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Joint Workshop of Kadaster, IGN France,
Federal Agency for Cartography and Geodesy
and EuroSDR

November 26th-28th 2025, Rotterdam, The Netherlands

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Official Workshop Report

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Abstract

This report documents the outcomes of the Geo-Artificial Intelligence (GeoAI) Special Interest Group (SIG) kick-off workshop dedicated to exploring how it can support national mapping and cadastral agencies (NMCAs) in adopting and governing AI. Kadaster (NL) together with the IGN (FR) and BKG (DE) organized and animated the workshop, which took place from the 26th to the 28th November 2025 and was hosted by Kadaster in Rotterdam (NL). Almost 30 representatives of 18 EuroSDR member organisations took part in the workshop. This report follows the structure of the workshop agenda. It begins with an overview of the current status and vision for the GeoAI SIG, followed by summaries of the breakout sessions exploring organizational needs, use cases, and challenges related to AI adoption. Subsequent sections document the identification and prioritization of GeoAI SIG themes, the discussion of barriers and enablers, and the exploration of governance considerations. The report concludes with the outcomes of the roadmap and milestone discussions and a summary of key conclusions and next steps.

The workshop was carried out with contributions from EuroSDR representatives:

Ivar Oveland (Chair Commission 2, Norwegian Mapping Authority Kartverket)

Claire Ellul (Chair Commission 3, University College London)

Martijn Rijdsdijk (outgoing Chair Commission 3, Kadaster)

Frédéric Cantat (Chair Commission 4, IGN France)

Anka Lisec (Chair Commission 5, University of Ljubljana)

Jantien Stoter (Vice-president EuroSDR, Kadaster, Delft University of Technology)

1 INTRODUCTION

This report documents the outcomes of the **Geo-Artificial Intelligence (GeoAI) Special Interest Group (SIG)** kick-off workshop dedicated to exploring how it can support national mapping and cadastral agencies (NMCAs) in adopting and governing AI. Kadaster (NL) together with the IGN (FR) and BKG (DE) organized and animated the workshop, which took place from the 26th to the 28th November 2025 and was hosted by Kadaster in Rotterdam (NL). Almost 30 representatives of 18 EuroSDR member organisations took part in the workshop. This report follows the structure of the workshop agenda. It begins with an overview of the current status and vision for the GeoAI SIG, followed by summaries of the breakout sessions exploring organizational needs, use cases, and challenges related to AI adoption. Subsequent sections document the identification and prioritization of GeoAI SIG themes, the discussion of barriers and enablers, and the exploration of governance considerations. The report concludes with the outcomes of the roadmap and milestone discussions and a summary of key conclusions and next steps.

Background

AI technologies and tools are becoming increasingly relevant with regard to geographical information. Their integration into NMCAs' core production processes promises to render them more efficient, creating both unique opportunities and new challenges for NMCAs across Europe. During EuroSDR's workshop on Artificial Intelligence in the core business processes of NMCAs, held in Amsterdam in November 2024, the concept of a **GeoAI Special Interest Group (GeoAI SIG)** was presented as an initiative for fostering international collaboration and coordination. This kick-off workshop was organized to advance the establishment of a GeoAI SIG within the framework of EuroSDR.

Purpose and scope

The main goal of the workshop was to explore the value of an SIG GeoAI within EuroSDR and to build a widespread consensus within EuroSDR on the GeoAI SIG's purpose, scope, and practical implementation by bringing together EuroSDR representatives, in particular from NMCAs interested in exploiting AI in order to improve their services or production processes. Through a series of plenary sessions, breakout discussions, and brain-storming exercises, the participants were invited to help shape a common vision for the GeoAI SIG, lay the foundation for future actions and define a collaborative road-map.

Results

A first step was to share the current status of AI uptake within the participants' organizations and their vision for the GeoAI SIG. Common goals and challenges were identified and helped determine and prioritize four main focus areas for the GeoAI SIG:

1. **Model Catalog**, to improve visibility, reuse and information source of AI models
2. **Benchmarking and collaboration**, to enable objective assessment of model performance across different datasets and national contexts
3. **LLM's and Agentic AI**, for semantic search, data interaction and workflow support
4. **AI Governance**, covering legal, ethical and organizational aspects of trustworthy AI

These focus areas were explored in more depth and concrete goals for the GeoAI within these topics were formulated. For the first three topics, activities for the up-coming two years were proposed, an initial roadmap was drafted and participants willing to contribute to the GeoAI SIG were identified.

General takeaways from the workshop:

- The AI technology readiness level, as well as the resources made available for AI research and development varies strongly from organization to organization, with only a few already having fully integrated AI into their production lines.
- Organizations with a clearly defined AI strategy generally tend to have more technologically advanced AI projects and to have started integrating them into their production processes.
- There are many shared use cases for AI and the participants generally believe that a greater collaboration among NMCAs in the field of GeoAI will be beneficial and, in particular, that a GeoAI SIG can play an important role in fostering collaborations on an European scale. Many participants showed interest in participating in a GeoAI in some form.
- Many organizations share similar challenges regarding AI uptake: a lack of human resources and expertise, limited access to sufficient computational capacities, as well as unclear guidelines with respect to the use of AI technologies, general distrust towards AI, unclear legal implications and national security concerns.

In a plenary session, options for future governance of the GeoAI SIG were outlined, but no consensus could be found. It was decided that governance structure will be refined in coordination with the EuroSDR Board and Management Team.

Next Steps

The next steps for the GeoAI SIG are to confirm the interest in contributing to the GeoAI SIG's activities expressed during the workshop, in order to establish the roles of the potential participants and form a network of committed professionals. Subsequently, the goal is to revise the proposed roadmaps, adjust them where necessary and affirm preliminary planning for the upcoming two years:

- **Common AI Catalog:** organization of a workshop on creating a metadata profile, that will allow not only an simple integration of AI-related information, data, and models, but also an ease of access for potential users looking for AI resources.
- **EU-wide Benchmarking of AI models:** creation and distribution of a survey focused on indentifying relevant use cases within the NMCAs, in order to jointly converge on a first use case as a POC.
- **LLMs & Agentic AI:** creation of a survey to get a more comprehensive picture of LLMs and agentic AI with in NMCAs (uses cases, intended users, best practices, future plans) to identify collaboration activities.

2 The GeoAI-SIG and the EuroSDR Commissions

This session introduces the motivation behind establishing a GeoAI SIG, also in relation to the 5 EuroSDR commissions. The objective is to illustrate how the GeoAI SIG and the commissions could potentially benefit from and be impacted by each other's work. It sets the frame for future discussions on how to integrate the GeoAI SIG into the existing organizational structure of EuroSDR.

2.1 *GeoAI-SIG – Motivation and Introduction*

Presented by Bhavya Kausika, Kadaster

GeoAI is increasingly becoming a core component of operational workflows within NMCAs. Recent workshops and conferences have demonstrated its transformative potential, particularly in accelerating data collection, change detection, and topographic map updating. At the same time, GeoAI is emerging as a critical enabler in addressing workforce challenges, as agencies face growing demands with limited availability of subject matter experts. AI can help to overcome lack of human resources.

Discussions during the **workshop on Artificial Intelligence in the core business processes of NMCAs**, held in Amsterdam in November 2024, highlighted that while adoption is progressing, significant challenges remain. These include high upfront investment costs, the need for specialized expertise, legal and governance constraints, and difficulties in scaling pilot projects into operational production. Ensuring appropriate infrastructure, traceability, and compliance with institutional mandates and policy frameworks was identified as a common concern across organizations.

Against this backdrop, and recognizing that **knowledge sharing is essential for successful and responsible GeoAI adoption**, an initiative for international collaboration among national mapping authorities was proposed within the framework of EuroSDR. The concept of a **GeoAI Special Interest Group (SIG)** was presented to align participating organizations on shared opportunities and challenges and to foster a cooperative ecosystem focused on practical implementation.

The idea was first pitched to the EuroSDR Board of Delegates in May 2025, and subsequently refined based on feedback from the Board and the EuroSDR Commission Chairs. As GeoAI cuts across all EuroSDR commissions, the establishment of a dedicated SIG was identified as an effective mechanism to address the topic in a coordinated and structured way. Following this feedback, the first GeoAI SIG kick-off meeting the current workshop has been planned and organized.

Potential focus areas of the GeoAI SIG

Based on the outcomes of the November workshop held in Amsterdam in 2024, several priority areas were identified as potential follow-up activities for the GeoAI SIG. These will be further refined based on the interests and needs of participating countries:

- **Data sharing and access**, with an emphasis on non-sensitive, AI-ready geospatial training data and clear frameworks for usage and governance
- **Sharing of GeoAI models, methods, and best practices**, including code, workflows, and open-source approaches
- **Standardization of data formats, metadata, and methods** to improve interoperability and reuse across national contexts
- **AI governance and responsible AI**, covering legal, ethical, security, transparency, and sustainability aspects
- **Collaborative research and development, addressing shared challenges and advancing GeoAI applications relevant to NMCA core tasks**

2.2 Commission 1 – Overview and Fields of Action or Interests concerning GeoAI-SIG

Presented by Jantien Stoter (EuroSDR Vice president,
in absence of the chair of Commission 1 Eija Honkavaara)

Commission 1 is responsible for data acquisition, with a mission to investigate, test and validate platforms, sensors and algorithms used to capture geospatial data, with a strong emphasis on precision, accuracy, reliability, feasibility and the standardisation of primary data-acquisition procedures. Its terms of reference cover a wide range of technologies and methods, including sensors and sensor platforms, georeferencing and positioning, mobile mapping, UAV/RPAS, satellite imagery (including Copernicus), airborne and hybrid sensors, point-cloud generation from multi-view stereo and LiDAR, data quality, historical data and crowdsourcing of ground truth for machine learning.

For the GeoAI SIG, Commission 1 provides the foundation for AI applications that depend on high-quality input data, especially in areas such as Earth observation, 3D mapping and point-cloud analytics. Collaboration could focus on defining data-quality requirements for AI models, standardising acquisition procedures that support training and benchmarking datasets, and integrating crowdsourced ground truth into AI workflows, ensuring that the SIG's catalogues, benchmarks and LLM/agent use cases are grounded in robust, well-characterized primary data.

2.3 Commission 2 – Overview and Fields of Action or Interests concerning GeoAI-SIG

Presented by Ivar Oveland (Chair of Commission 2)

Commission 2 focuses on data processing, modeling and integration with the goal to render the data more adaptable to geospatial applications. This involves extracting geospatial information from data sources, generating digital representations of objects in a geospatial context, and combining multiple data sources to reach a higher level of information, time resolution and accuracy.

For the GeoAI SIG, Commission 2 is interested in using AI to perform object detection, segmentation and attribute detection from a variety of different types of data sources, e.g. lidar, optical images, radar images. The sharing of best practices, as well as actual AI training data and models, and working on standardisations in the field of AI are topics that could be part of joint activities.

2.4 Commission 3 – Overview and Fields of Action or Interests concerning GeoAI-SIG

Presented by Martijn Rijdsdijk (outgoing Chair of Commission 3),
also on behalf of Claire Ellul (incoming chair Commission 3)

Commission 3 focuses on the usage, access, distribution and visualization of authorized geospatial data, with a mandate that spans user demand analysis, domain integration and the design of networked systems such as National Spatial Data Infrastructures (NSDIs), geoportals and INSPIRE compliant services. It also covers linked data, Earth observation (EO) services, digital twins, smart city applications, metadata, and archiving and storing data, with a track record of workshops and webinars on topics such as linked data, data science in NMCAs, digital twins and AI related applications.

For the GeoAI SIG, Commission 3 is a natural anchor for data and service oriented GeoAI activities, including model and dataset catalogues that align with existing service architectures and metadata practices. Joint work could focus on AI enhanced information retrieval, digital twin support, and LLM/agent AI use cases that improve user access, interpretation and visualization of geospatial data across NMCA services.

2.5 Commission 4 – Overview and Fields of Action or Interests concerning GeoAI-SIG

Presented by Frédéric Cantat (Chair of Commission 4)

Commission 4's core mission is to develop and implement business models that explain how NMCAs create, deliver and capture value in economic, legal, social, governance, cultural and sustainability contexts. Its terms of reference include business case analysis for data acquisition and use, valuation of geoinformation, funding and financing models, geospatial policy and strategy, EU regulations and directives for geodata, co creation with stakeholders, and the ethical and security dimensions of open data and AI.

This commission provides the main institutional home for AI related business models, regulatory monitoring and ethics, which are central to the GeoAI SIG's governance theme. Collaboration could include cost-benefit assessments of AI use cases, analysis of how AI reshapes NMCA business models and operations, and joint work on ethical frameworks addressing bias, transparency, liability and security in AI enabled geospatial workflows.

2.6 Commission 5 – Overview and Fields of Action or Interests concerning GeoAI-SIG

Presented by Anka Liseć (Chair of Commission 5)

Commission 5 is responsible for professional competencies, capacity building and knowledge transfer across the EuroSDR community, covering professional development, education and skills, curricula design, recruitment and capacity development, and promotion of professions in the fields of geospatial information. Through initiatives such as EduServ, it organises short courses, training and workshops that translate research outcomes into production ready knowledge for staff in NMCAs, academia and industry, including recent and planned courses on machine learning for Earth observation, AI based 3D scene capture, Python for geospatial applications and spatial data quality.

For the GeoAI SIG, Commission 5 is the key partner for turning GeoAI concepts into practical competencies via structured training, life long learning programmes and the sharing of best practices, datasets and training models. Joint activities could include GeoAI SIG branded EduServ courses, train the trainer events and hands on workshops that use common benchmarks and model catalogues, ensuring that the skills needed to implement and govern GeoAI are widely available across member organisations.

3 DEEP DIVE 1: Connecting Solutions to Problems

During this session breakout groups were utilized to share the role AI currently plays in their organization and what if any strategic goals for AI implementation have been defined. In particular, the participants presented current use cases, planned projects and the challenges they face. The discussions provided a comprehensive overview of where NMCAs currently stand in their adoption of AI, highlighting differences in technical maturity, organizational strategic viewpoints and available resources. Nonetheless, common use cases and shared challenges were identified.

3.1 Organizational Maturity and AI Strategy

A key insight across all groups was that AI maturity strongly correlates with a clearly defined AI strategy within the organization, rather than with technical ambition alone.

Only a few organizations (e.g. IGN, Ordnance Survey UK) have an explicit AI strategy in place. Others operate in a project-driven or exploratory mode, where AI initiatives are assessed on a case-by-case basis and are not yet embedded as a default part of production workflows. In several agencies, AI efforts are led by small teams or even single individuals, limiting scalability and institutional up-take.

Some organizations deliberately adopt a cautious approach, viewing AI primarily as a tool to enhance and accelerate existing processes rather than replace them. In others, uncertainty around legality (e.g. generative AI), governance, or long-term vision has slowed the development of a coherent strategy. Overall, participants agreed that a successful AI adoption not only requires technical knowledge and infrastructure, but also a clear governance, internal strategic alignment, and communication on AI and its implications for the organization.

3.2 Current Use Cases and Emerging Directions

Despite differences in maturity, there is significant convergence in current AI use cases across organizations:

- Detection and updating of buildings and roads using EO and remote sensing data
- Semantic segmentation of orthophotos and imagery
- Classification of point clouds (LiDAR, DIM)
- Land cover and field boundary mapping
- Rapid mapping for floods, disasters, and change detection
- Deriving thematic layers such as roof materials, wetlands, or agricultural land use

Several agencies already have AI models in production, particularly for pixel-based land cover maps, change detection, and feature extraction. Foundation models (e.g. SAM, MapAnything) and embeddings are increasingly used to support operational workflows and layer creation.

Looking forward, the shared vision is to automate common and repetitive mapping tasks, while relying on humans for quality control, data interpretation, and more complex decision-making. Participants also expressed interest in agentic AI, semantic search over geospatial data, and improved quality-control pipelines. A recurring message was that use cases should drive AI development, rather than applying AI for its own sake.

3.3 *Data, Infrastructure, and Resource Constraints*

Across all groups, **data quality, provenance, and documentation** were identified as foundational challenges. Participants stressed the importance of:

- Traceable datasets and AI outputs over time
- Consistent definitions (e.g. what constitutes a “road”) across countries
- Access to labeled, high-resolution, and high-temporal EO data

Infrastructure capabilities vary widely, ranging from mature cloud-based data lakes and High Performance Computing (HPC) environments to a few local Graphics Processing Units (GPUs). These differences in access to computing power directly determine whether organizations can move beyond proofs of concept to scalable, production-ready AI workflows, or not.

Human resources were also highlighted as a major bottleneck in AI adoption. Many organizations lack sufficient **AI expertise, capacity, and continuity** to maintain, evaluate, and improve models over time. This also impacts trust, quality assurance, and the ability to tackle more complex mapping problems.

3.4 *Governance, Culture, and External Constraints*

Governance and regulatory considerations play a significant role in slowing down AI adoption. General Data Protection Regulation (GDPR) concerns, the lack of clear AI governance frameworks, and the fact that **AI development often moves faster than legislation** was frequently mentioned as sources of hesitation. In addition, **geopolitics and data access restrictions** influence EO data availability and sharing, which can potentially make it more difficult to exchange tools and technologies between different organizations.

Culturally, several organizations face internal resistance, including concerns about potential job displacements and skepticism toward the reliability of AI-generated outputs. While AI-assisted land cover and change detection is generally accepted, fully automated workflows are still viewed cautiously. Participants agreed that educating on AI and **preparing colleagues for new AI-supported roles** are essential for long-term adoption.

3.5 *Implications for the GeoAI-SIG*

The discussions highlighted several challenges for the GeoAI-SIG:

- Difficulty in exchanging AI models due to heterogeneous data types, resolutions, and national definitions
- Limited standardization across datasets, workflows, and evaluation methods
- Mixed attitudes toward sharing code and models (e.g. via open-source platforms)
- A need to clarify differences between predictive and generative AI, with the former currently more accepted in production settings

At the same time, participants clearly saw the value of the GeoAI-SIG as a platform to **share experiences, align on standards where possible, improve AI literacy, and collectively address common challenges** that individual organizations struggle to solve alone.

This breakout session confirmed that while AI adoption across NMCAs is uneven, many challenges and ambitions are shared. Overall, there seems to be a wish to exchange and coordinate on a larger European scale. The insights gathered underline the added value of the GeoAI-SIG in supporting coordinated learning, responsible AI practices, and gradual progress from experimentation toward sustainable, operational AI use.

4 DEEP DIVE 2: Focus Areas, Opportunities & Needs

During this session, breakout groups identified and prioritized topics within the broader GeoAI SIG themes expected to be relevant for NMCAs in the up-coming years. The objective was to focus on a few clearly defined areas of interest, which can successfully be addressed by the GeoAI SIG to help overcome shared challenges and collaboratively support AI adoption within NMCAs across Europe. The following topics emerged as priorities for the GeoAI-SIG:

- **Model Catalog**, to improve visibility, reuse and information source of AI models
- **Benchmarking and collaboration**, to enable objective assessment of model performance across different datasets and national contexts
- **LLM's and Agentic AI**, for semantic search, data interaction and workflow support
- **AI Governance**, covering legal, ethical and organizational aspects of trustworthy AI

Additionally, participants highlighted several challenges that are an important part of these themes and that will influence their success. These include improving **dataset quality and provenance**, strengthening **AI literacy**, and developing **shared definitions** for core geospatial concepts (e.g. differing national interpretations of what constitutes a “road”). Limitations related to **human resources and access to sufficient and appropriate computational capacity** were repeatedly raised, alongside the importance of **documentation, ground truth data**, and **GDPR-aligned governance frameworks**. Participants also emphasized the need to recognize the complementary strengths and limitations of humans and AI systems.

The discussions were grounded in practical use cases, many of which are already being explored or piloted within organizations. These include EO-based map updating, detection of demolished buildings, rapid and disaster mapping, and point-cloud-based workflows. Looking ahead, a shared vision emerged around automating common mapping tasks, while maintaining a human-in-the-loop approach for quality control and decision-making. Enablers for this vision include agentic AI, quality-control pipelines, semantic search over geospatial data, and improved access to high-resolution, high-temporal, well-labelled datasets to support larger foundation models.

Together, these inputs informed the selection of focus areas for Deep Dive 2 and provide clear direction for how the SIG can prioritize activities that are both strategically relevant and operationally valuable for member organizations.

5 CHALLENGES: Identifying barriers for bringing the GeoAI-SIG into existence

The subsequent breakout session focused on identifying barriers to establishing the GeoAI SIG and doing work on the identified themes, how to overcome them and to assure an operational GeoAI SIG. Participants reflected on the previously prioritized themes; model catalogues, benchmarking, LLMs, and AI governance, and examined associated challenges and opportunities from **technical, legal, and organizational perspectives**.

5.1 *Cross-cutting Themes*

Across all topics, participants continuously highlighted the shortage of human resources, expertise, and computing capacity as a primary constraint, alongside fragmented legal frameworks and a lack of clear institutional AI strategies. Organizational resistance, limited AI literacy, and uncertainty about data ownership, licensing, and data protection obligations further slow adoption. These challenges reinforce the need for common guidance and shared interpretations, and practical examples of successful implementations.

5.2 *Model Catalogue*

On the catalogue theme, groups pointed to technical fragmentation in platforms, metadata standards, and update processes, as well as high efforts required to properly document models, code, and training data in sufficient detail as obstacles to establishing a useful shared model catalogue. Legal and organizational questions around publishing models and datasets, liability, data security, and securing resources for maintenance mean that many institutes hesitate to expose their AI assets, even when internal prototypes exist. Additionally, the practical implementation of a model catalogue requires an appropriate infrastructure to host the catalogue and sufficient resources to not only implement it, but also maintain it.

Enabling factors discussed included converging on a shared metadata profile and evaluation of candidate platform technologies, leveraging existing communities (e.g. EuroSDR) for hosting and governance, and exploring European funding to lower initial implementation costs across national mapping and cadastral agencies. Participants also highlighted that clear inventory procedures, role definitions, commitments, and business-value narratives are essential to motivate contributions and sustain the catalogue over time.

5.3 *EU-wide Benchmarks*

For EU-wide benchmarks, participants underlined the technical complexity of harmonizing diverse sensors, data formats, object definitions, and acquisition methods, especially for raster data with varying resolutions, bands, and temporal characteristics. Legal barriers such as differing national rules on open versus closed data, licensing, and GDPR compliance intersect with organizational challenges including funding for infrastructure, data storage, and the need for enough participating institutes to make benchmarks representative.

At the same time, there was strong interest in moving toward at least one shared European benchmark, provided that common definitions, data-sharing agreements, and security safeguards can be jointly

developed within the GeoAI SIG. Participants saw scope for the SIG to coordinate knowledge exchange on specifications, negotiate template agreements, and advocate for EU-level frameworks that simplify cross-border benchmarking activities. It was generally recognized that such a benchwork would help evaluate different AI models and foster research and innovation in GeoAI.

5.4 *LLMs and Agentic AI*

On LLMs and agentic AI, the discussions emphasized the need for skills, infrastructure (including servers and orchestration frameworks), and standardized ways of formatting and routing geospatial queries to AI agents. Legal concerns centered on personal data handling, user trust, and security risks when connecting internal systems to third-party or open-weights models, as well as uncertainty about suitable business and responsibility models for operational deployments.

Participants identified several actions the GeoAI SIG could take, including developing shared guidelines for prompt design and query standardization in Geographic Information System (GIS) contexts, recommendations for responsible and controllable AI usage, and providing examples of architectures that balance open-source tooling with compliance and security requirements. The value of jointly maintained use-case repositories and solution patterns was also highlighted as a way to accelerate safe experimentation across institutes.

5.5 *Organization-level AI Implementation and Governance*

The groups noted that obstacles to AI implementation on an organizational level are lacking hardware resources, unclear guidelines, and in particular a limited understanding of how AI capabilities scale from pilots to fully integrated organization-wide technologies and services. Many organizations lack an explicit AI roadmap, struggle with change management and continuous training, and face skepticism or ethical concerns, such as job displacement and the balance between investments in GeoAI development versus the adoption of generic AI solutions, i.e. LLMs.

Participants proposed that the GeoAI SIG could help support AI governance by interpreting emerging EU-level regulations (e.g. the EU AI Act) with regards to geographic information and within the specific context of national mapping and cadastral agencies, providing templates for policies and strategies, and sharing approaches to training, literacy, and transition management. A recurring suggestion was that the GeoAI SIG should promote a united vision that positions GeoAI, LLMs, and benchmarking as complementary components of a broader, responsible AI agenda across the community.

5.6 *Summary*

Overall, the breakout confirmed that most barriers are not purely technical, but lie at the intersection of technology, governance, and organizational readiness. While individual organizations can make incremental progress, many challenges, such as standardization, benchmarking, legal clarity, and skill development are structural and shared. The GeoAI SIG is therefore well-positioned to act as a collective enabler: reducing duplication, lowering entry barriers, and accelerating responsible adoption by providing shared frameworks, trusted guidance, and a sustained space for collaboration and learning across the European NMCA and Research community.

6 OPPORTUNITIES: Mapping the Value of the GeoAI-SIG

Given the significance of AI and the impact on multiple EuroSDR commissions, this session focused on clarifying the value that the GeoAI-SIG can deliver to participating organizations through work on the selected priority topics. The discussion aimed to provide a clear baseline for organizations to assess the benefits of engagement in the SIG and to understand how participation can support their strategic, technical, and organizational objectives. The session highlighted that the AI SIG can create tangible value for participating organizations by accelerating learning, strengthening collaboration, and supporting responsible AI adoption across catalogue, benchmarking, LLMs, and governance themes. By pooling knowledge and resources, the SIG helps agencies improve public services, enhance internal efficiency, and navigate ethical and legal obligations more confidently.

6.1 Knowledge Sharing and Collaboration

Participants emphasized that structured knowledge sharing within the SIG reduces duplicated effort, helps organizations avoid common pitfalls, and speeds up the uptake of proven solutions. Shared experiences, success stories, and joint work on ethics and GDPR were seen as key to fostering innovation, creating synergies between agencies, and turning the GeoAI SIG into a practical implementation support hub.

6.2 Catalogue, Models, and Benchmarking

A jointly developed catalogue of models, methods, and benchmark datasets was viewed as a foundation for collaboration, enabling members to learn from each other's successes and failures, stay up to date, and specialize where they have strengths. Feeding this catalogue through collaboration and benchmarking activities helps identify state-of-the-art approaches, sustain standardization, and support research while opening opportunities for EU funding and broader partnerships.

6.3 LLMs, Agents, and Public Services

The GeoAI SIG was seen as a vehicle to exchange LLM and agentic AI use cases, demonstrate how AI can simplify workflows, and improve customer and citizen experience through better data integration and easier access to geospatial information and metadata. Participants noted that shared experimentation and examples can help organizations understand where LLMs add value, derive new use cases from existing data, and strengthen internal motivation to invest in AI capabilities.

6.4 Productivity, Trust, and AI Governance

From an internal perspective, organizations expect GeoAI SIG participation to help their productivity by reusing resources, automating repetitive tasks, and improving data quality through AI workflows. At the same time, the AI governance focus of the GeoAI SIG supports literacy, risk awareness, and security, helping members understand AI limitations, manage bias and hallucinations, and build trustworthy, compliant AI environments that deliver value without undermining public trust.

7 GOVERNANCE AND ORGANISATION OF THE GEOAI SIG

The plenary session was originally intended to explore how the GeoAI SIG should be governed, including its internal structure, key roles and responsibilities, and its interaction with existing EuroSDR commissions. The goal was to clarify which of the prioritized themes should be led directly by the GeoAI SIG and where cross-commission steering or support would be required.

To validate the proposed governance outline, the group held a round-table check-in to see whether participants agreed with the suggested approach and to collect any comments or concerns. During this exchange, it became clear that not all participants had a sufficient overview of the EuroSDR setting and commission landscape to meaningfully assess the governance proposal. An important question was also how the strength of running a GeoAI SIG by EuroSDR members that links through all the commissions can align with the relevant AI activities in individual commissions

The session was further used to design a survey for EuroSDR members regarding both their expectations for the GeoAI SIG and their current state of AI implementation (for example AI approach, data catalogues, organizational structure, use cases, and governance).

A survey questionnaire was created from the proposal, given to the workshop participants, and the results are shared in the Appendix II. The results give a first insight into AI use within the NMCAs of EuroSDR. To get a more complete picture of AI use within EuroSDR, the survey could be sent out via EuroSDR.

8 GEOAI SIG ROADMAPS

Two sessions were held to discuss how the selected topics will be dealt with in the coming year, along with how and who would be involved, leveraging the momentum of the workshop.

8.1 *Common AI Catalog (Models, Methods & Metadata Standards)*

Contact person: Eva Bookjans, IGN France

Define the Host Organization

A necessary requirement for establishing a European catalog of AI models is having an organization willing to host and maintain the catalog, or at least a proof-of-concept after which other solutions can be proposed. Lantmateriet (Sweden) indicated that they might have a solution for kicking off this activity. If unsuccessful, other options will have to be explored and a plan on how to find support for hosting the catalog will have to be made.

Propose a Standardized Metadata Profile

In parallel, the participants can start working on defining a standardized Metadata profile, which will help ensure that the catalog is accessible for potential users and contributors. It was proposed that the working group takes inspiration from INSPIRE. Additionally, it was noted that on the one hand, creating a metadata profile should be easy and require minimal effort, and on the other hand, the metadata profile needs to contain a sufficient amount of information to be useful. Ideally, the metadata profile helps a user easily understand the specifications of an AI model, determine its relevance to their use case and facilitate its application.

Submit Roadmap to BOD 148

The first major milestone identified was the clear formulation of a more detailed roadmap, which will depend on how quickly a hosting organization can be identified. Ideally, a first concrete roadmap will be submitted to the Board of Delegates meeting 148 (BOD 148) planning for 20-22 May at IGN, Paris and ask for funding for a workshop on defining the Metadata profile.

Workshop on Metadata Profile

The general consensus was that the success and accessibility of a European AI catalog will strongly depend on the metadata profile. To help exchange ideas on how to create such a profile, it was proposed to organize a workshop bringing together both potential contributors to the catalogue as well as users.

8.2 *EU-wide Benchmarking of AI models*

Contact person: Anatol Garioud, IGN France

Build the inventory (define first use case via survey)

Create an initial inventory of benchmarking needs and opportunities by running a lightweight survey to identify candidate use cases and select a first concrete benchmarking use case to focus the work. This step establishes scope, success criteria, and a shared understanding of what will be benchmarked and why.

Timeline: Q2 2026;

Collect examples of existing NMCA benchmark activities

Gather and document existing benchmarking initiatives already conducted by NMCAs (methods, metrics, tooling, governance, reporting formats). This will prevent duplication, identify proven

practices, and clarify what can be reused directly versus what needs harmonization for an EU-wide approach.

Timeline: Q2–Q3 2026;

Explore benchmarking platforms & choose solution

Assess candidate benchmarking platforms and approaches (e.g., Kaggle, Codalab, or equivalent) against requirements such as access control, reproducibility, cost, integration effort, evaluation workflows, and community participation. Select the platform/solution that best supports the chosen use case. IGN Spain, IGN Belgium, ICGC and IGN France are interested to take this up further.

Timeline: Q2–Q3 2026;

Centralize data/models for the use case

Prepare the benchmark by consolidating the required datasets, reference data, and candidate models for the selected use case. The objective is to ensure consistent inputs, reproducible runs, and a shared baseline that participating NMCAs can access and use minimizing additional local setup work.

Timeline: Q4 2026–Q1 2027;

Check integration with Catalog (standardize benchmark workflows)

Define how the benchmark workflows integrate with the Catalog to enable standardized publication, discovery, and reuse of benchmarks, datasets, metrics, and results. This step focuses on harmonizing processes (submission, evaluation, reporting), aligning metadata, and establishing a repeatable workflow that can be extended to additional benchmarks.

Timeline: Q1–Q4 2027;

Launch the first benchmark

Publish and run the first EU-wide benchmark end-to-end on the selected platform, using the centralized data/models and the standardized workflow. Produce an initial results package (leaderboard or equivalent reporting), summarize lessons learned, and capture follow-up improvements.

Timeline: Q3–Q4 2027

8.3 LLMs & Agentic AI

Contact person: Hendrik Wagenseil, BKG Germany

Survey on LLMs/Agentic AI/RAG/VLM/MCP

Design and launch a structured survey across NMCAs to capture a comprehensive picture of activities related to the use of LLMs, agentic AI and other AI technologies. The survey should collect information on intended use cases, target audience (internal and external), maturity level and current status, future plans, and organizational requirements around communication, platforms, hosting and legal issues. It should also explicitly ask about willingness to share experiences, artefacts, or lessons learned, and identify contact persons to enable follow-up exchanges. Results will be analysed and synthesized into an initial landscape and gap analysis that informs subsequent collaboration activities.

Timeline: Q1 2026;

Lunch & Learn (recurring virtual format)

Establish a recurring virtual “Lunch & Learn” series as the main vehicle for exchanging use cases and practical experiences with LLMs, agentic AI etc. based on the survey results. Sessions should feature short talks and demonstrations that show how AI can simplify workflows, unlock new value from existing data (e.g. by VLMs), and enable easier access to geospatial information and metadata, followed by Q&A and selected structured interviews. These interviews should address cost–benefit considerations, legal and compliance aspects, and operational responsibilities. By highlighting concrete examples and shared experimentation, the series will help organizations recognize where LLMs add value and strengthen internal motivation to invest in AI capabilities.

Timeline: Q2 2026;

Knowledge Base

Create and maintain a shared knowledge base that captures and structures the insights emerging from the survey and Lunch & Learn sessions, including use-cases, best practices, lessons learned, requirements and more. The knowledge base should make it easy for organizations to discover proven patterns, reuse examples, and explore new use cases derived from existing data. Over time, it will serve as a central, living repository that supports continuous learning, encourages shared experimentation, and accelerates the responsible and effective adoption of LLMs and agentic AI across the community.

Timeline: Q3 2026 → ongoing;

9 CONCLUSIONS

The workshop successfully established a shared understanding of the **role, scope, and potential value of an AI Special Interest Group (SIG)** within the EuroSDR framework. Across plenary discussions and breakout sessions, participants collectively confirmed that GeoAI, LLMs, benchmarking, and AI governance are no longer minor topics, but increasingly central to the core business of national mapping and cadastral agencies. The discussions demonstrated strong support for the need for a coordinated, European-level forum to address these challenges in a structured and collaborative way.

Key objectives of the workshop were achieved. Participants jointly identified and prioritized concrete GeoAI SIG themes, discussed common technical, legal, and organizational barriers, and clarified where shared action can meaningfully reduce duplication to accelerate progress on a European scale. The breakout sessions provided valuable insights into current organizational AI maturity levels, existing use cases, and future ambitions, creating a realistic baseline for collaboration.

Importantly, the workshop also received constructive feedback on governance and positioning. While there was broad support for the establishment of the GeoAI SIG, participants emphasized the importance of close alignment with existing EuroSDR commissions and other existing special interest groups. This will be discussed later during the BOD meeting of EuroSDR.

The roadmap session marked a clear transition from exploration to action. Participants collaboratively outlined initial roadmaps and milestones for the prioritized topics and expressed willingness to contribute expertise, examples, and lessons learned. This confirmed strong engagement and a shared commitment to move from discussion toward practical outcomes.

Overall, the workshop received positive feedback from participants, who valued the openness of the discussions, the relevance of the topics, and the opportunity to learn from peers facing similar challenges. The GeoAI SIG has now formally moved from concept to implementation. With a clear thematic focus, an emerging community of participants, and strong support for continued collaboration, the GeoAI SIG is well positioned to become a central platform within EuroSDR for advancing responsible, effective, and operational use of AI in national mapping and cadastral agencies.

9.1 Next Steps

The next steps for the GeoAI SIG are to confirm the interest in contributing to the GeoAI SIG's activities expressed during the workshop, in order to establish the roles of the potential participants and form a network of committed professionals. Subsequently, the goal is to revise the proposed roadmaps, adjust them where necessary and affirm preliminary planning for the upcoming two years:

- **Common AI Catalog** : organization of a workshop on creating a metadata profile, that will allow not only a simple integration of AI-related information, data, and models, but also an ease of access for potential users looking for AI resources.
- **EU-wide Benchmarking of AI models** : creation and distribution of a survey focused on identifying relevant use cases within the NMCAs, in order to jointly converge on a first use case as a POC.
- **LLMs & Agentic AI** : creation of a survey to get a more comprehensive picture of LLMs and agentic AI within NMCAs (use cases, intended users, best practices, future plans) to identify collaboration activities.

APPENDIX 1 – Workshop Agenda

EuroSDR Workshop: GeoAI Special Interest Group Kick-off



Dates: 26–28 November 2025

Location: Kadaster, George Hintzenweg 77, 3068 AX Rotterdam, The Netherlands

Day 1 – Wednesday, November 26

- 13:00 – 14:00 | Registration
- 14:00 – 14:30 | Welcome and Introductions
- 14:30 – 15:00 | SIG GeoAI: What & Why – Current Status
- 15:00 – 15:50 | EuroSDR Commissions Spotlight
- 15:50 – 16:10 | Coffee Break
- 16:10 – 17:15 | Deep Dive 1: Connecting Solutions to Problems
- 17:15 – 17:30 | Closure Day 1
- 17:30 – 17:45 | Walk to Icebreaker Venue
- 17:45 – 19:30 | Reception: Drinks and Snacks

Day 2 – Thursday, November 27

- 09:00 – 09:15 | Opening Day 2 & Recap Day 1
- 09:15 – 10:15 | Deep Dive 2: Focus Areas, Opportunities and Needs
- 10:15 – 10:45 | Reporting Back
- 10:45 – 11:00 | Coffee Break
- 11:00 – 12:00 | Challenges: How to Bring SIG into Existence?
- 12:00 – 12:30 | Reporting Back
- 12:30 – 14:00 | Lunch
- 14:00 – 15:15 | SIG & EuroSDR Commissions: Tasks & Responsibilities

- 15:15 – 15:45 | Coffee Break
- 15:45 – 17:00 | Governance Structure SIG: How to Organize SIG?
- 17:00 | Closure Day 2 & Preview Day 3
- 19:30 | Dinner at Restaurant

Day 3 – Friday, November 28

- 09:00 | Start of Day 3 – Open Discussion & Recap Day 2
- 09:15 – 10:45 | Future Vision: Shaping the SIG Agenda
- 10:45 – 11:15 | Break
- 11:15 – 12:15 | Future Vision: Collaboration and Roadmaps
- 12:15 | Wrap-up Two Days' Workshop
- 13:00 | Going Home

Thank you! Looking forward to seeing you.

Organizing Team:

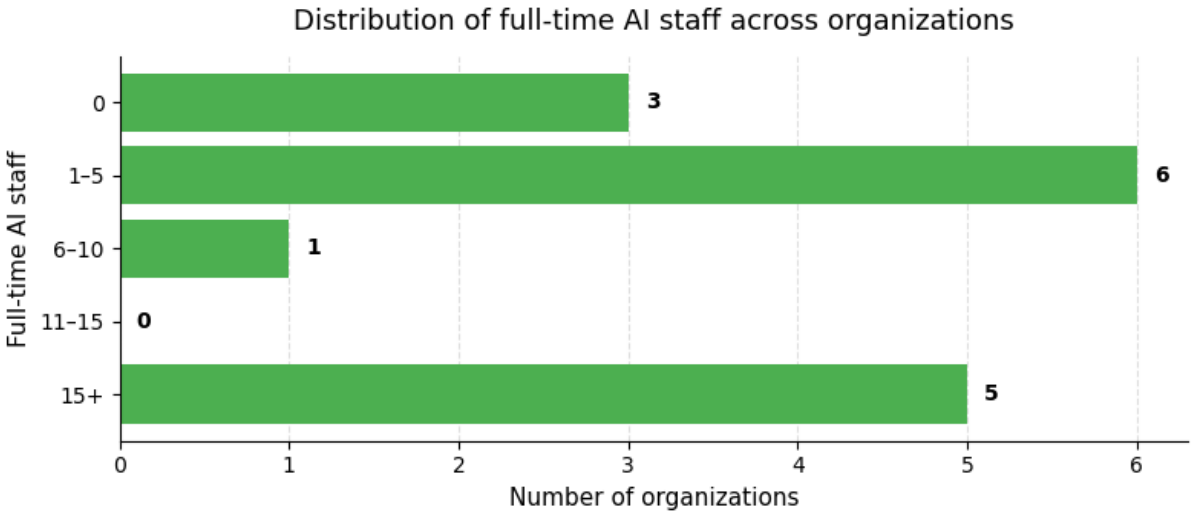
Bhavya Kausika	
Lennart Harmsen	Kadaster, NL
Ditmar Visser	
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Eva Bookjans	
Anatol Garioud	IGN, FR
Hendrik Wagenseil	BKG, DE

APPENDIX 2 – The General Survey

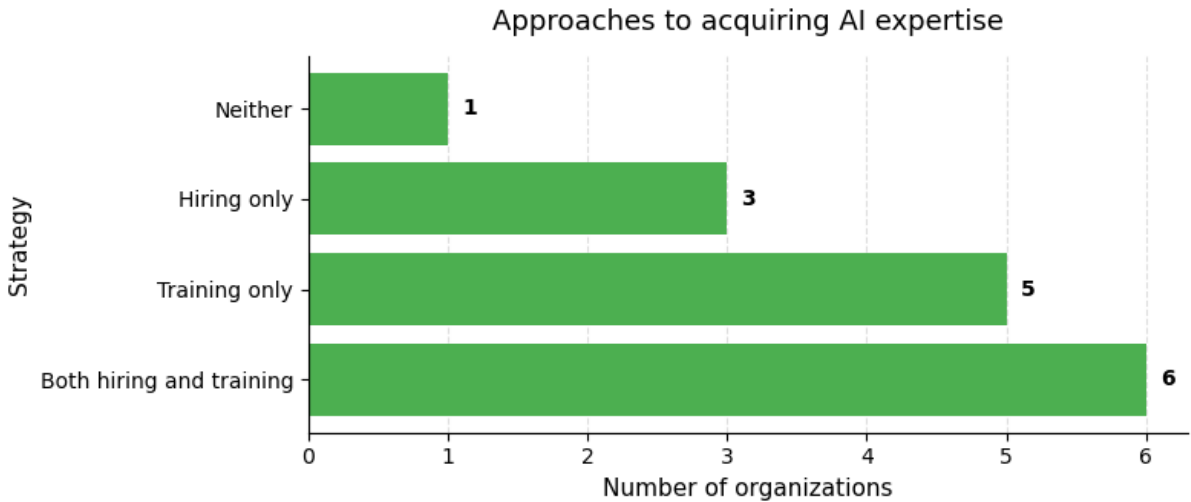
The survey questions were developed after the workshop, participants were asked what questions they would like to include in a survey of the NMCAs regarding AI implementation. Here the answers from the workshop participants are summarized.

Organizational Structure

1. How many people are involved full-time in AI? In research and development?

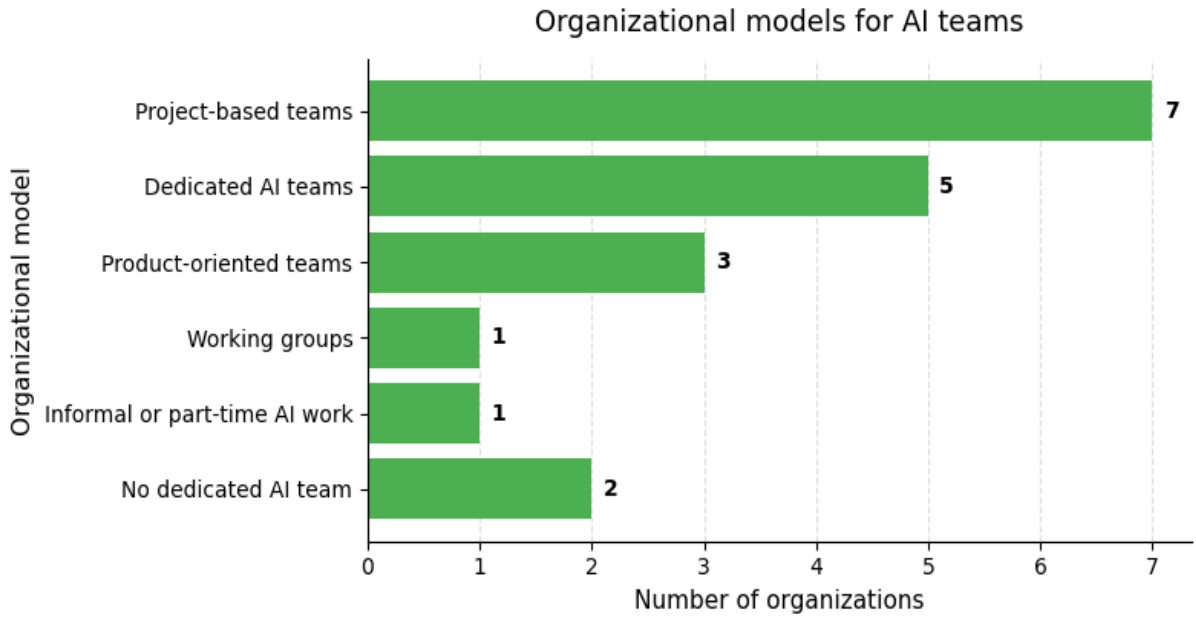


2. Is your organization hiring experts or training people?



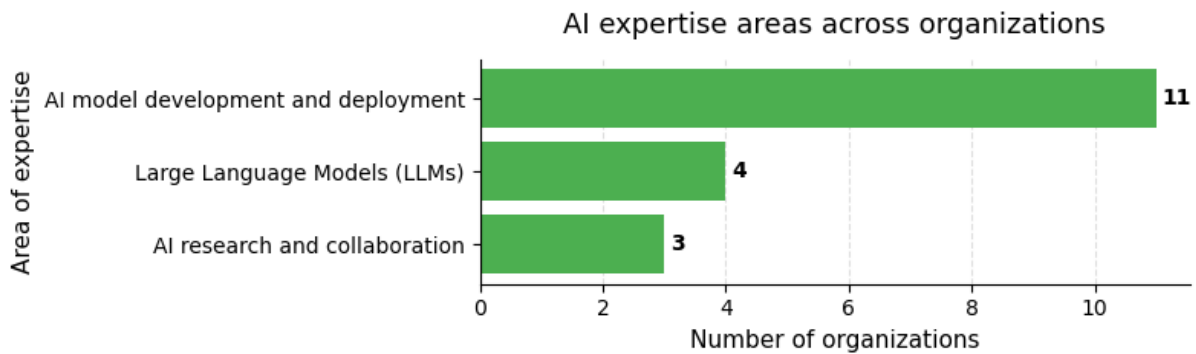
Most organizations combine hiring and training to develop AI expertise (6 organizations). Training alone is also common (5 organizations), while fewer rely solely on hiring (3 organizations). Only one organization reported neither hiring nor training specifically for AI.

3. If you have an AI team, how are they organized? (Project-oriented, product-oriented, separate departments?)



Most organizations organize their AI activities using project-based structures (7 organizations), indicating that AI development is often integrated into specific initiatives rather than centralized. Dedicated AI teams are also common (5 organizations), reflecting growing institutional commitment to AI capabilities. Product-oriented teams are less frequent (3 organizations), suggesting fewer organizations have mature AI operations supporting continuous products or services. A small number of organizations rely on informal structures such as working groups or part-time efforts (1 organization each), while two organizations reported having no dedicated AI team. These results suggest that while many organizations are actively developing AI capabilities, organizational maturity and formalization vary considerably.

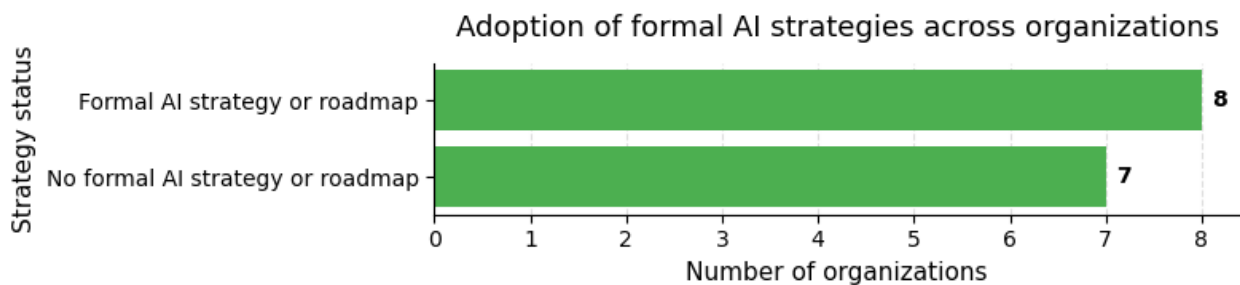
4. In which themes do your NMCA or organization have expertise?



AI model development and deployment is the most common area of expertise (11 organizations). Fewer organizations report expertise in Large Language Models (4) and AI research and collaboration (3).

AI Strategy & Vision

1. Does your organization have an AI strategy, roadmap?



Reported strategies include the development of MLOps platforms, adoption of LLMs and AI tools, and structured initiatives focused on responsible AI, productivity improvements, and innovation. Some organizations report that AI is already integrated broadly without a formal written strategy, while others are still developing their roadmap.

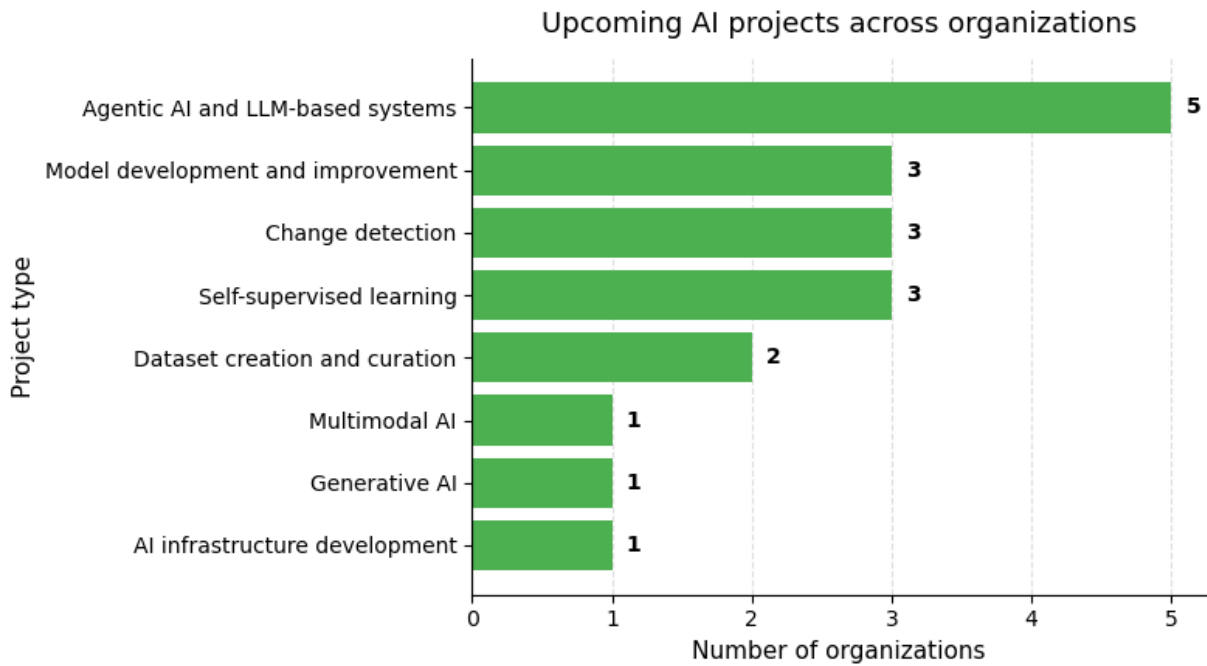
2. What are your current use cases and rate them as successful, testing or research?

Broader theme	Example use cases
Earth observation and land monitoring	Land cover mapping, agriculture monitoring, forest species classification, aquifer detection
Infrastructure and built environment detection	Building detection, roads, bridges, construction sites, storage tanks
Renewable energy monitoring	Solar panel and solar park detection
Object detection for operational applications	Crisis management, oblique imagery analysis
Change detection and monitoring	Building change detection, LLM-based change detection
Point cloud and 3D analysis	Point cloud classification and segmentation
Advanced AI models	Geo foundation models, GCNN, super-resolution
AI assistants and language systems	Spatial chatbots, LLM-based geospatial tools
Cartography and map production	Automated map annotation, hillshading

AI use cases are primarily focused on Earth observation and infrastructure detection, particularly land cover mapping, building detection, and environmental monitoring. Organizations are also exploring advanced applications such as foundation models, LLM-based geospatial tools, and automated cartographic production. These results indicate a strong focus on automating geospatial data extraction and analysis of workflows.

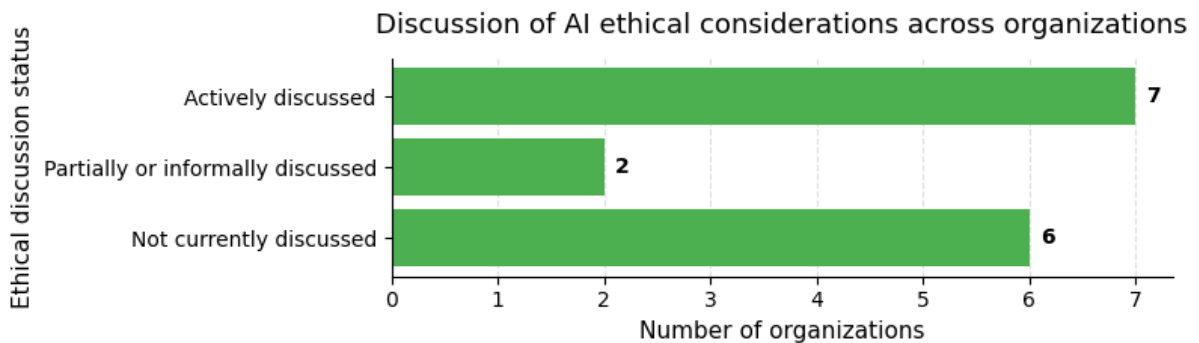
Some use cases were reported as unsuccessful or blocked, primarily due to accuracy limitations and privacy concerns, particularly for applications involving people or text recognition.

3. What are your upcoming AI projects?

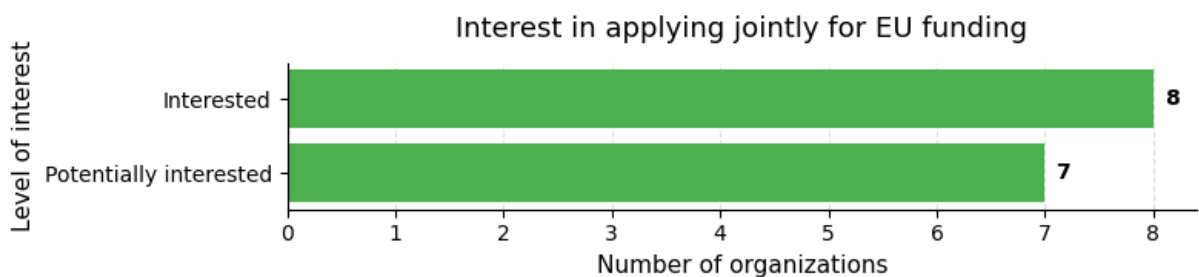


Upcoming AI projects are primarily focused on Agentic AI and LLM-based systems (5 organizations), followed by model development, change detection, and self-supervised learning (3 organizations each). Additional efforts include dataset creation, multimodal AI, generative AI, and infrastructure development.

4. Are ethical questions already discussed at your organization (e.g., job replacement)?

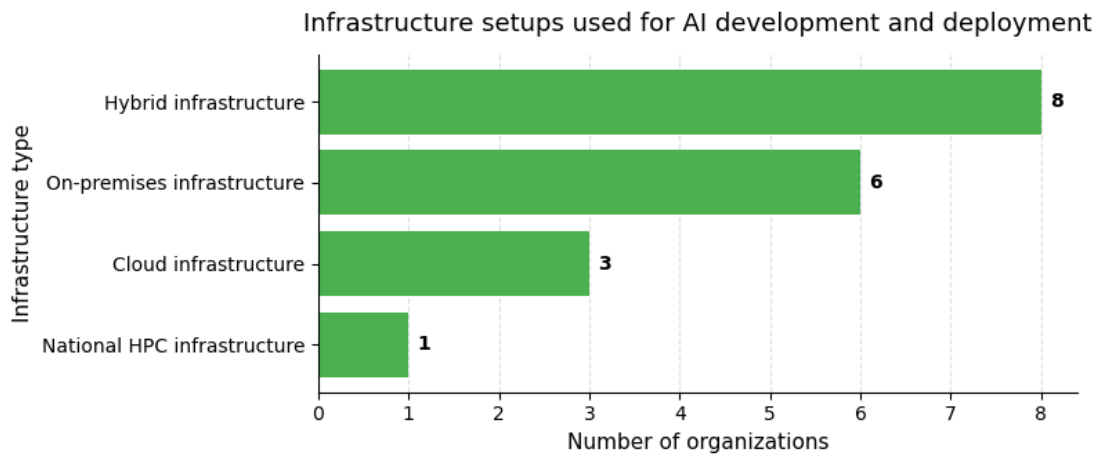


5. Are you interested in applying together for EU funding?



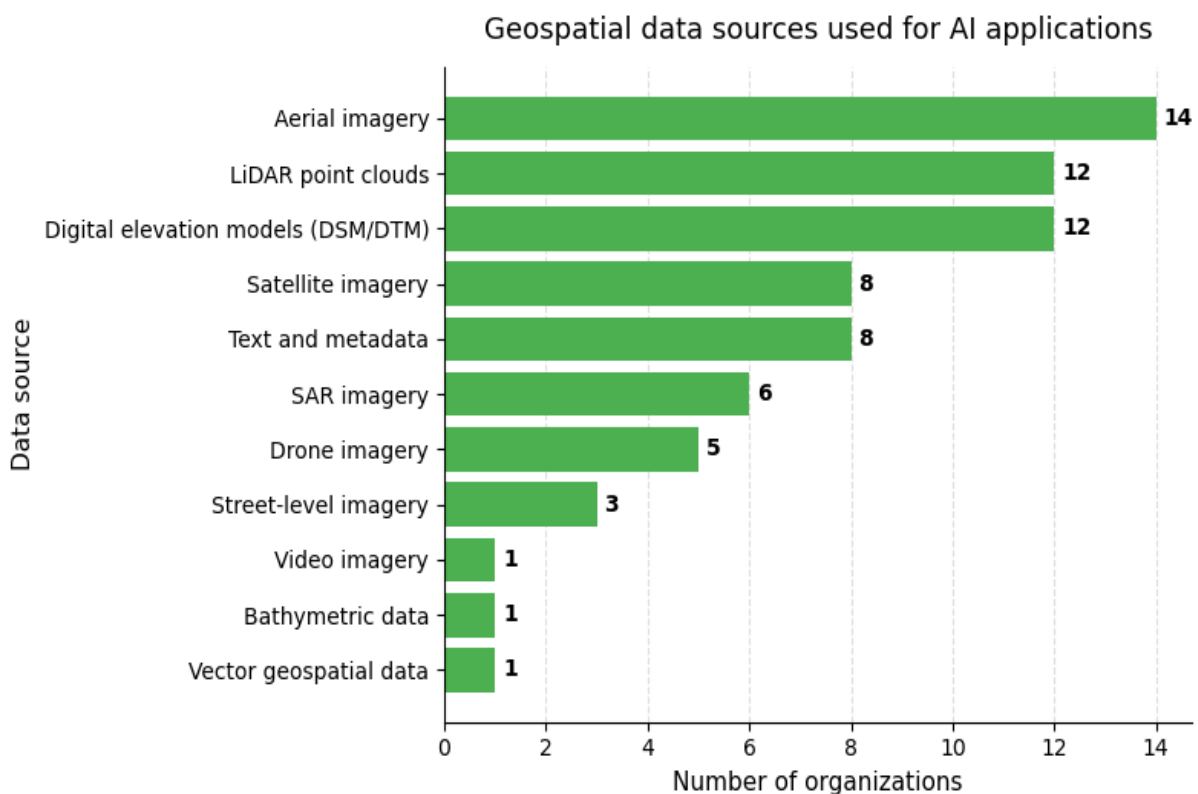
Technical Aspects (Data, Infrastructure, Open vs Proprietary)

1. What is your infrastructure setup? (Cloud, on-premises, hybrid?)



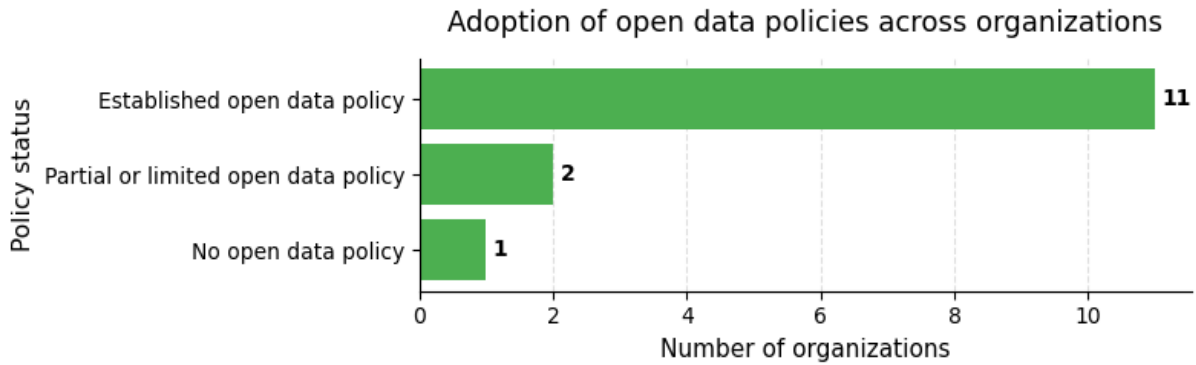
Hybrid infrastructure is the most common setup, followed by on-premises infrastructure. Some organizations also use cloud or national HPC resources, reflecting the need for scalable compute capabilities beyond internal infrastructure.

2. What are your data sources (Satellite, aerial, LiDAR, sensors, text, ...)?

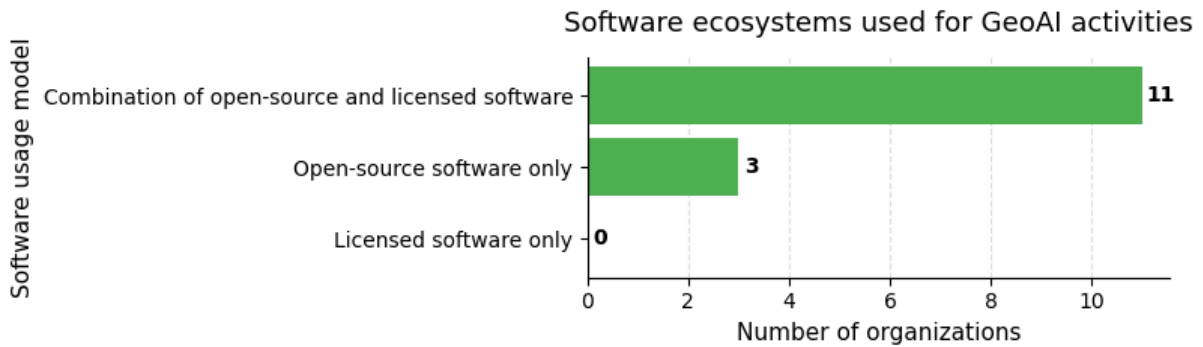


Aerial imagery, LiDAR, and digital elevation models are the most widely used data sources. Satellite imagery and text-based data are also commonly used, while drone, street-level, and specialized data sources are less frequent.

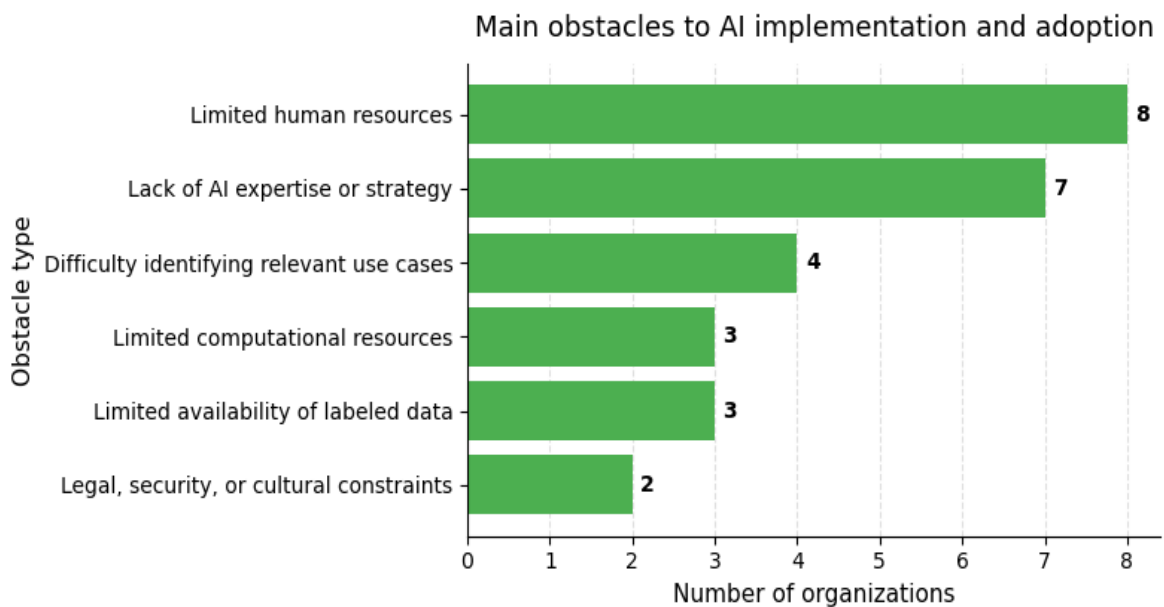
3. Does your organization have open data policies?



4. Do you use open-source software, licensed or combinations?



5. What is currently the biggest obstacle for the implementation / uptake in AI



The main obstacles to AI adoption are limited human resources (8 organizations) and lack of AI expertise or strategy (7 organizations). Other challenges include identifying relevant use cases, computational resources, data availability, and legal or organizational constraints.

APPENDIX 3 – Session Highlights

Group Photos



Interests – Opportunities and Needs



Challenges

Challenges : how to bring SIG into existence

- Materials:
- Post-its
 - Pens
 - Whiteboard/white paper for each group

PREVIOUS SESSIONS : PRIORITIZE THEMES / ORG DESIRES

STEP 1 : present the themes -> TOP 3

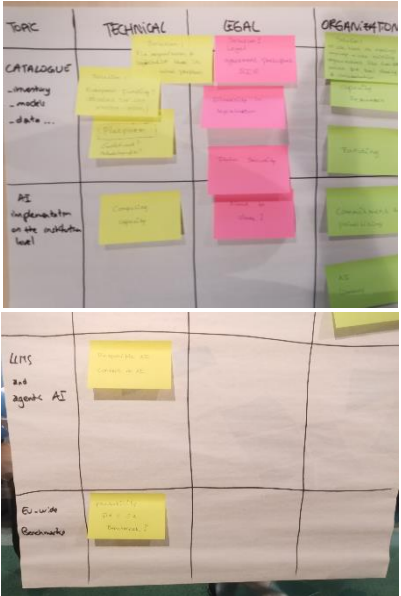
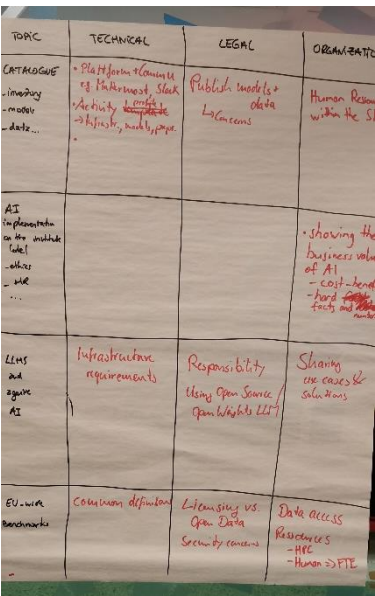
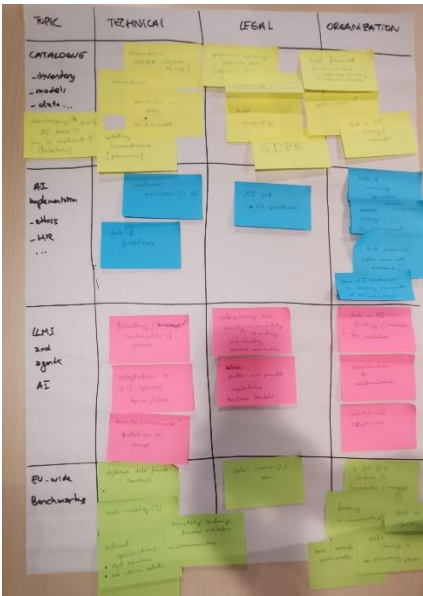
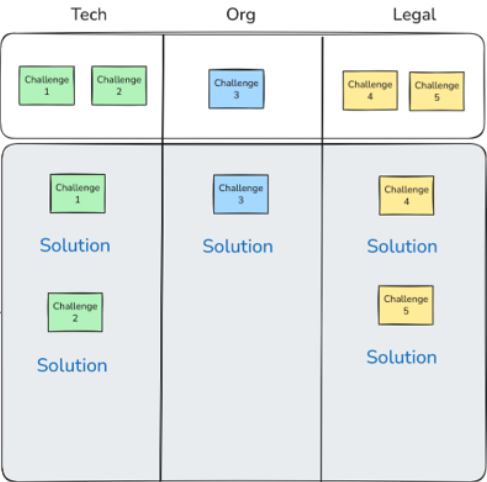
STEP 2 : open questions for challenges w.r.t. the 3 aspects (tech, org, legal) (10 minutes)

per group

STEP 3 : Prioritize challenges (top 5 total across all themes) (try to mix themes)

STEP 4 : Needs / Requirements for each challenge

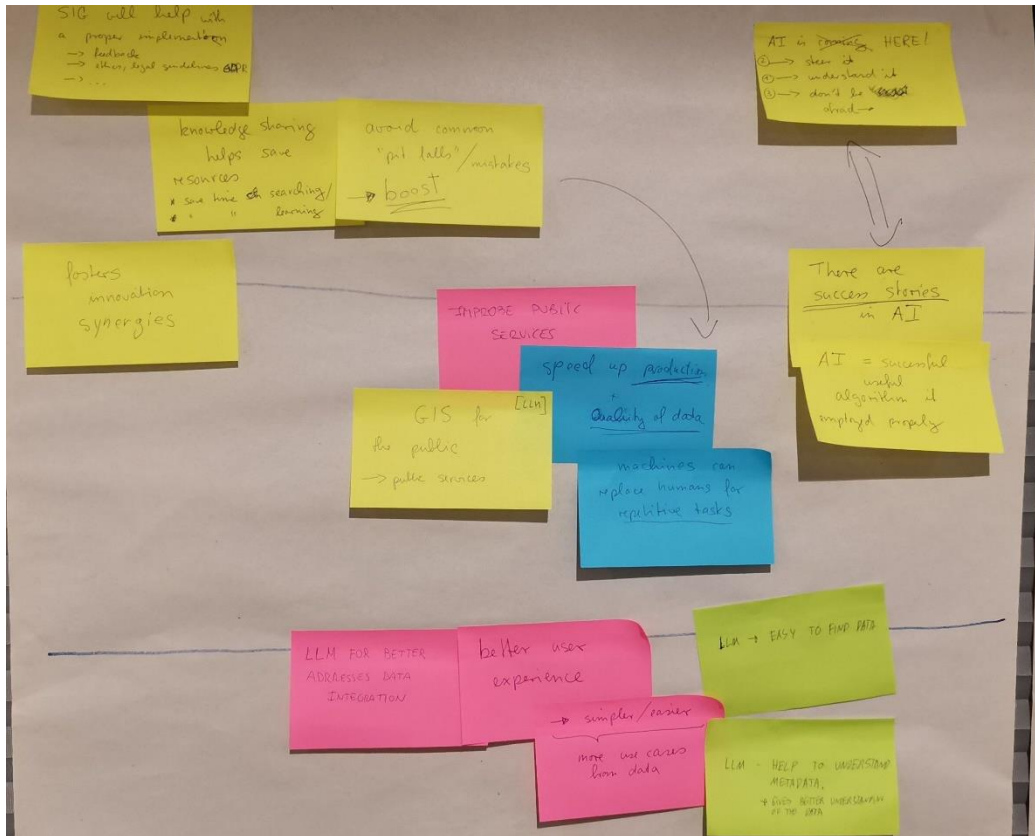
STEP 5 : Report back



Benefits

Catalogue Models & Methods	<ul style="list-style-type: none"> • Benefit from failures/successes • Be informed/inspired • Foundation 4 collaboration • Show what I do • Speed up learning • Stay up 2 date • Foster specialisation
AI Governance	<ul style="list-style-type: none"> • Create good AI environment to deliver value
LLMs + Agents	<ul style="list-style-type: none"> • Learn use cases • Improve customer exp.
Foundation Model + Benchmark Data	<ul style="list-style-type: none"> • Self-advising of my data & models • Encourage others to work with your data (e.g. universities), lower the barrier

CATALOG / SHARING / LLMs	<ul style="list-style-type: none"> • EFFICIENCY <ul style="list-style-type: none"> - FOSTER COLLABORATION ON A TOPIC / SYNERGIES - STRENGTHEN YOUR ORG. WITH SKILLS / EXPERTISE (USE CASES → immediate feedback) - WORKLOAD: reuse of existing resources • INSPIRAT° / INNOVAT°: motivation inside ORG. / branding • SCALING COLLABS: EU fundings etc.
COLLAB / BENCHMARKING	<p>INTERLINK!</p> <ul style="list-style-type: none"> • FEED CATALOG • IMPROVE QUALITY: SELECT STATE OF THE ART • STRATEGIC IMPORTANCE • SUSTAINS STANDARDIZATION! • SUPPORT RESEARCH!
AI GOVERNANCE	<p>INTERLINK!</p> <ul style="list-style-type: none"> • LITERACY: LIMITATIONS, AWARENESS, FAIR • SECURITY / CONTROL RESULTS AND USAGE • AWARE OF BIAS (EG. WHERE/WHY DOES AN LLM HALLUCINATES)



Roadmaps

