IBM **TechXchange** 2025

AI in high-trust engineering domains

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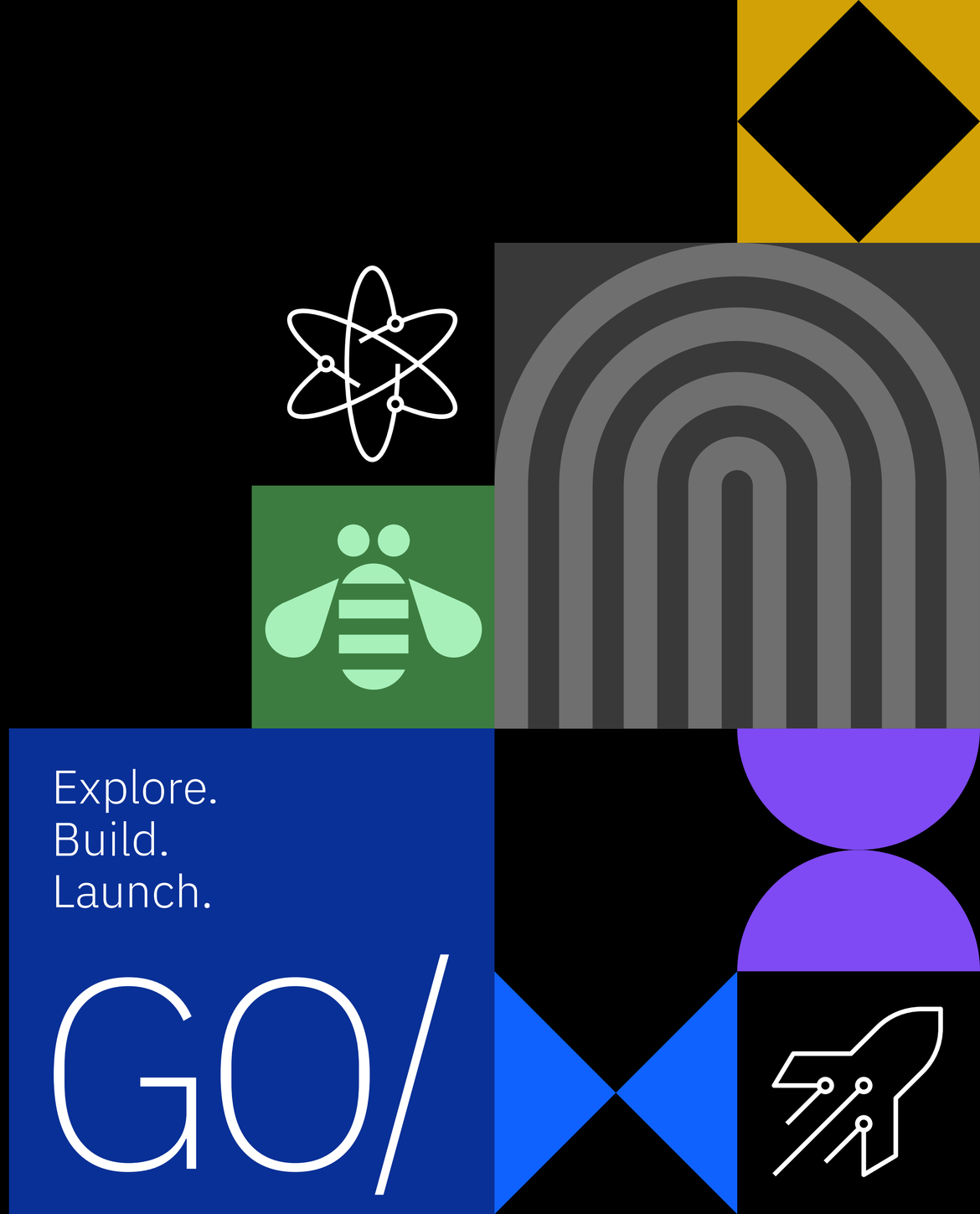


In use cases beyond software development, using AI agents for task-level automations is a promising paradigm for increasing the accuracy, relevancy, and usefulness of Generative AI in these domains.

Agents are the foundation of the newest tool in the IBM Engineering Lifecycle Management product set.

This session will provide a short introduction to this new offering.

Event signup: https://www.ibm.com/events/reg/flow/ibm/f4da3umb/landing/page/landing

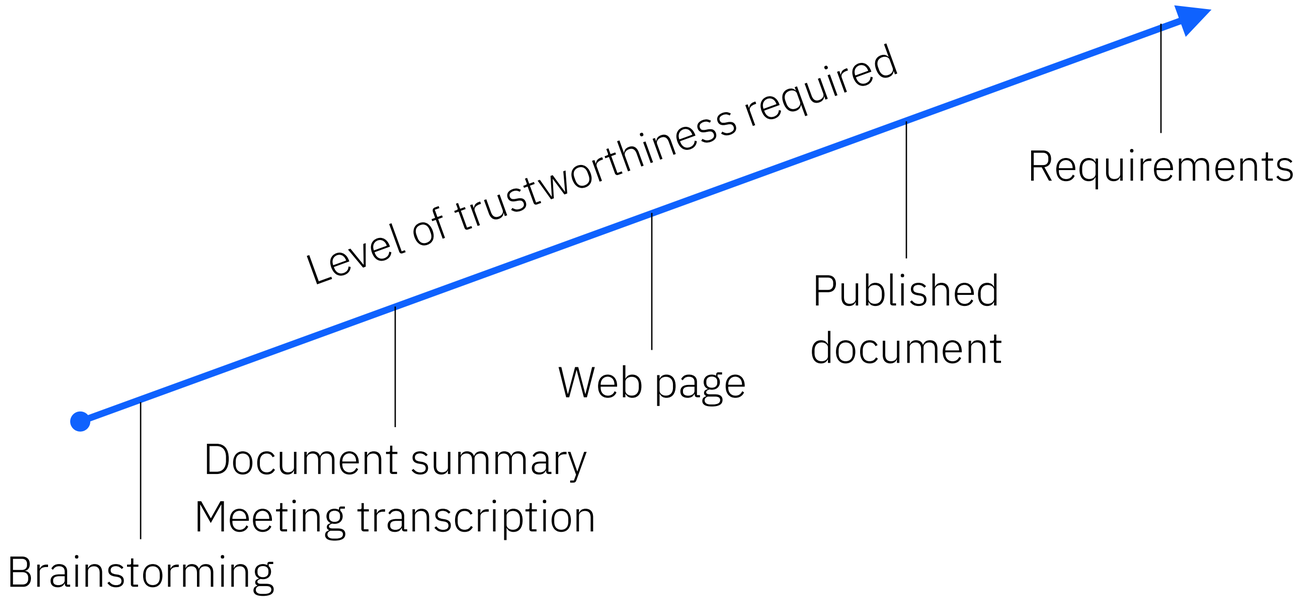
AI-augmented engineering teams will innovate faster.

Following Google Maps directions in rural Tasmania and encountered this sign.

Source: @MikeElgan@mastodon.social

How can we apply imperfect tools in domains where correctness is essential?

Trustworthiness is on the spectrum



Risks and Challenges

Engineering

Accuracy with tolerances

Safety

Professional obligations

Deep domain Expertise

GenAI

Probabilistic

Black box

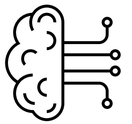
Bullshitter

Limited domain understanding [1]

[1]Humans tend to project reasoning skills on to GenAI models that exceed their true capabilities

"STOP ANTHROPOMORPHIZING INTERMEDIATE TOKENS AS REASONING/THINKING TRACES!", Subbarao Kambhampati et al., Arizona State University, May 2025 https://arxiv.org/pdf/2504.09762

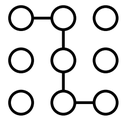
Agent-based systems



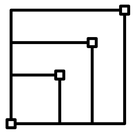
AI-driven (LLM)

Task-specific

Accurate



Composable



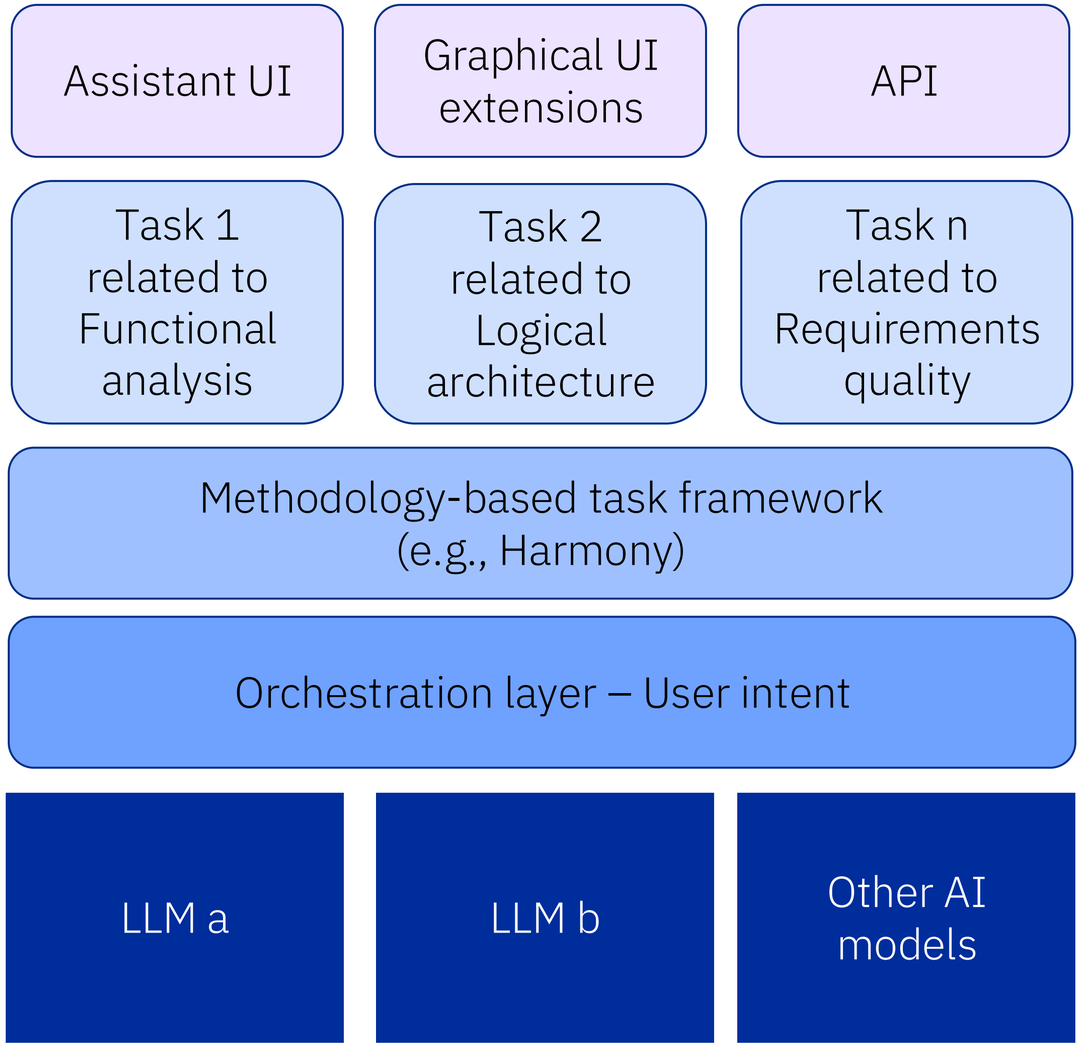
Extensible

Human-centric

Get in the right mindset: An agentic approach

Agent framework: dedicated agents plugged in to solve complex engineering problems

- Users interact with agents
- Agents decompose problems
- Agents implement known methodologies
- Agents interact with LLMs
- Agents connect to tools and data (APIs)
- Agents can be orchestrated together



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Engineering efficiencies through AI-assisted automations

IBM Engineering AI Hub 1.0

IBM Engineering AI Hub is a set of AI agents designed to help automate repetitive, time-consuming engineering tasks, freeing engineers to focus more on creative works, solving problems, and delivering complex, mission-critical, secure systems and software with speed.

Task-level automations

Designed to automate tasks so your team can focus more on high-value work.

Data-informed responses

Outputs grounded in your engineering data.

Human-centered validation

AI recommends. You review and confirm. You're in the driver's seat.

Enterprise ready

Designed to grow with your needs across engineering disciplines and use cases.

IBM Engineering AI Hub is an add-on to IBM Engineering Lifecycle Management with agents that address these use cases:

01 Requirement quality analysis

Analyzes requirements against industry standards to generate quality scores with detailed feedback, with recommendations for wording enhancements that raise requirement quality.

This helps engineers to build stronger requirements, teams to accelerate reviews, and managers to gain visibility into quality trends to identify risks early.

02 Engineering Assistant

Provides a natural language interface to requirements designed for conversational queries, topic-based searches, summaries, and translations.

This helps engineers access information faster, teams collaborate more effectively across global projects, and managers see improved alignment and reduced misinterpretation.

03 Work Item synopsis

Generates concise synopses of complex, long-running tasks, defects, and features, including key context, progress, and risks.

This allows engineers save time ramping up as they switch contexts, teams communicate more effectively, and managers gain clearer visibility into ongoing work.

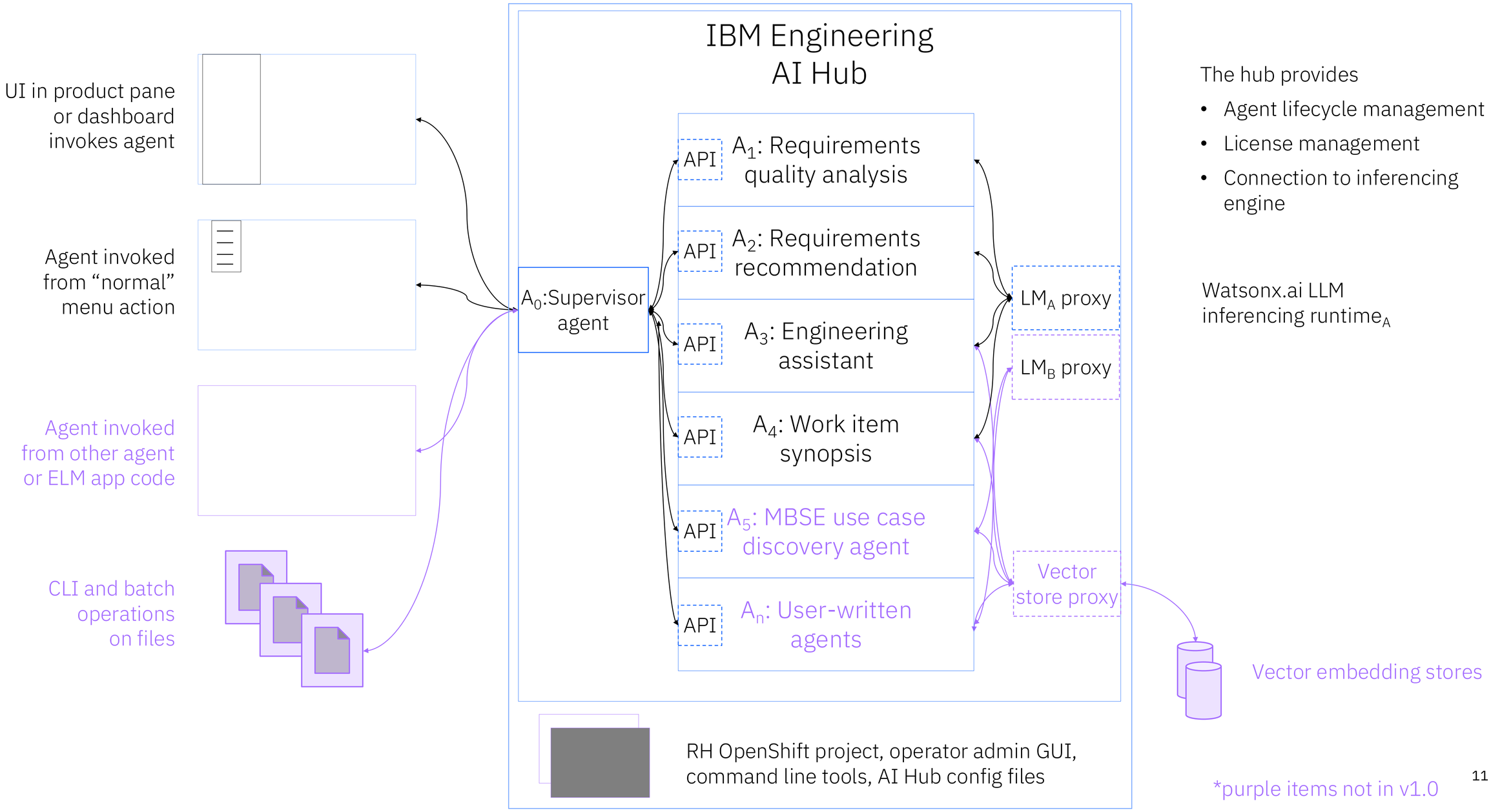
04 MBSE use case discovery

Technical Preview

Identifies use cases and actors in natural language requirements and creates corresponding model elements and use case diagrams in SysML.

This allows engineers to move faster into the RFLP (requirements, functional, logical, physical) design framework.

Concept*



The hub provides

- Agent lifecycle management
- License management
- Connection to inferencing engine

Watsonx.ai LLM inferencing runtime$_A$

*purple items not in v1.0

Get in the right mindset: Anthropomorphisms are dangerous

AI Foundation Models don't...

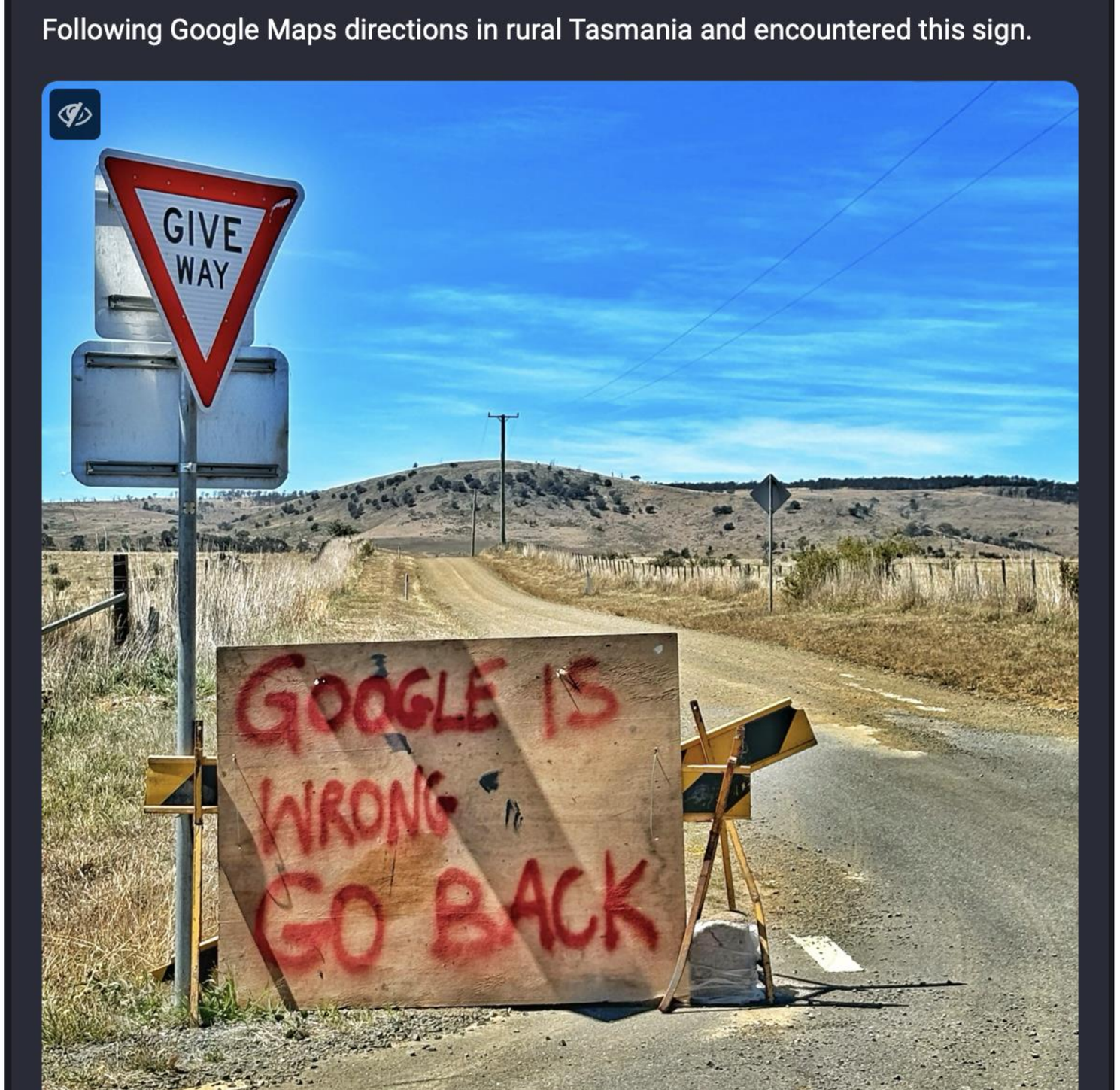
- ❌ Understand
- ❌ Reason
- ❌ Have empathy for their users
- ❌ Face the consequences

People using models should...

- ✅ Understand
- ✅ Reason
- 💯 Have empathy for their users
- 💯 Be prepared to face the consequences

Get in the right mindset:

The hard-won engineering “laws of gravity” still apply.



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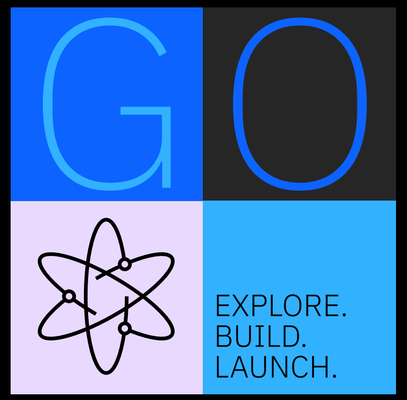
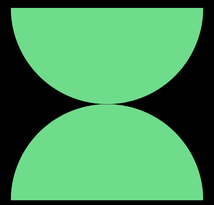
Q&A





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