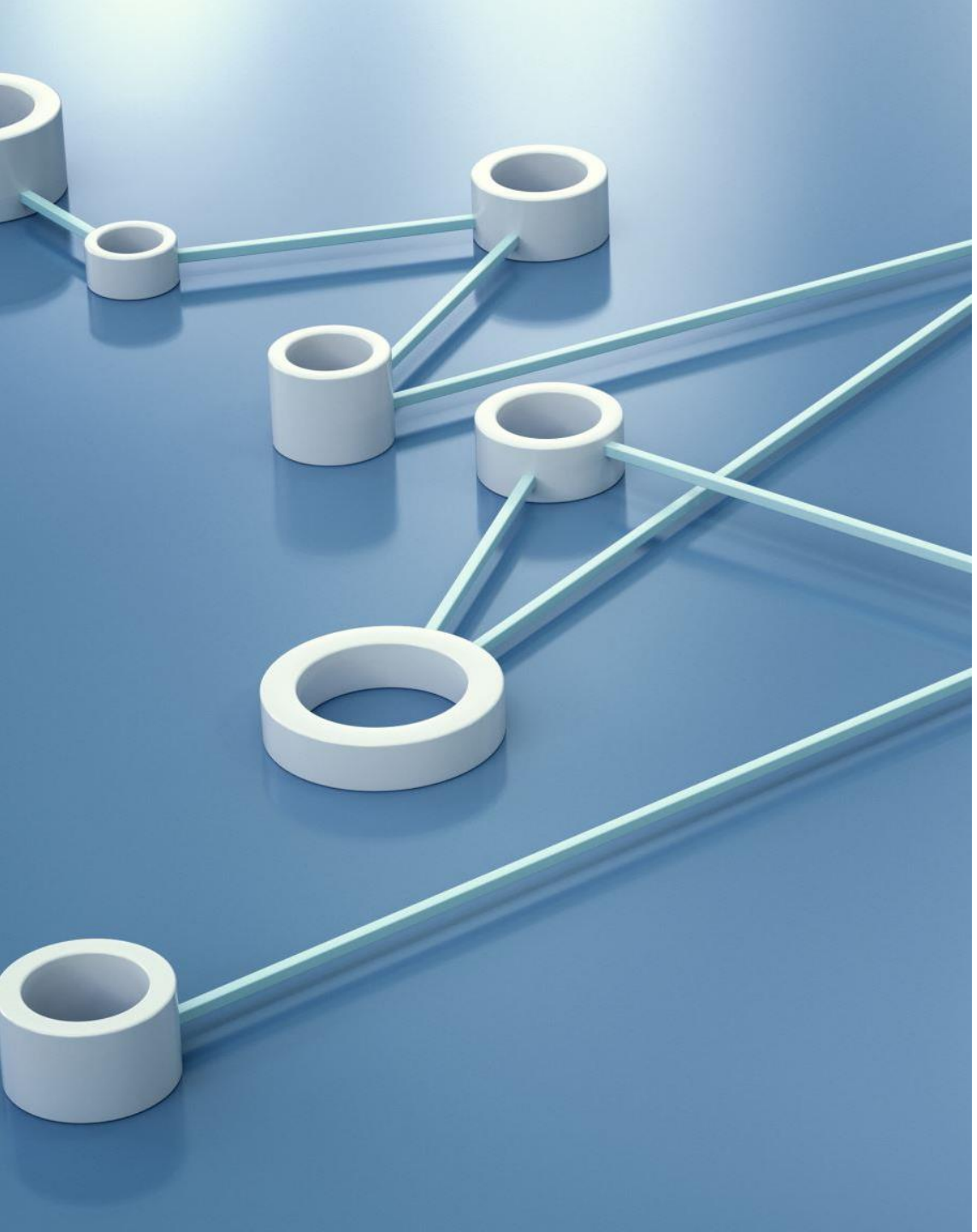
Identifying and Addressing Legal Issues In Emerging Technologies



UNGGIM Policy and Legal Working Group

Kevin Pomfret

October 8, 2025



Emerging Technologies

- Recent technological advancements (e.g., AI, IoT, Digital Twins, and small satellites) are reshaping geospatial information management.
- New technologies present opportunities for enhanced data collection and analysis but also raise legal, ethical, and policy challenges.

Key Emerging Technologies and Challenges

- **Artificial Intelligence (AI)**: Enables predictive modeling and decision-making but raises data sovereignty, transparency, privacy, ownership, and accountability concerns.
- **Autonomous Systems**: Allows real-time data collection but raises issues of privacy, and liability.
- **Internet of Things**: Facilitates continuous data flow but presents security, ownership, and interoperability issues.

Additional Technologies and Challenges

- **Digital Twins**: Creates virtual models of real-world entities for predictive analytics but raises data accuracy and privacy concerns.
- **Small Satellites**: Enables cost-effective data collection globally but involves regulatory and spectrum management issues.
- **Blockchain**: Secures data transactions but faces regulatory and standardization hurdles.

Common Legal Theme: Data-Related Issues

- **Cross-Border Data Sharing**: Managing cross-border data flows while respecting national sovereignty.
- **Data Privacy and Protection**: Compliance with privacy laws is essential to protect individuals' rights.
- **Data Ownership and Intellectual Property**: Legal clarity on ownership and licensing of AI-generated data is needed.
- **Data Security and Cybersecurity**: Ensuring robust security protocols to protect data integrity and confidentiality.

The EU AI Act – Overview and Timeline

Regulation (EU) 2024/1689 entered into force on 1 August 2024.

Applies to AI systems placed on or used in the EU.

Key dates:

- Feb 2025: Prohibited practices apply

- Aug 2026: High-risk obligations apply

- 2027+: GPAI compliance

Risk-Based Framework

Unacceptable Risk: Prohibited (e.g., social scoring).

High-Risk: Conformity assessment & monitoring.

Limited Risk: Transparency obligations.

Minimal Risk: Voluntary codes of conduct.

High-Risk Use Cases for GeoAI

Critical infrastructure, law enforcement, border control, environmental risk prediction, smart city systems.

Satellite, drone, and IoT GeoAI may trigger 'high-risk' classification.

Obligations for High-Risk Systems

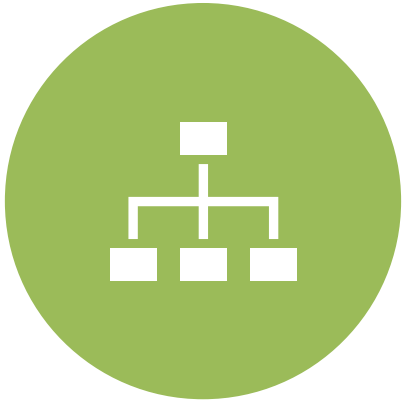
Providers: Risk management, documentation, dataset quality, human oversight, CE marking.

Deployers: Conduct FRIA, maintain logs, ensure transparency, cooperate with authorities.

Fundamental Rights Impact Assessment (FRIA)

Transparency and Human Oversight

USERS MUST BE INFORMED WHEN INTERACTING WITH AI.



SYSTEMS MUST ALLOW HUMAN REVIEW.

SYNTHETIC OUTPUTS MUST BE LABELED.

Artificial Intelligence Training Data Transparency

- Establishes the world's first mandatory training-data transparency law for generative AI.
- Developers must post, on a public website, documentation describing datasets used to train any generative AI system or substantial update released since Jan 1, 2022.
- Applies whether or not the product is commercial.
- Must be updated at every new release, retrain, or fine-tune.

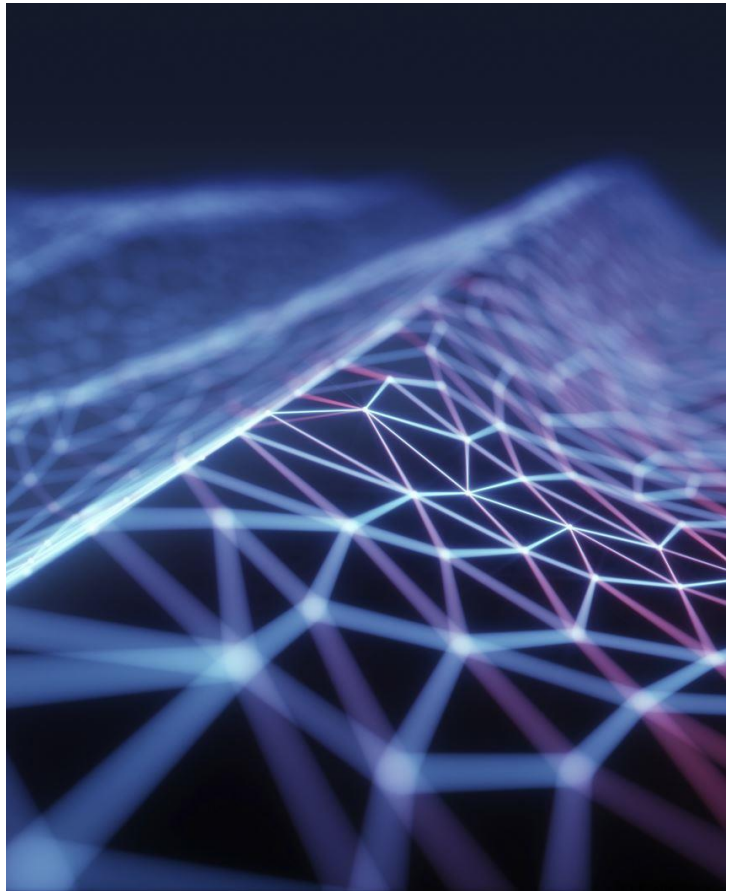
Covered Entities and Definitions

Developer: Any person, business, or government body designing or modifying AI systems for public use.

Generative AI: Systems producing synthetic content (text, imagery, spatial maps, models).

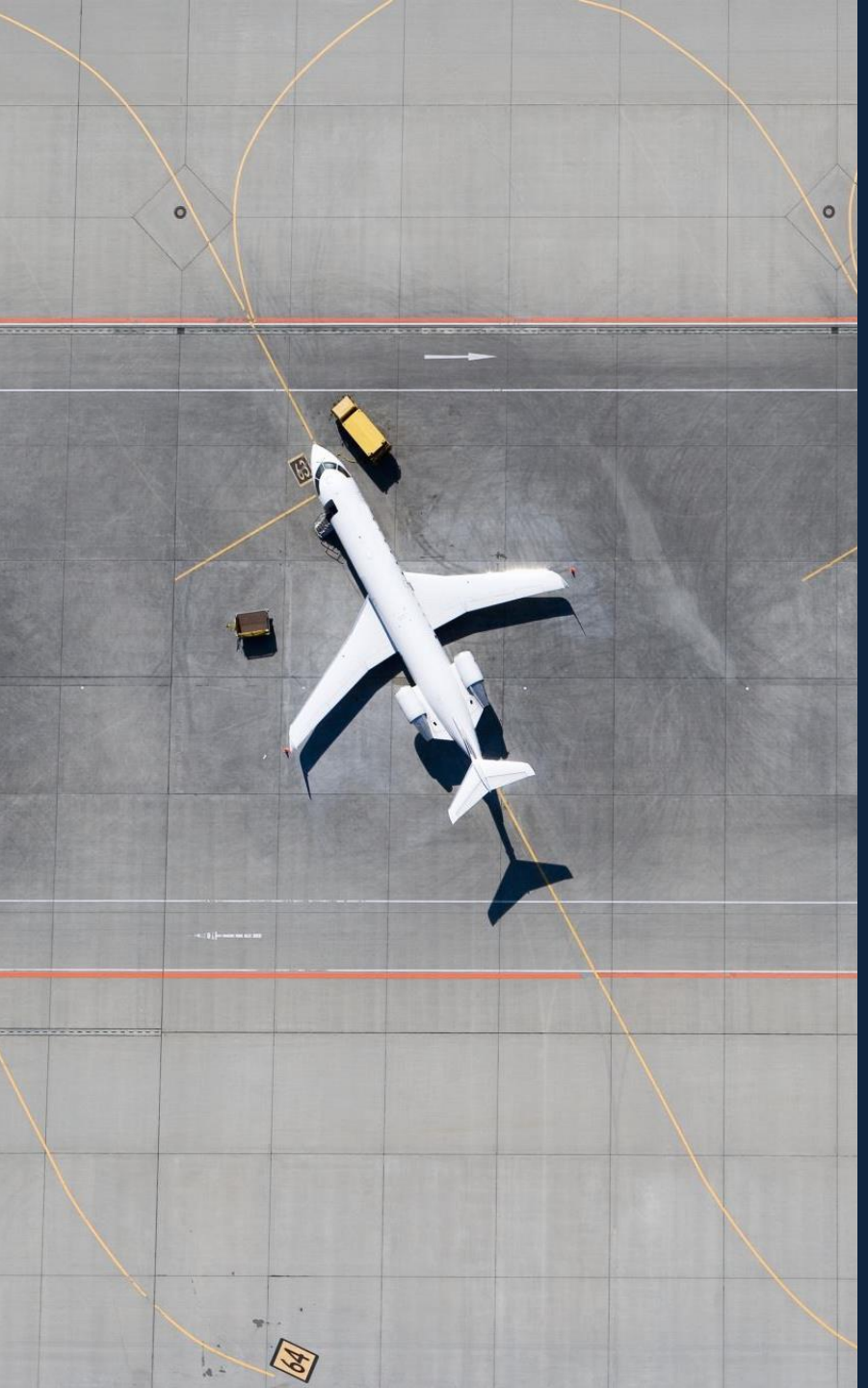
Substantial Modification: Any retrain or fine-tune materially changing performance.

Train includes testing, validating, or fine-tuning.



What Must Be Disclosed (12 Key Items)

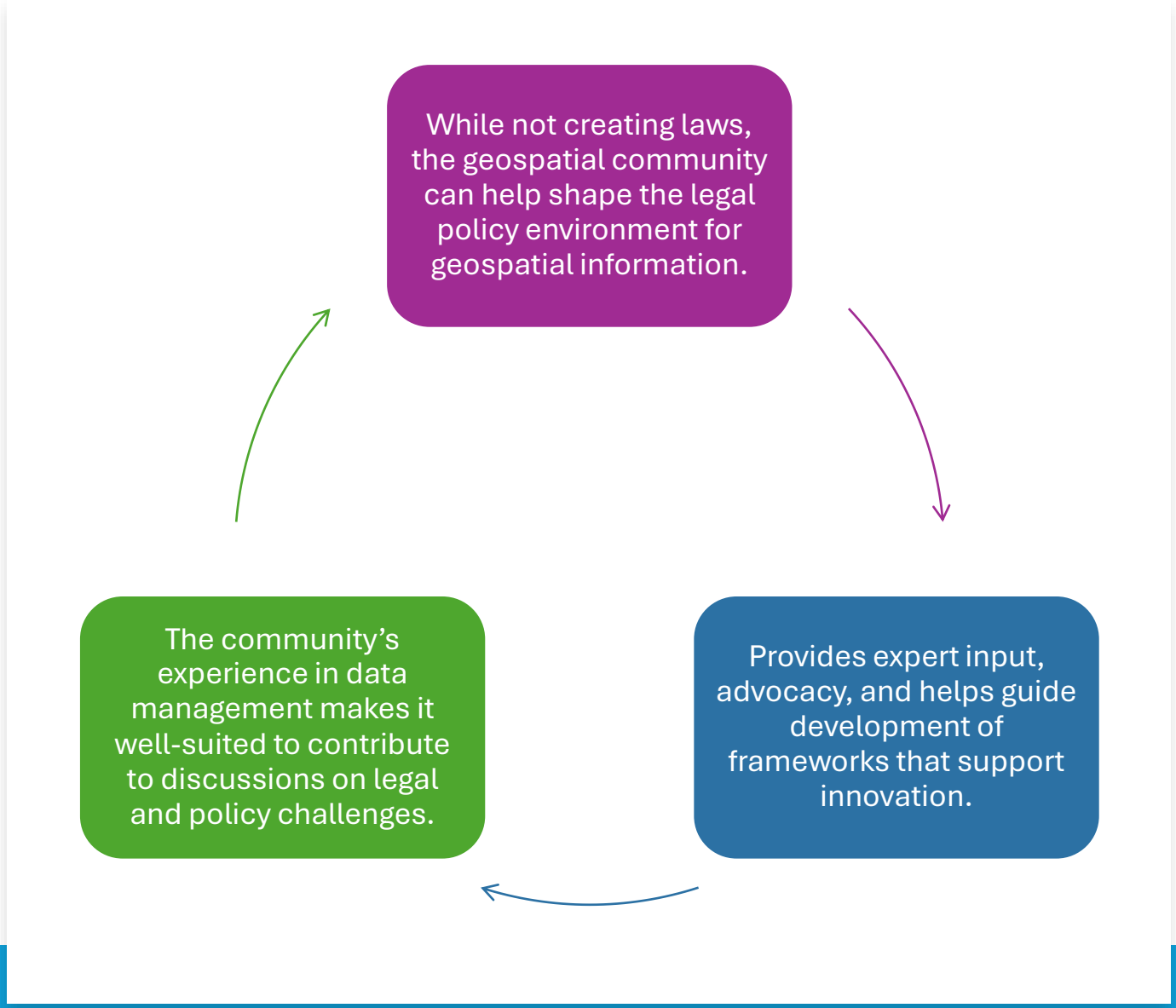
1. Dataset sources or owners.
2. How datasets support intended AI purpose.
3. Approximate dataset size or range.
4. Types of data points or labels.
5. Whether data are copyrighted or public domain.
6. Whether datasets were purchased or licensed.
7. Presence of personal information (CPRA §1798.140v).
8. Presence of aggregate consumer information.
9. Cleaning or processing methods and purpose.
10. Data collection period (and if ongoing).
11. Date of first use.
12. Use of synthetic data and its purpose.



Exemptions

- Developers need not disclose for systems whose sole purpose is:
- • Security and integrity functions.
- • Operation of aircraft in national airspace.
- • National security or defense systems made available only to U.S. federal entities.

Role of the Geospatial Community in Legal and Policy Development



Adopting Flexible and Dynamic Legal Frameworks

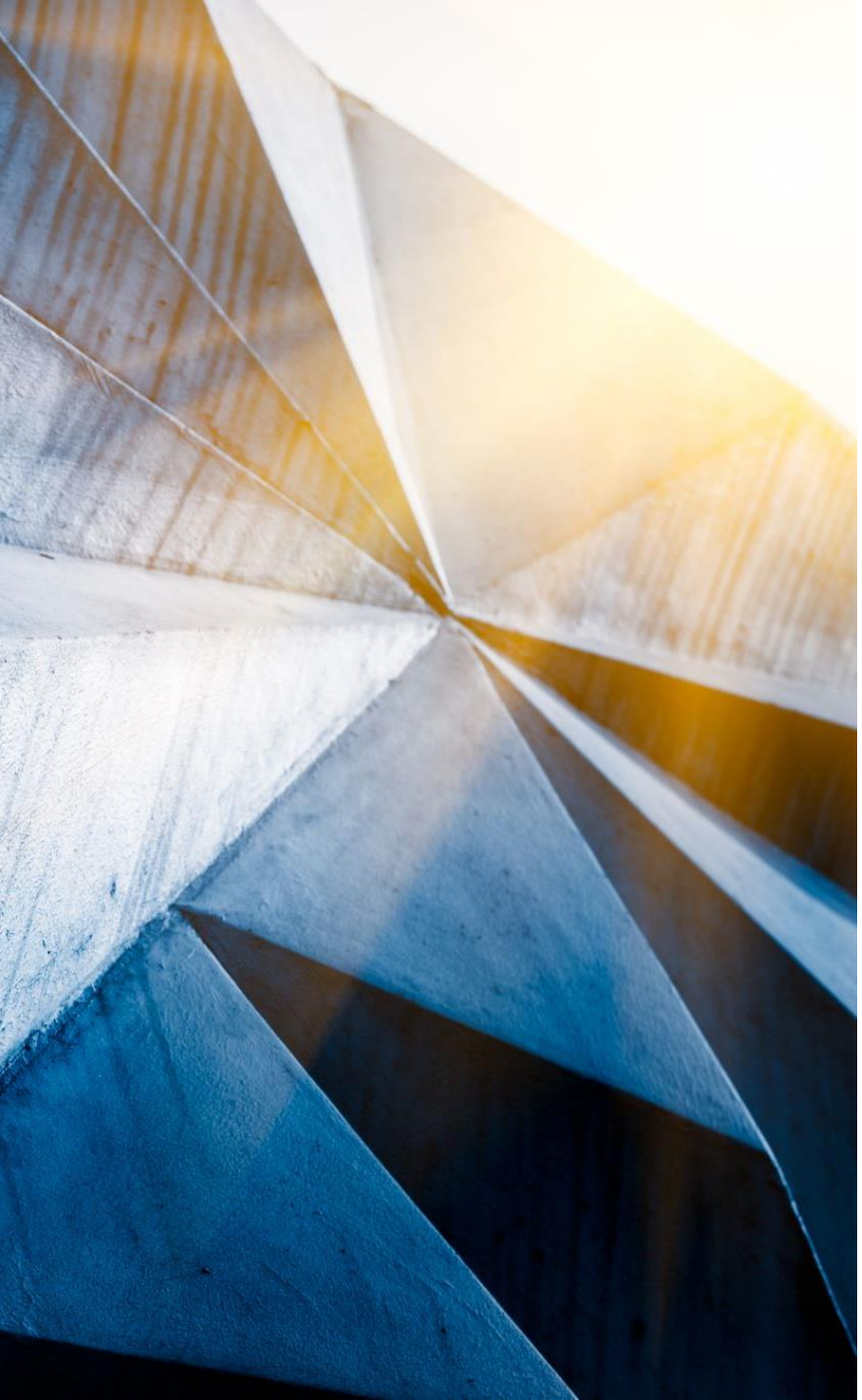
DYNAMIC LEGAL FRAMEWORKS: ENABLE REGULAR UPDATES WITHOUT LENGTHY PROCESSES.

TECHNOLOGY-NEUTRAL LANGUAGE: AVOID TECH-SPECIFIC TERMS TO KEEP LAWS RELEVANT OVER TIME.

REGULATORY SANDBOXES: ALLOW CONTROLLED TESTING OF NEW TECHNOLOGIES UNDER TEMPORARY EXEMPTIONS.

Future-proofing Legal and Policy Frameworks for Geospatial Information Management

- As new technologies such as AI and digital twins become integrated, geospatial legal frameworks must evolve.
- Stakeholders must ensure that geospatial information management systems remain relevant, resilient, and adaptable.
- Need for a future-proof legal and regulatory framework.



Recommendations

- Emerging technologies such as AI present significant opportunities in geospatial information management.
- They also raise a number of legal issues and concerns.
- Strategic Pathway 2 should be updated in order to give the geospatial community the tools it needs to understand and address these concerns.

Third expert meeting of the working group on policy and legal frameworks for geospatial information management, including addressing issues related to authoritative and reliable geospatial data and emergent technologies

1. Opening of the third expert meeting, welcome and introductions
2. Agenda, organization of the meeting and setting the scene
3. Policy and legal developments – national and regional
4. Workplan and deliverables for 2025 – 2027
5. Awareness, communication, engagement, developing and sustaining legal-policy capacity
6. Evolving geospatial and technological landscape, artificial intelligence, and its regulation
7. **UN-IGIF strategic pathway on Policy and Legal frameworks**
8. Collaboration with partnering international organizations and other functional groups
9. Sixteenth session of the Committee of Experts
10. World Geospatial Information Congress 2026
11. Summary, next meeting and close

A world **where** geospatial information solves local to global challenges