The GeoAI UK Outlook

As part of the Innovate UK GeoAI Festival

Acknowledgments

This publication captures the conversations and insights that emerged from the Innovate UK GeoAI Festival and three salon dinners that were held at The Royal Society in London on 27 to 29 January 2026.

Led by Innovate UK with support from Lunate AI and Sparkgeo, each salon dinner brought together leaders from government, industry, finance, defence, academia, and innovation to explore how GeoAI is reshaping decision-making, strengthening trust, and unlocking the power of geospatial intelligence.

This report reflects a shared commitment to advancing responsible, scalable, and impactful GeoAI, and to building an ecosystem where collaboration turns insight into action.

Co-authors

Innovate UK

Innovate UK, part of UK Research and Innovation, is the UK's innovation agency. It works to create a better future by inspiring, involving and investing in businesses developing life-changing innovations.

Its mission is to help companies to grow through their development and commercialisation of new products, processes and services, supported by an outstanding innovation ecosystem that is agile, inclusive and easy to navigate.

Lunate AI
Geospatial, Earth Observations & AI

LunateAI is a strategic advisory firm helping organisations navigate a period of rapid AI-driven disruption and explosion of geospatial and Earth Observation data, translating expanding technology options into clear, agile strategies and actionable implementation plans with customers and partners across the US, Europe, the Middle East and Canada.

sparkgeo

Sparkgeo is a geospatial software consultancy that designs and builds modern, cloud-native systems to help technology firms and global enterprises harness spatial data to measure, monitor, and understand environmental, and economic change. Sparkgeo delivers vendor-agnostic advisory services backed by deep implementation expertise, from global monitoring platforms to advanced geospatial data pipelines and GeoAI enabled applications. Working with open-source frameworks and modern cloud infrastructure, the team creates scalable, reliable tools that turn complex geospatial data into operational insight.

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Notes From the Editors

Luca Budello
Knowledge Transfer Manager - Geospatial Insights, Innovate UK Business Connect

The salon dinners began as a question I could not shake when the GeoAI Festival was still more of an idea than a sanctioned programme: how do you get people with genuinely different incentives into the same room, and keep the conversation honest, open and candid?

In Italy we say: *Le migliori idee nascono da una bella chiacchierata fatta a cena* — the best ideas are born from a proper conversation done over dinner. From this popular saying, the idea of getting a diverse group of leaders across public, private sector, academia, and policy together over a dinner under the watchful eyes of science leaders and visionaries at the iconic Royal Society in London became an idea to pursue. The more I pitched it, the more I saw the interest of people wanting to share their ideas and experience on complex strategic issues across geospatial, AI and their impact on our society.

And so, the salon dinner at the Royal Society was born. We organised three dinners and invited twenty-four leaders to speak plainly about what the combination of geospatial and artificial intelligence is for, who it serves, and what it will take to use it with purpose.

Some would say that GeoAI does not exist, that geographers have been using AI for a long time, and GeoAI is only a buzzword. I am inclined to agree. But the pace and momentum of AI development, for better or worse, and its growing application across every aspect of our lives make this a highly topical moment for GeoAI.

This is a moment full of opportunity, both for the sector itself and for what it can help enable in building a better society.

One participant said it plainly: *We decide the future We want to have*, and I don't feel we can build that future without the acknowledgement that Geospatial data is the connective tissue between the systems that shape everyday life — from planning to infrastructure, from nature to finance, from local services to national resilience. AI can amplify that connective power, but only if the foundations are in place and the guardrails are clear.

GeoAI can lower the barrier to the adoption of spatial intelligence and help move geography from the margins to the core of decision-making. When geography becomes an integral part of decisions, risks can be identified earlier, resources allocated more effectively, and long-term outcomes better understood. In this sense, spatial intelligence is not only a technical capability, but a foundation for economic growth, climate resilience, and national competitiveness.

These questions sat at the heart of the salon discussions. If geospatial intelligence is to shape decisions across sectors, then the conditions that enable its adoption must also be understood: how trust is built, how value is communicated, and how collaboration between public institutions, industry, and research communities can turn technological potential into practical impact.

They created a small room where different parts of the system could speak openly, surface tensions without posturing, and begin aligning on what must be built first: shared data foundations, decision-grade trust, and practical routes from innovation to adoption.

This report reflects those conversations. It captures not just what was said, but the shared recognition that scaling GeoAI requires more than algorithms. It requires direction, collaboration, and a deliberate commitment to building the conditions for innovation to serve society.

Luca Budello

Nadine Alameh
Founder, LunateAI

Will Cadell
Founder and CEO
at Sparkgeo

It was a privilege to convene and moderate the GeoAI Festival salon dinners, and an honour to host them at the iconic Royal Society in London. Few settings could better frame the gravity of the moment we find ourselves in, both as technologists and as human beings. The conversations at the table affirmed what many of us now recognise: the geospatial community is at the cusp of one of its most significant transformations. With the maturation of Artificial Intelligence, the continued expansion of Earth Observation, and the proliferation of new sources of location data, the opportunity before us is truly transformative.

I have often said that we are fortunate to be working in this field at this moment in history. My own journey began more than 25 years ago, inspired by a vision of planetary intelligence, one where data about our world meaningfully informs how we govern, invest, protect, plan, and respond. Today, that vision is no longer aspirational; it is within reach.

Now more than ever, geospatial professionals are uniquely positioned to be both connectors and disruptors, bridging silos, integrating domains, and incubating innovations that reimagine decision-making at scale. The salon dinners made one thing clear: we must start with real problems and walk the journey alongside those we serve. From there, everything else follows: procurement, capacity building, governance, and trust.

We do not have all the answers. Challenges around AI trust, data governance, workforce readiness, and public–private collaboration remain. But that is precisely what makes this moment so exciting. A future where anyone can converse with data, and where intelligent agents assemble solutions on demand depends on us ensuring what operates behind the scenes is rigorous, resilient, and trustworthy. This is our mission, and the GeoAI salon dinners convinced me that we are ready.

Nadine Alameh

Intimate conversations elicit genuine opinions. That is the power of assembling market, government, and community leaders in small rooms for curated conversations. The AI debate has been beset by binary hyperbole, swinging wildly between utopias and dystopias, but the rest of us have been left to manage the inevitability of change. AI is here, and we will be using it. We can choose to engage it, or choose to be engaged by it. I say we choose to lead.

The conversations I heard at the Innovate UK GeoAI Festival salon dinners focused on the **problems** to solve, the **people** affected, and the **purpose** of our sector. This all tells me that the geospatial community still has a strong sense of humanity, underscoring the importance of prior work, such as the Locus Charter.

There is a sense of inevitability to the adoption of AI, and I note that the adoption curves of technology have become increasingly steeper from personal computing, to the modern internet, to social media, to now AI. Each innovation has its own economic and social effects. While our community must find a way to leverage the tools of AI, because, at the very least, we are already collecting far too many pixels for humans to interpret, we must also not forget to bring along those who might feel abandoned by the cadence of change.

Will Cadell

Executive Summary

This report captures the insights that surfaced through three salon dinners that took place at the Royal Geographic Society in London between 27-29 January 2026. It draws on the perspectives of experts, doers, enablers, and thinkers united by a shared commitment to the future of the geospatial domain, our society, our planet, and the UK's place within it. We are sincerely grateful to all participants for their openness, thoughtful contributions, and constructive challenge.

Under the overarching theme of *Navigating the GeoAI Era: From Problem Solving to Planetary Intelligence*, the discussions focused on three core areas:

- Addressing the adoption gap for GeoAI and related innovations in the private sector
- Charting a clear pathway toward trusted and responsible GeoAI
- Building a cohesive ecosystem, from data foundations to planetary intelligence.

The following themes emerged across all salon dinners:

1. The GeoAI narrative is shifting from a conversation around technology to one around decision systems: There was an observation that GeoAI capabilities are sometimes advanced ahead of clearly articulated user needs, creating a risk that solutions are promoted without sufficient grounding in real operational, environmental, or policy problems.

This reflects a broader shift in the GeoAI narrative, moving away from technology for its own sake towards the design of decision systems that help organisations act on spatial intelligence.

The experts strongly aligned on the importance of disciplined problem framing, use-case driven innovation, and continuous communication between customers and providers as prerequisites for successfully integrating GeoAI into real decision-making processes.

Three Shifts in GeoAI

Strategic movements shaping the future of spatial intelligence.

From technology to decision systems
The GeoAI narrative is shifting from a conversation around technology to one around decision systems.

From AI capability to trusted AI systems
The GeoAI ecosystem is still in the formative stages of establishing trust, governance, and assurance.

Planetary intelligence requires cross-sector collaboration
Achieving planetary intelligence requires deeper collaboration between governments, industry, and scientific communities.

2. The GeoAI ecosystem is still in the formative stages of establishing trust, governance, and assurance: Trust and legitimacy emerged as central considerations in how participants evaluated the appropriateness of GeoAI, especially where outputs may influence consequential decisions.

The experts observed that existing systems and methods for tracing information, such as metadata standards, audit trails, model documentation practices, and traditional data governance processes, are no longer sufficient in the era of Generative AI. These systems were designed for more deterministic, linear analytical workflows and struggle to account for multimodal data fusion, adaptive models, probabilistic outputs, and dynamically generated content, where decision pathways are less transparent and harder to reconstruct after the fact.

Additionally, the ability that AI systems have in creating new content, simulations, or insights from learned patterns in data, requires a fundamental shift in how we think (and communicate) about provenance and assurance. The experts also agreed that we are still in the early stages of Trusted AI. What was clear, however, is that trust cannot be assumed. Instead, it must be deliberately built through explicit governance arrangements, demonstrable practices, transparent safeguards, accountability, and sustained human oversight.

3. Achieving planetary intelligence requires deeper collaboration between governments, industry, and scientific communities: Discussions on planetary intelligence quickly converged on purpose and responsibility, with frequent reference to the Gemini Principles and the need to balance public benefit, value creation and economic growth. The experts recognised planetary intelligence as inherently multifaceted, underpinned by still-maturing federations of data, systems, standards, and ontologies.

There was also a shared awareness that this topic required deep domain expertise, multidisciplinary collaboration, and AI at scale. A highlight of the discussions was the acknowledgement that it is the responsibility of the geospatial community and its partners to "decide what future we want" for humanity.

Participants emphasised that the geospatial community has a role in influencing regulation, policy, and public understanding of how spatial intelligence informs everyday decisions and societal outcomes. Addressing these tensions will require deeper and more structured engagement between government and the private sector to support innovation, governance, and responsible growth in this transition economy.

Positioning the UK for Leadership – Recommendations

Every salon dinner concluded with recommendations on how the UK could establish and sustain leadership in GeoAI.

These recommendations are timely given the recent publication of the UK Government's Modern Industrial Strategy and its eight growth-driving sectors. Geospatial intelligence and GeoAI function as cross-cutting enabling capabilities across many of the UK Government's Modern Industrial Strategy (2025–2035) eight growth-driving sectors (IS-8), from defence and clean energy to life sciences and digital technologies.

Several of these recommendations connect directly to the Strategy's delivery mechanisms and demonstrate how GeoAI can be operationalised in practice. Problem-led procurement supports the commitment to shape markets for innovation, embedding geospatial expertise within organisations reinforces skills commitments across Digital and Technologies, and leveraging the UK's high-integrity data assets positions GeoAI as enabling infrastructure for sectors from Clean Energy to Defence.

Realising this potential will require government to recognise geospatial intelligence not as a specialist function within a single domain, but as foundational infrastructure that underpins decision-making across all eight growth sectors and supports long-term national competitiveness.

The following themes consistently emerged:

- **Adopt and adapt**

In a period of rapid technological change, the UK has an opportunity to lead by example, championing not only advanced technology but also ethical, responsible, and inclusive AI practices that other countries, can look to as a model.

- **Be more ambitious**

The UK should invest more boldly in cross-sector exploration and look into more opportunities to embed geospatial capabilities across all industries. This includes investing in mission-driven innovation and building on the impact of initiatives such as the GeoAI Festival. It also involves rethinking education, workforce development, leadership, and both AI and geospatial literacy to support long-term adoption.

- **Leverage long-term investment in data**

The UK should fully capitalise on its long-standing investments in high-quality, temporally rich, and well-governed data. Given the country's scale and data integrity, there is a unique opportunity to develop trusted national foundation models grounded in robust geospatial data, creating a platform for innovation across sectors.

- **Go deeper on trust**

With decades of authoritative datasets such as those held by the Ordnance Survey and the Met Office, the UK is well-positioned to lead on temporal validation, provenance, and trust frameworks for GeoAI. This requires multidisciplinary collaboration to clarify guardrails, governance, accountability, and communication, ensuring that explainability and assurance are embedded in deployment from the outset. In doing so, the UK could extend its position as a global thought leader in trusted spatial intelligence, responsible AI governance, and decision-grade geospatial standards for public and commercial use.

> In a period of rapid technological change, the UK has an opportunity to lead by example.

- **Strengthen incentives for innovation**

As technology increasingly drives economic growth, the UK should revisit incentive structures to accelerate innovation and adoption at scale. GeoAI should be treated as an investable national capability, supported through place-based deployment pathways such as AI Growth Zones and clear problem-led procurement to bridge innovation with commercial uptake.

- **Reimagine public–private engagement**

Greater investment and clearer incentives are needed to deepen collaboration with industry and to establish more effective partnerships. Procurement should be treated as a progression from defined requirements to pilots and operational deployment, with earlier engagement of the private sector and visible celebration of successful adopters to encourage wider diffusion.

A National Blueprint for GeoAI Leadership

A strategic guide for the UK to champion ethical GeoAI practices on a global scale.

Adopt and adapt

Prioritise human capital and leadership while adapting governance, institutions, skills, and workflows so GeoAI can be adopted confidently and used responsibly.

Be more ambitious

Embed GeoAI as core national infrastructure. Recognise geospatial intelligence as foundational across defence, climate, clean energy, life sciences and all growth sectors.

Leverage long-term investment in data

Build trusted foundation models grounded in robust geospatial data. Capitalise on high-quality, temporally rich and well-governed datasets.

Go deeper on trust

Reinforce trust through robust data, metadata and explainability. Trust frameworks depend on robust metadata, validation and explainability built into those models.

Strengthen incentives for innovation

Use place-based deployment pathways to scale, such as AI Growth Zones and the GeoAI Festival. Create structured environments where public and private actors co-deploy, co-invest and scale geospatial.

Reimagine public–private engagement

Treat GeoAI as an investable national capability. Position GeoAI as strategic economic infrastructure worthy of coordinated capital and incentives for cross-sector collaboration.

The Innovate UK GeoAI Festival: Mapping the Future of Adoption, Growth and Impact

GeoAI is advancing rapidly, yet its adoption remains uneven, fragmented, and often confined to pilot projects. The application of artificial intelligence to Earth Observation data and geospatial workflows has the potential to reshape decision-making across climate, finance, agriculture, infrastructure, defence, and public policy. However, this acceleration is also exposing deeper structural challenges. If we are to realise the full promise of AI-ready geospatial and multimodal data, we must address long-standing issues around standardisation, interoperability, and licensing.

Data owners and custodians need frameworks that protect competitive advantage while enabling value creation at scale. Without resolving these foundational constraints, the efficiency gains promised by AI will remain limited, and the time and resources required to extract value from geospatial data will remain unnecessarily high. Addressing these structural issues is necessary, but it is not sufficient.

The opportunity offered by the application of AI algorithms on Earth Observation data and geospatial workflow is significant. It is the next wave of innovation in geospatial, with the potential to lower the barrier to adoption and fundamentally change how end users integrate EO-derived intelligence into their decisions. But adoption does not happen by accident. It requires breaking down siloed thinking and deliberately building an ecosystem of innovators, enablers, and thinkers who can move forward with shared direction and purpose.

The GeoAI Festival was designed as that convening platform. It brings together public sector organisations, industry, researchers, startups, and investors to co-create solutions for clearly defined sector challenges. Rather than treating AI or Earth Observation as standalone technologies, the GeoAI Festival positions GeoAI as an integrated capability applied across the full process from data acquisition to decision, embedded within workflows, business models, and policy environments rather than used as a separate analytical tool.

Over the course of the programme, we combined multiple formats to stimulate both innovation and reflection. Through the Build and Pitch programme, delivered in collaboration with Amazon Web Services, the National Centre for Earth Observation, the Satellite Applications Catapult, and others, we supported twenty startups in developing user-focused prototypes enabled by geospatial AI. This included access to petabyte-scale EO data and agentic AI tools to accelerate experimentation and commercial pathways. In parallel, thought leadership initiatives, including the Explainable Earth webinar series, explored deeper questions of trust, governance, and responsible deployment.

At the heart of this intellectual exploration were the salon dinners. Leaders from government, finance, defence, academia, startups, and intergovernmental organisations were convened in a trusted space under Chatham House Rule to examine unresolved questions around adoption, trust, leadership, and the long-term vision for the sector. Across three evenings, participants explored how public agencies can operationalise GeoAI, what it truly means for GeoAI systems to be trusted, and what we must invest in today to enable genuine planetary intelligence tomorrow.

While challenges around data harmonisation, interoperability, and computational scale remain important, the harder questions now concern purpose, people, trust, and vision. Small and medium sized enterprises (SMEs) face procurement models that favour incumbents, fragmented data infrastructures, and limited in-house capability to operationalise AI-driven geospatial insights. Demonstrating return on investment within short budget cycles is difficult. Governance frameworks are evolving, but are not always aligned with the pace of innovation. Without coordinated action across industry and policy, embedding geospatial capability strategically within government, and sustained investment, GeoAI risks remaining a promising technology rather than the connective tissue for building the future we want.

However, if deployed effectively, GeoAI can lower the barrier to spatial intelligence and make geography an integral part of decision-making.

This matters because everything happens somewhere, and its consequences are felt in specific places by people, infrastructure, ecosystems, and economies. When geography is systematically integrated into policy and business processes, decisions become more targeted, risks can be identified earlier, and interventions become more effective.

This report synthesises those conversations. It reflects a shared recognition that GeoAI will not scale through technology alone. It requires vision, coordinated direction across industry and policy, institutional change, and sustained commitment to responsible and collaborative innovation.

Salon Dinner 1
How are Public Agencies Incorporating GeoAI into Decision-Making?

The selected group of leaders were asked to examine how public agencies are turning GeoAI from a promising experiment into a trusted engine for real-world decision-making.

They explored where AI and Earth Observation (EO) can drive the fastest impact, how to integrate them into existing workflows, and how to measure value in the short and long term. The conversation also incorporated what it takes, organisationally, technically, and strategically, to overcome procurement hurdles and build the talent, governance, and partnerships needed for GeoAI adoption.

The prompts for conversation were as follows:

- **Where geospatial, EO and AI deliver public value**: Where are AI, geospatial, and Earth Observation already delivering clear, near-term value for public agencies? Which applications represent the most realistic "low-hanging fruit" within a single budget cycle?
- **GeoAI as part of digital transformation**: How should AI-enabled geospatial and EO capabilities be embedded into public sector digital transformation strategies, rather than treated as standalone or experimental technologies?
- **Overcoming barriers to adoption**: What are the most significant obstacles, such as leadership awareness, procurement models, regulation, risk tolerance, or skills, that slow GeoAI adoption in government, or prevent the technology from moving from proof-of-concept stage to operational systems? What practical steps could remove or lower those barriers?
- **Measuring value and building for scale**: What metrics and governance approaches can demonstrate credible ROI in both the short term (1 year) and long term (3–5 years)? What changes in hiring, training, and data stewardship are required for the UK to increase adoption and lead globally in responsible GeoAI?

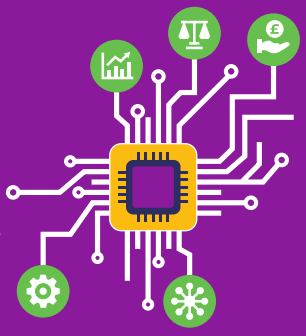
Advancing Public Value Through GeoAI Strategy

Delivering near-term public value

Focus on realistic "low-hanging fruit" applications deliverable within a single budget cycle.

Embedding GeoAI in digital transformation

Integrate GeoAI capabilities into core digital strategies rather than treating them as experimental.



Overcoming obstacles to adoption

Address leadership awareness, procurement models, and regulation to move beyond proof-of-concepts.

Measuring value and building for scale

Establish governance and metrics to demonstrate ROI over 1-year and 5-year horizons.

> The UK's advantage lies in its trusted data foundations and its ability to translate them into scalable geospatial intelligence.

Word cloud


Operational use
Value articulation
Capacity building
Educational rethink
Awareness
Transformation
Embracing change
Innovation divide
Procurement models
Awareness
Decision-maker focus
Explainability
Ownership
Accountability
Reusable innovation
Skills beyond specialists
Standard-setting
Risk aversion
GeoAI transformation
Accountability
Pilot-to-operations
Scaled use
Leadership
Active use
Operational enablers
Governance
Standard practice
Risk aversion
Silos
Exemplars
Trust and assurance
Isolated use cases
Scaling
Deployment
Data scientists
GIS managers
Digital transformation officers

Key Takeaways

How Public Agencies are Incorporating GeoAI into Decision-Making

Adoption is driven by clearly defined use cases

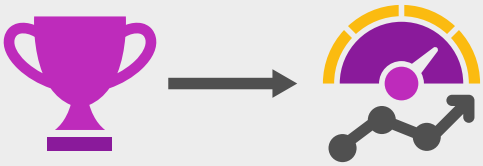
GeoAI gains traction when it is framed around specific operational, policy, or commercial problems rather than promoted as a standalone technology.

Investment follows measurable value

Adoption strengthens when value can be evidenced through clear outcomes such as cost reduction, productivity gains, risk mitigation, or faster decisions.

Early engagement aligns demand and capability

Earlier dialogue between customers, providers, and partners helps shape better problem statements, more realistic solutions, and smoother routes to deployment.



Visible success cases accelerate uptake

Practical examples of trusted deployment help build confidence, demonstrate relevance, and encourage wider adoption across organisations.

Side themes

> Mind the divide: AI can increase the advantage of those already well positioned to use it.
> Embrace change: We have adapted to technology shifts before.
> Rethink education: Skills and training must evolve for an AI-enabled future.

Core insight

GeoAI adoption is driven by use cases, not technology.

Salon Dinner 1
How are Public Agencies Incorporating GeoAI into Decision-Making?
Insights

The expert roundtable ultimately coalesced around five critical areas:

1 Acknowledgement that GeoAI and geospatial analytics are already operational across sectors

GeoAI applications in agriculture, land management, environmental monitoring, planning, and infrastructure illustrate the evolution of long-established geospatial practices, now enhanced through automation and analytics. In these contexts, value is often articulated through improved resource allocation, stronger evidence for policy and investment, enhanced transparency, earlier detection of risk, and greater organisational resilience.

2 GeoAI remains under-exploited

Use cases are concentrated in a narrow set of domains, for example defence and security, disaster response, environmental monitoring, agriculture, and forestry. These domains often have clear demand, defined operational mandates, and established data pipelines that make return on investment easier to evidence and scale. In other sectors, the limiting factor is not technical capability or data availability, but the way GeoAI is framed, commissioned, and embedded within organisations. Where it is treated as a specialist or experimental function rather than a general decision support capability, adoption remains confined to isolated projects, which helps explain why deployment remains concentrated in a limited number of domains.

Experts argued that the key to unlocking value lies in normalising GeoAI as part of everyday decisions, embedded within workflows, dashboards, reporting systems, and planning processes, operating quietly in the background to inform decisions consistently and reliably.

3 Decision-makers are not interested GeoAI itself

Decision-makers are not interested in GeoAI itself. They are focused on reliable answers to real problems and on whether decisions are grounded in trustworthy data and robust processes. This reinforced a recurring point from the experts: GeoAI delivers most effectively when it is embedded seamlessly within workflows and presented as an answer to a specific question, rather than as a standalone data product or a technology seeking an application. Starting with the decision to be made and the outcome to be improved helps frame GeoAI as a practical solution to a real need.

Value also needs to be expressed in terms that decision-makers recognise, and these will vary across sectors and organisations. Traditional ROI models based on direct financial return are often poorly suited to GeoAI, particularly in public sector settings where benefits arise through improved decisions, avoided costs, reduced risk, time saved, wider coverage, and faster action.

The group suggested that shared approaches to measuring these forms of value, including common productivity metrics, proxy indicators for risk reduction and decision quality, and standard evaluation frameworks beyond financial ROI, would reduce the burden of justifying GeoAI on a case-by-case basis.

4 The primary barriers to wider adoption are organisational, structural, and cultural

Many organisations already have access to relevant data, analytical tools, and external capability, yet struggle to move beyond isolated projects. This gap is driven by fragmented ownership, unclear accountability, governance and procurement processes that are poorly suited to iterative, data-driven innovation.

Skills and capacity constraints compound this challenge.

Scaling GeoAI is unrealistic where organisations lack expertise to commission, interpret, and sustain its use, not only among technical specialists but also across decision-makers and operational teams, where spatial and analytical literacy is often limited.

Uncertainty around validation, responsibility, and risk leads organisations to treat GeoAI cautiously, particularly where decisions have significant consequences. As a result, even proven tools are often confined to advisory or experimental roles rather than being trusted as part of routine decision-making.

GeoAI also suffers from both over-hype and insufficient understanding.

Without clear narratives explaining what it does, what it does not do, and how it augments rather than replaces human judgement, scepticism persists among senior leaders and practitioners. Overcoming these barriers requires more than technical solutions. It demands clearer governance, shared language, and sustained leadership commitment to normalising GeoAI as a strategic asset.

5 Governance, trust, and value measurement are prerequisites for scale

Clear accountability, shared value measurement approaches beyond traditional ROI, and transparent assurance of outputs are necessary. Trust was understood as both a technical and a social issue. Data quality, validation, and assurance processes matter, but they are not sufficient on their own. Trust ultimately depends on transparency and explainability. This means trust depends on there being a clear understanding of how outputs are generated, what data and assumptions underpin them, and where their limitations lie.

Decision-makers need confidence not only that outputs are accurate and reliable, but also that they are produced through robust processes.

Trust cannot be declared; it must be built and sustained over time through clear standards, shared language, responsible governance, and realistic expectations on the limitations of GeoAI.

Salon Dinner 2
Trusted GeoAI: How can We Plot the Path Forward?

The selected group of leaders were asked to examine what it would take for GeoAI systems to earn genuine trust in decisions that shape society. The discussion explored explainability, ethics, governance, federated data, next-generation AI including agentic and multimodal systems, and the partnerships required to make responsible GeoAI real. In particular, explainability was framed as making spatial AI systems understandable, defensible, and accountable in real-world decision-making, while positioning the UK as a global leader in doing so.

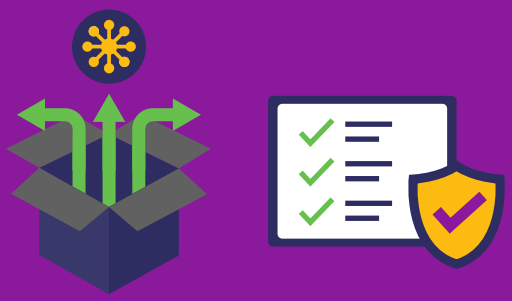
The prompts for conversation were as follows:

- **Defining trust in GeoAI**: What does "trust" mean in the context of geospatial and Earth-Observation AI, from data provenance and model behaviour to accountability in decision-making? How do we recognise when that trust has genuinely been established?
- **Governance, ethics, and explainability by design**: Which governance mechanisms, ethical safeguards, and approaches to explainability are essential for AI-driven geospatial workflows, particularly as systems become more autonomous and decision-support moves closer to action?
- **Trust at scale in complex AI systems**: How can trust be established and maintained when using agentic and multimodal AI within federated data and model ecosystems, where multiple organisations contribute data, models, and infrastructure, and no single actor owns or controls the full system end to end?
- **Leadership through responsibility**: What practical steps can the UK take, through policy, standards, collaboration, and investment, to position itself as a global leader in responsible, trusted GeoAI deployment?

> The GeoAI narrative is shifting from a conversation about technology to one about decision systems.

Architecting Trust in Global GeoAI Governance

Trust in GeoAI must be earned



Trust depends on clear data provenance, transparent model behaviour, reliable outputs, and accountability for how insights are used in decisions.

We need governance, ethics, and explainability by design

Responsible GeoAI needs clear governance, ethical safeguards, and explainable processes from the start, especially as systems shape higher-stakes decisions.

Trust must hold across complex AI systems

In federated and multimodal environments, trust relies on shared standards, robust assurance, and clarity on roles, risks, and system limits.

Responsible leadership enables scale

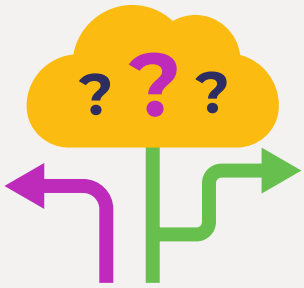
Policy, standards, collaboration, and investment can help the UK build trusted GeoAI capability and strengthen its global leadership.

Word cloud


Rationale
Decisions
Justify
Mechanics
Visibility
Use-case
Ownership
Organisation responsibility
Explainability
Auditability
Trust standards
Transparency
Tool-chain outcomes
Tool-chain ownership
Accountability
Over-trust
Trust
Specificity
Societal impacts
Misuse
Human perception
Absolute certainty
Automation
Defensibility
Risk aversion
Organisational silos
Lack of skills
Ethical risks
Limits
Deterministic assurance
Societal risks
Technology
Standards
Governance
Certainty
Capability gap
Complex social contexts

Key Takeaways

How Trusted GeoAI Enables Decision-Grade Intelligence



Geography matters

GeoAI informs decisions that affect real people, ecosystems, and economies in specific places.

Trust is place and context-specific

What counts as trusted GeoAI depends on the local context, the decision at stake, and the risks involved.

Spatial integrity is a strength

High-quality geospatial data and strong metadata provide a foundation for decisions.

Build controls by design

Embed guardrails early, keep humans in the loop, and involve technical, domain, legal, and operational expertise.

Side themes

> Trust is both technical and social.

> Data governance and transparency are foundational, but not sufficient on their own.

Core insight

Trust matters more when AI shapes decisions about real places and real lives.

Salon Dinner 2
Trusted GeoAI: How can We Plot the Path Forward?
Insights

The expert roundtable ultimately coalesced around four critical areas:

1 Discussions on trust and AI are just beginning, and legislation is clearly lagging behind technological development

- **GeoAI is distinct** from other decision-making capabilities because it builds on high-quality, trusted geospatial data, with strong foundations in robust metadata foundations, particularly in the UK context.
- **AI introduces additional challenges** because existing geospatial information systems and organisational data processes were largely designed for deterministic, linear workflows. They were not built to track complex data lineage, evolving model interactions, and probabilistic decision pathways that arise in multimodal and non deterministic AI environments. As AI systems become adaptive and increasingly autonomous, the absence of robust tracking, versioning, and audit mechanisms makes accountability, validation, and reproducibility significantly more difficult.
- **AI shouldn't be governed as a standalone technology**, but applied proportionately according to the level of risk and the type of decision it supports.
- **GeoAI Governance** must extend beyond models and algorithms, to include data sourcing, development practices, and the deployment of AI within human-in-the-loop frameworks.

2 The many facets to trust: context, transparency, accountability, explainability, governance, and reproducibility

- **Trust is not simply a technical property of a system**. It is a human and contextual judgement shaped by perception, experience, and social norms. Familiarity plays a central role in whether systems are trusted at all.
- **Transparency is essential for trust but insufficient on its own**. Trust depends not only on openness, but also on how information is contextualised, communicated, and aligned with expectations.
- **Trust is highly use-case specific and risk-driven**. What constitutes trust in financial services, healthcare, or public safety differs significantly. Governance must reflect how systems are applied and justified in each context.
- **Trust is not blind acceptance.** You can't "just" trust the AI. AI systems must be bounded, explained, and supported by education so users understand their limitations and potential biases.
- **There is a tension between genuine trust and tolerated dependence**. Users often rely on systems they don't fully trust because they are useful, suggesting that convenience can mask unresolved concerns.

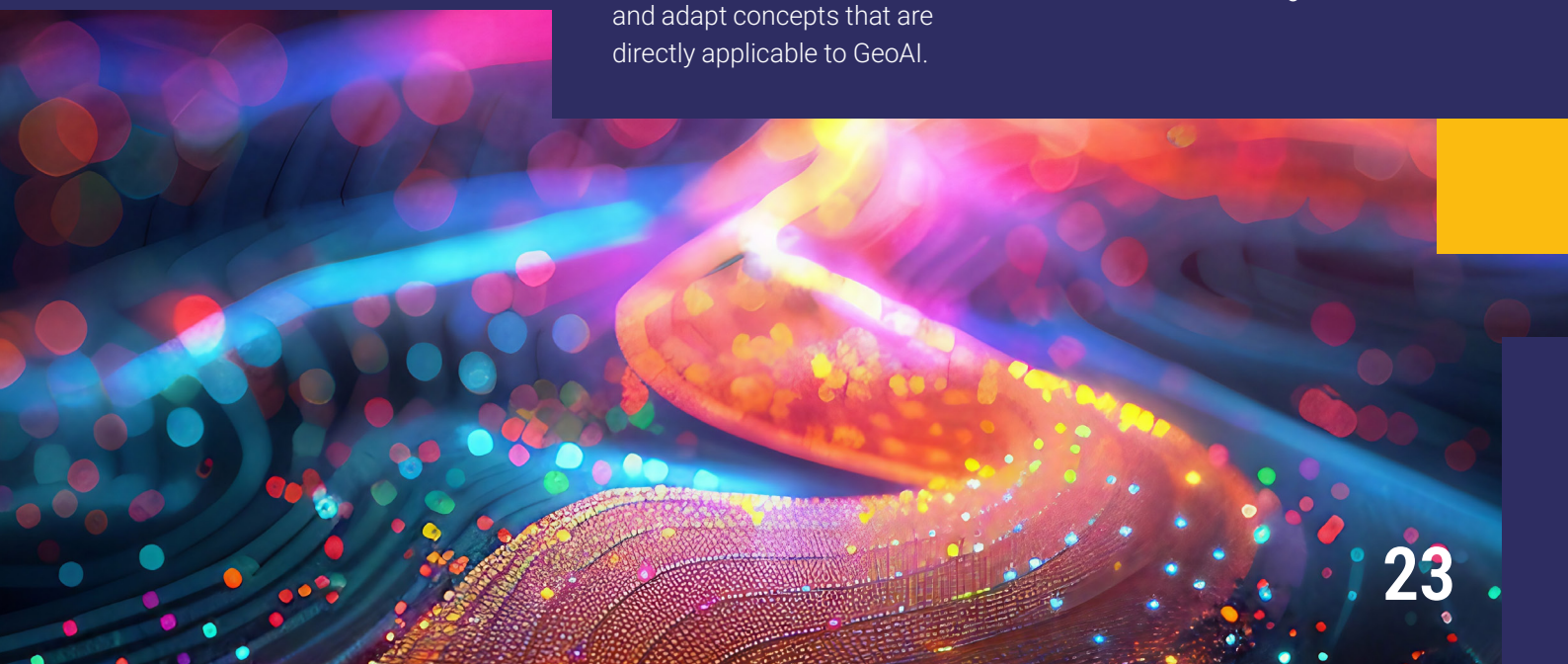
3 Exploring how trust in AI depends on accountability

- **Accountability for GeoAI-enabled decisions lies with each organisation**, not with the technology itself, and must be clearly defined within institutional structures. This is especially true in the public sector and within regulated environments. Gaps in accountability occur when strategy, delivery, and operational responsibility are distributed across different parts of an organisation, creating ambiguity over ownership when outcomes are challenged.

- **Adaptive AI systems challenge traditional accountability mechanisms**. Existing governance mechanisms struggle to track version history, as well as changes to documentation and decision pathways as these models evolve, either through model retraining or through the incorporation of new data.
- **Accountability requires the ability** to explain decisions to affected parties, regulators, or courts. This places emphasis on the need for robust governance frameworks and documented decision processes, including clarity about when a decision was made by a human, when it was supported by AI, and when it was automated.

4 The UK's pivotal opportunity to drive geospatial market growth and lead on the global stage

- **Focus on practical enablement over abstract ambitions**. The UK should concentrate on applying GeoAI to clearly defined use cases, particularly where geospatial data already plays a critical role, including environmental monitoring, land management, infrastructure, and public services. By prioritising incremental deployment, and learning through real-world application, the UK can build institutional confidence, demonstrate measurable impact, and create scalable pathways from pilot projects to operational adoption.
- **Build on existing regulatory and governance strengths**, rather than create parallel AI-specific frameworks. These should draw on established trust models, such as the Defence AI Playbook and adapt concepts that are directly applicable to GeoAI.
- **Strengthen cross-sector coordination between operational teams, policymakers, digital specialists, and regulators** to break down silos and ensure that GeoAI capabilities are developed, governed, and deployed with clear accountability.
- **Build on the momentum of the Innovate UK GeoAI Festival** to expand cross-disciplinary dialogue on trust and AI, while increasing opportunities to co-create with private sector and startup partners to achieve more ambitious outcomes overall.
- **Use AI to grow the geospatial community.** By leveraging the UK's high-quality and high-integrity temporal data, the country has an opportunity to create trusted geospatial foundation models to power applications, stimulate entrepreneurship, and accelerate market growth.



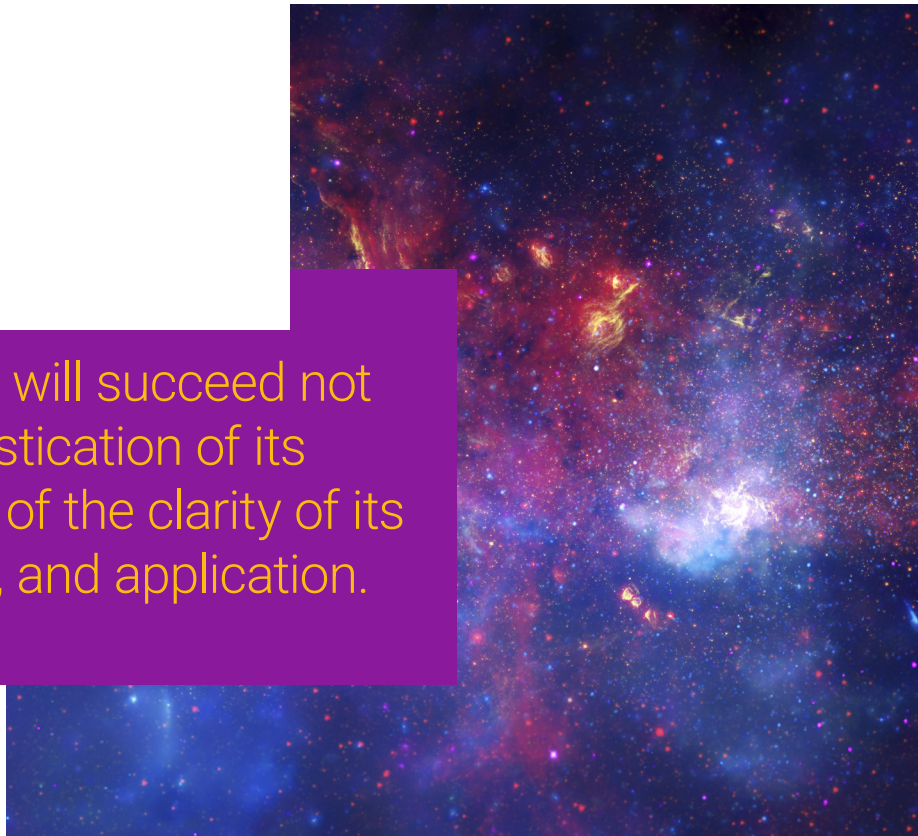
Salon Dinner 3
What is the Future of GeoAI and Planetary Intelligence?

The select group of leaders were asked to engage in a future-shaping conversation on GeoAI and planetary intelligence, which is the capability to monitor, analyse and anticipate planetary scale change using data and AI to inform collective action. They were challenged to tackle the urgent question: what must we invest in today to unlock true planet-scale intelligence tomorrow? Topics of discussion included approaches to achieving the breakthroughs needed for global monitoring, the alignment of private innovation and public oversight, the adequacy of governance frameworks, and the workforce training and education required to deliver on the promise of GeoAI and planetary intelligence.

The prompts for conversation were as follows:

- **From data to planetary intelligence**: What does "planetary intelligence" truly mean in practice, and what capabilities, technical, organisational, and societal, must come together to enable trusted, planet-scale monitoring of climate, biodiversity, and infrastructure?
- **The breakthroughs that matter most**: Among emerging advances such as multimodal foundation models, autonomous AI, ubiquitous sensing, and next-generation infrastructure, which investments will most fundamentally reshape the geospatial and Earth Observation ecosystem, and why?
- **Governing innovation at scale**: How should industry, government, and academia align to accelerate GeoAI innovation while establishing ethical, governance, and data-stewardship frameworks that earn public trust?
- **People, leadership, and global positioning**: How must education, workforce development, and leadership evolve to support this transformation, and how can the UK strategically position itself as a global leader in responsible and impactful GeoAI?

> Planetary intelligence will succeed not because of the sophistication of its models, but because of the clarity of its purpose, governance, and application.



Planetary Intelligence and the Future of GeoAI

Defining planetary intelligence

Planetary intelligence is the coordinated use of geospatial data, AI, and digital systems to understand change across environmental, economic, and social systems and support collective action.

Breakthroughs shaping the ecosystem

- Advancements in multimodal foundation models
- Autonomous AI
- Ubiquitous sensing
- Shared data infrastructure

Governing innovation at scale

Aligning industry, government, and academia to build trusted frameworks for governance, ethics, accountability, and data stewardship.

Leadership and workforce development

Building the skills, institutions, and leadership needed to position the UK as a global leader in responsible GeoAI.

Word cloud

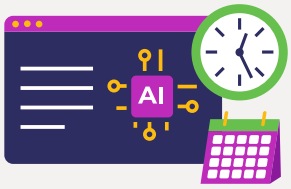

Transition
Economic shift
Trust shared risk
Risk
Trust
Gemini Principles
Incentives
Irreversible shift
Wisdom
Shared values
Economy
Market realism
Cross-sector coordination
Collaborative frameworks
Human centricity
Dialogue
AI productivity
Planetary intelligence
AI productivity gains
Technical foundations
Economical driver
Interoperability
Ethical and technical foundations
Long-term responsibility
Ethics
Strategic and economic drivers
Human judgement
Implementation
Sector-specific rules
Long-term responsibility
Collaboration
Investment realism
Avoiding hype cycles
Responsible drivers
Commercial drivers
Restraint in adoption
Responsible implementation

Key Takeaways

How Cross-Sector Collaboration Enables Planetary Intelligence with GeoAI

From technology to decision systems

The GeoAI narrative is shifting from a conversation about technology to one about decision systems.

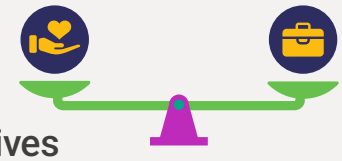


Adopt and adapt

Real progress depends on adopting AI while adapting governance, institutions, skills, and workflows around it.

Geography everywhere

GeoAI should become part of how every sector operates, quietly enabling better decisions in the background.



Align incentives

Balance public good with sustainable private-sector business models.

Build the ecosystem

Progress depends on deep expertise, multidisciplinary teams, shared standards, strong ontologies, and aligned incentives.

Side themes

> Purpose must stay ahead of hype.
> Leadership and political commitment remain uneven.
> The sector must help shape policy, regulation, and public understanding.

Core insight

Planetary intelligence requires coordinated action across sectors.

Salon Dinner 3
What is the Future of GeoAI and Planetary Intelligence?
Insights

The expert roundtable ultimately coalesced around four critical areas:

1 How we frame planetary intelligence shapes how we build and govern it

The experts framed planetary intelligence as:

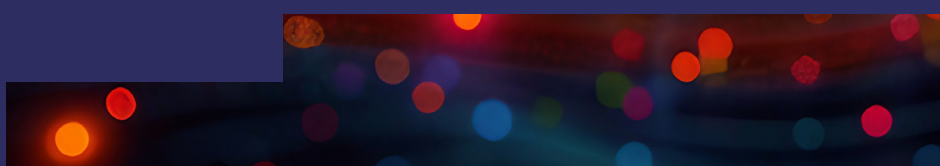
- **A purpose-led capability**, designed to enable faster and more informed decisions within specific use cases and across interconnected systems.
- **A federation of interoperable capabilities** rather than a single universal model or centralised technical system, recognising that different problems require distinct data, timescales, governance arrangements, and analytical approaches.
- **A shift from retrospective analysis** towards real-time or near real-time awareness of environmental change, infrastructure stress, economic activity, and systemic risk, enabling both immediate situational awareness and longer-term foresight.
- **A values-driven capability**. Without explicit principles, a GeoAI-enabled planetary intelligence system risks being technically impressive but societally misaligned. Shared reference points, such as the Gemini Principles, can help guide responsible collaboration.
- **A collaborative innovation framework** between people, institutions, and technical experts. Shared standards, common language including interoperable ontologies, and alignment across models are prerequisites for meaningful integration and trust.

2 Risks associated with planetary scale monitoring and the role of trust, ethics and governance

- **Planetary scale monitoring** can create challenges because it can be applied across a wide range of use cases. The same capabilities that enable environmental protection, compliance, and accountability can also introduce concerns about privacy, surveillance, and misuse. This is particularly relevant in contexts involving data collection by consumer devices and other ubiquitous data streams.
- **Trust depends on clear stewardship** and cannot be assumed. Trust requires transparency about data sources, limitations, decision-making processes, and explicit accountability when systems fail or cause harm.
- **Existing regulatory and ethical frameworks risk lagging behind the development of GeoAI systems**. If governance does not evolve at pace, innovation may outstrip public understanding and consent, undermining legitimacy and trust.
- **Ethics and governance should be seen as enablers** of trust and long-term adoption, not as constraints on innovation, particularly where GeoAI influences public policy, land use, or environmental outcomes.

3 Strategic investments are essential to enable and accelerate planetary intelligence

- **Investments must be outcome-driven, not technologically led**. Transformative impact comes not from chasing emerging tools, but from applying advances in AI, sensing, and infrastructure to clearly defined real-world problems. This means focusing less on the tools themselves and more on the decisions and outcomes they improve.



- **AI-enabled analysis represents the most significant productivity shift** and is likely to deliver the most transformative impact on planetary intelligence. Tasks that once took years can now be completed in days, fundamentally altering how insight is generated, validated, and scaled.
- **The strategic opportunity** lies in the building of foundation models and the tools workflows, decision systems, and domain specific applications that translate technical capability into usable intelligence.
- **Human capital must evolve in parallel with the technical development of foundation models**, and the tools and workflows that use these. Without sustained investment in education and skills, the responsible use of GeoAI will be constrained. This is particularly true if organisations do not provide the future workfore with the broad skills required to work effectively alongside GeoAI-driven decision-making.
- **Leadership is critical**. Decision-makers require training, not to become technical experts, but to ask the right questions, understand limitations, and interpret outputs. Without this competence, there is a risk of overreliance on technically impressive systems that remain poorly understood by those ultimately accountable for their use.

4 Alignment of industry, government and academia is a precondition for the responsible acceleration of planetary intelligence

- **Industry, government and academia play distinct but complementary roles**. Government sets the direction, provides regulatory stability, and establishes guardrails. Academia focuses on exploration, critique, and methodological rigour. Industry scales solutions and translates innovation into usable products with the capacity to achieve widespread adoption.
- **Commercial incentives shape what ultimately achieves scale**. While societal objectives matter, technologies that reshape ecosystems tend to align with strong and sustained market demand.
- **Responsible acceleration therefore depends on aligning incentives across sectors**. If public purpose, research priorities, and commercial drivers are not coordinated, planetary intelligence will evolve unevenly and potentially in directions that do not reflect societal priorities.

Conclusion

The salon dinners proved to be a powerful and unique forum for exchange on the future of GeoAI and the UK's role in it. Each evening, participants stayed until the very end, often leaving with a mix of emotions: inspired, challenged, enlightened, and committed to playing their part in shaping what comes next. "***WE decide what future WE want***" is a statement that lingered long after the conversations ended and most of us went back to our day jobs.

The discussions were genuine and curious. We questioned whether geospatial is a unique use case for AI. We wondered how close planetary intelligence is to global surveillance. We dug deep into the dynamics between public good and private sector profit. We asked whether the UK is lagging behind, and whether GeoAI is simply another wave of technology that we will adapt to, just like we did with the Internet and the iPhone.

Perhaps the most inspiring part of the dinners was that the dialogue always returned to purpose and problem-solving: What problems does GeoAI solve? How can we shape and adapt to the evolution of our domain, and how can we deliver planetary intelligence collaboratively and responsibly? What also stood out was the openness of the conversations. There was a shared realisation that we are, together, at an inflection point.

AI is not merely accelerating workflows; it is redefining how spatial information is generated, interpreted, and applied. With generative and agentic AI, even our methods of building applications are being reimagined. Imagine being in the room with leaders visualising a future that consists of millions of distributed, use-case-driven applications and agents. Such a vision is disruptive not only for the geospatial sector, but for every sector that depends on it.

Coupling this realisation with the acknowledgement that AI is here to stay requires us to rethink how we communicate value and how we embed geospatial in every decision. This is something we have yet to fully achieve in the UK or elsewhere.

The UK stands at a moment of both challenge and an extraordinary opportunity. After the merger of the UK Geospatial Commission, the Central Digital and Data Office (CDDO), the Government Digital Service (GDS) and the Incubator for Artificial Intelligence (i.AI) into the new Government Digital Service within the Department for Science, Innovation and Technology (DSIT) in January 2025, there is new urgency to ensure that geospatial intelligence is explicitly acknowledged as a cross-cutting enabler. It is foundational to defence, climate, clean energy, life sciences, and every growth-driving sector in the UK Industrial Strategy.

With strengths in regulation, standards setting, research excellence, public institutions, and high-integrity national data, the UK is well positioned to:

> GeoAI should become part of the fabric of how every sector operates, quietly powering better decisions in the background.

1. Build trusted AI foundation models grounded in robust geospatial data.
2. Turn GeoAI into an investable national capability, using place-based deployment pathways such as AI Growth Zones to support the scaling of geospatial AI solutions.
3. Invest in mission-driven innovation, building on the impact of initiatives such as the GeoAI Festival.
4. Strengthen public private engagement to accelerate adoption.
5. Prioritise the human layer through education, workforce development, leadership, and both AI and geospatial literacy.

There were many insights shared throughout these dinners, each of which could contribute to a strong blueprint for enabling the UK to capitalise on this once-in-a-generation GeoAI transformation, a shift from traditional geospatial practice to AI-enabled spatial intelligence embedded across systems and decisions.

However, none of these insights will lead to transformative change without deliberate action. We must act collectively to embed geospatial information everywhere it matters, make it usable at scale with AI, and lead in a way that is collaborative, trusted, and grounded in public value.

Most of all, none of this will happen without you – the readers of this report. The future is clearly approaching fast, and what comes next is ours to shape. After all, as we were reminded again and again during our dinners, ***WE decide what future WE want***.

Accelerating GeoAI Adoption – Key Recommendations for the UK

Adopt and adapt
Prioritise human capital and leadership.

Go deeper on trust
Reinforce trust through robust data, metadata and explainability.

Be more ambitious
Embed GeoAI as core national infrastructure.

Strengthen incentives for innovation
Use place-based deployment pathways to scale.

Leverage long-term investment in data
Build trusted foundation models grounded in robust geospatial data.

Reimagine public–private engagement
Treat GeoAI as an investable national capability.

Contributors to the Conversation

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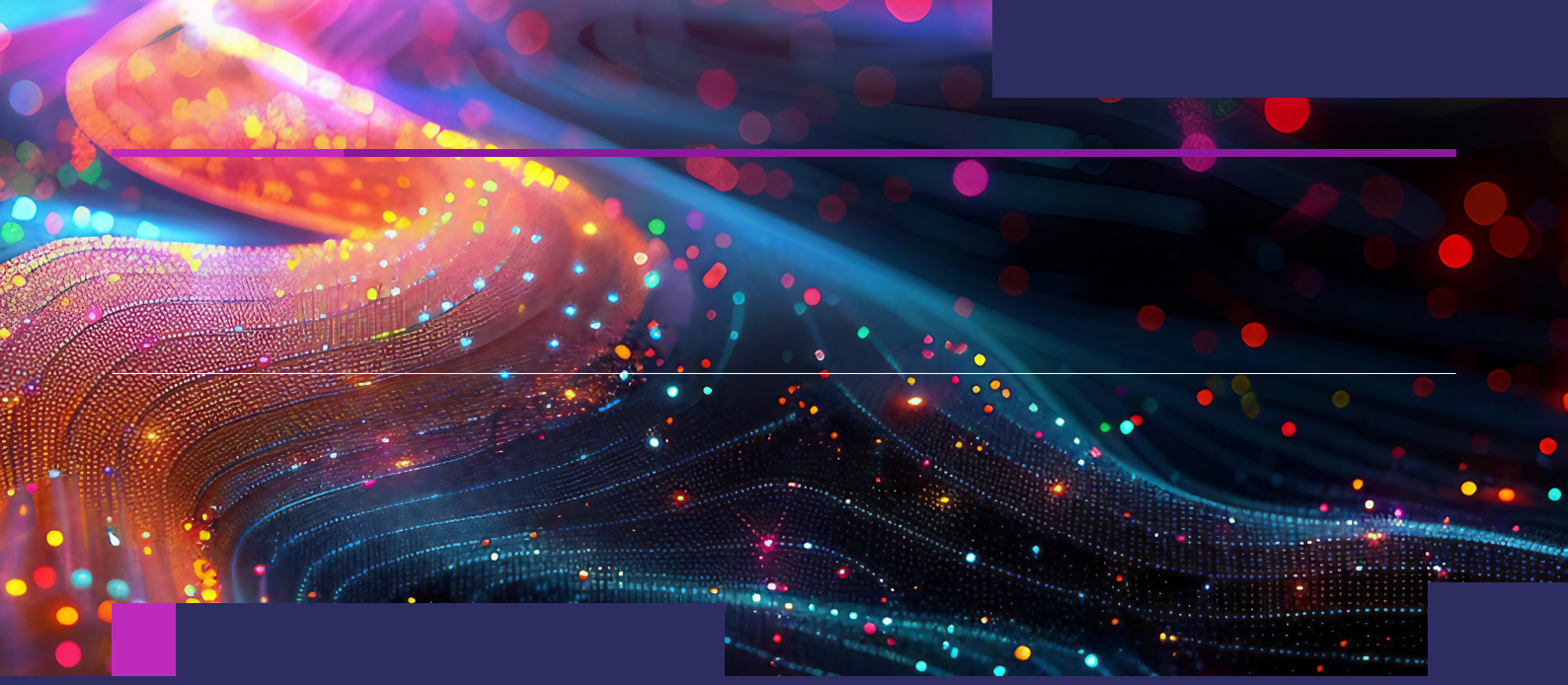

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The Use of AI in this Report

Lorefully was employed to record the meeting and use the recording in OpenAI ChatGPT 5.2. Artificial Intelligence model as a supporting analytical tool in the preparation of this summary report. Its role was limited to processing, structuring, and synthesising discussion material and did not replace human judgement, interpretation, or editorial oversight at any stage.

AI was primarily used to assist with the following activities:

- Transcription support: Converting recorded discussions into text to enable systematic qualitative analysis.
- Thematic organisation: Supporting the identification and grouping of recurring topics, concepts, and areas of emphasis within and across the discussions.
- Comparative synthesis: Assisting in the organisation of material across multiple events to enable side-by-side comparison using consistent analytical lenses.
- Drafting support: Helping to structure narrative summaries and tables in a clear and consistent format, based on direction provided by the project team.

Disclaimer

The Lorefully team acted solely in a facilitation and evidence-capture capacity during the workshop. Lorefully team members were not actively engaged in the substantive discussions and did not contribute domain expertise to the sessions. We do not claim subject matter expertise in the technical or policy areas discussed within this report.

Our Partners

The Innovate UK GeoAI Festival was possible thanks to the partnership with many organisations who have been instrumental in realising the purpose and vision. We like to acknowledge their contribution to the festival output and the report.

With thanks to

The Innovate UK GeoAI Festival is the result of a truly collective effort, shaped by the dedication, generosity, and leadership of an extraordinary community.

This programme would not have been possible without Elaine Livera, whose unwavering support made the ambition achievable. Alana Kruger has been a constant pleasure to work with, and we congratulate her on her new appointment. Justin Beirold and Mel Cassley who have been instrumental in coordinating the webinars, salon dinners and incubation programmes with confidence and professionalism. Soray Smith provided essential administrative support behind the scenes. Anita Onwuegbuzie ensured the events were delivered with love and care. Becky Rowland provided invaluable support and communications expertise throughout.

Our Defra colleagues, Oliver Vaugh and Sajida Sayeda, offered leadership, resourcefulness, energy, and commitment at every stage. Thank you for believing in the vision from the get-go.

Luca Budello

Glossary

GeoAI: GeoAI is the integration of artificial intelligence with geospatial and Earth Observation data to generate actionable insight and support automated or assisted decision-making about places, systems, and spatial relationships.

Planetary Intelligence: Planetary intelligence is the coordinated use of geospatial data, AI, and digital systems to develop real-time or near-real-time awareness of environmental, economic, and societal systems at multiple scales in order to inform better collective decisions.

Trusted AI: Trusted AI refers to artificial intelligence systems that are designed, governed, and deployed in ways that are transparent, accountable, secure, fair, and reliable, enabling confidence in their use for consequential decision-making.

Explainability: Explainability is the ability to understand and clearly communicate how an AI system generates its outputs, including the data, assumptions, and reasoning processes involved, so that decisions supported by AI can be interpreted, challenged, and justified.

Ethics in GeoAI: The application of moral and governance principles to ensure geospatial AI systems are used responsibly, transparently, and fairly, with attention to privacy, bias, accountability, and the societal impact of place-based decisions.

Salon Dinner: A salon dinner is an invitation-only discussion held in an informal dining setting, designed to foster candid, trusted, and cross-sector dialogue on strategic issues. It combines structured moderation with open exchange to surface insight, challenge assumptions, and build shared direction among senior leaders.

Innovate UK

The UK's Innovation Agency

To discuss findings and insights shared within this report, please contact:

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Visit our website to find out more about the Innovate UK GeoAI Festival and what we do within the geospatial industry.

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