

Agentic AI in Life Insurance

Why Now, Why it Matters, What Comes Next

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BEFORE I INTRODUCE MYSELF

I want you to sit with three bold *predictions*.

PREDICTION

01

You will spend more of your working day interacting with *AI agents* than with humans.

PREDICTION

02

95% of the day-to-day tasks of an actuary today will be unrecognisable.

PREDICTION

03

A team of *three actuaries* with AI agents will deliver what a department of *fifty* delivers today.

AND THE TIME HORIZON

All of this in the next *2 - 4 years.*

INTRODUCTION

Now, let me introduce myself.

Nicholas Thomadakis. Senior Actuarial Analyst at Deloitte.

Three years in traditional actuarial consulting. The past year building agentic AI systems for insurance companies.

“I'm not here as an expert. I'm here because I've had early exposure to agentic AI, and what I've seen has changed how I think about the actuarial profession.”

AGENDA

- What we mean by Agentic AI
- Demo: From Chatbot to Agent
- Why Now
- Insurance Adoption Today
- The Art of the Possible
- The Future Actuarial Function
- Roadmap and Call to Action

GETTING ALIGNED ON LANGUAGE

Chatbot, or agent?

ChatGPT – Chatbot

Question → Answer

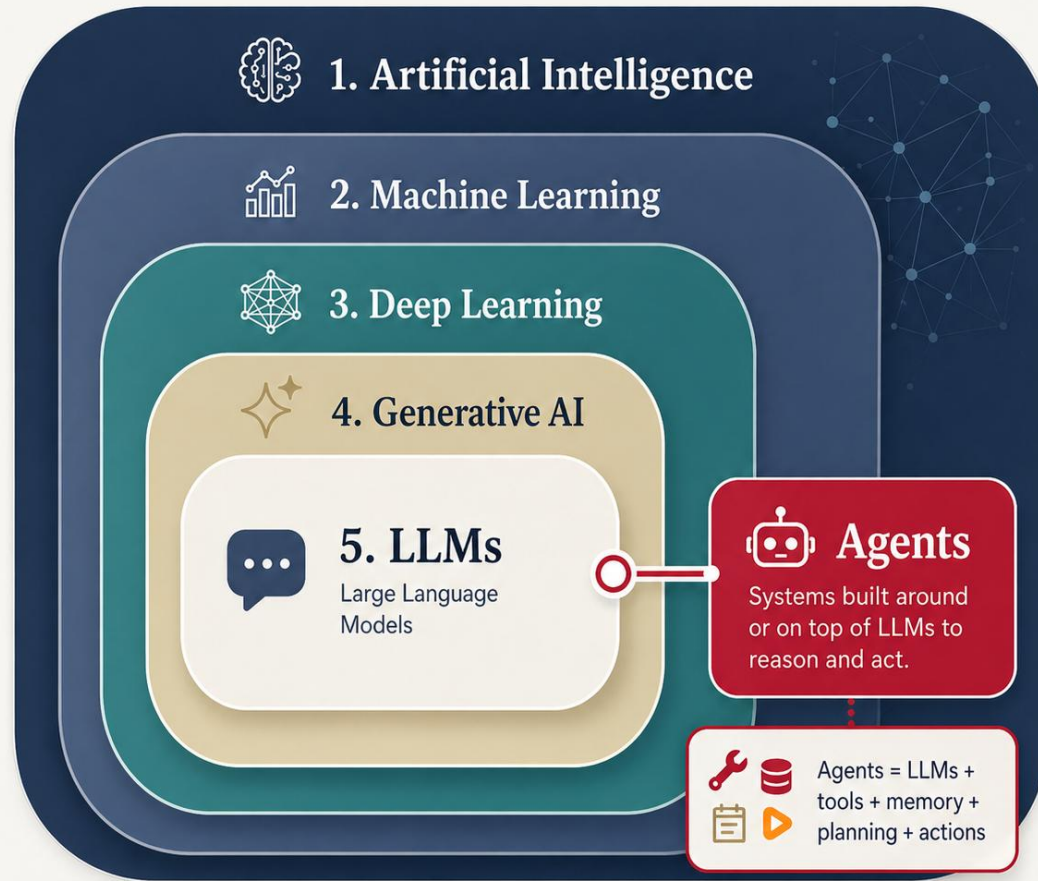
Agentic AI – System

Goal → Reason → Plan → Tools → Execute → Iterate & correct

From AI to LLMs to Agents: How AI Moves from Prediction to Action

Where LLMs and Agents Fit in the AI Landscape

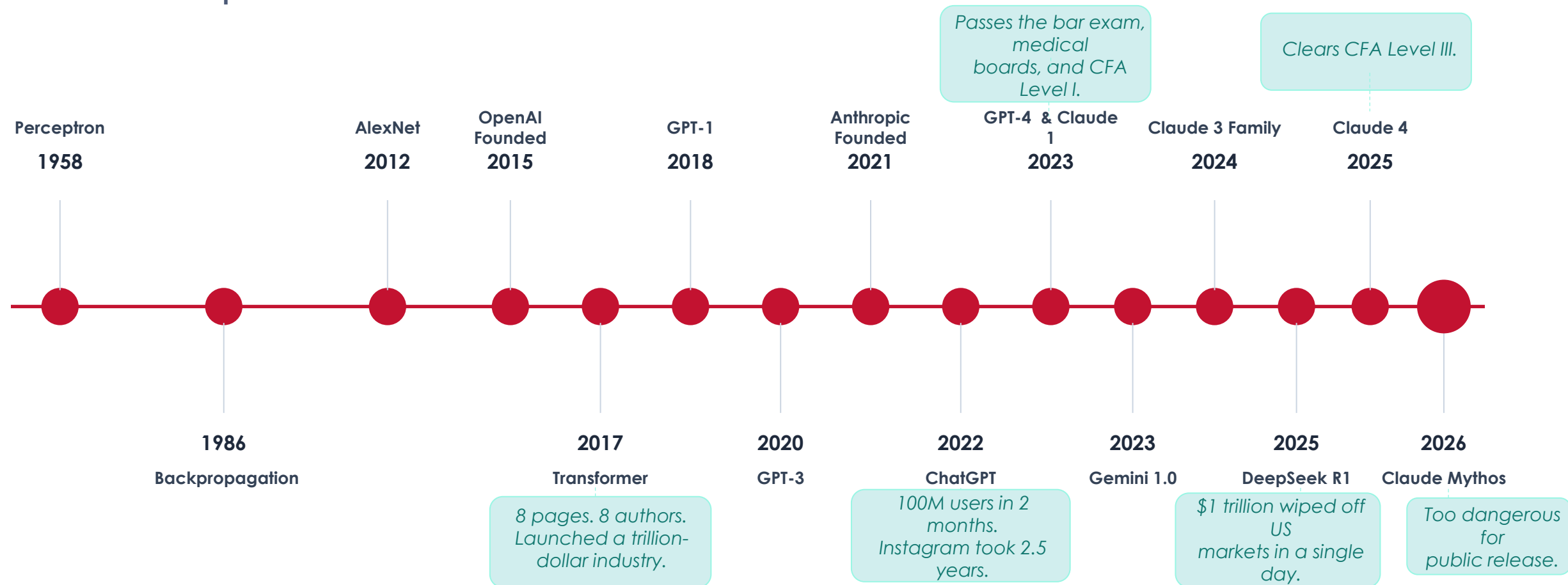
A simple view of the hierarchy and relationship



An LLM responds. An agent executes.

- The LLM is the reasoning engine.
- The agent is the system around it.
- Add tools, memory, planning, permissions and feedback.
- The system can then act, observe, correct, and continue.
- That is how AI moves from prediction to action.

Each step shorter than the last

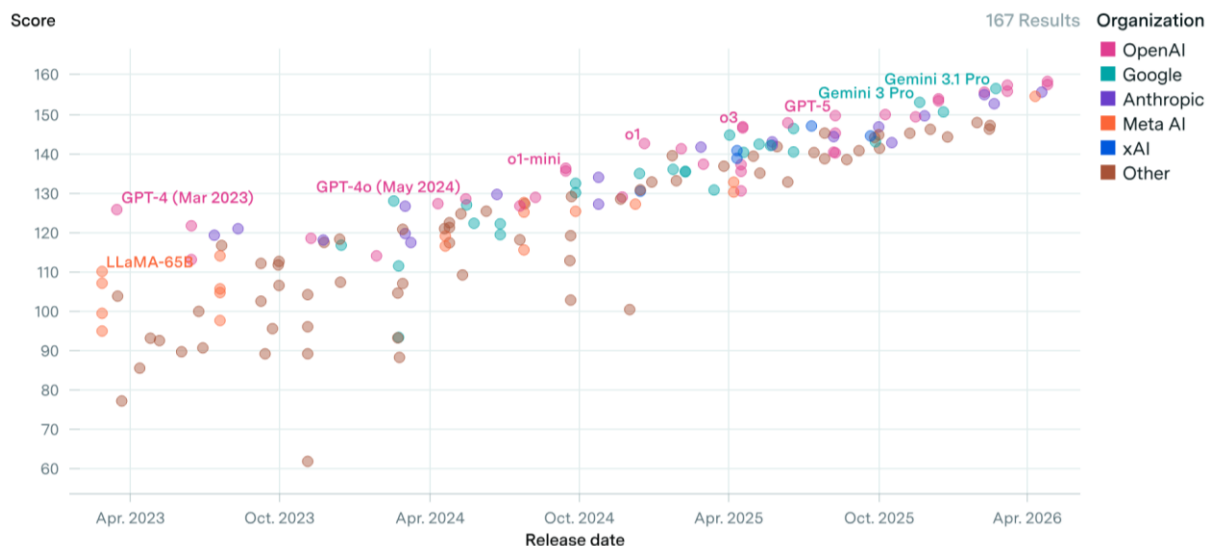


Demo

THE PACE OF IMPROVEMENT

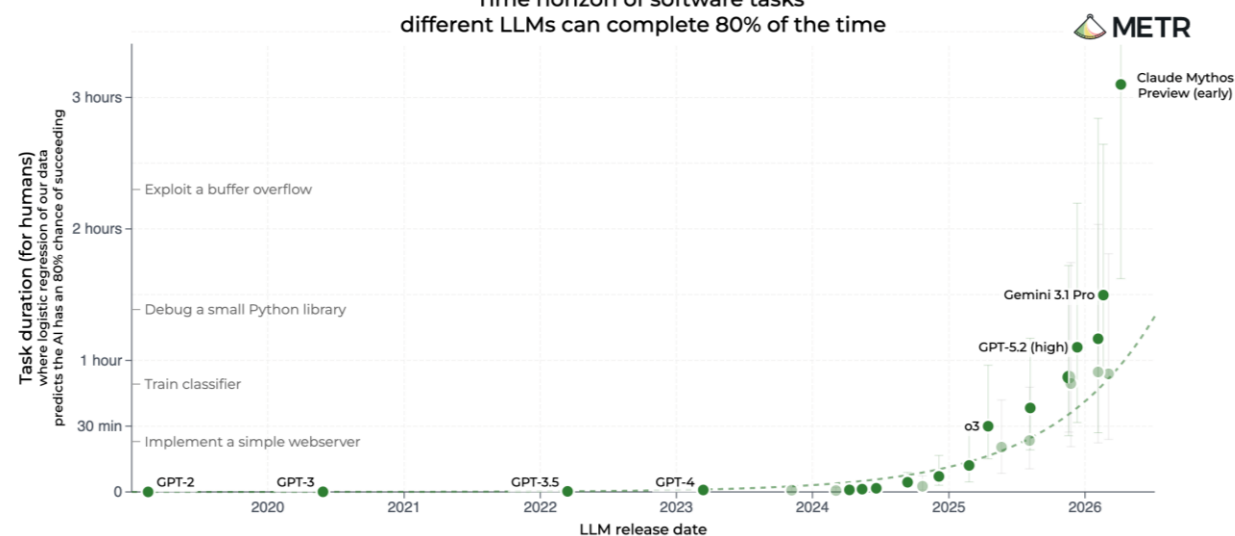
Task complexity AI can handle is growing steadily

Epoch Capabilities Index (ECI)



Source: <https://epoch.ai/eci?view=graph&tab=release-date>

Time horizon of software tasks
different LLMs can complete 80% of the time



Source: <https://metr.org/blog/2025-03-19-measuring-ai-ability-to-complete-long-tasks/>

The Trillion Dollar Question – Will this trend continue?



ACTUARIAL SOCIETY
OF SOUTH AFRICA

Agentic AI is at the inflection point.

Deloitte – 2026 State of AI in the Enterprise (3,235 C-suite respondents, 24 countries, 6 industries)

- **60%** of workers have access to sanctioned AI tools. Up from **<40%** in one year.
- **84%** of companies are increasing AI investment.
- **23%** of companies use Agentic AI today. **74%** expected in 2 years.
- **21%** of companies reported a mature model for governance of Agentic AI.

“AI Agents are scaling faster than Guardrails”

Areas of adoption

CURRENT FOCUS Addressing the **PAINPOINTS** in the actuarial and insurance space to create **EFFICIENCY**

Agentic systems inside actuarial workflows

- Data validation & preparation
- Analysis & Investigation
- Reporting & Commentary

Agentic capability across insurance operations

- Underwriting
- Claims management
- Fraud Detection
- Customer Operations
- Finance Functions

AI augmenting day-to-day actuarial work

- Writing & reviewing code
- Drafting Reports and Documentation
- Analysing Data Interactively
- Summarising content

- Easily Quantifiable ROI. Time & Efficiency
- A good starting point. Not the Final Destination

From *efficiency* to *the art of the possible*.

TODAY · EFFICIENCY

Same problems, solved faster.

TOMORROW · THE ART OF THE POSSIBLE

Bigger and more complex problems, previously impossible.

- Reimagining what is possible
- A future-state operating model
- The new role of an actuary

The ROI is real but harder to isolate

Glimpses of work that *wasn't possible before.*

i. **Exhaustive scenario discovery**

Instead of choosing which stresses and scenarios to run, the system explores and runs hundreds of thousands of carefully calibrated scenarios.

iii. **A digital twin of the book**

A living simulation of how policyholders respond to premium shocks, benefit changes, service levels and economic stress

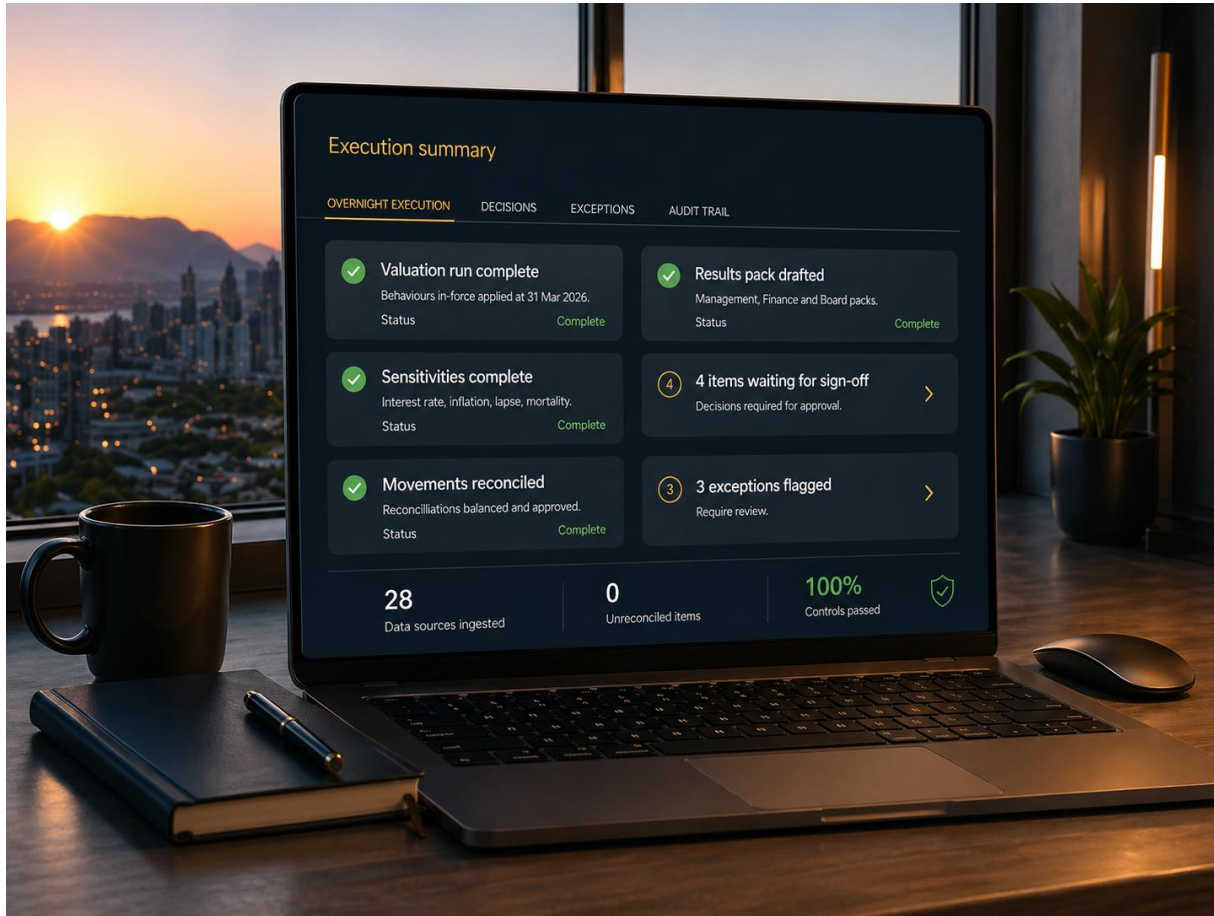
ii. **Living assumptions**

Assumptions recalibrate continuously against emerging experience and current market conditions

iv. **Product design at machine scale**

Before launch, thousands of product, pricing, underwriting and reinsurance combinations are explored to find designs that are profitable, resilient, and fair.

One Step Further: Autonomous Systems



Overnight execution

Before the team logs on, agents have ingested source data, run valuations and sensitivities, and drafted the results pack.

Ready for sign-off

Three decisions are queued for approval: the lapse assumption refresh; the reserve release recommendation; and release of the finance and board outputs.

Flagged for review

Only exceptions surface: an administration system data issue and a capital coverage ratio moving close to risk appetite.

Agents will **>10x** your output. The human is still the bottleneck.

Agents scale execution. **Complexity**, **speed** and **volume**.
Judgement doesn't scale. LLMs have limitations.

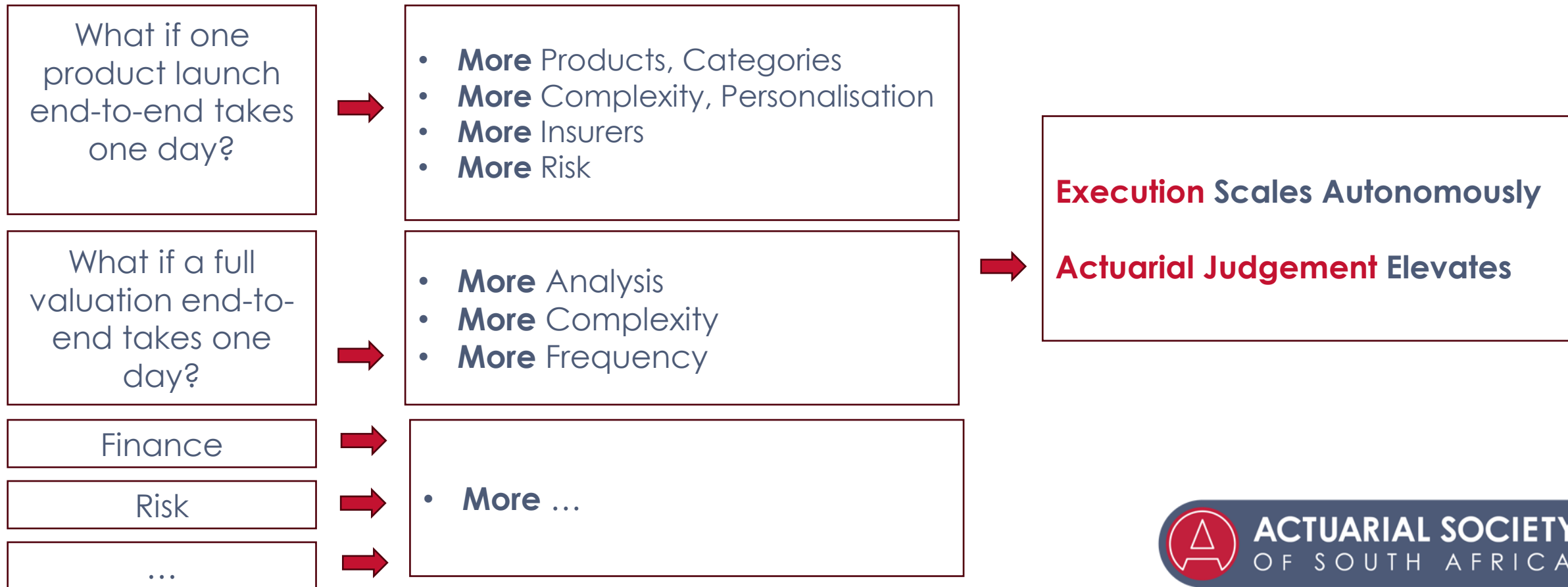
- **They hallucinate with confidence** - *Wrong answers arrive without signal*
- **They're jagged** - *They don't know what they don't know.*
- **They lack full context and big picture** - *They need direction.*
- They **don't learn continuously** - *A correction today is forgotten tomorrow unless the system is designed to retain it.*
- **They don't carry accountability** - *Professional ownership doesn't transfer.*

“You can outsource your thinking. You cannot outsource your understanding.”

Referenced by Andrej Karpathy, Sequoia AI Ascent 2026

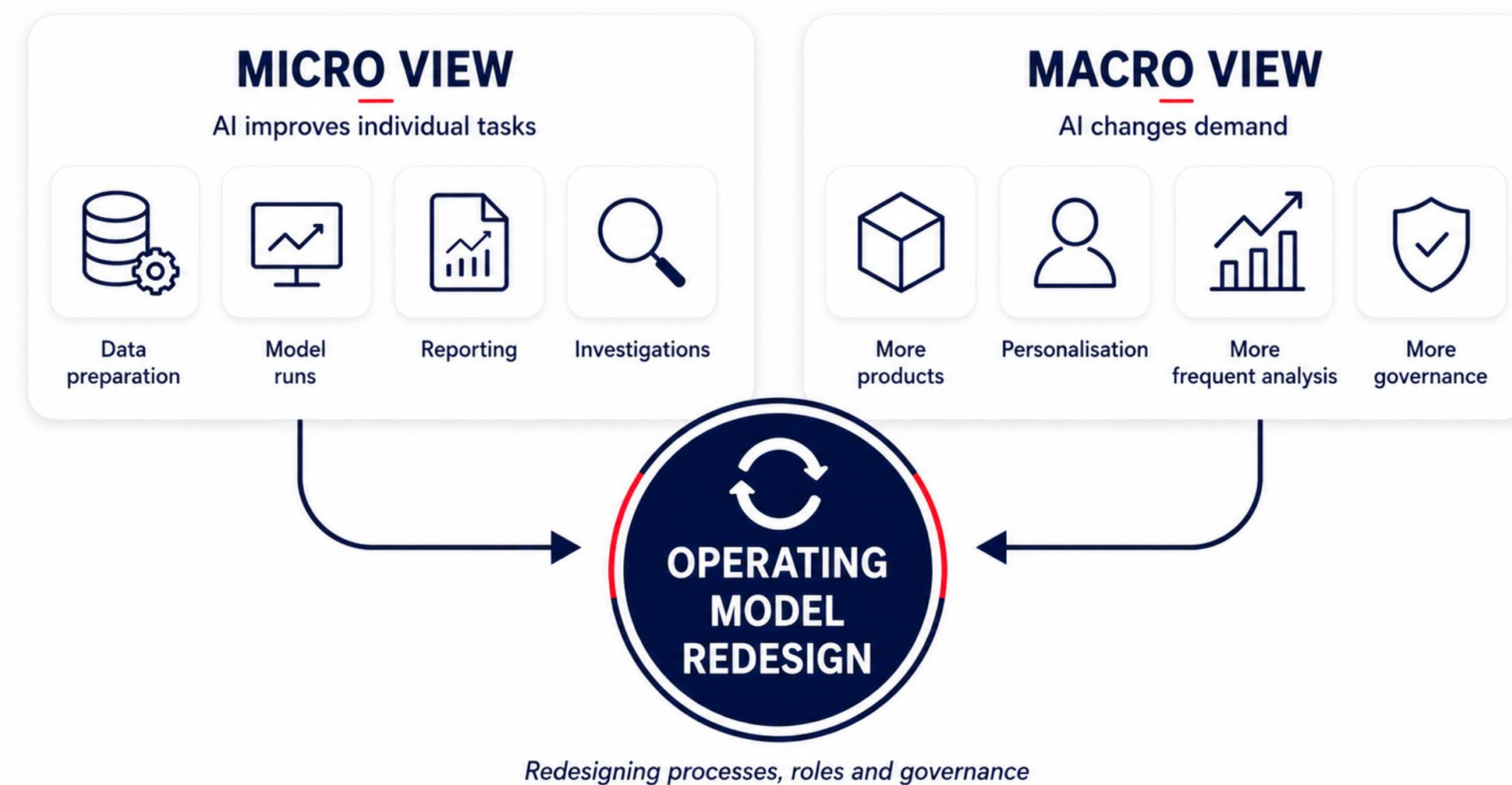
When Actuarial Execution becomes Abundant, Demand Stretches

Jevons Paradox: When technology makes a resource more efficient, total consumption of that resource increases rather than decreases



SHIFTING THE OPERATING MODEL

Micro and macro changes, require a redesigned operating model



How the work splits.

WHAT AGENTS DO

Execution.

- All output production
- Continuous monitoring
- All data work
- Generating text & code

WHAT HUMANS RETAIN

Judgement.

- Strategy
- Relationships
- Assumption ownership
- Design
- Approval & sign-off

How much of your week is currently spent on the **left** versus the **right**?

THE CAPABILITY MODEL — HEAT MAP

Not every capability transforms equally.

CAPABILITY	INCREMENTAL	SIGNIFICANT	RADICAL
Valuation & Reporting	Radical		
Pricing & Product Development	Significant		
Capital & Risk Management	Significant		
Experience & Data Analytics	Radical		
Model Governance & Validation	Significant		
Actuarial IT & Systems	Radical		
Reinsurance Actuarial	Significant		
ALM & Investment Actuarial	Significant		
Strategic Actuarial	Incremental		

TWO NEW CAPABILITIES

AI Governance & Oversight

Actuarial AI Engineering

Two new capabilities in the actuarial function.

CAPABILITY 01

AI Governance & Oversight

- Who governs the agents?
And how?
- When is human oversight and intervention necessary?
- Who monitors bias and explainability?

CAPABILITY 02

Actuarial AI Engineering

- Designing & maintaining agent instructions
- Architecting agent workflows
- Designing agent context and data access

Does this sound familiar? This is not entirely new territory for actuaries.



Factors to Consider → Engineering Decisions.

FACTORS TO CONSIDER

Stakes & Accountability

How consequential is the outcome? Who owns it professionally?

Complexity & Business Context

How much institutional knowledge and judgement does it require?

Accuracy & Auditability

How wrong can it be, and would you know? Can you trace the decision?

Data Reliability & Accessibility

How clean, structured and accessible is the data?



AI ENGINEERING DECISIONS

Level of human oversight

Human-in-the-loop, Human-on-the-loop, Full autonomy

Approach & architecture

Rules-based, Structured agent workflow, Free-Form agent

Context, tools & memory

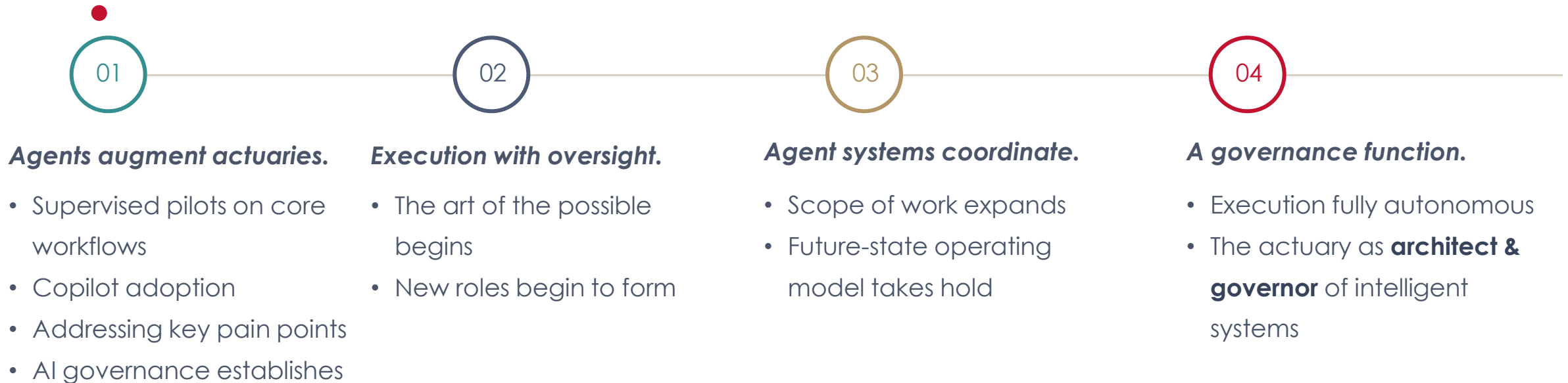
Context management, Skills, Tools, Short-term & long-term memory

Transparency & Explainability

How decisions are surfaced, audited and challenged.

Where the actuarial function may land

WE ARE HERE



As models continue to improve, Agents become more reliable and more embedded

THE OTHER SIDE OF MY PREDICTIONS

PREDICTION
01 You will spend more of your working day interacting with *AI agents* than with humans.



The work you do with agents will be more *powerful*.
The conversations you have with people will be more *meaningful*.

PREDICTION
02 *95%* of the day-to-day tasks of an actuary today will be unrecognisable.



Because you'll be solving more complex problems that were *previously impossible*

PREDICTION
03 A team of *three actuaries* with AI agents will deliver what a department of *fifty* delivers today.



Imagine what the remaining 47 actuaries will be *building* and *delivering*

Call to Action

ASSA - Shape the Standard

- Proactively lead the conversation on professional guidance for Agentic AI
- Build AI-specific CPD, so the profession develops together.
- Convene working groups, engage regulators early and set the pace.

Insurers - Build for what's coming.

- There will be new AI native entrants
- Treat AI enablement as a strategic investment
- Start designing the future-state operating model
- Establish governance that enables adoption and manages risk.

Individual Actuaries - Step into the new role.

- Invest in understanding AI agents.
- Engage with the frontier models now. Don't anchor to previous experiences.
- Master the skill of judgment and oversight



Thank You

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Advancing Actuarial Excellence

Educate • Develop • Uphold