

The AI Landscape in Insurance: **From Predictive Models to Generative AI**

| Agenda

1. A Brief History of AI

- Predictive AI
- Generative AI

2. Reimagining Claims Management with AI



A Brief History of AI

WHAT IS AI?

The ability of a computer system to perform tasks commonly associated with humans, such as the ability to *reason, learn, and make decisions*.



HAL 9000, 2001: A Space
Odyssey, 1968

Two AI Winters: AI couldn't deliver and funding collapsed

1974–1980 Symbolic AI promised translation and reasoning. The Lighthill Report ended UK funding; DARPA followed.

1987–1993 Expert systems proved brittle and costly to maintain.

What survived — **regression, rules, statistical models** — was never called AI.



Predictive AI

Before 2012

Predictive AI was everywhere. Its canonical example is your credit score.

How a bureau score learns

Pay on time → score up

Balance-to-limit rises → score down

No rules involved. Patterns learned from data.

Same method, other industries

Fraud detection

Recommendation systems

Demand forecasting

Nobody called it AI. It was machine learning, data mining, predictive analytics.

Predictive model ~ scorecard

Characteristic	Where you fall	Points
Late payments	none	+90
	one	+40
	two or more	0
Balance-to-limit	under 10%	+80
	10-30%	+55
	over 60%	+10
... plus dozens more		...
Score		712

Where the points come from

Machine learning algorithms learned them from the data of millions of past borrowers.

They predict one thing: will this person fall 90 days behind in the next 24 months?

Learned from the past.
Aimed at the near future.

| Predictive AI in disability insurance

Intake and triage

- Claim complexity model
- Straight-through processing model
- Assignment and workload model
- Early intervention flag model
- Document classification model

Duration and reserving

- Duration prediction model
- Case-reserve model
- STD-to-LTD transition model
- Reserve development (IBNR) model
- Settlement value model

Clinical and return to work

- Return-to-work model
- Claim deterioration model
- Intervention targeting model
- Medical cost model
- Provider outcome model

Pricing and underwriting

- Morbidity / incidence model
- Claim frequency model
- Pure premium model
- Risk classification model
- Lapse and persistency model

Integrity and oversight

- Anomaly detection model
- Provider abuse model
- Impairment misrepresentation model
- Litigation propensity model
- Claim leakage model

I AI model adoption in US life insurance

365

AI/ML models reported in total across 94 carriers: about **four models** per company

54%

of those models were built by **a third party**, sourced from 59 separate vendors

48%

of pricing and underwriting models are automated, not advisory

58%

of life insurers use or explore predictive models, compared with 88% in personal auto

Source: NAIC, 2023 Life Artificial Intelligence/Machine Learning Survey Analysis, memorandum to the Big Data and Artificial Intelligence (H) Working Group, November 30, 2023. 161 companies in 14 states; life products only, excluding annuities; GLMs and GAMs counted as models, unlike the auto survey.

I What you should know about your models

Performance

Accurate and well calibrated

Data

Documented, representative, permitted

Monitoring

Drift, decay, retraining triggers

Explainability

Reason per individual decision

Fairness

Tested for proxy discrimination

Human oversight

Automated or advisory, declared

Governance

Inventory, owner, independent validation

Compliance

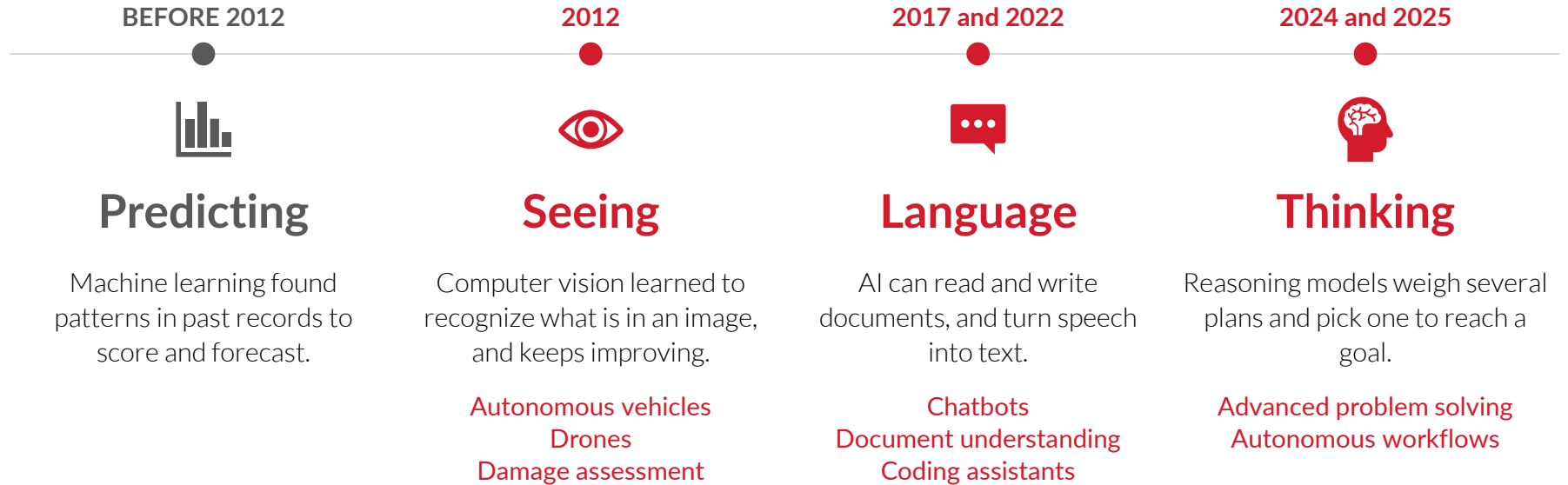
Defensible under every applicable rule

Regulations in scope: NAIC Model Bulletin on the Use of AI Systems by Insurers (2023); state unfair trade practices and unfair claims settlement practices acts; Colorado SB21-169; NY DFS Circular Letter No. 7 (2024); ECOA and FCRA adverse action requirements; ERISA claim procedure rules for group disability; ASOP 56.



Generative AI

I After 2012



I Accumulation of decades

90x

Data

Data created worldwide went from 2 zettabytes in 2010 to 181 in 2025, as internet users passed 6 billion

3.3x

Chips

Annual growth in AI compute capacity since 2022; performance per dollar up 49% a year

3x

Algorithms

Less compute needed each year for the same result; pre-training efficiency doubles every 7.6 months

280x

Cost

GPT-3.5-level output fell from \$20.00 to \$0.07 per million tokens, Nov 2022 to Oct 2024

\$252B

Capital

Corporate AI investment in 2024, up 26% on the year; 78% of companies now report using AI

Sources: IDC Global DataSphere; ITU, Facts and Figures 2025; Epoch AI, Trends in Artificial Intelligence, 2026; Stanford HAI, AI Index Report 2025.

I Generative AI

Text sample

LLMs	learn	to	predict	one	word	at	a	time
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What the model has seen

The next word it predicts

Every word is predicted from the words before it, one step at a time.

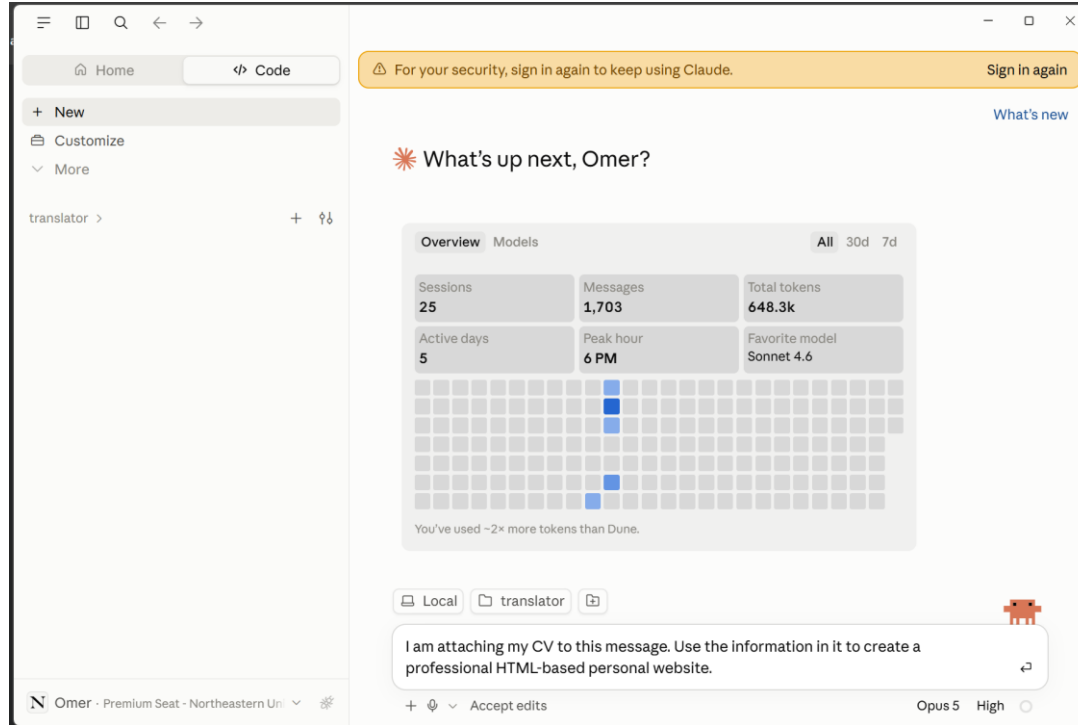
I Generative AI

PROMPT

"Create a panda reading a book"



I Generative AI



I Generative AI - Agents

OpenAI says it has found a solution to a decades-old advanced maths problem in a matter of hours using a new artificial intelligence (AI) model and thousands of AI bots.

The ChatGPT-maker said on Tuesday that by focusing a group of roughly 10,000 AI agents, or AI bots that undertake tasks somewhat autonomously, it solved a notoriously difficult maths problem in just 88 hours.

The problem was part of the Navier-Stokes equations, which concern how fluids move. For 90 years important aspects of the problems have lacked a proof, the argument underlying a correct math equation.

OpenAI called the solution which it found a "milestone" and evidence that AI tools are improving quickly.

10,000

AI agents working on one problem

88 hours

to produce a proof that had been open for 90 years



Reimagining Claims Management with AI

I AI can automate multiple tasks in intake process

CHANNELS

- Web and mobile
- Voice and IVR
- Chat
- Email
- Agent or broker

CHANNEL ADAPTER

- Form parsing
- Speech-to-text
- Conversation interface
- FNOL normalization

INTAKE AGENT

- Extraction
- Coverage retrieval
- Evidence intake
- Validation
- Entity resolution
- Missing-info chase

CLAIM CONTEXT

- Fraud risk
- Severity and cost
- Complexity

TRIAGE

- Straight-through creation
- Examiner or nurse review
- Special Investigations Unit (SIU)
- Handoff, file complete

I Six steps where AI offers automation

Step	What the AI does	Technology
1 Claim intake	Takes the notice on any channel and runs the conversation	Conversational agent
2 Information extraction	Pulls people, vehicles, dates, injuries and damage from text, speech and images	LLM and vision models
3 Validation	Checks completeness, formats, required fields and contradictions	Rules plus LLM workflow
4 Policy and coverage	Retrieves coverages, limits, deductibles, endorsements and dates	API and retrieval service
5 Entity resolution	Matches claimant, policy, vehicle and third parties to enterprise records	Data and ML service
6 Evidence intake	Classifies and links photos, reports, estimates and recordings	Multimodal AI workflow

I Six more for triage and routing

Step	What the AI does	Technology
7 Fraud and risk screening	Flags anomalies against the notice and historical claims	ML service
8 Severity assessment	Estimates cost and flags injury, total loss and litigation signals	ML service
9 Complexity prediction	Scores how much handling the claim will take	ML service
10 Triage	Picks the path: straight through, adjuster, SIU, injury, total loss	Rules plus ML agent
11 Missing information	Works out what is absent and goes back to the claimant for it	Conversational agent
12 Claim creation	Opens the claim, issues identifiers, starts downstream processes	Workflow and APIs

I Automation levels

The test: can the output be checked against a source, and does the decision go against the claimant?



Automated

- Notice capture on any channel
- Extraction and validation
- Coverage and entity lookup
- Evidence handling
- Claim creation



Human In the Loop

- Fraud and severity scores
- Complexity and triage routing
- Reserve and duration suggestions
- Examiner accepts or overrides, with the reason recorded



Human Review

- Coverage denials
- Reserve setting and settlement
- SIU referral
- Anything adverse to the claimant

Thank You

I Nothing moves until six facts are in the file

Eligibility

Coverage in force, waiting period served, enrollment file match

Date last worked

Employer statement: last day worked, earnings, scheduled hours

Diagnosis and restrictions

Attending Physician's Statement: findings, restrictions, prognosis

SLOWEST TO ARRIVE

Job demands

Occupation, physical and cognitive requirements of the role

Concurrent leave

FMLA, workers' compensation, state PFML, other open claims

Claimant contact

Reachable, return-to-work intent, accommodation options

The Attending Physician's Statement is the slowest of the six to arrive, and every later step waits on it.

I Four capabilities, four jobs at intake

SEEING



Read the paper

Faxed forms, handwritten notes and phone photos become machine-readable text.

LANGUAGE



Fill the file

Diagnosis, restrictions, dates and earnings move into claim fields.

PREDICTING



Rank the claim

Duration, LTD transition and complexity scored before anyone opens the file.

THINKING



Chase the gaps

Agents request the APS, chase it, and verify eligibility.

What comes out: a complete claim file and a routing decision, on day one

I Day-one triage sends each claim to the right desk

Every new claim is scored on duration risk, documentation completeness and complexity



Straight through

Short, predictable diagnoses with complete documents. The system sets duration; an examiner audits a sample.



Examiner desk

The majority. The file arrives complete, with a duration estimate and the open questions already listed.



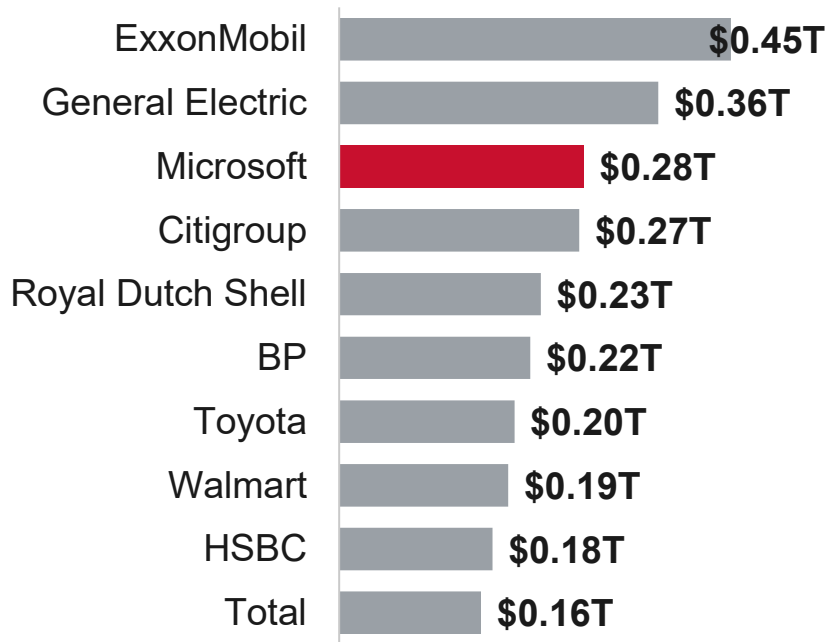
Nurse and complex

High duration risk, comorbidity or unclear restrictions. Clinical review and return-to-work planning start in week one.

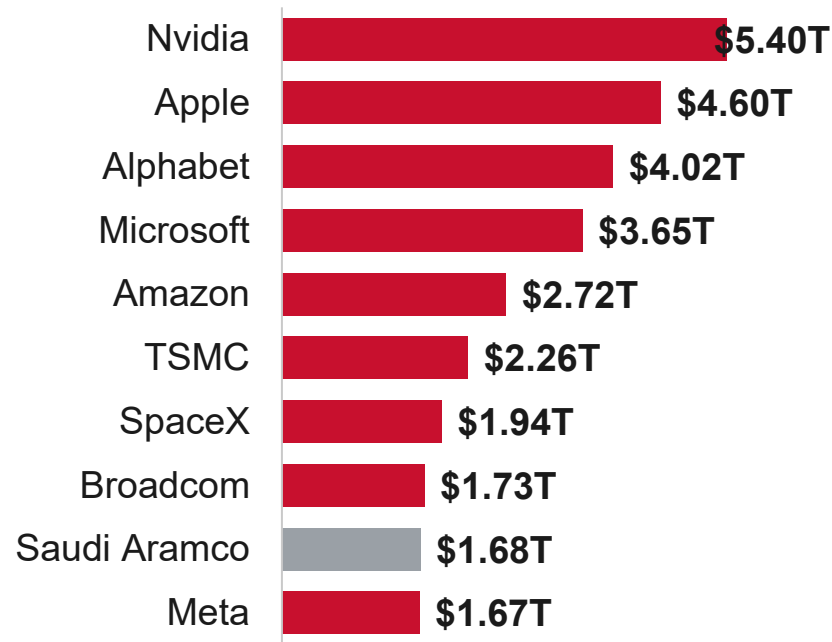
Triage routes the claim. It does not decide it: every denial and every duration cut stays with a person.

AI demand made tech nine of the ten most valuable companies, up from one in 2006

Ten most valuable companies, 2006



Ten most valuable companies, 2026



Nvidia went from \$0.5T to \$5.4T in five years, on demand for AI chips

Nvidia market capitalization, \$T



\$5.4T

market capitalization, the largest of any company

The share price is up 895% in five years.

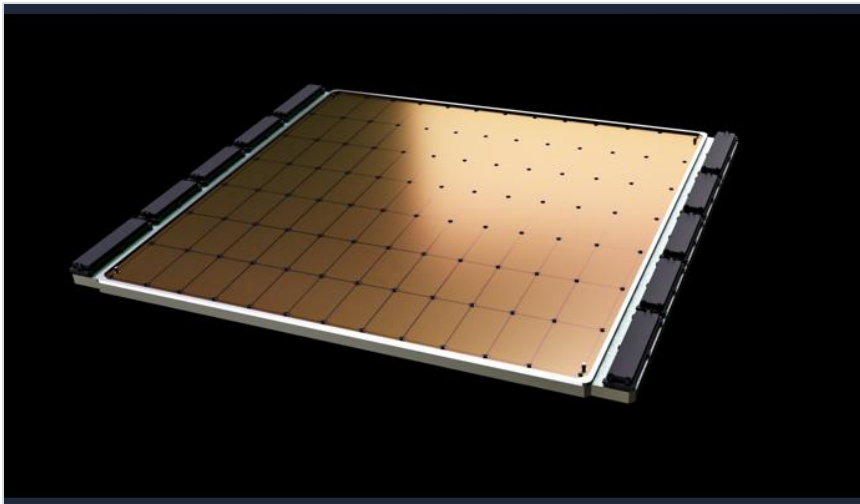
Nvidia sells the chips that train and run AI models, so its value tracks AI spending more directly than any other company.

Human ingenuity keeps scaling: one transistor in 1947, four trillion on one chip in 2024



1947

One transistor, built at Bell Labs



2024

Four trillion transistors on one chip

First point-contact transistor, Bell Labs, December 1947. Wafer-scale processor built for AI training, 2024.