



The Vanishing Apprenticeship:

Rebuilding Career Pathways in the Age of Agentic AI



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Executive Summary

Agentic artificial intelligence (AI) will transform how work is done in property and casualty (P&C) insurance, but that may come at the cost of the informal learning pathways that once built employees' expertise across the value chain. Roles like underwriting assistants, junior adjusters, and IT analysts have long formed the industry's informal apprenticeship system. As automation consumes that foundational work, insurers risk losing the next generation of skilled judgment.

Most carriers haven't reached this point yet, but the decisions being made today about automation will shape how people learn tomorrow. Insurers must act before the knowledge gap forming becomes irreversible.

The goal of this e-book is to help insurers get ahead of that challenge — to understand how apprenticeship once built expertise across every function, how technology could weaken that path, and how to redesign learning for an AI-driven future.

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The Disappearing Craft of Learning



I grew up in my parents' tool and die shop, a place where precision mattered and learning happened through doing. Apprentices didn't start by running machines for large customer work; they started by watching, trying, studying, and adjusting until the work felt right. Over time, they developed an instinct for the material, the sound of a good cut, and the rhythm of real craftsmanship. That kind of learning built judgment – not just skill, but true wisdom.

For most of its history, the insurance industry has relied on a similar “learning by doing” model. Over time, that kind of learning developed insurance experts who understood not only how things worked, but why. In underwriting, for example, assistants were the bridge between data and decision. By gathering submissions, reviewing forms, and watching underwriters weigh trade-offs, they learned that risk isn't just a number, it's a story about people, property, and behavior.

In claims, junior adjusters gained judgment by working cases under experienced mentors, learning how to interpret coverage, balance fairness and cost, and manage the gray areas where policy language meets human circumstance.

As automation expands, however, those repetitive but instructive tasks are the first to disappear. But apprenticeship wasn't inefficiency. The routine work that once seemed menial was actually the training ground for future experts. People didn't just learn procedures; they learned how to make sense of complexity.

With the emergence of agentic artificial intelligence (AI), insurers are reaching a turning point. Agentic systems can gather data, analyze submissions, classify claims, and automate many of the repetitive steps that once defined entry-level work. The question now is: How can insurers rebuild the path to expertise in an age when machines are learning faster than people?

UNDERSTANDING AGENTIC AI

AI has evolved into three overlapping “faces” distinct capabilities:
Predictive, Generative, and Agentic.

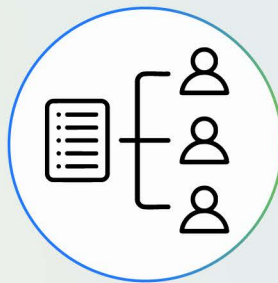
Face of AI	Primary Function	Insurance Applications	Human Relationship
Predictive AI	Analyzes historical data to forecast outcomes	Fraud detection, pricing models, risk scoring	Decision support – humans interpret the model's output
Generative AI	Creates new content or insights from context	Document summarization, policy drafting, claims communication, coding copilots	Co-creation – humans guide, edit, and validate results
Agentic AI	Uses reasoning, memory, and tools to perform actions toward goals	Intake automation, claim triage, submission analysis, code reviews, workflow orchestration	Collaboration – humans oversee and shape the system's behavior

Agentic AI doesn't replace humans; it extends their reach. Unlike traditional automation, which executes fixed processes, agentic systems adapt and decide what to do next. They can query data, call APIs, analyze context, and hand off tasks to other agents or humans.

In an insurance setting, an agentic system might:



Read a submission package, identify missing details, and request clarifications.



Route a claim to the right adjuster based on complexity and sentiment.



Review code changes, identify test coverage gaps, and document compliance checks.

This automation across the various insurance functions brings insurers the potential for faster, more consistent decisions.