

Project details

Application team

FLOSSVERSE LTD (Lead)

Organisation details

Type	Business
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Team members

Full name	Email	EDI survey
John O'Hare	flossverse@xrsystems.uk	Complete

THG INGENUITY LIMITED

Organisation details

Type	Business
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Team members

Full name	Email	EDI survey
Steve Moyler	steve.moyler42@thgingenuity.com	Incomplete

Application details

Competition name

The Agentic AI Pioneers Prize -
Development Phase

Application name

IRIS - Immersive Real-Time Integrated
Studio

When do you wish to start your project?

23 February 2026

Project duration in months

3 months

Public description**Public description**

Creative studios produce the images, videos, and campaigns that power the UK's billion-pound e-commerce sector, yet much of their workflow knowledge exists only in the heads of experienced staff. When people leave, that knowledge leaves with them. Meanwhile, cloud-based AI tools require studios to upload sensitive brand assets to third-party servers, creating intellectual property risks that many businesses cannot accept.

IRIS (Intelligent Real-time Integrated Studio) is a voice-controlled AI system that works alongside creative teams rather than replacing them. Studio staff speak naturally to request images, set up marketing experiments, or ask questions about past campaigns. Behind the scenes, teams of AI agents carry out the work, generating images, checking brand guidelines, analysing campaign performance. Formal knowledge system captures every decision so it can be found and reused later.

Three features distinguish IRIS from existing creative AI tools. First, all image and video generation runs on the studio's own computers. Brand assets and unreleased designs never leave the building. Second, the system records creative workflows as structured, searchable knowledge rather than unstructured files, addressing the persistent problem of institutional knowledge loss. Third, a human approves every client-facing output; the AI proposes, the person decides.

IRIS is built on VisionFlow, an open-source platform developed by DreamLab AI Ltd and released under the Mozilla Public License so that other UK studios, universities, and technology companies can build on the work without licensing barriers.

The system is being validated in partnership with THG Ingenuity, part of THG Holdings plc and Europe's largest creative production studio, serving over 250 brands across 195 countries. On 25--26 February 2026, IRIS will support a fashion catwalk event at the University of Salford as a world-first demonstration of AI agents assisting live creative production, covering image generation, virtual production screen content, and real-time campaign asset creation.

IRIS aims to give UK creative studios a sovereign, explainable AI capability that keeps intellectual property under their control, preserves hard-won creative expertise, and accelerates production workflows, strengthening the UK's position in a global AI-in-media market projected to reach nearly 100 billion by 2030.

Scope

Which Challenge statement does your solution address?

IRIS addresses challenge 2, orchestrating complex creative operations, coordinating tasks, assets, tools, collaborators and agents in real time, resolving gaps and infrastructure problems, ensuring security, compliance and accessibility, and optimising workflows to deliver more efficient, predictable and agile creative production.

Agent skills orchestrated via the MCP and Claude-Flow hierarchical coordinator, operate over formal OWL 2 ontology classes that encodes brand guidelines, workflow rules, compliance requirements and creative asset relationships. Agents collaborate through a six-stage pipeline: brief capture, task decomposition, asset generation, human review in immersive 3D, deployment to company channels, and closed-loop performance measurement feeding results back into the ontology. The ontology reasoner prevents logically inconsistent actions before execution, meaning the system spots gaps and flags issues structurally and also after the fact for defence in depth.

IRIS's coding and infra agents have direct orchestration access to containerised ComfyUI instances via rich API middleware running in a docker private network. This enables generative workflows for image, video and 3D asset creation, composed intelligently against creative guidelines, rather than requiring pre-built templates. Agents can inspect available ComfyUI nodes, assemble novel pipelines, test outputs against brand constraints, and iteratively refine workflows autonomously. When a workflow fails or underperforms, self-healing routines diagnose the fault, adjust parameters or reconstruct the pipeline, and re-execute, optionally with granular human oversight. This self-optimising loop is what transforms IRIS from a static tool into a genuinely agentic production system that adapts workflows based on client input, historical data and shifting priorities.

Trust, safety and auditability are engineered throughout. Every agent action is recorded as an immutable bead, content-addressed, cryptographically verifiable unit of provenance stored in AgentDB, alongside human-readable Markdown summaries. All ontology mutations pass through a GitHub pull request workflow, giving human reviewers full visibility and veto over structural changes before they are committed. Generative inference can run entirely on-premises or private cloud, via containerised ComfyUI.

Validate with real creative teams. Deploy IRIS within THG Ingenuity and evaluate its impact on three distinct creative teams producing assets for live e-commerce brands. Demonstrate agentic creative co-production. Show that voice-controlled AI agents can generate, iterate, and deploy creative assets under human supervision within production timescales.

Application questions

1. Applicant location (not scored)

Applicant location (not scored)

Dreamlab AI Consulting Ltd (previously flossverse), Company number **14732989**

DreamLab - Fairfield - Eskdale CA19 1UA

(previously/currently The Old Workshop, 12b Kennerleys Lane, Wilmslow, Cheshire, United Kingdom, SK9 5EQ)

THG Ingenuity Icon 1, 7-9 Sunbank Lane, Ringway, Altrincham WA15 0AF, United Kingdom

University of Salford, non contributing partner in live event

2. Animal testing (not scored)

Animal testing (not scored)

No

3. Permits and licences (not scored)

Permits and licences (not scored)

Not applicable

4. International Collaboration (not scored)

International Collaboration (not scored)

No international collaboration or engagement required.

5. Export licence (not scored)

Export licence (not scored)

No

6. Trusted Research and Innovation (not scored)

Trusted Research and Innovation (not scored)

no dual use or other confounding factors apply.

7. Challenge statement (not scored)

Which challenge statement does your solution align to?

Creative Industries Challenge: Intelligent Creative Workflow and Asset Orchestration Agents

8. Expression of Interest (EOI) application number (not scored)

What was your EOI application number?

10181628 - VisionFlow

9. Consortium (not scored)

If Collaborative, who is in your consortium and what are each organisation's roles?

Lead Organisation: DreamLab AI Consulting Ltd

DreamLab AI Ltd an AI platform and consulting company based at Dreamlab in Cumbria. The company develops VisionFlow, an open-source GPU-accelerated knowledge graph engine with autonomous AI agent orchestration (168,000 lines of Rust, MPL-2.0). Led by Dr John O'Hare, the core team comprises AI/ML engineers, Rust and CUDA developers, ontology specialists, and creative technologists. DreamLab AI brings the IRIS platform, agent architecture, OWL 2 ontology engineering, and open-source ecosystem strategy.

Partner: THG Ingenuity (THG Holdings plc) (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#partner-thg-ingenuity-thg-holdings-plc>).

THG Ingenuity is the technology and creative services division of THG Holdings plc (LSE: THG). It operates Europe's largest creative production studio, including a virtual production LED volume, image-to-video pipelines, 3D product modelling facilities, and an established Google Cloud AI partnership (Vertex AI, Gemini, Veo, Imagen). THG serves over 250 e-commerce brands -- including Lookfantastic, ESPA, and Myprotein -- across 195 delivery destinations. THG Ingenuity provides the real creative workflows that IRIS must understand, the production environment for deployment, and the commercial route to market through its brand portfolio.

Collaborator: University of Salford (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#collaborator-university-of-salford>)

The University of Salford is co-producing the February 2026 fashion catwalk and contributes creative industries research expertise, user study methodology, and evaluation rigour. The university supports co-design workshops, contextual inquiry sessions with THG creative teams, provides a shared physical environment for the collaboration.

Why This Consortium (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#why-this-consortium>)

The partnership covers the full path from research to commercial deployment. DreamLab AI contributes the platform and AI engineering capability. THG Ingenuity contributes the creative studio environment, brand portfolio, and commercial scaling route -- providing both the problem domain and the market.

[appendix-f-draft-collaboration-agreement.pdf \(opens in a new window\)](#)
(</application/10190411/form/question/51521/forminput/148212/file/912439/download>).

10. High level technical approach

How does the system work and why is it credible?

IRIS is the creative production application built on VisionFlow, DreamLab AI's open-source (MPL-2.0) platform for real-time 3D knowledge graphing with autonomous AI agents. The architecture comprises five layers (see Appendix B, Figure B.4).

Knowledge Layer. Neo4j and markdown store creative assets, brand ontologies, workflow rules, and agent decisions as a unified knowledge graph. An OWL 2 EL reasoner (Whelk-rs) performs subsumption and consistency checking over 900+ ontology classes -- agents reason over this formal ontology *before* execution, not after. This is the core neuro-symbolic innovation: semantically invalid proposals are rejected at the validation gate, unlike RAG-based systems (AutoGPT, CrewAI) that check outputs only post-generation. We also bundle Microsoft GraphRAG for large corpus search.

Agent Layer. 101 specialised skills orchestrated via the Model Context Protocol (MCP) and a Claude-Flow hierarchical coordinator support 50+ concurrent agents. Seven ontology-specific tools (discover, read, query, traverse, propose, validate, status) give agents read/write access to the knowledge graph with formal consistency guarantees.

Compute Layer. A Rust/Actix-web backend (168K LOC, 373 source files) with 100+ CUDA 12.4 kernels runs server-authoritative graph-layout physics,

PageRank, Leiden clustering, and anomaly detection on GPU, achieving a 55x speedup over CPU and sustaining 180,000 nodes at 60 FPS on RTX 4080.

Presentation Layer. React 19 + Three.js (26K LOC) renders the knowledge graph as an interactive 3D space with custom TSL shaders. WebXR enables Meta Quest 3 immersive collaboration for up to 250+ concurrent users via a compact binary protocol (21 bytes/node, 80% bandwidth reduction versus JSON).

Generative Layer. Containerised ComfyUI instances on local GPU provide image generation (Flux2 Dev, 18s per 1024x1024), image-to-video (Veo, AnimateDiff), and 3D asset creation via Headless Blender MCP and Microsoft Trellis 2. All inference runs on-premises -- brand IP never leaves the studio network. This contrasts directly with Midjourney and DALL-E (cloud-dependent, no IP sovereignty), Runway ML (video generation but no ontology reasoning or formal consistency), and Adobe Firefly (no agent orchestration, no semantic constraint enforcement).

What was hard in practice. Stable 60 FPS at 180,000 nodes required six iterations of CUDA kernel fusion for Barnes-Hut force calculation, with hand-tuned shared-memory tiling to avoid warp divergence. Integrating Whelk-rs into the Rust actor system demanded a lock-free message-passing architecture with an LRU inference cache, yielding 90x speedup on repeated reasoning operations. Full architecture detail in Appendix B.

[appendix-b-technical-approach.pdf \(opens in a new window\)](#)
[\(/application/10190411/form/question/51522/forminput/148218/file/912434/download\)](#).

11. User and workflow fit

Who will use it, where does it fit in the workflow, and what does it improve?

IRIS is designed around five core creative-industry roles. Creative Director, Graphic Designer, Video Producer, Campaign Manager and Brand Manager, each of whom interacts with the system through voice, gesture and 3D spatial interfaces rather than conventional file-based handoffs. The Creative Director voice-briefs IRIS and reviews AI-generated variants in immersive 3D or traditional dashboard, github, or messenger clients.

Throughout the development sprint, we will be embedded with THG Ingenuity's creative director, working on live workflows measured against their current legacy AI-augmented production flows on the virtual production LED volume at THG STUDIO. This direct, sustained collaboration ensures IRIS is shaped by real business needs as they emerge, not by assumptions made in advance. The sprint begins with a landmark collaboration with the University of Salford: the world's first AI-assisted catwalk world record attempt that will stress-test the current pipeline from voice brief through agent-driven asset generation to real-time virtual

production delivery, providing a compelling public demonstration of the platform's capabilities and shared publicity.

Human-in-the-loop governance is fundamental to the design. Every agent action that produces a client-visible artefact passes through a gated approval workflow: the agent proposes an action, the Coordinator checks ontology constraints and brand rules, the proposal is surfaced to the appropriate human approver in the 3D interface, and the human approves, amends or rejects using voice or gesture. Only then is the action committed to the knowledge graph with full provenance. Fully automated actions such as analytics collection and A/B traffic splitting operate within pre-approved policy boundaries encoded in the ontology and are logged for retrospective audit.

The target workflow impact is substantial: reducing time to first creative draft from days to hours, A/B test setup from hours to minutes, and replacing sequential team handoffs with simultaneous collaboration in XR while capturing workflow knowledge that currently exists only as undocumented tribal practice.

Interoperability is built on open standards OWL 2, JSON-LD, RDF/Turtle and OpenAPI 3.1, and nostr w3c DID, with API adapters integrating THG's existing Google Cloud AI stack (Vertex AI, Gemini, Veo, Imagen). Self-sovereign data storage via W3C Solid Protocol pods ensures brand assets and creative IP remain under organisational control, with decentralised identity for both human users and AI agents via w3c Nostr DID signing. On-premises deployment supports UK GDPR compliance, alignment with AI Safety Institute principles, and DCMS guidance on AI in creative industries.

[appendix-a-user-workflow-fit.pdf \(opens in a new window\)](/application/10190411/form/question/51523/forminput/148224/file/912435/download)
(/application/10190411/form/question/51523/forminput/148224/file/912435/download).

12. Minimal Viable Product (MVP) and integration readiness

Describe what aspects of your solution are ready for demonstration and how they can be deployed.

The IRIS MVP is grounded in the THG Ingenuity fashion catwalk (25--26 February 2026, University of Salford) -- the forcing function that will exercise the full creative co-production pipeline under live production conditions. Target metrics: voice-to-asset generation in under 60 seconds, LED scene switching in under 2 seconds, 500+ knowledge-graph decisions captured during the event, and 99%+ agent uptime across the four-hour production.

Deployed evidence. The Glass Icons demonstration produced 12 3D-rendered objects across 48 angle views from a single seven-word brief ("glass 90s icons with chromatic aberrations") in approximately 60 minutes -- a 24-48x throughput improvement versus manual artist workflows (see Appendix E). The voice-to-3D GLB pipeline, triggered by a conversational brief from THG's Steve Moyler,

autonomously routed through ComfyUI and Microsoft Trellis 2 to produce a fully textured flower bloom mesh with no manual intervention.

Capability readiness. Voice agents: Deployed, 2.1s end-to-end latency. 3D knowledge graph: Deployed, 180K nodes at 60 FPS. OWL 2 ontology reasoning: Deployed, zero false negatives on entailment test suite. ComfyUI image generation: Integrated, 18s average per 1024x1024. Headless Blender MCP: Integrated, scene generation from natural language. Agent orchestration: Deployed, 50+ concurrent agents via 101 MCP skills.

Deployment architecture. Docker Compose with 10 profiles (dev, production, voice, XR, agents) -- single docker-compose up brings the full stack online. 28 HTTP/WebSocket handlers, 7 MCP ontology tools, and OpenAPI 3.1 specification provide integration interfaces. See Appendix C for deployment architecture.

Testing. 820+ Rust tests and 380+ Vitest frontend tests provide unit coverage. Playwright E2E suites validate all 28 REST endpoints and 7 MCP tools against a fresh Docker stack. GitHub Actions GPU CI blocks merges on >5% performance regression. 200 ontology entailment test cases ensure reasoning correctness as the class hierarchy grows.

Known limitations. The Whelk-rs reasoner supports OWL 2 EL but not full DL; EL expressivity is sufficient for the creative domain ontology. WebXR hand-tracking on Quest 3 degrades above 50,000 rendered nodes; dynamic level-of-detail mitigates this. Video generation is currently limited to 6-second clips.

Path to production. THG Commerce API integration (Q1 2026), production hardening with Prometheus monitoring (Q1), user acceptance testing with three THG creative teams (Q1-Q2), OWASP security audit and penetration testing (Q2), Kubernetes Helm charts for horizontal scaling (Q2). See Appendix C for deployment architecture; Appendix E for pipeline demonstrations.

[appendix-c-mvp-integration-readiness.pdf \(opens in a new window\)](#)
(/application/10190411/form/question/51524/forminput/148230/file/912436/download).

13. Risks, assurance and explainability

Have you identified the risks and how will you mitigate and manage them?

Six risks scored on a 5x5 (Likelihood x Impact) matrix with named owners: R1 AI hallucination (25 Critical, Tech Lead); R2 Data privacy breach (15 High, Security Lead); R3 THG integration (12 Medium, PM); R4 Model bias (9 Medium, Ethics Board); R5 User adoption (9 Medium, UX Lead); R6 Delivery slippage (6 Low, PM).

R1 is mitigated through a gated approval workflow: the OWL 2 reasoner rejects invalid proposals pre-execution, and no generative output reaches production

without human sign-off. R2 is addressed structurally -- on-premises inference, Solid pods with granular ACLs, and TLS 1.3 mean brand assets never leave the studio network.

Red-Teaming and Assurance (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#red-teaming-and-assurance>)

200+ adversarial prompts tested across four categories: prompt injection, data exfiltration, agent manipulation, and brand violations. Ontology constraints caught 97% of injection attempts pre-execution; Solid ACLs prevented all exfiltration attempts. Every agent action produces an immutable Neo4j audit record with timestamp, actor identity, reasoning path, and provenance links.

Incident response targets: prompt injection (<1 min), data anomaly (<2 min), off-brand content (<5 min), biased output (<30 min).

Three-Tier Explainability (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#three-tier-explainability>)

Tier 1 -- Natural Language. Brand manager asks "why this model?" IRIS cites the specific guideline, 91% alignment score, and A/B data showing 23% CTR uplift -- every claim traceable to a knowledge-graph node.

Tier 2 -- Visual Provenance. The 3D knowledge graph renders the decision as an interactive subgraph with attention beams showing the agent's traversal path. Click any node for its OWL class hierarchy, authorship, and derivation chain.

Tier 3 -- Formal Audit. Neo4j Cypher queries return typed provenance chains (derivedFrom, approvedBy, generatedWith) with timestamps. Reproducible because the KG is append-only with immutable provenance.

Compliance and Governance (<https://github.com/DreamLab-AI/ukri-agentic-ai-pioneers-2026/blob/main/docs/IRIS-unified-bid-responses.md#compliance-and-governance>)

UK GDPR (Compliant -- on-premises, Solid pods, no third-party transfer), EU AI Act (Aligned -- human-in-the-loop, audit trails, bias evaluation), W3C OWL 2 and Solid (Compliant), OWASP Top 10 (in progress, Q2 2026), AI Safety Institute (Aligned).

Aligned with UKRI's AREA framework and the UK Government's five AI principles. Core platform open-source (MPL-2.0). Ethics Board chaired by Dr John O'Hare conducts quarterly reviews of the risk register, incident log, and bias reports, with an independent external auditor from Q2 2026. See Appendix D for the full risk register, heatmap, incident response protocol, and governance structure.

[appendix-d-risks-assurance-explainability.pdf \(opens in a new window\)](#)
(</application/10190411/form/question/51525/forminput/148236/file/912437/download>).

14. Potential commercial impact and UK benefit

What impact might this project have outside the project team?

THG Ingenuity is the primary design partner and first customer --- operating one of Europe's largest creative studios (90,000 sq. ft.), a virtual production LED volume, and a commerce network fulfilling 80 million units annually across 195 countries for over 1,300 brands. Yet its creative teams remain trapped in the adoption plateau defining the wider industry: effort fragmented across siloed web-based AI tools, workflow knowledge locked in tribal practice, no unified system connecting brief to published asset to performance data. IRIS replaces this brittle patchwork with a single ontology-driven platform reducing time to first creative draft from days to hours, automating brand-guideline compliance, and capturing institutional knowledge as queryable, reusable structure. . THG's pain point is not unique. Unilever spends £7.8 billion annually on marketing and is building proprietary AI content studios delivering 55% cost savings and 65% faster turnaround but through closed, bespoke systems. Nestlé, LVMH and L'Oréal are all scaling AI-driven digital twins for content production. The six largest global content companies led by Disney, Netflix and Comcast collectively invest \$126 billion in content annually, with Netflix alone spending \$18 billion in 2025, over a third of it in Europe. Every one of these organisations faces the same workflow fragmentation IRIS is designed to solve.

The open-source MPL-2.0 licence eliminates vendor lock-in. Docker single-command deployment and voice-first interaction remove adoption friction. THG's pilot validates the delivery model, support requirements and pricing assumptions with three in-house creative teams before wider release. The Google Cloud strategic collaboration provides an enterprise go-to-market channel; the University of Salford partnership builds the academic skills pipeline.

The UK creative industries contribute £124.6 billion in GVA and employ 2.4 million people, yet the sector risks being a nation of AI ambition rather than AI execution. Productivity gains validated at THG compressing multi-day creative cycles into hours, automating compliance, capturing tribal knowledge are directly transferable. On-premises, self-sovereign architecture strengthens resilience by keeping creative IP under UK control.

No competing platform combines neuro-symbolic agent coordination, formal ontology reasoning and self-sovereign local inference in an open-source stack. UK film and high-end TV production spend reached £5.6 billion in 2024, with inward investment accounting for 86%. IRIS validated open-source and UK-originated gives international studios a reason to locate creative AI workflows here rather than defaulting to US-controlled proprietary platforms, strengthening the UK's position in a subsector forecast to generate £18 billion and 160,000 jobs over the next decade.

15. Future potential and scalability

How far do you think you can develop your solution?

The solution development phase with THG Ingenuity has validated IRIS at TRL 5 through 7: real-time knowledge graphs, 101 agent skills via MCP, OWL 2 EL ontology reasoning, and voice-controlled creative co-production running on local GPU. The roadmap advances beyond TRL 7 across three horizons. First production-harden the THG deployment with Prometheus observability, federated ontology support enabling multi-organisation knowledge sharing with granular access control, and extension of the generative pipeline to long-form video (beyond the current 15-second clip limit), and radically improving 3d asset and scene generation through Gaussian splats . Third (2027): a self-improving ontology layer where agent interactions continuously refine workflow models.

separate domain knowledge (the OWL 2 ontology) from platform capability (agent orchestration, knowledge graphs, generative inference). Transfer to adjacent sectors requires only ontology authoring, not re-engineering. Immediate adjacencies include architectural visualisation, broadcast media production, game asset pipelines, and museum curation, knowledge-intensive creative workflows with iterative human-AI review cycles. Transfer is harder where creative outputs lack structured approval workflows (e.g. live improvised performance) or where real-time latency requirements exceed our current voice loop (e.g. live broadcast direction).

Causal clustering supports horizontal read scaling; Compute: the CUDA kernel library is GPU-architecture-portable targeting H100 for enterprise and recently extensible to AMD via open source. Safety: the ontology-gated approval workflow scales linearly every new agent skill inherits the existing constraint-checking pipeline. Deployment: the Docker Compose stack converts to Helm charts for UK cloud (AWS London, Azure UK South) or on-premises GPU clusters, preserving data sovereignty. Operations: we target fewer than two full-time-equivalent engineers for steady-state operation of a 50-agent deployment.

IP: DreamLab AI retains core platform IP under MPL-2.0 open-source licence; THG holds jointly developed ontology IP. Partnership: Letter of intent with THG for commercial pilot (Q3 2026); discussions with two further MediaCity creative studios. Commercial: enterprise licensing for IRIS is architected for horizontal scaling, sector transfer, and ecosystem growth beyond the initial THG pilot.

THG's 250+ brands span beauty, nutrition, fashion, and luxury, natural expansion paths within the existing partnership. The parameterised pipeline (demonstrated by switching briefs without code changes) transfers directly to publishing, broadcast, architecture visualisation, and retail product configurators. Each sector requires only new ontology templates.

Federated Ontology Network. Year 3 introduces multi-organisation knowledge sharing with W3C Solid Protocol access control. Creative industry consortia share ontology fragments -- trend taxonomies, material libraries, production workflows -- while retaining sovereignty over proprietary data. This positions IRIS as collaborative infrastructure.

Terms and conditions

Award terms and conditions

Partner	Funding rules	Terms and conditions
FLOSSVERSE LTD (Lead)	Subsidy control	Innovate UK - Subsidy control (/application/10190411/form/terms-and-conditions/organisation/94821/question/51426)
THG INGENUITY LIMITED	Subsidy control	Innovate UK - Subsidy control (/application/10190411/form/terms-and-conditions/organisation/129888/question/51426)

