



SYLVAN-AI



SYLVANITY FOREST INTELLIGENCE

SYLVAN-AI

The Chat-Enabled Forest Manager, powered by JackDaw GeoAI

Presented by **Sylvanity B.V.**

PoliRuralPlus JackDaw Code Camp, Athens · Online Session, 17 June 2026





Sylvanity B.V. — responsible AI, made in Europe

Sustainable, privacy-first AI. Engineered in Delft, the Netherlands; deployed across Europe.



Sustainable & Privacy-First AI

Sylvanity builds AI that optimises resources across industries without compromising privacy or the planet. We pair deep GeoAI and Retrieval-Augmented Generation (RAG) expertise with real-world rural and land-management know-how.



Based in Delft, NL EU-hosted, GDPR-compliant by design



Founded by Amir A. Zadpoor



Privacy-First

GDPR-compliant by design with full data sovereignty: personal data is stripped from inputs before it ever reaches inference.



Local & Green AI

EU-hosted on European infrastructure; your data stays within the Union, with no third-party trackers — a quiet win for the planet.



The European Way

Safe, inclusive, sustainable AI that strengthens Europe's resilience and autonomy.



SYLVAN-AI at a glance

Selected in the PoliRuralPlus Enhance Call to validate JackDaw in a real, high-complexity European domain.



Our mission is to democratise access to spatial intelligence: replacing complex GIS interfaces with a simple conversation so the people who manage Europe's forests can finally use the data generated about their land.



Enhance

Open Call strand



Feb - Jul 2026

6-month action



Forestry

Validation domain



JackDaw

GeoLLM under test



The digital gap in European forestry

Valuable spatial intelligence exists, but stays out of reach of the people managing the land.



60%

of Europe's forests are managed by small-scale owners who lack the GIS tools or training to meet EUDR and Green Deal reporting.



Data asymmetry

Copernicus data and digital twins are standard in urban planning, yet rarely reach the rural forestry interface.



3-4 portals

A single decision today means cross-referencing cadastre, Natura 2000, soil and risk maps across separate geoportals.



From data complexity to natural conversation

SYLVAN-AI puts JackDaw's tool-using GeoLLM behind a single conversational interface.



Ask in plain language

"Is my plot in a high fire-risk zone?"



Grounded in real data

Cadastre, Natura 2000, terrain, soil, fire
& land cover



JackDaw GeoRAG

Retrieval-Augmented Generation over
geodata



Traceable answer

Spatially accurate, with sources, no
hallucination



Ask naturally

No GIS skills needed



Integrated layers

Many datasets, one place



Faster decisions

Insight in minutes, not days



Scalable in EU

A replicable framework



Four SMART objectives

Measurable targets driving a rigorous validation



1 · Technical validation

Deploy JackDaw across 5+ geospatial layers and reach an 80%+ prompt success rate in a high-complexity domain.



2 · Usability with real users

Engage 5–10 rural stakeholders in testing and achieve a System Usability Scale (SUS) score above 70 (“Good”).



3 · Added value for decisions

Document 5–10 success cases showing $\geq 50\%$ time-to-insight reduction versus traditional manual research.



4 · Replicability planning

Deliver a transferability roadmap mapping the workflow to ≥ 2 other PoliRuralPlus pilot regions.

DELIVERED

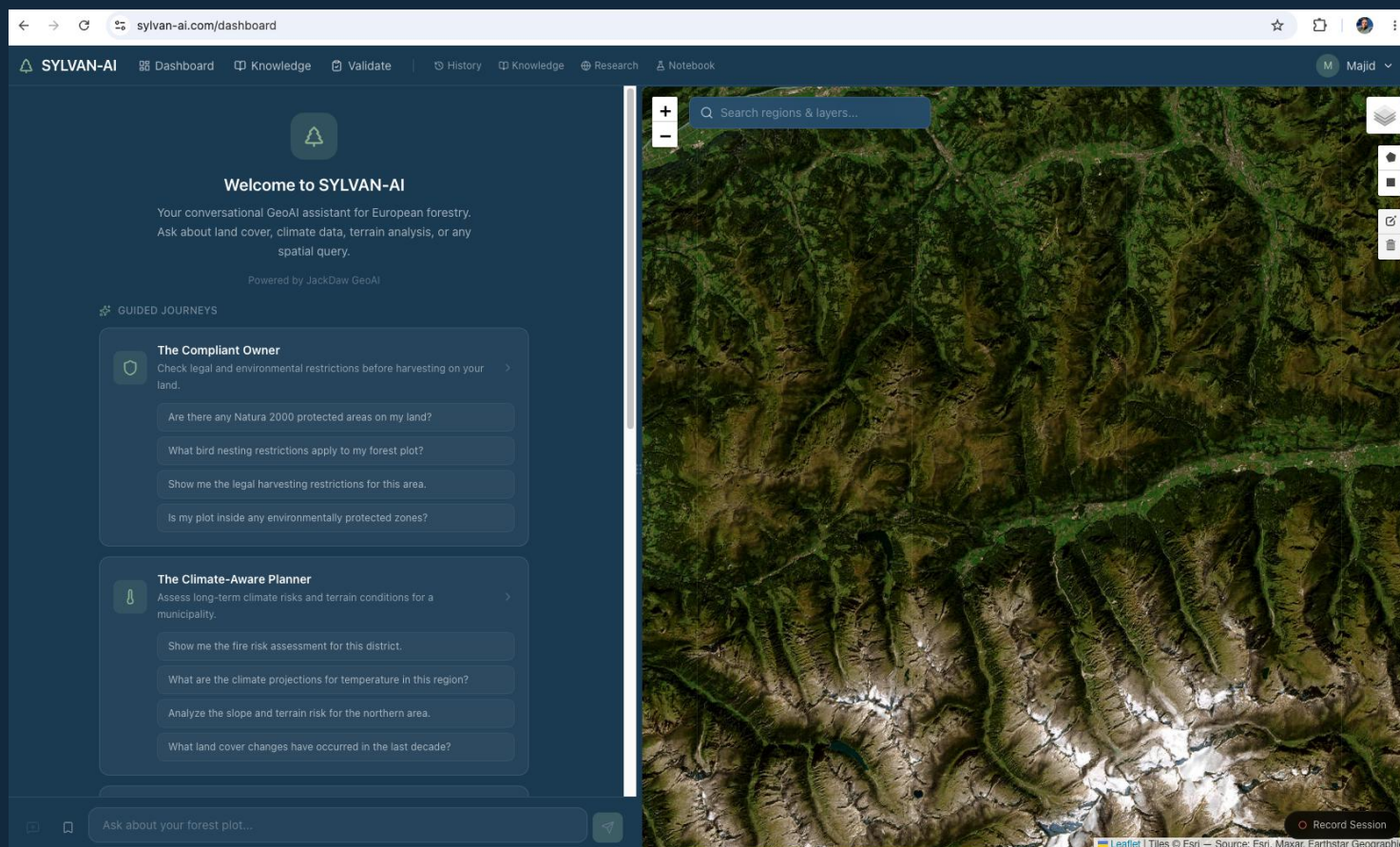


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The live platform: sylvan-ai.com

A working conversational GeoAI dashboard, secured behind PoliRuralPlus single sign-on.



Conversational chat

Plain-language queries beside the map, with History, Knowledge, Research & Notebook modes.



Interactive map

Draw a polygon or rectangle; search regions & toggle live data layers.



Secure access

Single sign-on with PoliRuralPlus accounts; PII stripped from logs.



Five guided journeys, built in

Each persona from the proposal is live in the product, with ready-made example queries.



The Compliant Owner

Check legal & environmental restrictions before harvesting.

"Are there Natura 2000 areas on my land?"



The Climate-Aware Planner

Assess long-term climate & terrain risk for a district.

"Show the fire-risk assessment here."



The Investor

Evaluate economic suitability of plots for timber.

"What soil depth & quality is in this area?"



The Conservationist

Verify protected boundaries & species safeguards.

"Which protected species are documented?"



The Carbon Estimator

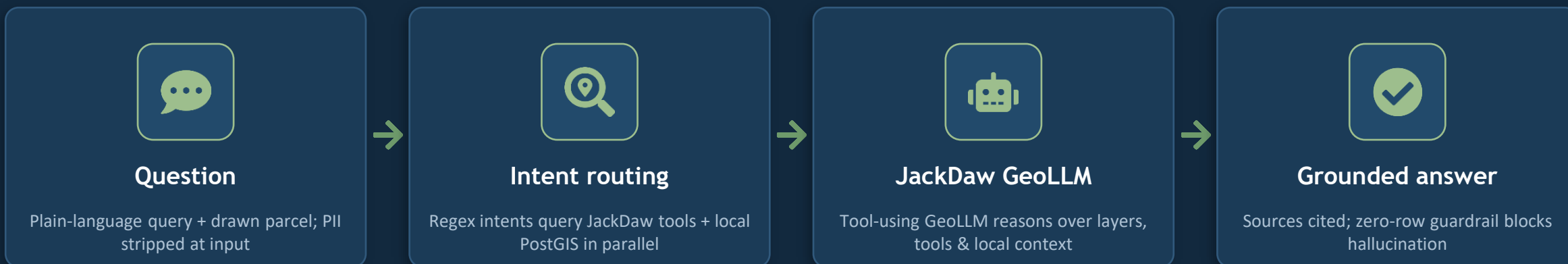
Assess forest cover, change & afforestation potential.

"What share of this area is forest cover?"

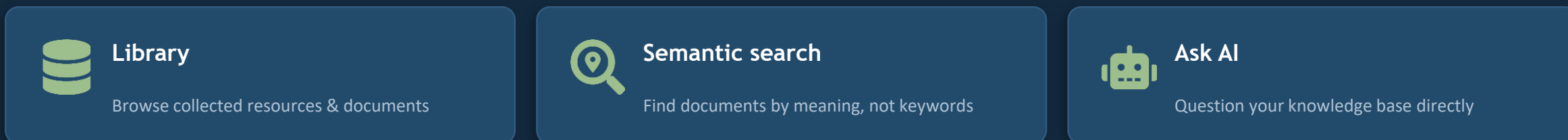


Grounded answers: GeoRAG & the Knowledge Hub

Retrieval-Augmented Generation keeps outputs tied to real, traceable geospatial data.



Knowledge Hub





Under the hood

The stack behind sylvan-ai.com — how a plain-language question becomes a grounded, traceable answer.

1

Conversational front end

Next.js 16, React 19 & TypeScript. Leaflet map with draw tools; chat streamed over SSE with a non-streaming fallback.

2

Single sign-on (SSO)

Auth.js v5 with a custom PoliRuralPlus OAuth2 provider — users sign in with their poliruralplus.eu accounts.

3

Hybrid retrieval

Intent routing sends each query to JackDaw's GeoLLM and a local PostGIS layer in parallel; NUTS3 is geocoded from the drawn parcel.

4

264 GB geodata store

PostgreSQL 16 / PostGIS 3.4: 442M parcels (27 countries), CORINE, Copernicus DEM GLO-30, SoilGrids, GFWED fire & Natura 2000.

5

Grounding & safety

Zero-row queries return a “no data here” note, not a guess; PII is stripped before inference; sources & latency streamed for traceability.

6

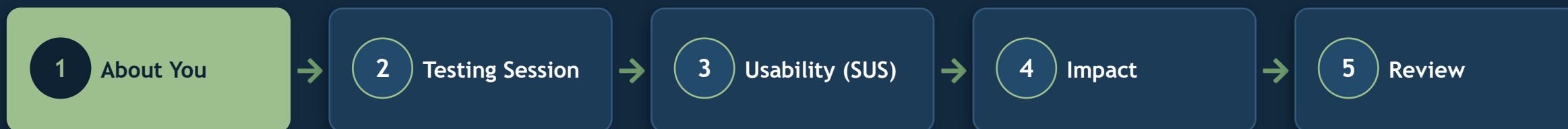
Deployment & MCP

Dockerised on Hetzner (EU) behind Nginx + Cloudflare; MCP integration lets JackDaw expose geospatial tools to the assistant.



A built-in validation framework

An in-app survey operationalises the PoliRuralPlus standardised feedback form.



Standardised form

Every participant completes the consortium's validation form, giving comparable, consistent data.



Think-aloud sessions

Facilitators record where users hesitate or get confused, surfacing the “why” behind errors.



Accuracy audit

A GIS analyst checks a random sample of logs against raw data to report a true factual-accuracy rate.



Key performance indicators

Ambitious yet realistic targets we are validating against.

80%+

Prompt success rate

correct spatial retrieval, no hallucination

> 70

SUS usability score

the threshold for “Good” usability

< 5%

Critical hallucination

answers factually opposite to the truth

50%

Time-to-insight cut

vs. traditional manual research

25+

Validation forms

across a balanced 40/40/20 stakeholder mix

500+

Professionals reached

through dissemination across the EU network



Challenges & how we manage them

An honest look at the risks — and where we'd value the consortium's input.



TECHNICAL

AI hallucination & latency

RISK

JackDaw could state incorrect spatial facts, or be slow on complex layers.

MITIGATION

Verification sandbox, cached datasets, and a strict “I don't know” fallback on low confidence.



OPERATIONAL

Stakeholder fatigue

RISK

Rural stakeholders are project-fatigued; recruitment and form completion are hard.

MITIGATION

Frame workshops as skills training (certificate); over-recruit 50%; provide a comfortable venue.



COMPLIANCE

GDPR & data privacy

RISK

Users may type personal data (names, tax IDs) into the chat.

MITIGATION

Anonymisation protocol strips PII from logs; participants briefed; reports aggregate only.



Replicability across the PoliRuralPlus ecosystem

Standard EU datasets make the workflow transferable, let's connect it to other pilots.



Built on standard EU data

Our grounding layer already spans the Union — 442M cadastral parcels across 27 countries, plus Natura 2000, CORINE & Copernicus — so proving the workflow once means it can be replicated in any member state.

- ✓ **Cadastre** — 442M parcels, 27 countries
- ✓ **Natura 2000** — protected areas
- ✓ **Copernicus** — land monitoring



Vidzeme, Latvia

A “Roadmap for Vidzeme” adapts our query templates to Latvian bioeconomy & forest planning.



Central Greece

Our risk-assessment workflows support fire-safety planning for the agritourism pilot.



How we'd like to collaborate

Connect us with pilot data owners, share JackDaw MCP-server roadmaps, and co-define reference use cases we can validate together.



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THANK YOU

Let's shape conversational GeoAI for rural Europe, together.

We welcome your feedback, questions, and ideas for collaboration during today's session.



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