OpenGryd

Sovereign, Efficient, and Decentralized AI Infrastructure for Europe's Digital Future

AI INFRASTRUCTURE | SUSTAINABILITY | DIGITAL SOVEREIGNTY

Europe's Data Center Energy Crisis Is Accelerating

The digitalization of Europe is driving an unprecedented surge in energy demand. EU data centers are projected to consume **150% more energy by 2035** compared to 2025 — a trajectory that puts immense pressure on both energy grids and sustainability commitments.

Meanwhile, the competitive landscape is deeply skewed: US hyperscalers — Google Cloud, AWS, and Microsoft Azure — command **80% of all cloud computing capacity**, while European cloud providers remain marginalized at a mere **15% global market share**, with little sign of meaningful growth.

Key Figures

150%

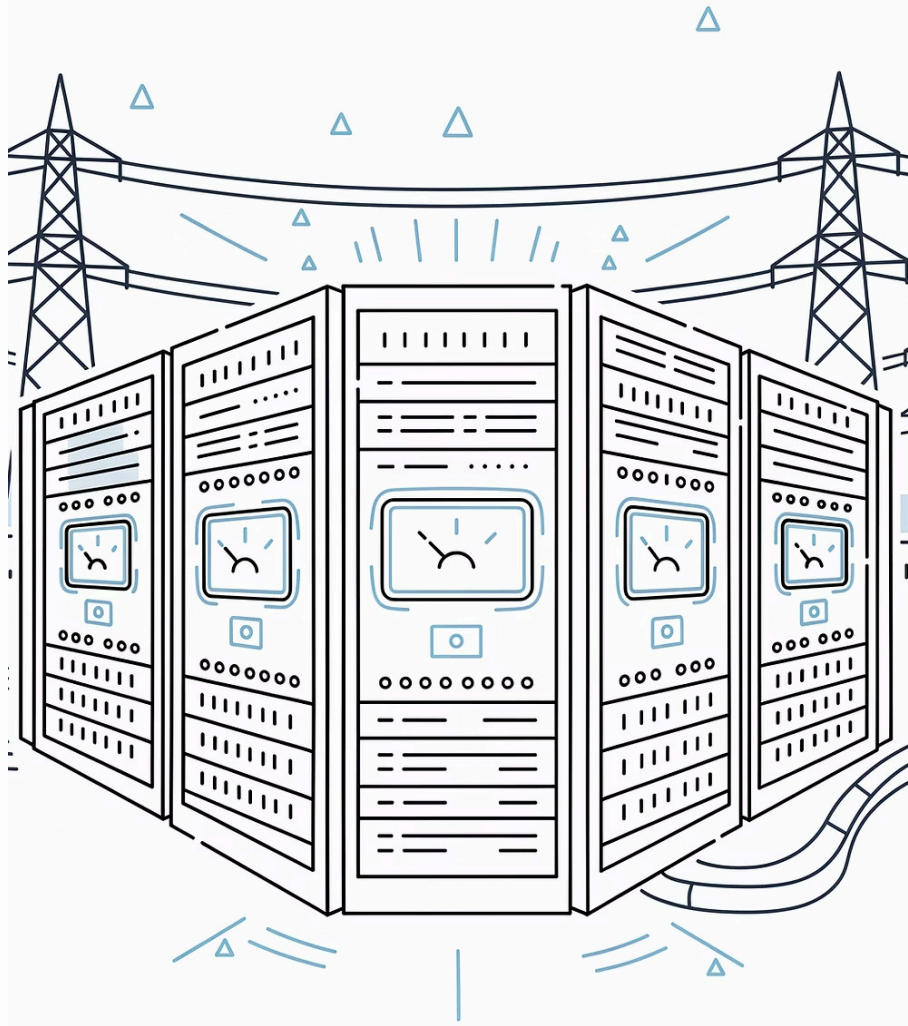
Projected rise in EU data center energy use by 2035

80%

Cloud market share held by US hyperscalers

5%

of the world's AI compute capacity

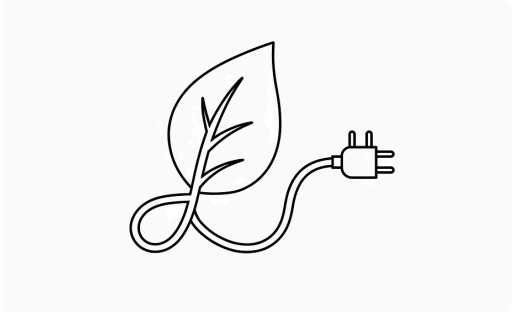


The EU AI Act Sets a New Compliance Baseline

The EU AI Act, the world's first comprehensive legal framework for artificial intelligence, establishes binding obligations across four critical dimensions.

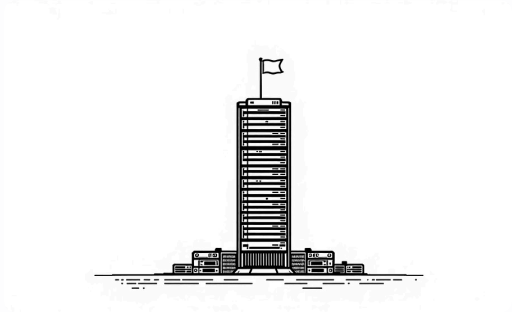
Safety First

High-risk AI systems must meet stringent conformity and risk management requirements before market entry.



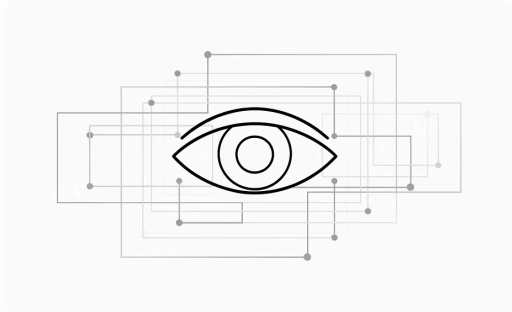
Green AI

AI systems must disclose energy consumption and environmental impact, making sustainable infrastructure a legal obligation.



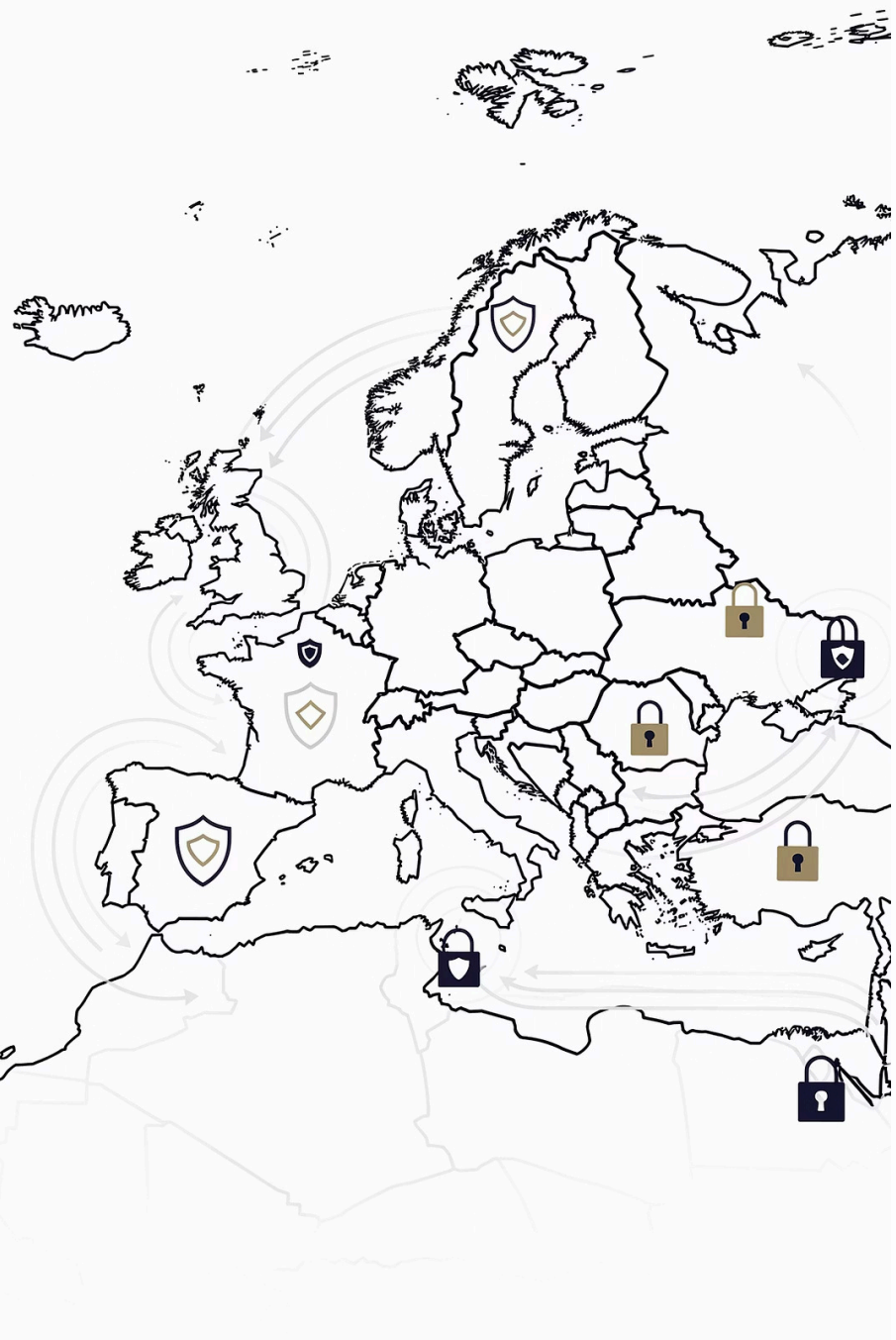
Sovereignty & Compute

The Act highlights Europe's compute deficit, where dependence on non-EU infrastructure for critical AI poses strategic risks.



Transparency

Organizations must ensure explainability, auditability, and traceability of AI decisions, requiring infrastructure that supports full model visibility.



CHAPTER 2 — STATUS QUO & CHALLENGES

Sovereignty: Europe's Most Urgent AI Vulnerability

1 Copyright, IP & GDPR Exposure

Processing European citizen and enterprise data on US-based cloud infrastructure creates persistent compliance risks under GDPR and evolving IP frameworks.

2 GPU & VRAM Bottleneck

Europe's compute deficit is structural. Access to high-performance GPUs and VRAM is constrained by supply chains and export controls dominated by non-EU actors.

3 Technology & Talent Drain

Leading AI researchers and engineers continue to migrate toward US hyperscaler ecosystems, eroding Europe's innovation capacity and deepening dependency.

Open Source AI Is Closing the Gap with Proprietary Models

The software layer of AI is undergoing a fundamental democratization. Open-weight models — once far behind proprietary alternatives — are now reaching near-parity performance on a wide range of enterprise tasks, with the critical advantage of full transparency and local deployability.

This shift unlocks a new generation of AI architecture: **Agentic AI** — autonomous, multi-step reasoning systems — combined with advanced **quantization techniques** that compress model size without sacrificing meaningful accuracy, enabling powerful inference on commodity hardware.

Open Weights

Capable open-weight models (e.g., LLaMA, Mistral, Gemma) are now enterprise-ready and fully auditable.

Open Source Software

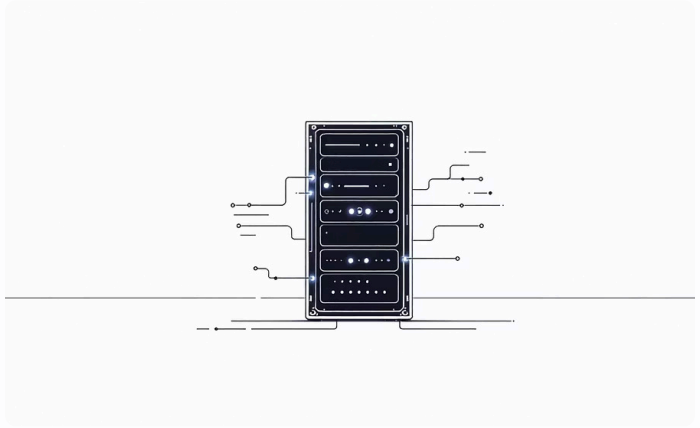
A rich ecosystem of inference runtimes, orchestration tools, and vector databases accelerates local AI deployment.

Agentic AI & Quantization

Agentic architectures combined with dynamic quantization deliver high-performance reasoning on efficient, local hardware.

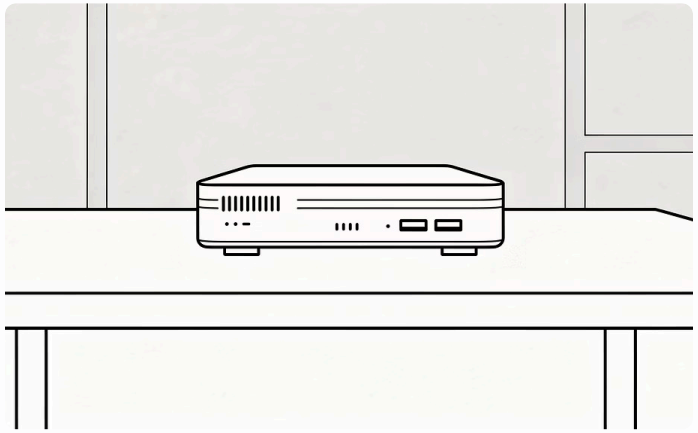
Infrastructure Is Shifting: Edge AI Changes the Equation

A structural market shift is underway, as enterprises move towards local, high-performance Edge AI hardware driven by cost, compliance, and capability.



On-Prem & Edge AI

Local hardware deployment eliminates cloud latency, reduces data exposure, and keeps sensitive workloads within organizational control.

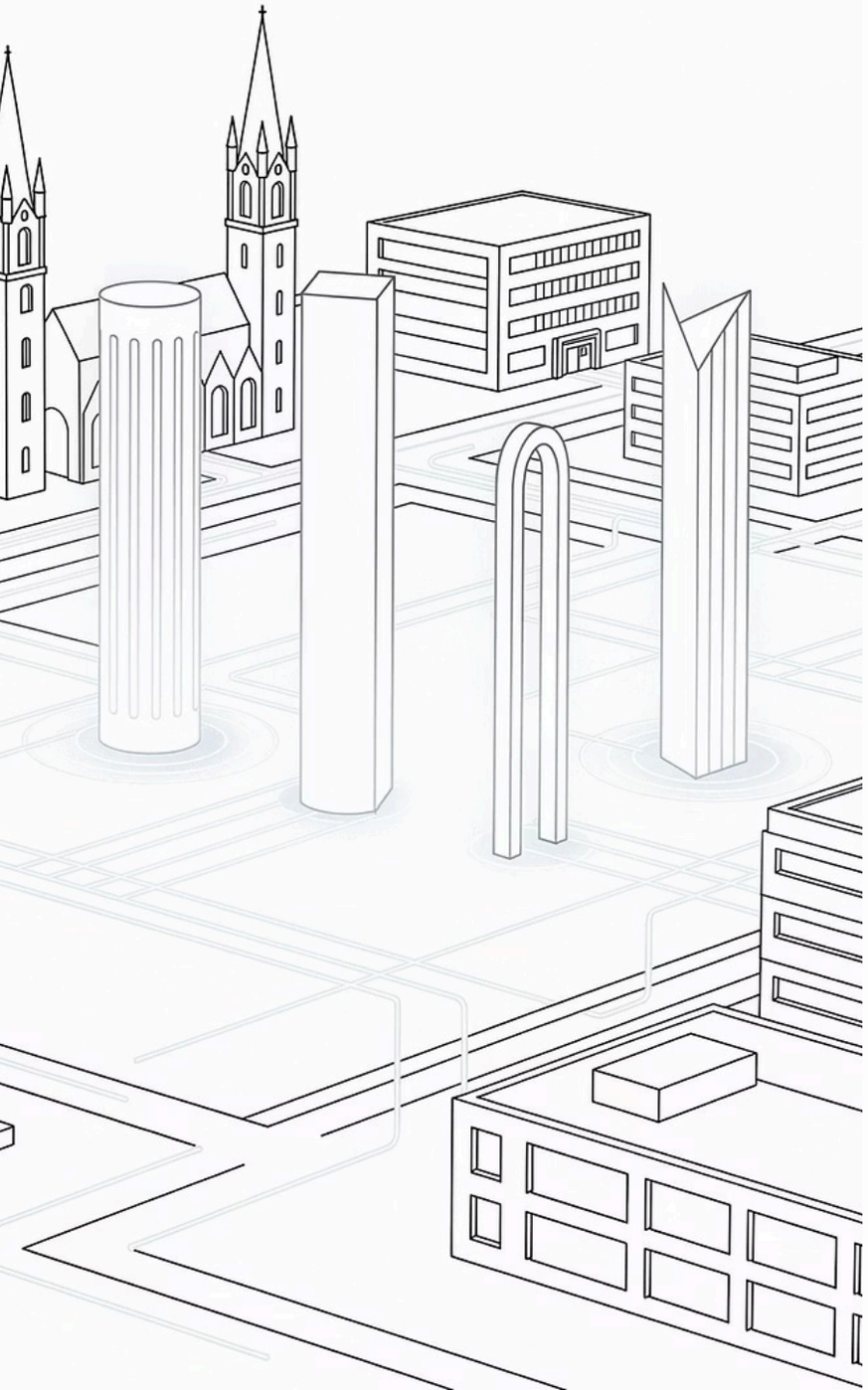


Minimal Infrastructure Footprint

Modern AI servers boast small physical and energy footprints, enabling viable deployment for SMEs, municipalities, and research institutions without a dedicated data center.

High-Performance for the Masses

Platforms like Apple Silicon and Nvidia DGX deliver data center-class AI performance at a fraction of the cost, democratizing access to powerful compute.



Our Mission: The Four Pillars of Responsible AI Infrastructure

OpenGryd believes high-performance AI and responsible deployment are complementary, shaping every product and partnership decision.

Economical

Accessible AI pricing for all, enabling enterprise-grade solutions without hyperscaler lock-in.

Efficient

Our stack maximizes performance per watt, optimizing for high AI throughput with minimal energy consumption.

Ecological

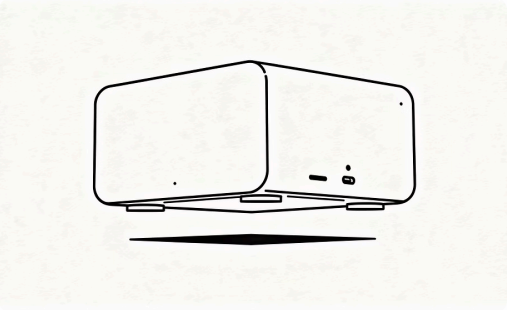
With recyclable hardware and energy-efficient deployment, OpenGryd provides a truly sustainable AI infrastructure.

Sovereign

Ensuring full data sovereignty and GDPR compliance, OpenGryd infrastructure keeps your data on-premises and independent.

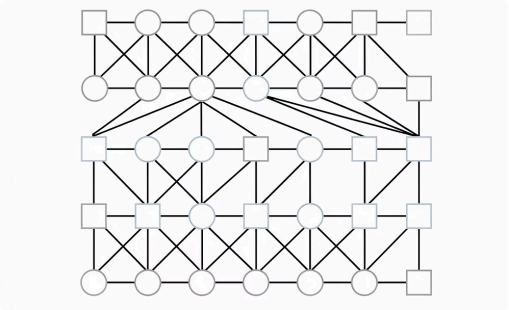
A Full-Stack AI Platform — From Silicon to Interface

OpenGryd delivers an integrated, end-to-end AI infrastructure stack designed for rapid, sovereign AI deployment without specialist cloud expertise.



Hardware

Leveraging **Apple Mac Studio** with Unified Memory Architecture (UMA/DMA), our hardware enables large model loading and exceptional performance-per-watt for high-performance edge computing.

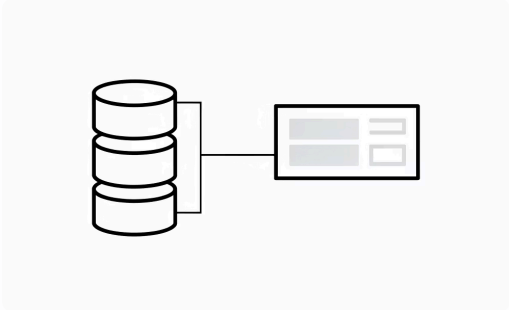


AI Layer

Our AI layer supports GPU frameworks like CUDA and Metal, LLM runtimes (GGUF, MLX), **Dynamic Quantization**, and advanced tuning techniques (LoRA/QLoRA, MoE) for flexible, scalable inference.

Software

Featuring Chat interfaces (OpenWebUI), **Vector Databases**, embedding models, and OCR pipelines, our software integrates Model Context Protocol (MCP) for on-premises deployment with full data sovereignty.



Infrastructure

This layer provides containerized deployment (Docker), distributed scaling (EXO), observability dashboards, and web proxy layers for enterprise-grade operational management and monitoring.

Background & Experience

Ioannis Dikeoulias

Founder & CEO, OpenGryd

M.Sc. Computer Science,
Universität des Saarlandes

Background:

- Founder & CEO at seatbase Technologies GmbH
- CTO at Plastle GmbH
- Head of IT at Godiplast GmbH
- IT Consulting (Freelancer)

Research Background

→ At the **Max Planck Institute (MPI)**, Ioannis conducted foundational work in large-scale knowledge graphs and information retrieval under Dr. Weikum's Distributed Information Systems group.

→ At **CISPA Helmholtz Center**, his applied security research with Dr. Krombholz in the field of Usable Security.

→ **DFKI** research in Natural Language Processing (Dr. Neumann / Dr. van Genabith) and Time-Aware Knowledge Graph Embeddings

Live Pilot Projects: Real-World Validation Across Sectors

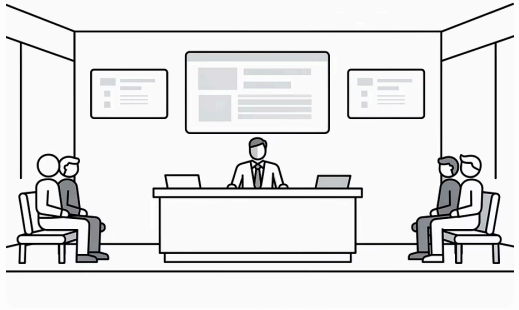
OpenGryd is already operational across five pilot deployments spanning regulated industries, public sector, and deep-tech science. Each pilot validates a distinct use case — from document intelligence to sovereign knowledge management.

Laboratory — Norm Sheet Intelligence

Automated changelog generation for regulatory norm sheets reduces manual review time.

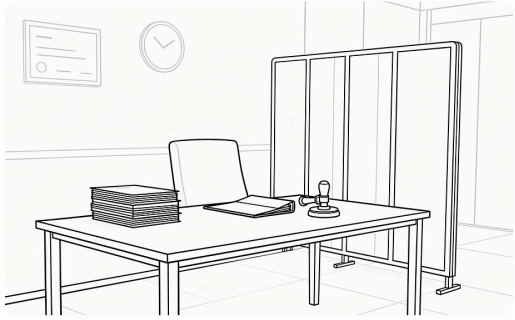
DeepTech Biotech — Private AI Chat

A fully air-gapped AI assistant for sensitive R&D conversations, ensuring zero data exposure.



Saarland Municipalities — RAG

Retrieval-Augmented Generation enables local government staff to query large internal document repositories.



Legal Notary — Document Creation & PII

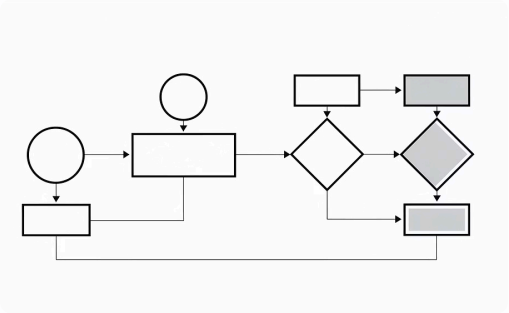
AI-assisted legal document drafting with automatic PII detection and redaction, compliant with GDPR.

Four Core Use Cases — From Chat to Full Process Automation

OpenGryd's platform addresses high-value enterprise AI use cases requiring privacy, accuracy, and seamless integration, all without data leaving the client's infrastructure.

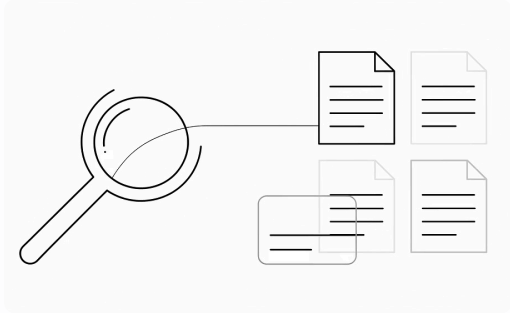
OCR & Document Processing

Intelligent extraction from scanned documents, PDFs, and images using Vision Language Models provides structured output for automation or compliance workflows.



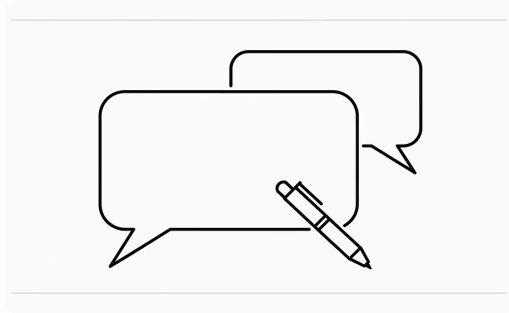
Process & Workflow Automation

Agentic AI orchestrates multi-step business processes, from data extraction to decision routing, reducing manual effort and accelerating throughput.



RAG Search & Internal Knowledge Base

Retrieval-Augmented Generation (RAG) enables staff to query internal documentation with natural language, delivering precise, cited answers in seconds.



Chat, Assistants & Copy-Writing

Sovereign AI chat interfaces and writing assistants are tailored to organizational tone and policies, ensuring no data reaches foreign clouds.

CONCLUSION

Demo + Q&A

Thank you for your time and attention; we are excited to demonstrate OpenGryd and answer your questions.

Pilot Partners

Join our growing network of pilot deployments across regulated industries.

Strategic Investors

Help scale sovereign AI infrastructure across Europe.

Policy Collaborators

Shape the regulatory framework for responsible AI deployment.