INNOVATION INTELLIGENCE SUITE

This project explores how AI/ML can
accelerate insight generation for R&D teams

Developed as a Data Science + AI Bootcamp capstone project (2025)

SPICED

PROBLEM

Consulting R&D teams rely heavily on manual work to track trends, technologies, and startups and link them to client needs.

AI tools can reduce research time by ~30%,
but only ~10% deliver real business value.

*Boston Consulting Group: The Widening AI Value Gap. Build for the Future 2025

PERSONA NARRATIVE

- Innovation Strategy Consultant (Automotive)
- Works with advising automotive clients on problems and opportunities for innovation
- Needs faster, automated intelligence to turn complex signals into actionable recommendations

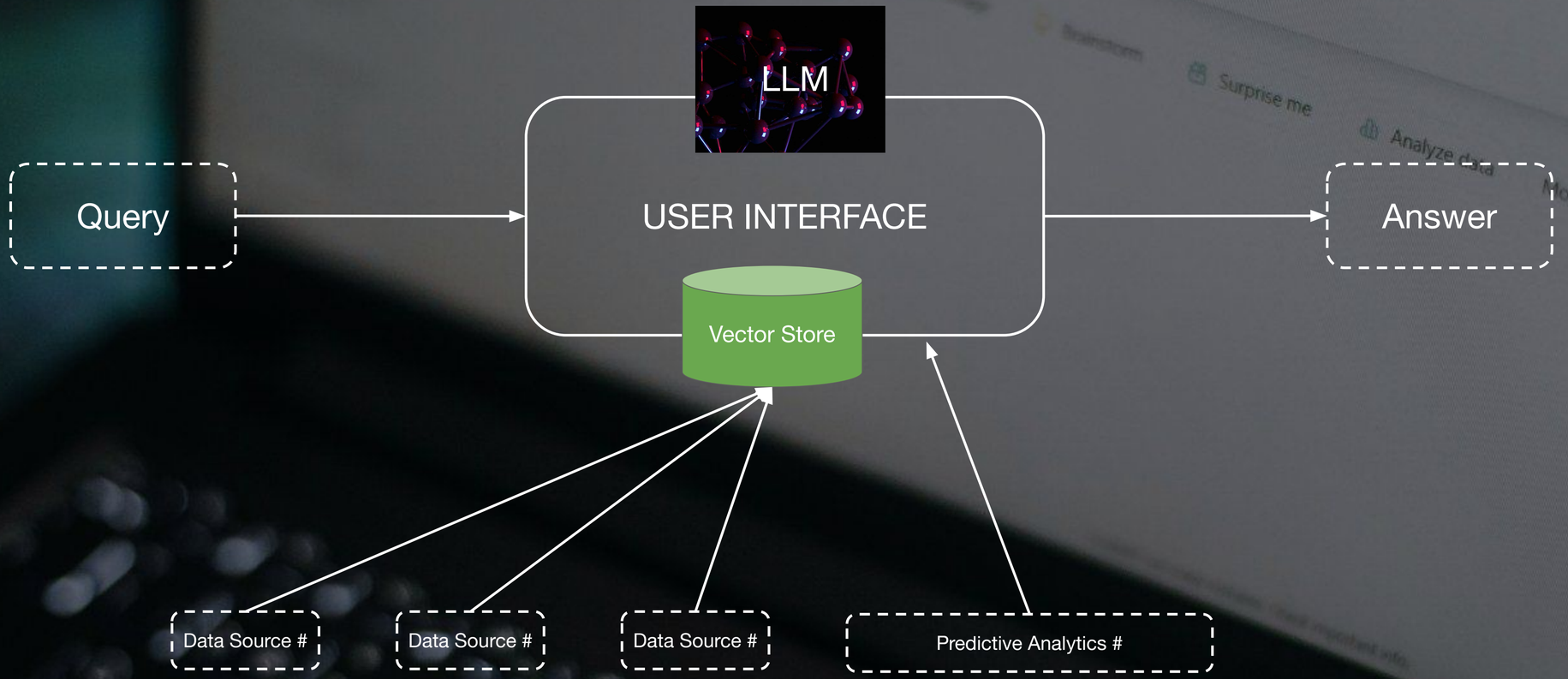
SOLUTION

We built an Innovation Intelligence Suite MVP that combines intelligent Retrieval-Augmented Generation (RAG) with tech maturity prediction to help R&D teams identify what's next in automotive tech (B2B2C) - **faster and with greater precision.**

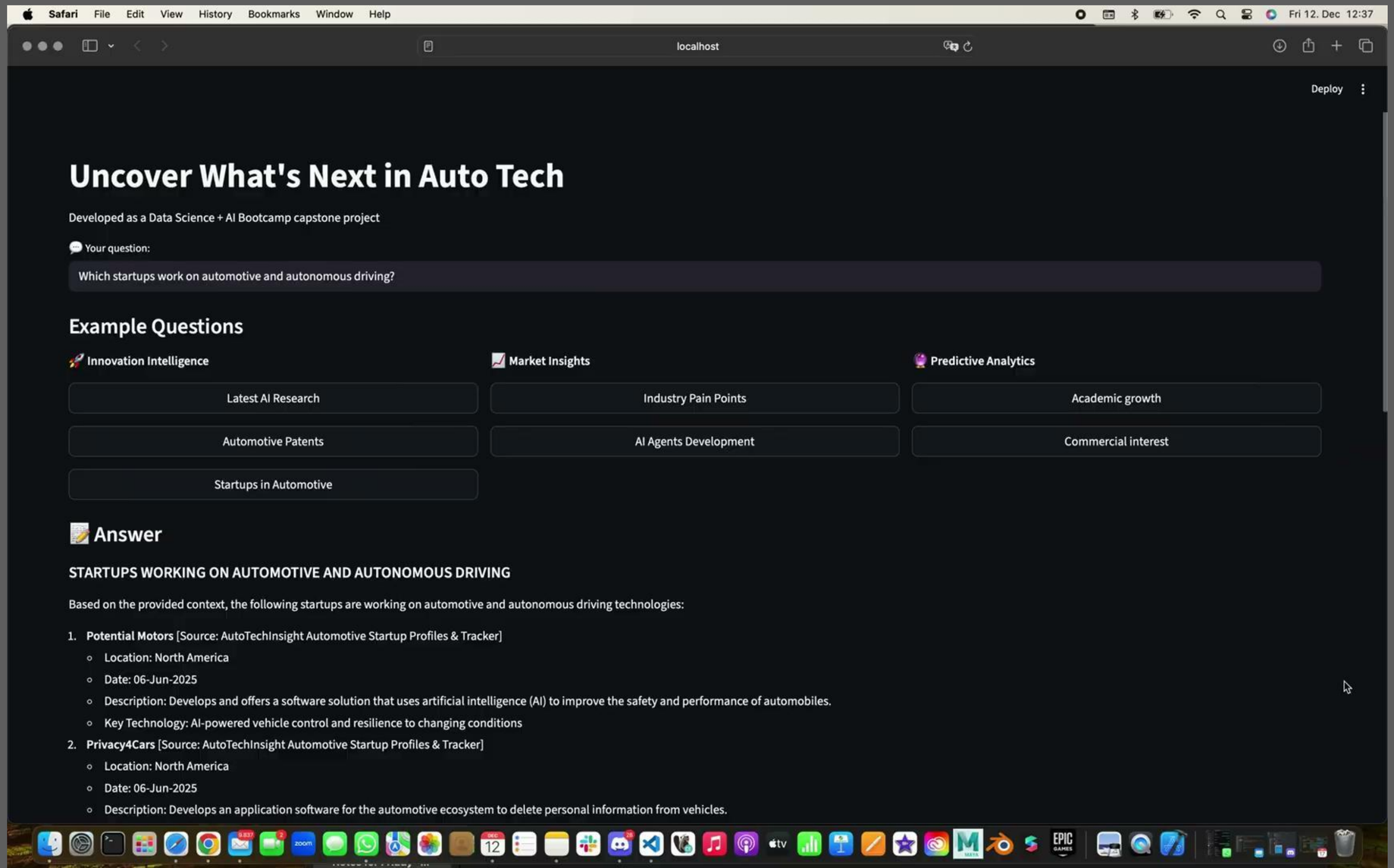
SOLUTION FEATURES

- **Intelligent query processing** that classifies and routes requests to appropriate modules
- **Multi-source synthesis:** Query and summarize automotive technology documents (18,000+ chunks)
- **Domain insight retrieval:** Get insights on specific innovation topics from research papers, tech reports, startups and patent data (2025)
- **Transparent attribution:** Source citation with relevance scoring
- **Template-based generation:** Structured answer generation with full transparency
- **Predictive analysis:** Topic modeling and trend forecasting based on academic and commercial interest (25,000+ research papers and patents, Fraunhofer ISI-inspired)

SOLUTION ARCHITECTURE



SOLUTION DEMO



Find me on
Github.com

SOURCES + KEY INSIGHTS

RAG sources (18.000+ chunks):

- Patents/papers: Lens.org (24k+ documents)
- Reports: WEF, BCG, McKinsey (2025)
- Startups: S&P Global, Seedtable LLC

Predictive model dataset

- 15.861 papers + 8.419 patents (2015-2025): Lens.org
- Focus: tech x automotive innovation

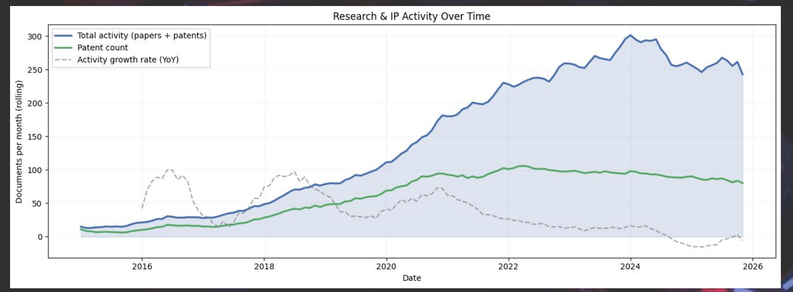
Temporal patterns:

2015-2021 - Rapid growth phase

- Low publication/patent barriers
- High momentum fluctuations

2021-2025 - Maturation phase

- Slower papers (system validation)
- Selective patents (safety cycles)
- Insight: Saturation, not hype



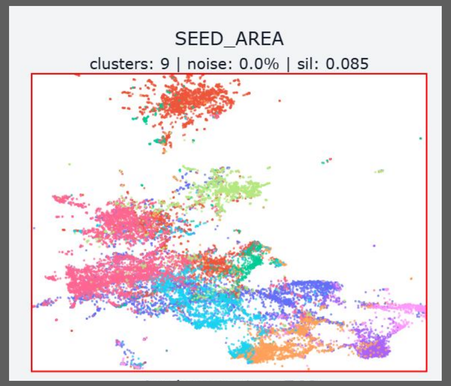
MODELING DECISIONS + RESULTS

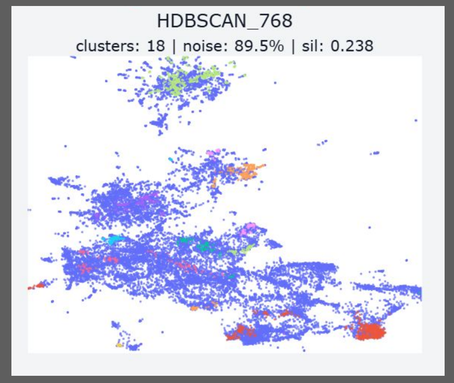
RAG optimization:

- TF-IDF -> FAISS + Sentence Transformers
- all-MiniLM-L6-v2 embeddings
- Result: Relevance score >0.5 (vs. <0.5 before)

Predictive model:

- Seed-guided clustering (vs. HBDSCAN)
- Maintained temporal consistency
- Cosine analysis: Single-peak = no natural breaks





Outcomes:

RAG Pipeline:

- Fast response + relevant answers
- Source attribution with scores

Predictive Model:

- Domain-validated clusters
- Interpretable time trends

WHAT’S NEXT

Business Evolution:

- Product-market fit via R&D focus groups
- Automotive specialization as competitive edge
- Domain specific impact metrics

Technical Advance:

- Specialised LLMs for automotive reasoning
- Multi-modal retrieval & strategic reasoning
- AI agents for strategic workflows (Q&A to tasks)
- Ethics by design

Domain expertise + Value mapping = Scalable AI impact

Addressing where +70% of AI projects fail to scale (McKinsey 2025)

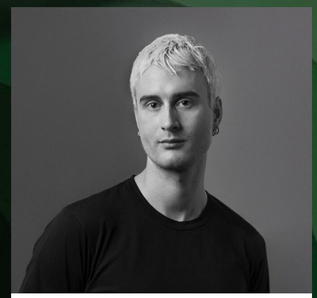
CONNECT WITH THE TEAM

Siri Rääf

Background: Accounting & Business Analytics

Mert Asaroglu

Background: Vehicle Development Engineering + Trend & Innovation Research



Timo Wolf

Background: Innovations & Product Development + HR