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AI-Powered FNOL and Damage Assessment:

Redefining the future of Claims Management

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Abstract

AI-powered Cognizant® Auto Claims Process Accelerator are transforming claims management by replacing manual, fragmented workflows with intelligent, scalable and empathetic systems.

Our multimodal AI solution — leveraging speech-to-text, large language models, sentiment analysis and visual intelligence — accelerates intake, extracts critical data and supports real-time decision-making. With added document intelligence and fraud detection, it enhances compliance, reduces costs and builds customer trust. This is more than automation — It's a paradigm shift toward efficient, transparent and human-centred claims experiences.

We invite insurers to test this offering and collaborate with us in shaping the future of claims intake and adjudication.

Introduction

Reimagining the claims journey

In the world of insurance, the First Notice of Loss (FNOL) marks the starting point of the claims journey. The moment a policyholder, witness, or third party reports an accident, loss, or damage, the claims process officially begins. This stage sets the tone for customer trust, empathy and fairness. When done right, FNOL can turn a moment of stress into an opportunity to demonstrate reliability and care.

Closely tied to FNOL is the damage assessment process, where adjusters determine the extent of loss, validate estimates and ensure alignment with policy coverage. Together, FNOL and damage assessment safeguard the integrity of the claims process. They protect insurers from inflated or fraudulent submissions while ensuring policyholders receive swift, accurate compensation. These processes also provide insurers with an early, quantified view of likely payouts — crucial for reserve planning and financial stability. Yet, despite their importance, these processes are fraught with inefficiencies.

Problem statement: Legacy challenges in FNOL and damage assessment

Today's FNOL and damage assessment workflows are manual, fragmented and reactive. Outdated practices increase stress for policyholders, while inefficiencies drive up costs for insurers. Policyholders often submit incomplete or vague information, delay reporting, or omit required documentation. Intake channels are fragmented across calls, apps, emails and agents, leading to inconsistent data capture. On the assessment side, subjectivity and human variability introduce inconsistencies. In disaster scenarios such as floods or wildfires, site inspections may be delayed or unsafe. The result: slower settlements, higher costs and diminished customer trust.

Key industry challenges include:

- **Fragmented data foundations:** Disparate legacy systems and siloed data limit insurers' ability to connect risk, policy and claims information, constraining modernization and accuracy across the value chain. [1]
- **Inefficient and fragmented claims intake:** Despite digital progress, gaps in speed, transparency and experience persist—manual processes and limited visibility continue to drive delays and customer frustration. [2]
- **Manual FNOL processes and rework:** Reliance on manual data entry and routing leads to errors and rework that slow claims. Digital intake forms and automated validation improve accuracy and efficiency. [3]
- **Disconnected workflows and excessive touchpoints:** Multiple handoffs and repeated data collection reflect unstructured, disconnected systems. Integrated FNOL automation reduces manual steps and accelerates throughput. These systemic shortcomings increase operational expenses, extend cycle times and erode fairness and transparency in the claims journey.

The Cognizant® Auto Claims Process Accelerator solution: Cognizant's multi-agent AI for FNOL and Adjudication

To address the systemic challenges that have long constrained the insurance industry, we have engineered an AI-powered FNOL and damage assessment platform — a cloud-native, multimodal, intelligence system that reimagines the very front door of the claims journey.

Redefining the upstream FNOL experience

At its foundation, the FNOL platform fuses speech-to-text, large language models, sentiment analytics and acoustic processing to transform claims intake into an interaction that is instantaneous, empathetic and precise.

Conversations between agents and policyholders are captured with near-zero latency and interpreted across incomplete, noisy, or ambiguous inputs. From this, the system extracts critical entities — policy numbers, customer IDs, loss details and estimated amounts — with a level of accuracy that ensures claims forms are automatically populated in real time.

The **Knowledge and Information Extraction (KIE)** pipeline operates in two synergistic phases:

- **Real-time flow:** Entities are recognized and structured instantly, dynamically populating digital claims forms as conversations unfold.
- **Batch reconciliation:** Conflicts are resolved, gaps are closed and schema compliance is validated — ensuring the integrity of every record.

A human-in-the-loop safeguard underpins this process, allowing adjusters to intervene only when model confidence falls below defined thresholds. This design ensures speed without compromising accountability.

Beyond efficiency, the platform embeds emotional intelligence directly into the FNOL workflow. Real-time sentiment analysis and acoustic signal processing detect stress, frustration, or anger in the caller's voice. Supported by a Vocal Dynamics Module that monitors pitch, pace and cadence, agents can adapt their tone and responses on the fly. The result is not just a faster claim — but a more humane, trust-building customer experience.

Built on a resilient microservices architecture, the system is designed for scale. Event-driven orchestration ensures sub-500ms latency from transcription to structured extraction, even during peak surge scenarios, while APIs integrate seamlessly with downstream platforms like Guidewire and Duck Creek.

Extending the value: Document intelligence at scale

The complexity of claims intensifies after FNOL, when the ecosystem is flooded with unstructured data — forms, invoices, repair estimates and adjuster notes. Historically, this stage has been a manual, errorprone bottleneck.

Our platform extends its intelligence into this domain, functioning as a document intelligence engine that unifies preprocessing, schema alignment and contextual reconciliation across diverse inputs. It systematically extracts key entities — claimants, coverage terms, deductibles and exclusions — while cross-checking for consistency across documents.

To further strengthen compliance, a fraud detection layer continuously cross-references text, images and medical records, flagging anomalies with confidence scores. Adjusters are equipped with real-time adjudication dashboards that present consolidated claim summaries, highlight discrepancies and surface AI-driven confidence ratings. What was once a labor-heavy and time-intensive process is now a fast, transparent and data-driven workflow.

Tangible and transformative outcomes

The deployment of this AI-driven FNOL and damage assessment platform is expected to deliver enterprise-wide benefits that go well beyond operational efficiency:

- **25–30% reduction in cycle time** – Accelerates resolution and enhances customer responsiveness.
- **~30% reduction in cost per claim** – Minimizes rework and eliminates inefficiencies.
- **Enhanced fraud detection** – Strengthens compliance and financial resilience.
- **Empathetic engagement** – Builds customer loyalty through interactions that feel human, not transactional.

This is not an incremental improvement — it is a paradigm shift: a re-engineering of claims management for the next generation of insurance. By fusing intelligence, empathy and scale, the solution elevates FNOL from a transactional intake step to a strategic, differentiating capability.

Architectural foundation: Orchestrating intelligence at scale

As shown in Figure 1, the orchestration layer serves as the central function that unifies diverse AI agents into a seamless pipeline — transforming fragmented, manual steps into a real-time, intelligent claims ecosystem.

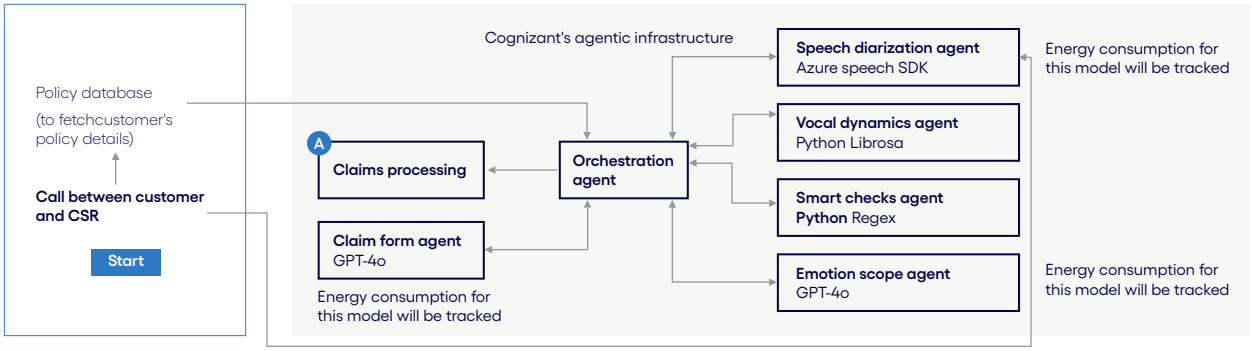

Figure 1: FNOL architecture

This orchestration coordinates a suite of specialized agents across the FNOL and damage assessment journey:

- **Speech diarization and transcription (Azure Speech SDK):** Captures customer conversations in real time, separating speakers automatically and converting dialogue into structured, searchable text.
- **Generative AI agents (e.g., GPT-4o & GPT-4oV):** Provide contextual reasoning across text and vision, powering both claims form automation and image-based severity classification.
- **Document intelligence (Azure & GPT-based extraction):** Unlocks insights from forms, invoices, adjuster notes and medical records.
- **Vocal dynamics and emotion analysis (Librosa + GPT-4o):** Detects tone, pace and emotional stress to enable empathetic engagement.
- **Smart checks (Regex-driven):** Validates accuracy and compliance with policy rules.
- **Vector stores (Azure Cognitive Search):** Retain contextual memory for faster, more accurate responses.
- **Adjudication interfaces (React-based):** Deliver actionable insights directly to adjusters for decision-making.

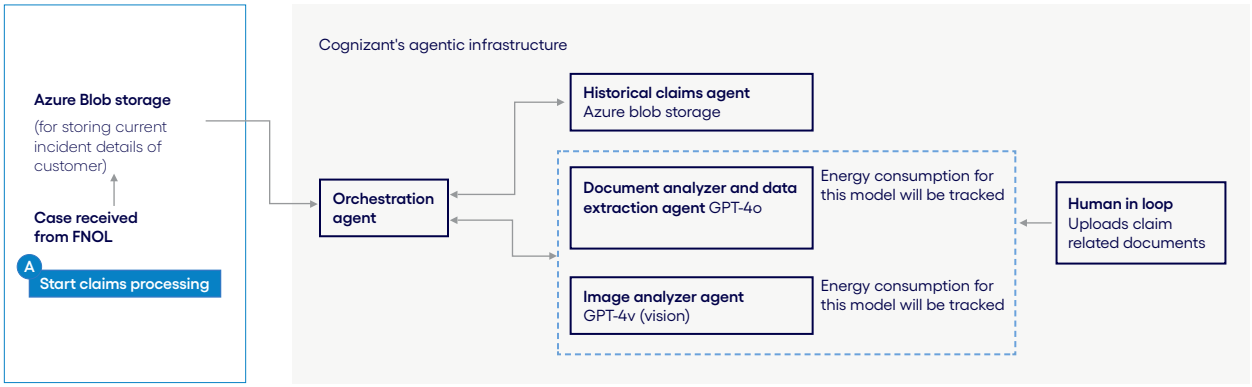

Figure 2: Claims architecture

By fusing frontier models for text intelligence and visual assessment, the system achieves both precision and scalability.

The architecture is cloud-native and microservices-driven, ensuring resilience during surge events and delivering sub-second latency from transcription to structured extraction.

What was once fragmented, manual, and reactive is now a cohesive, AI-driven pipeline — designed not only to address today's inefficiencies but also to future-proof insurance operations for the digital era.

Conclusion: A blueprint for the future of claims

FNOL and damage assessment are more than operational necessities — they are pivotal moments that shape customer trust and financial outcomes.

By embedding AI into these foundational processes, insurers can move beyond reactive, manual workflows to proactive, context-aware and empathetic claims experiences.

The benefits are clear: faster cycle times, reduced costs, enhanced fraud prevention and stronger customer loyalty. But the true breakthrough lies in cultural transformation — building claims journeys that are not only efficient but also humane.

In this future, AI does not replace the adjuster; it augments them, enabling faster, more accurate and empathetic decision-making at scale. For insurers aiming to thrive in an era of rising expectations, this represents not just a technology upgrade, but a strategic reinvention of claims management.

We invite enterprises and business leaders to pilot this solution in controlled environments. Together, we can co-create the next generation of AI-powered claims solutions and elevate the industry's aspirations to new heights.

Statements and declarations

Authors' contributions

All authors contributed to the study conception and design.

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Code availability

The offering developed as part of this study can be made available to enterprises interested in piloting the solution within their controlled environments. For access, please contact one of the authors.

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Ramalingam M is a transformation lead specializing in Claims Management. He is currently responsible for leading process improvement initiatives for a top-tier insurance carrier in the BFSI IOA sector. He focuses on identifying opportunities through lean methodologies, automation and AI —collaborating with cross-functional teams to enhance process efficiencyand minimize costs for both Cognizant and the customer.

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