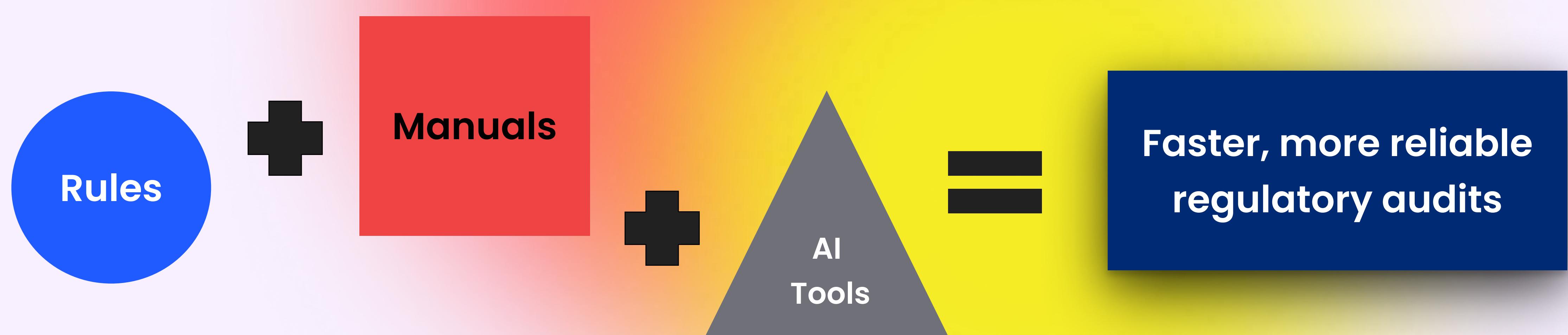


Regulatory Maze AI

AI-powered compliance insights for aviation maintenance



Challenge: AI Audit Aid (AAA) by TRAFICOM

Liikenne- ja viestintävirasto

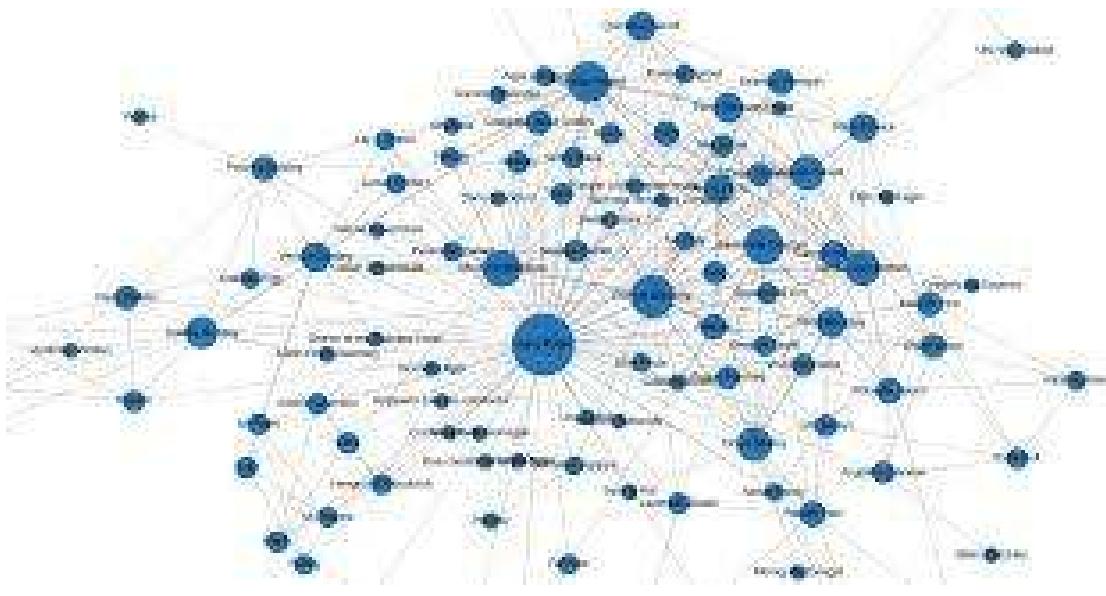
*Use AI to quickly audit maintenance handbooks for
EU1321/2014 Part-145 compliance.*

The Problem

- Auditors process huge, dense manuals → cognitive overload
- Manual cross-checking is slow and error-prone
- Regulations are fragmented and complex

??? Hackathon driver ??? **Can we show AI can handle a realistic regulatory manual and output meaningful findings within minutes?**

SOLUTION



- AI + Knowledge Graph to process a handbook
- Detect gaps, deviations, and non-conformities
- Generate explainable findings for auditors

HOW IT WORKS

1
Build Regulation Oriented Graph - ROG

2
Upload handbook

3
Embeddings

4
Clause matching & reasoning

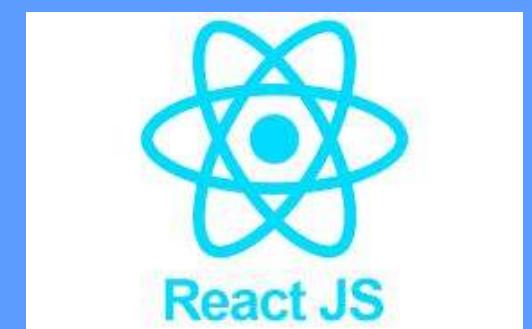
MVP scope:

- Handle 114 pages of Part-145 requirements
- Output findings in <10 minutes

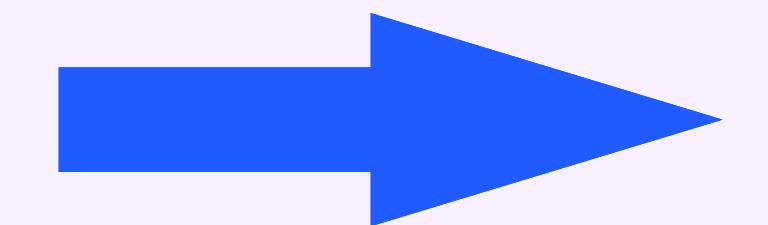
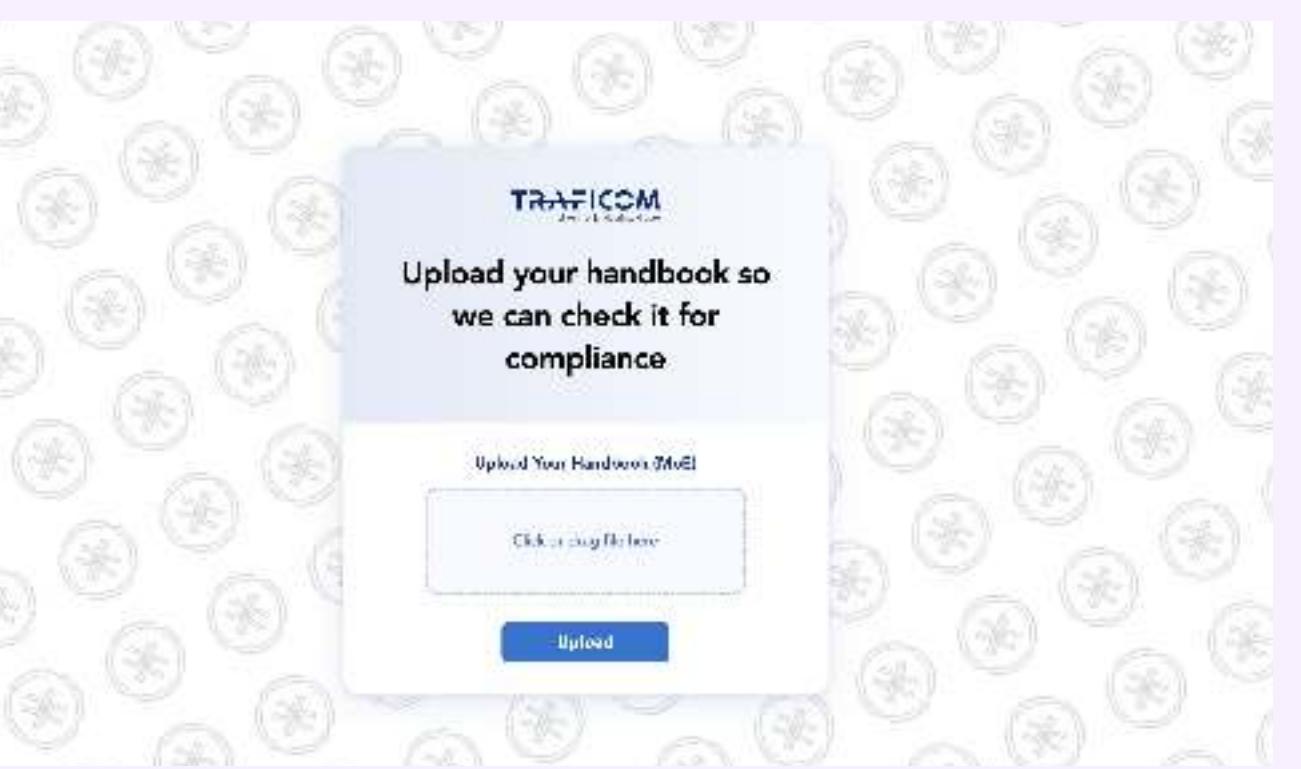
Results / MVP Demo

- 14 pages → 30 findings in 10 minutes
- Findings are actionable and explained
- Knowledge graph allows tracing reasoning for each flag
- UI is interactive and easy to explore

We used



User flow



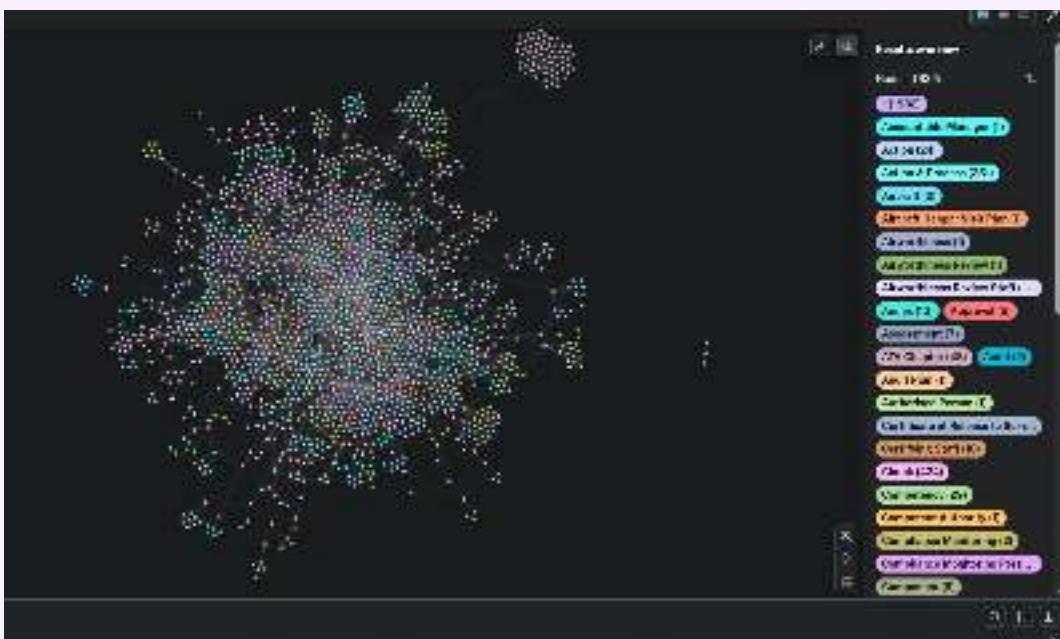
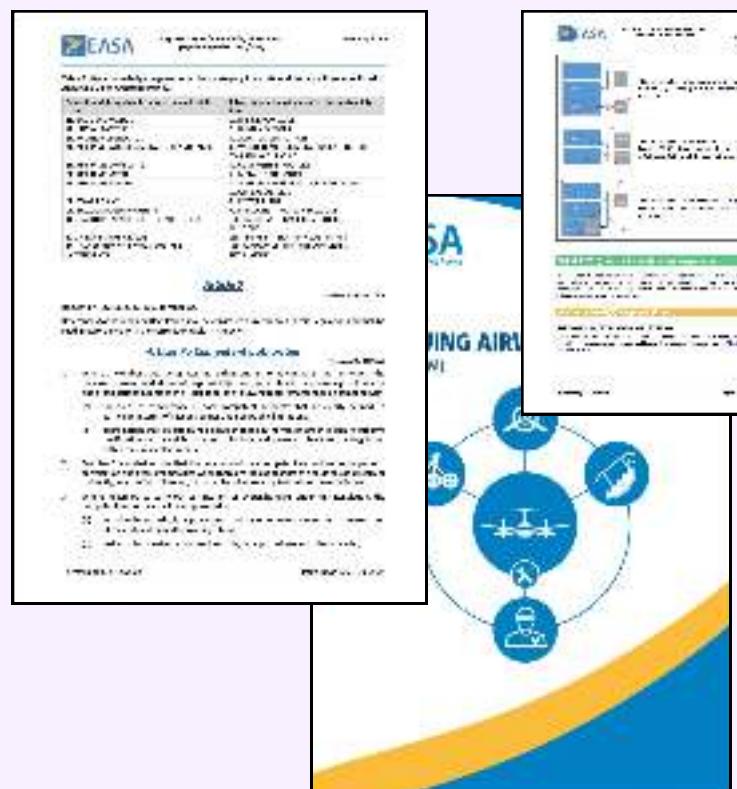
<10 minutes

A screenshot of a software interface titled "Findings" and "Handbook". The "Findings" section displays a list of items with small icons and descriptions. The "Handbook" section shows a detailed document with sections like "1. General Maintenance" containing several bullet points. A "Show All in Report" button is at the bottom.

Upload a handbook

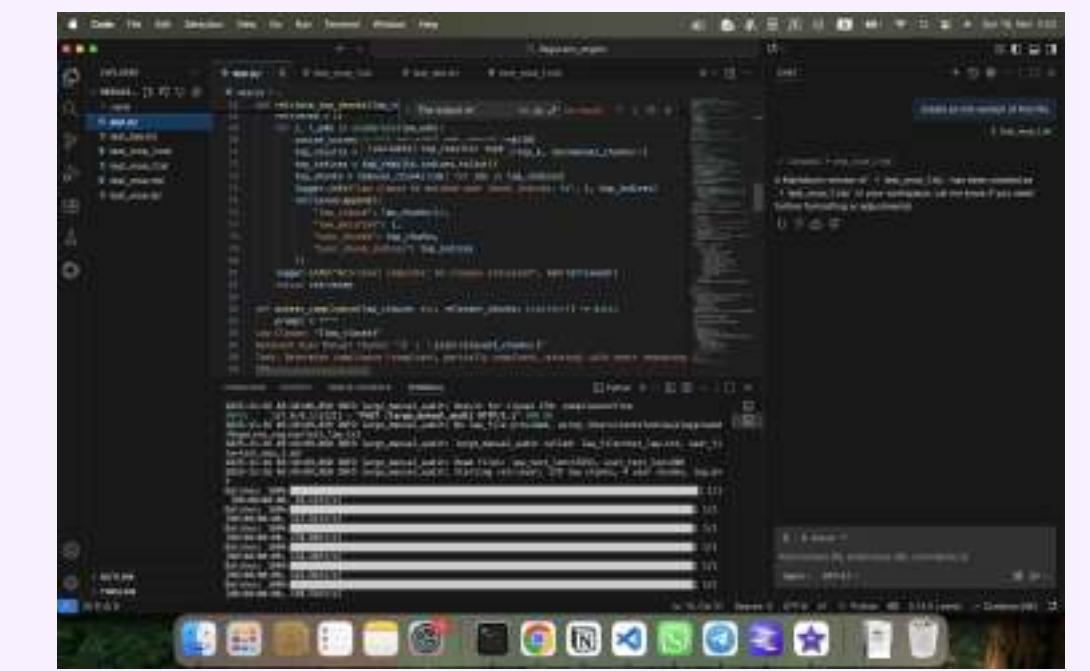
Work with findings

Inside the AI Pipeline

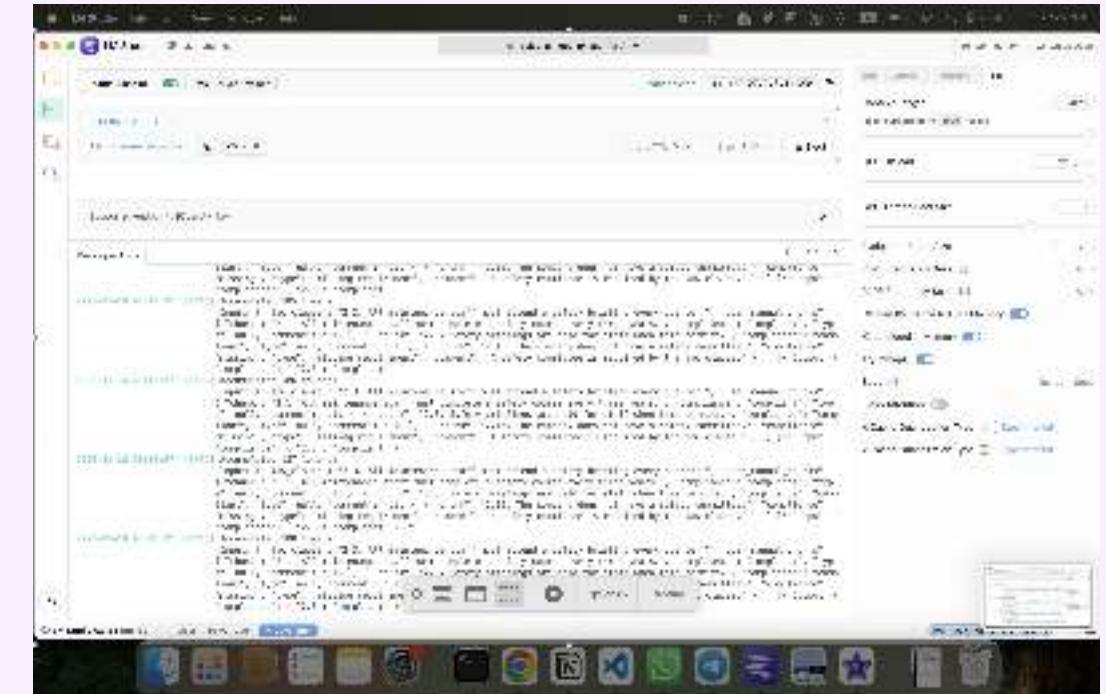


ANNEX II (PART-145)
Rules to check

Regulation Oriented Graph
LLM Graph Builder by Neo4J



Match related rules using
embeddings + cosine
similarity



Manuals and
Rules comparison
LM Studio + llama-2-7b-chat

Key Takeaways

- AI can tackle real regulatory complexity !!!
- Regulatory Oriented Knowledge Graph + AI = actionable compliance insights

Next Steps

- Enhance knowledge graph reasoning
- Enhance AI pipeline for fast, cloud-ready production use
- Expand to other regulated industries: maritime, financial sector

Team

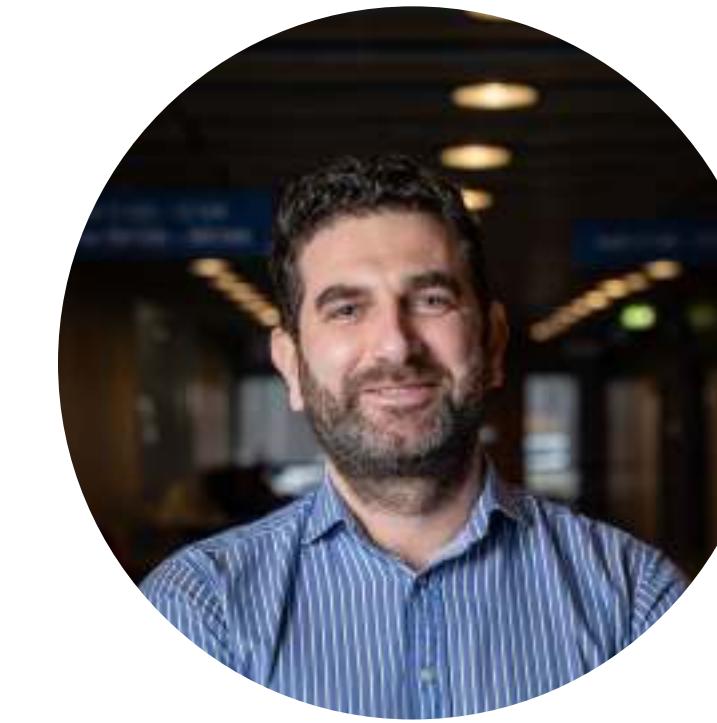


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