The Risk Intelligence Gap.

How Exposure Data Deficiency Is Reshaping Property Underwriting And What API-First Risk Intelligence Can Do About It.

A Research Paper for Chief Underwriting Officers and Senior Underwriting Leadership

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April 2026 | Authors:
Anthony Peake, CEO, Intelligent AI
Sabine VanderLinden, CEO, Alchemy Crew Ventures

Commissioned by Intelligent AI | Prepared by Alchemy Crew Ventures

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Executive Summary.

The US P&C industry posted consecutive net underwriting losses exceeding $20 billion in both 2022 and 2023, yet 90% of US commercial buildings and 93% of UK properties are still being underwritten on materially incomplete risk data.[11][4][5][12] Commercial property insurers should adopt an API-first risk intelligence infrastructure, or verified, structured property data delivered programmatically into existing underwriting workflows at the point of decision, in order to close the structural data gap that is driving adverse selection, loss ratio volatility, and capital inefficiency across global portfolios.

The evidence from 30+ insurer annual reports, 20 structured interviews with leading insurance executives, and multiple secondary research streams converges on a single finding: Underwriters are making portfolio-defining decisions with materially incomplete data, and the cost of inaction is measurable, accelerating, and no longer defensible to boards or regulators.

In the United Kingdom, independent assessments of 43,000 commercial properties found that only 7% are adequately characterised in underwriting files, with 93% insured for an incorrect amount.[4][5]

Across the Atlantic, a Kroll appraisal study found that an estimated 90% of US commercial buildings carry inadequate coverage, with 68% falling short of their true risk profile by 25% or more.[12] Underwriters rate their access to risk intelligence at just 3 to 5 out of 10 at the moment of decision.[P]

The consequence: As noted above, the US P&C industry posted consecutive net underwriting losses exceeding $20 billion in both 2022 and 2023. Industry data show that, over the past two decades, US P&C underwriting results have been volatile, with profitable years materially outnumbered by loss-making years.[11]

This paper establishes that the risk intelligence gap is not due to a lack of data; it is an architecture, integration, and trust problem. Data exists across the ecosystem but fails to reach underwriters in a verified, structured form at the moment of decision. The research identifies a clear path to resolution: API-delivered, building-level risk intelligence that transitions the industry from asserted to known data, embedded in existing underwriting workflows with full provenance, explainability, and audit trails. In the US market, Intelligent Rebuild Cost Platforms can complement Risk API capabilities by automating the delivery of accurate, forward-looking rebuild cost data, therefore addressing the coverage accuracy gap that compounds exposure uncertainty.

> "If I had to put one sentence on a board slide about the risk data problem, it would be: We are making billion-dollar portfolio decisions on data that wouldn't pass a first-year audit."
>
> — CUO, global carrier

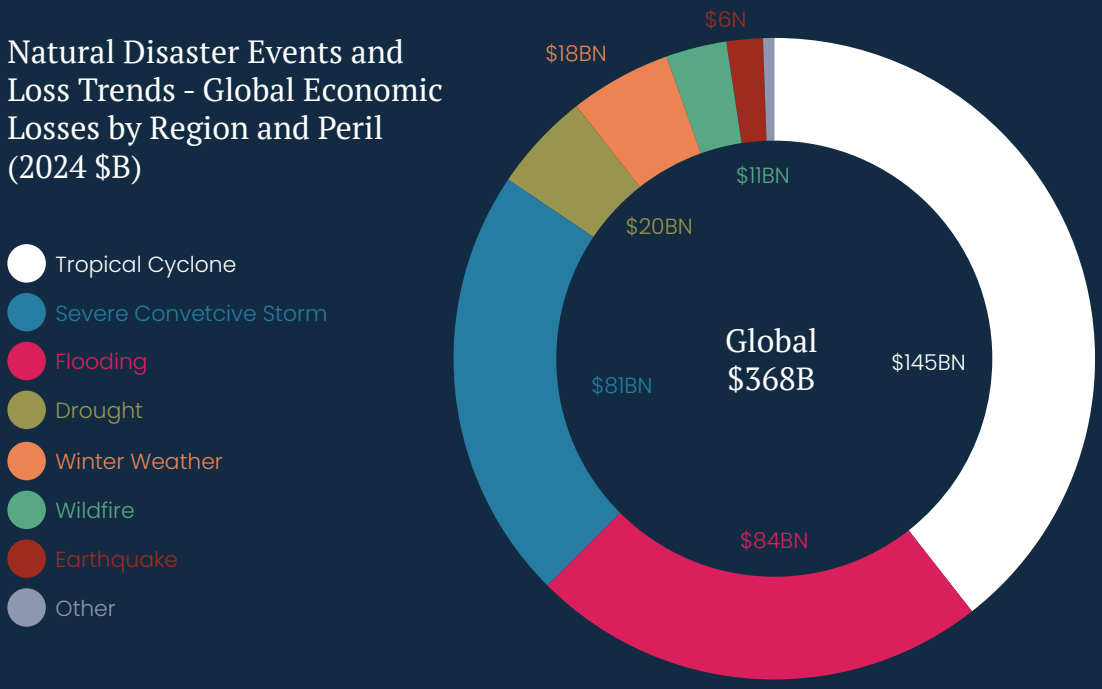
Impact Metric	Current State	Evidence Source
UK properties adequately characterised	7%	Insurance Times / Rebuild Cost Assessment [4][5]
US buildings with inadequate coverage (Kroll)	90%, with 68% short by 25%+	Triple-I / Kroll [12]
Submissions arriving incomplete	40–50% require follow-up	20 executive interviews [P]
Underwriter time on data chasing	50–55% of working day	Executive interviews [P]
Risk selection vs pricing asymmetry	$100M wrong risk vs $100K wrong price	CUO interviews [P]
Loss ratio advantage with verified data	20-point outperformance	FM Global 2024 Annual Report [AR]

1. The Transatlantic Exposure Visibility Crisis

The commercial property insurance market is navigating a period of profound structural vulnerability. In 2024, global insured natural catastrophe losses reached $145 billion, while economic losses totalled $368 billion, 14% above the long-term average.[1] For the fifth consecutive year, insured catastrophe losses exceeded $100 billion.[3]

In the United States alone, insured losses from weather-related catastrophes reached $112.5 billion in 2024, with 22 individual loss events exceeding the $1 billion threshold.[2] The 2025 Los Angeles wildfires produced the costliest-ever global wildfire event, with insured losses of approximately $40 billion.[15]

Natural Disaster Events and Loss Trends - Global Economic Losses by Region and Peril (2024 $B)



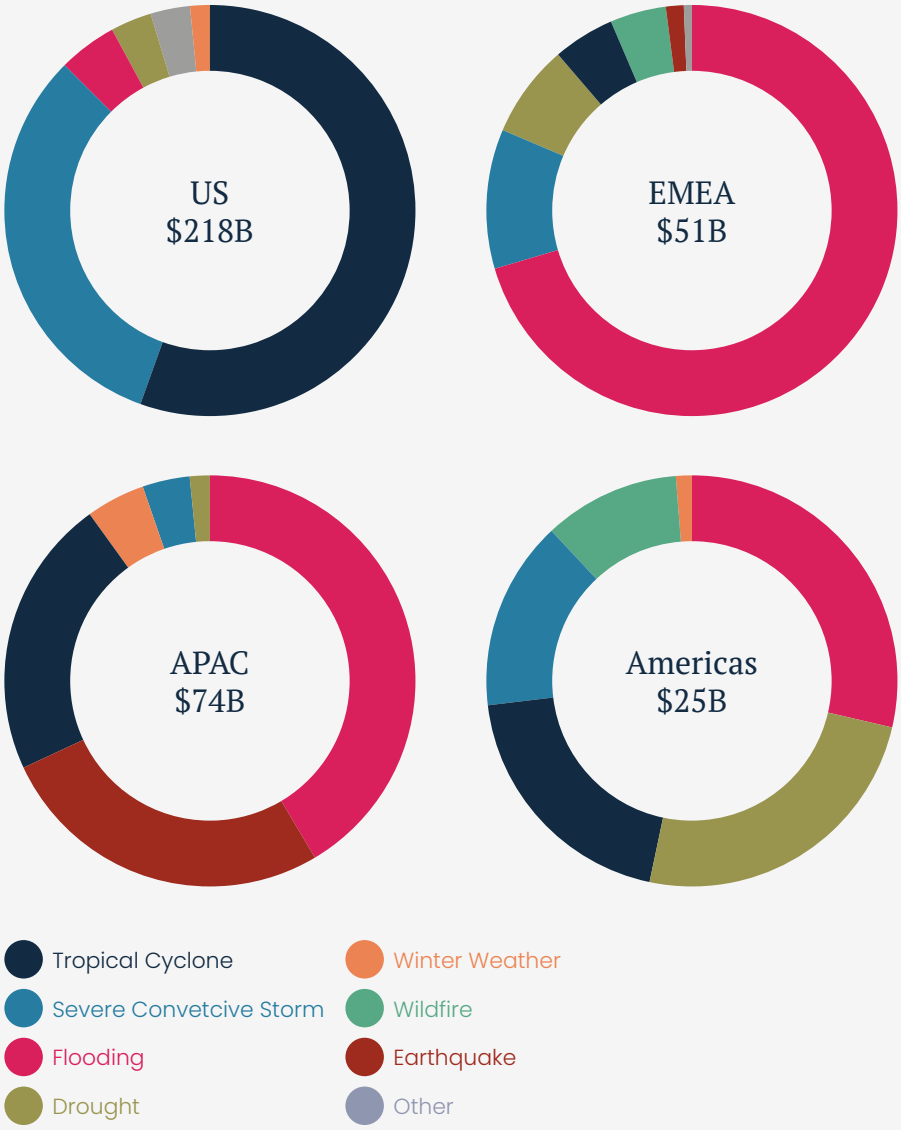
Data: Aon Catastrophe Insight

Despite these escalating threats, the data infrastructure used to assess these risks remains structurally deficient. Research into over 30 leading P&C insurer annual reports and 20 structured executive interviews reveals a striking automation paradox:

While the industry has invested billions in sophisticated AI decision engines and catastrophe models, these systems are being fuelled by unreliable, unverified, and often stale input data.[AR][P]

Natural Disaster Events and Loss Trends

Global Economic Losses by Region and Peril (2024 $B)



1.1 The United Kingdom Exposure Visibility Gap

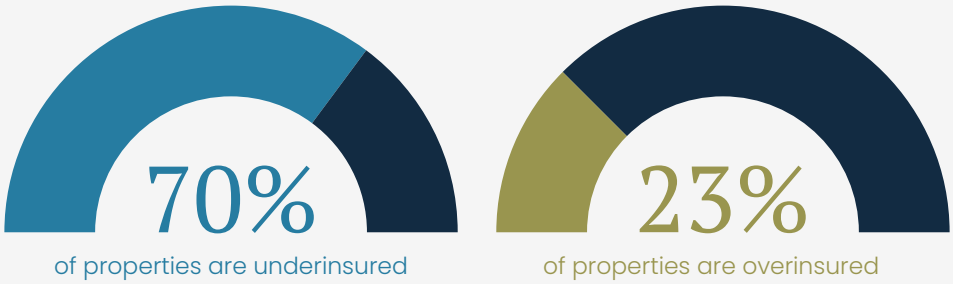
In the United Kingdom, independent analysis of 43,000 property assessments found that a mere 7% of properties are adequately characterised in underwriting files. Ninety-three percent of all UK properties are insured for an incorrect amount.[4][5] On average, UK properties are underwritten with only 67% of the required data for a full risk assessment, leaving carriers exposed to unrecognised hazard risk and adverse selection.[4][5] Certain sectors exhibit extreme vulnerability: For example, 85% of nursing and care home facilities are operating with mischaracterised risk profiles.[5][6]

In 23% of cases, properties are over-secured at an average of 129% of their actual exposure, resulting in unnecessary premium strain and inefficient capital allocation.[5] A separate study by Arthur J. Gallagher found that 46% of UK commercial properties carry inadequate coverage, with the average shortfall being 40%.[7]

We found that overall in the UK:

Source: Rebuild Cost Assessment Study

Meaning that the majority of property owners simply do not have sufficient cover. Here's the split:



On average, underinsured buildings are covered for just 67% for the amount they should be. While, on average. overinsured buildings are covered for 129%.

UK property claims hit a historic high of £5.7 billion in 2024, the largest amount paid out in any single year on record.[8] In 2025, payouts related to property damage reached a further high of £6.1 billion, a 50% increase over levels seen between 2021 and 2023.[32]

Construction inflation compounds the challenge: The BCIS General Building Cost Index recorded 4.4% building inflation in October 2025, with over 140,000 unfilled labor vacancies in the UK construction sector, creating persistent cost pressure.[9][10]

1.2 The United States Accumulation Challenge

The US commercial property insurance market generated over $254 billion in direct premiums written in 2023, yet this high premium volume is being deployed against a backdrop of massive unpriced risk.[19] A Kroll appraisal study found that an estimated 90% of US commercial buildings carry inadequate coverage, with 68% of files falling short of the true risk profile by 25% or more.[12] Severe convective storms, often considered "secondary perils," generated over $30 billion in US insured claims in 2024 alone.[14]

The 2025 Los Angeles County wildfires, which destroyed over 17,000 structures, revealed that many properties were carrying stale insurance baselines that did not reflect the dramatic spike in post-disaster labor and material costs.[P] US underwriters are increasingly concerned that insurance values are not keeping pace with changes in regulations and building codes.

> "Rebuilding costs now routinely exceed policy limits by hundreds of thousands of dollars. Building code changes create coverage gaps not anticipated in original policies."
>
> — VP, US insurance industry association

Mandates such as cement requirements in Miami or fire-retardant wood in Colorado have created coverage gaps, with rebuilding costs now routinely exceeding original policy limits by hundreds of thousands of dollars.[P]

Construction cost pressures are also intensifying. Current tariff rates are projected to increase construction materials costs by 9% relative to average pre-tariff levels.[16] The Associated General Contractors of America reports that 92% of US construction firms are having difficulty filling open positions.[17] Without property-level data that captures specific structural and regulatory requirements, US carriers remain dangerously exposed to catastrophic accumulation risks that historical models cannot predict.[P]

1.3 The Drivers of Exposure Uncertainty: Inflation and Data Decay

A major driver of the current transatlantic exposure visibility gap is the decoupling of policy terms from actual risk profiles. In the UK, construction material and labor costs have risen significantly, with a building inflation rate of 4.4%.[9]

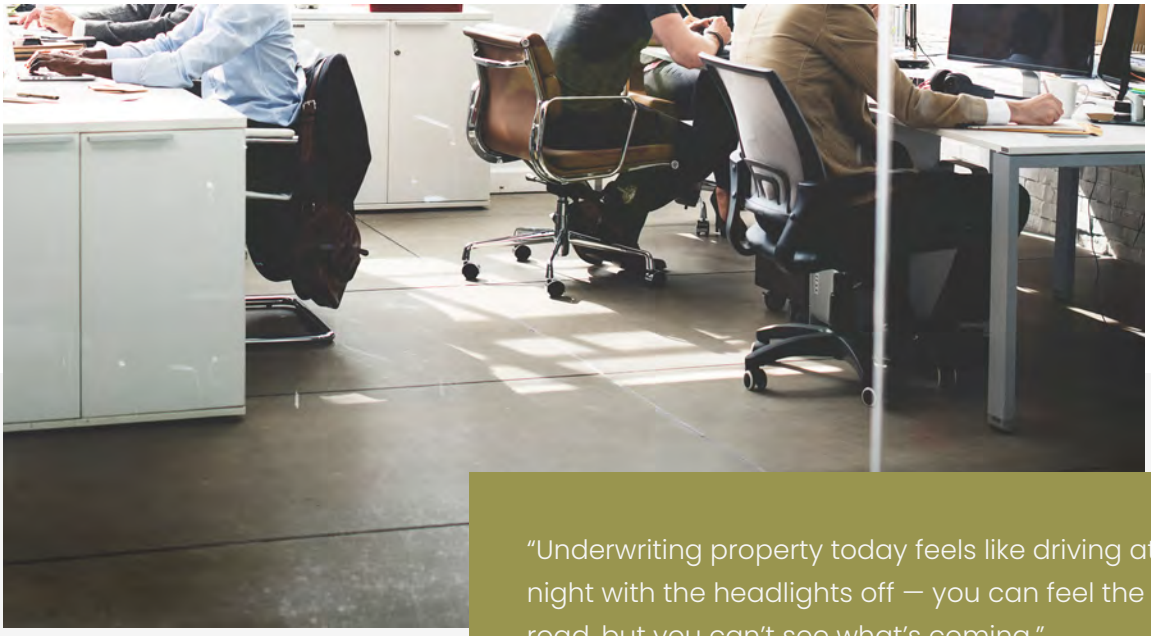
Supply chain disruptions and over 140,000 unfilled labour vacancies have made it virtually impossible for traditional assessment cycles — which typically refresh every 12 to 18 months — to keep pace with real-world costs.[9][10] In the United States, inflationary pressures range from 4.4% to over 7% in specific regions.[2] Many interviewees indicated that, in the current inflationary and regulatory environment, risk assessments older than three years are materially less reliable and should be treated with caution in underwriting and pricing decisions.[P]

Visibility Metric	United Kingdom	United States
Properties adequately characterised	7% [4][5]	~10% [12]
Properties with incorrect risk data	93% [5]	90% with inadequate coverage [12]
Average shortfall where under-characterised	40% (Gallagher) [7]	25%+ in 68% of cases [12]
Record annual property claims	£5.7B (2024) [8]; £6.1B (2025) [32]	$112.5B insured losses 2024 [2]
Construction inflation pressure	4.4% BCIS index [9]	9% tariff impact [16]

2. The Automation Paradox: Better Engines, Worse Fuel

Every leading P&C carrier is pursuing underwriting automation, but a review of 30+ annual reports reveals a striking asymmetry: massive investment in decision engines with minimal progress on input data quality. [AR] Insurers are building highly sophisticated AI models on top of unreliable fuel, where construction characteristics, year built, and fire protection signals arrive at the point of decision unverified.

> "Eighty percent of insurance tech spend goes to maintaining systems that average 36 years old. We're spending the technology budget on archaeology."
>
> — CEO, portfolio optimisation platform



> "Underwriting property today feels like driving at night with the headlights off — you can feel the road, but you can't see what's coming."
>
> — Head of Property, London specialty market

2.1 The Quantified Cost of Data Friction

This "data tax" is a primary driver of industry-wide operational efficiency loss. Senior underwriters, who should be focusing on technical pricing and risk selection, are instead consumed by administrative tasks. All 20 interviews pointed to the same conclusion: Data access at decision time scored only 3 to 5 out of 10.[P]

Forty to fifty percent of submissions arrive incomplete, forcing underwriters to spend 50 to 55 percent of their time on manual data chasing rather than risk judgment.[P] The estimated manual error rate in underwriting workflows is approximately 25%.[P]

Friction Point	Metric / Evidence	Business Impact
Manual data chasing	40–50% of submissions arrive incomplete [P]	Quote turnaround delays of 3–4 days
The data tax	50–55% of underwriter time spent on data [P]	Reduced capacity for new business; talent gap
Workflow error rates	~25% error rate in manual entry [P]	Mispriced exposure and loss ratio volatility
Data access rating	3 to 5 out of 10 at the point of decision [P]	Information asymmetry and adverse selection
STP rate (manual)	Below 20% for commercial property [P]	High operational expense ratios

2.2 Carrier Investment vs. Data Reality

Despite substantial technology investment by leading insurers, hazard risk often still goes unrecognised. The gap between investment ambition and input-data reality is consistent across the market:

Chubb spends $1B+ annually on technology with 3,500 engineers, yet acknowledges that risk location and construction age are frequently estimated rather than confirmed for catastrophe models.[AR]

AIG invested $300M in data and AI over two years, processing 370,000+ submissions via AIG Assist. However, their baseline data accuracy prior to generative AI deployment was approximately 75%, meaning one in four data elements was wrong or missing.[AR]

Intact has deployed over 500 AI models with $150M+ annual benefits, yet notes the scale of data generation makes quality a persistent challenge.[AR]

Hiscox reduced quote times from days to minutes after deploying Lloyd's first AI-enhanced lead underwriting model, yet notes that incomplete property data continues to force referral to human underwriters, directly constraining straight-through processing rates.[AR]

> "Pick the wrong risk, and it could cost you a hundred million. Wrong pricing, maybe a hundred thousand. That's the asymmetry nobody talks about."
>
> — CUO, global carrier

Liberty Mutual is deploying granular hazard-grade underwriting infrastructure, with its GRS property division achieving a 75% Combined Operating Ratio and generating approximately $1.2 billion in pre-tax operating income. The carrier reduced its US Severe Annual Aggregate Loss by approximately 16% following a portfolio review, yet explicitly flags inflation in repair costs as an ongoing challenge to sum insured accuracy.[AR]

FM Global achieved a 51.5% loss ratio versus a planned 71.6%, a 20-point outperformance driven by engineering-verified property data from 46,245 completed risk improvement projects in 2024. This mutual, engineering-visit model proves the value of known versus asserted data, but is unscalable for the broader market.[AR]

2.3 The Broker Data Bottleneck

Broker reports confirm the quality problem with submissions on the distribution side. Aon deploys 135 catastrophe models across almost 90 countries and launched its Broker Copilot initiative in June 2025.[AR] Marsh McLennan has deployed LenAI, a generative AI platform with over 40 use cases. WTW's 10-K details comprehensive advisory capabilities with substantial analytical infrastructure. Yet none has solved the fundamental problem: pre-populating submissions with verified, structured COPE data before they reach underwriters. Brokers enrich for placement, not for underwriting workflow. This creates a specific structural gap at the submission layer.[AR]

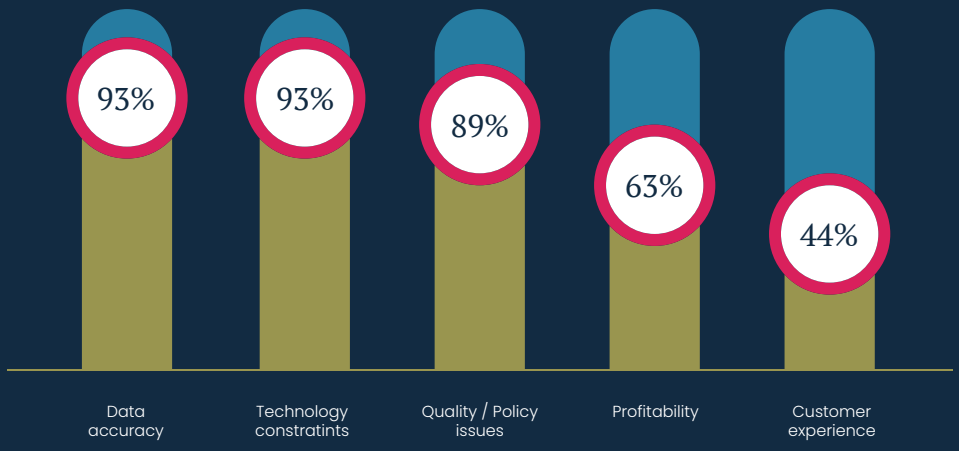
> "Our underwriting process is modern... until we hit the submission. Then it's 2004 again."
>
> — Technology lead, insurer venture arm

The root causes are well understood: client knowledge gaps (insureds frequently do not know their own building specifications), operational burden (site visits and surveys are time-intensive), time pressure (placement deadlines override data completeness), and perceived low value (clients do not see COPE collection as beneficial to them).[P]

3. COPE Data Failures: The Bedrock of Exposure Uncertainty

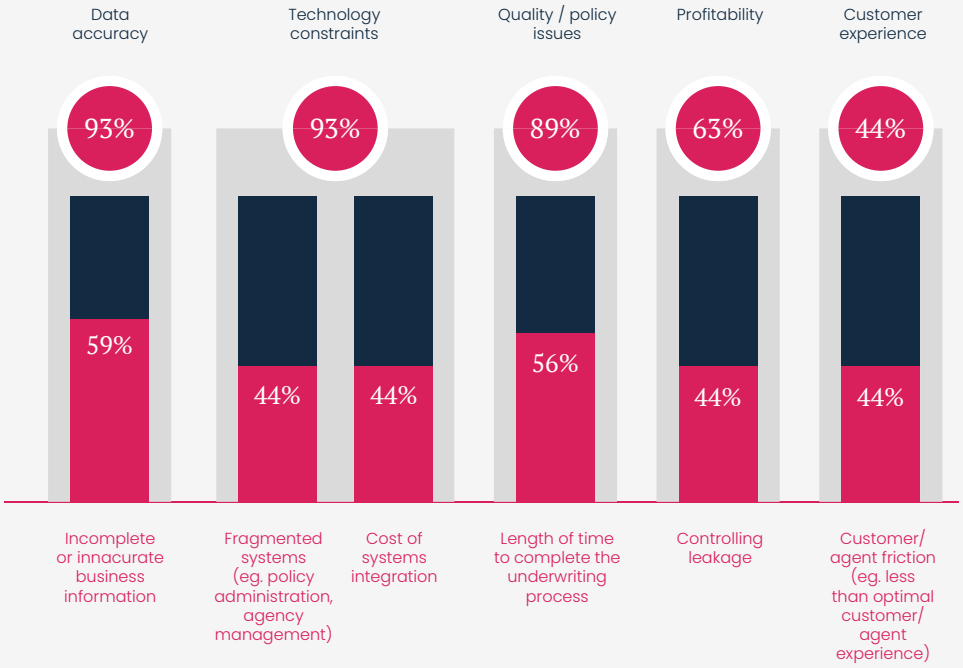
The Construction, Occupancy, Protection, and Exposure (COPE) framework remains the standard for property underwriting, yet research identifies critical data gaps across every element that undermine risk selection, pricing adequacy, and portfolio performance. LexisNexis research found that 93% of commercial property carriers cite data accuracy as a top concern, yet 84% still intake application data via manual methods — keying in results, PDF readers, or mobile scanning — contributing to average quote times exceeding two days for SME [20] while reaching 7-10 days for large commercial underwriting.

Percentage of commercial property carriers indicating challenges in applications and underwriting in the below categories.



Source: LexisNexis Risk Solutions

Drilling down into the categories above, we see the top challenge carriers identify within each area.



Source: LexisNexis Risk Solutions

3.1 Construction and Building Attributes

Building attributes are consistently cited as the most material gap. Across all 30+ annual reports reviewed, no insurer claims COPE completeness at submission. Construction type is typically stated but rarely verified against the current condition; the year of construction and renovation history — critical for catastrophe model accuracy — are either based on engineering data or absent entirely.[AR]

> "The uncomfortable truth about COPE is that it's gathered once, trusted forever, and tested only at the point of loss."
>
> — Market consensus across all interviews

MS Amlin's report is explicit: Data must be checked for any limitations, including data completeness and data quality, with adjustments made by underwriters and subsequently ratified by the Deputy CUO, layering manual validation on top of automated systems.[AR]

3.2 Occupancy and Operations Detail

Occupancy is the most dangerous blind spot because it drives loss severity. A leading global carrier bound a routine warehouse risk that contained an undeclared basement dry-cleaning operation, resulting in a $47 million loss.[P] Occupancy codes like NAICS provide a label, but they do not indicate whether flammable liquids are stored on the third floor.[P] Tenant mix and hazardous operations details are frequently outdated, leading to claim severity surprises that destabilize loss ratios.[P]

3.3 Protection Systems: Asserted vs. Known

Information regarding fire suppression, sprinklers, and monitoring arrives in inconsistent formats. While 80% of submissions declare sprinklers, fewer than 20% are verified to be functional.[P] Physical inspection costs of $5,000 to $8,000 per site make verification economically impractical for mid-market risks without automated intelligence.[P] The technology for automated verification exists — 4 million IoT devices are deployed for protection verification — but remains disconnected from underwriting workflows.[P]

3.4 Exposure and Hazard Intelligence

This is where the gap between data existence and usability is most acute. Critical hazard signals — flood elevation, wind speed, seismic zones — are often absent at the moment of decision. The 2024 Atlantic hurricane season generated $51 billion in insured losses from tropical cyclones.[14]

Yet many underwriters still rely on postcode-level hazard scores rather than building-specific intelligence. The data that matters most for wildfire survival is the zero-to-five-foot zone around the structure — the defensible space — which is rarely captured in submissions, according to one Property Risk and Product Design VP.[P]

3.5 The Vulnerability Multiplier: Business Interruption and Supply Chain

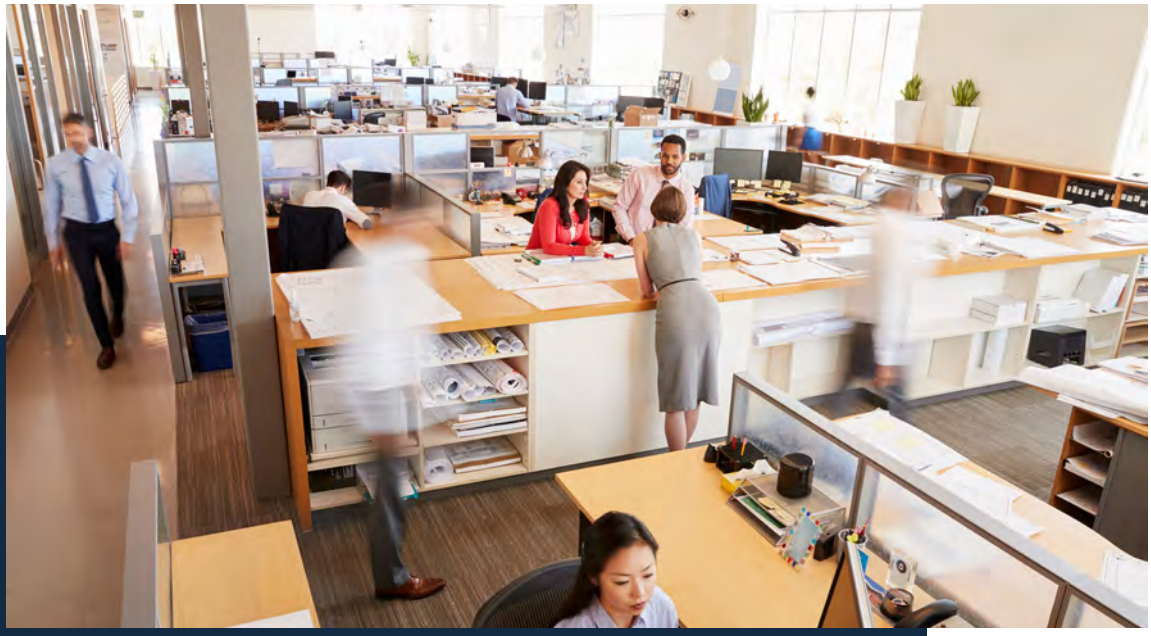
> "Seven percent of the building damaged, ninety-three percent still running: $300 million loss. The occupancy data said 'manufacturing.' It didn't say which manufacturing."
>
> — CUO, global carrier

Perhaps the most dangerous operational blind spot lies in the assessment of Business Interruption (BI) and Contingent Business Interruption (CBI). Traditional underwriting focuses on the physical building, but the true financial exposure often lies in the operational interdependencies.[P]

One interviewee described supply chain risk as the 'black sheep' of property insurance, reflecting the difficulty of quantifying it with current data.[P]

CBI accumulation is almost impossible to monitor because the industry lacks granular data on the interdependencies between facilities and their suppliers.[P] Research suggests that BI coverage is systematically underpriced by a factor of 3 to 5 because underwriters simply do not have the supply chain data to price it accurately.[P]

COPE Gap	Description	Consequence
Incomplete attributes	Missing year built, height, or materials	Inaccurate catastrophe model performance
Occupancy blind spots	Undeclared high-hazard tenants	Claims severity surprises ($47M example) [P]
Protection uncertainty	Unverified maintenance of sprinklers/alarms	Overestimated protection credits
Exposure invisibility	Coarse postcode-level hazard assessment	Unrecognised hazard risk and accumulation
Stale data	Renewing on data >3 years old	Failure to capture building/peril changes
Supply chain opacity	No visibility on CBI concentration	BI underpriced by factor of 3–5x [P]



4. The Financial Implications of Data-Deficient Underwriting

4.1 Selection Asymmetry: The $100 Million Error

Executives describe a stark asymmetry in decision-making. The industry has historically focused on pricing precision, but risk selection driven by exposure data quality is 2 to 4 times more valuable.[P] Mischaracterised risk leads to adverse selection, where the carrier wins the risks that other data-rich competitors have declined.

> "The difference between good risk and bad risk in a portfolio is 30 to 40 basis points of loss ratio. The difference between good underwriting and bad underwriting is 10 to 15 basis points. That's the leverage."
>
> — Senior consultant, global advisory firm

4.2 Loss Ratio Volatility and Claims Surprises

Data gaps do not just affect the point of bind; they manifest as catastrophic loss volatility. The following cases, cited by senior executives during deep-dive interviews, illustrate the scale of downstream impact:

The Supply Chain Cascade: An industrial facility suffered only 7% physical damage, yet triggered a $300 million loss because 93% of the business interruption was tied to unmodelled supplier dependencies.[P]

The Tornado Sliver: A $600 million loss occurred at a distribution centre because the exact geocoordinate of the building relative to the tornado path was unknown. This was a siting problem, not a peril problem.[P]

The Bad Faith Multiplier: A $27,000 property claim disputed on poor data resulted in a $92 million jury verdict in a US court: a 3,400x multiplier.[P]

The Global Supply Chain Ripple: A $2 billion loss from a manufacturing disruption in Indonesia that cascaded through global supply chains with no visibility on concentration.[P]

4.3 Premium Inefficiencies and Pricing Adequacy

When risk data is incomplete, carriers apply uncertainty loading to premiums — conservative pricing that protects the loss ratio but reduces competitiveness on well-documented risks.[AR] [P] Portfolios may become more exposed to adverse selection, particularly where higher-quality risks gravitate to carriers with better data: High-quality risks are lost to competitors willing to price on better data, while data-poor risks are retained at inadequate margins. McKinsey research indicates that leading insurers using analytics in underwriting have achieved 3 to 5 point improvement in loss ratios and a 10–15% increase in new business. [25]

4.4 Reinsurance and Capital Implications

Any change to appetite, pricing, or product mix has reinsurance consequences. Reinsurers, including Munich Re and Swiss Re, price uncertainty into their programs. Primary carriers with poor data quality pay more for reinsurance protection. Brit's LA wildfire reserves of $136 million (best estimate, after reinstatement) against reinstatement premiums of only $23.3 million reveal a $112.7 million gap — direct evidence of how exposure data deficiency cascades to the balance sheet. [AR] Swiss Re maintains 200+ proprietary catastrophe models, all dependent on input data quality, while Aon deploys 135 catastrophe models across 90 countries with $40M+ invested in its AI database.[AR]

Economic Vector	Legacy Baseline	AI-Native Projection	Strategic Value Driver
Loss Ratio	High volatility [AR]	5%+ Improvement [25]	Sub-second risk validation via API
Premium Adequacy	Significant leakage [P]	15% GWP increase potential [25]	Correcting the exposure data gap
Operational Speed	Weeks/days to quote [P]	>90% time reduction [AR]	API-driven automation
Portfolio Visibility	10% surveyed [CD]	100% real-time oversight [CD]	Digital Twin continuous monitoring

5. Stakeholder Alignment: Bridging the Chasm Across the Value Chain

Modernizing risk intelligence requires addressing the divergent incentives and decision-making pressures of key personas in the insurance value chain. Submissions often tell underwriters what the broker wants them to see, rather than the reality of the physical asset. [P] Research identifies four critical stakeholder archetypes, each with distinct data needs and adoption criteria.[P]

5.1 The Portfolio Guardian (Chief Underwriting Officer)

The CUO is responsible for combined ratio performance at the board level. Facing rising catastrophe volatility and harder reinsurance costs, the CUO's pain points include reactive portfolio steering, inconsistent Schedules of Values, and the inability to defend underwriting decisions with actuarially robust data. The CUO requires geocoded exposure accuracy to enable predictive accumulation monitoring and defensible pricing for the board.[P]

> "Brokers will only invest in data if they see carriers using it. Carriers will only invest in data if they see brokers investing in it. We're in a coordination game. Someone has to move first."
>
> — Innovation leader, global broker

5.2 The Distribution Strategist (Global Broker)

The Head of Placement prioritizes market access and speed-to-quote. Struggling with spreadsheet chaos and submissions being rejected due to missing COPE data, brokers seek API-ready submissions that improve quote-to-bind ratios. The structural misalignment is clear: Brokers bear the cost of data collection, but insurers capture the benefit.[P]

5.3 The Specialty Builder (MGA CUO)

The MGA Founder competing on underwriting precision needs to prove superior risk selection to capacity providers who demand total exposure clarity. For lean teams, automation is a survival mechanism, enabling building-level hazard overlays without physical site visits.[P]

5.4 The Infrastructure Architect (Insurtech CPO)

Focusing on enterprise integration, the technology leader identifies inconsistent data formats as the primary barrier to adoption.

The need for a clear industry taxonomy and interoperable APIs is critical for embedding risk intelligence into legacy underwriting workbenches.[P]

Persona	Core Mandate	Key Data Pain	Risk Intelligence Value
CUO	Combined ratio performance	Reactive steering; inconsistent SoVs	Predictive accumulation; defensible pricing
Broker	Placement success	Manual rekeying; STP rejection	API-ready, enriched submissions
MGA	Niche profitability	Capacity provider pressure	Automated risk selection proof
Insurtech CPO	Integration and AI	Fragmented data formats	Standardised risk data payload

6. The Risk Intelligence Solution: From Risk Data Gaps to Decision-Grade Intelligence

To bridge the information asymmetry, the industry must transition from static databases toward dynamic risk topologies. This shift is not about having more data. It is instead about how that data is structured, verified, and delivered at the moment of decision.

> "Stop focusing on the data gap. Start focusing on taxonomy, techniques, and architecture."
>
> — Risk architecture lead, global advisory firm

6.1 Pillar I: The Intelligent Risk API (UK and US)

Intelligent AI's Risk API serves as a universal translator for property risk intelligence. It ingests a property address and instantly augments it with over 100 structured data points across six categories: structural attributes, occupancy intelligence, fire protection data, natural peril exposure, human-made risk signals, and forward-looking climate projections.[24] This eliminates the need for manual data entry and ensures that every submission is assessed against the same high-fidelity baseline.

Intelligent AI's Risk_API delivers decision-grade intelligence in sub-second timeframes, enabling real-time triage and automated referral logic. By mapping building footprints against 3D structural data, underwriters can identify specific vulnerabilities, such as a basement critical-infrastructure site in a flood zone or a roof with unauthorized modifications that increase wind risk.[P][AR]

Available across both the UK and US markets, Intelligent AI's Risk API addresses the core submission-layer gap that no broker platform or internal automation has yet solved: pre-populating risk files with verified, structured, building-level intelligence before the underwriter makes a decision.

Data Category	Key Elements	Decision Value
Structural	Materials, roof type, year built, stories	Construction risk grading
Occupancy	Tenant mix, Occupancy codes, Leaseholder data	Operational hazard detection
Fire protection	Hydrant distance, station response, sprinklers	Adequate policy terms
Natural peril	Flood, wind, tornado, hail, hurricane scores	CAT model input validation
Human-made risk	Crime patterns, social risk, adjacent industrial	Liability exposure insights
Climate future	Sea level rise (30–100 yrs), storm surge paths	Forward-looking risk selection

6.2 Pillar II: The Intelligent Rebuild Cost Platform (US Market)

CUOs interviewed for this paper describe understanding the value of the individual building as the "number one data point."[P] In the US market, where building code drift, regional tariff impacts, and labor shortages have rendered historical property records obsolete, the accuracy of rebuild cost data is a critical determinant of pricing adequacy and portfolio stability.

Intelligent AI's Rebuild Cost Platform addresses this gap by automating the delivery of accurate, forward-looking rebuild cost data. Unlike legacy calculators that rely on broad regional averages, the platform factors in real-time inflationary spikes, local labor shortages, and complex cost modifiers such as demolition, professional fees, and external works costs. This shifts rebuild cost from a backward-looking estimate to a forward-looking capital risk model.

The platform enables carriers to assess sum insured accuracy across 100% of a portfolio annually, rather than relying on the periodic manual valuations that currently leave 90% of US commercial properties with stale or inadequate cost data.[12] When combined with Intelligent AI's Risk API, the result is a comprehensive picture: verified hazard exposure paired with accurate replacement-cost intelligence, delivered at the point of the underwriting decision.

For US carriers, this combination addresses two of the most acute sources of portfolio exposure: the risk data gaps that drive poor risk selection, and the rebuild cost inaccuracies that result in inadequate policy terms and downstream claims disputes.

6.3 Pillar III: Living Digital Twins of Risk

The culmination of this architecture is the creation of living digital twins, virtual 'data' replicas of physical assets enriched continuously with multi-dimensional data. These twins combine building footprints, 3D structural data, elevation data, real-time peril scores, and verified rebuild-cost intelligence. They demonstrate how digital twins of risk and rebuild cost, rigorously tested with leading insurers and brokers through Lloyd's Lab, enable underwriters to move from assumption-based pricing to evidence-driven decision making.

Contingent business interruption is widely viewed by practitioners as one of the largest unquantified exposures in commercial property portfolios. Their estimates suggest that, in some segments, BI and CBI coverage may be underpriced by a factor of 3 to 5, reflecting the absence of granular supply chain data in many underwriting models.[P] Digital Twins provide the connective tissue to begin quantifying these interdependencies at portfolio scale.

> "Trusted data means three things simultaneously: where did it come from, can I explain it, and can I prove I used it correctly. Remove any one of those, and the underwriter won't touch it."
>
> — Risk consulting principal, leading global firm

6.4 Trust Architecture: The Actuarial Imperative

For AI-powered underwriting to be adopted at scale, it must clear a high bar for trust and explainability. Every interviewee emphasized that trust is the non-negotiable gate.[P]

The trust architecture must provide four elements: source attribution (where did this data point come from), freshness indicator (when was this last verified), confidence score (how reliable is this data point), and an immutable audit trail of the data used at the moment of the bind.[P]

Regulatory requirements reinforce this imperative. The EU AI Act (2026) introduces transparency and oversight obligations for AI in risk-based decisions.[22] The NAIC AI Model Bulletin, adopted by 24 US states as of March 2025, requires clear documentation of data lineage and bias testing in rating models.[27]

Lloyd's Blueprint Two, the market-wide data standardization program, was effectively paused in late 2025, extending the window to identify and access complementary risk intelligence solutions.[28]

Trust Dimension	Market Expectation	Evidence Source
Accuracy benchmarks	>90% on core attributes; side-by-side vs. broker data	AIG achieved 75% to 90%+ [AR]
Explainability	Full source attribution, confidence score, methodology	CUO survey [P]
Audit trail	Immutable record; Solvency II compliant	Hiscox four-pillar AI governance [AR]
Conflict resolution	Clear protocol when API data contradicts broker data	20 executive interviews [P]
Governance sign-off	Passes model governance, CDO, and CUO review	EU AI Act; NAIC (24 states) [22][27]
Workflow integration	Minimal additional friction (ideally no extra clicks); embedded in UW workbench	Adoption standard [P]

7. Evidence-Based Performance: Delivering Operational Alpha

The strategic value of a modernized risk data layer is evidenced through enterprise-scale deployments that demonstrate a direct link between data quality and financial performance.

7.1 100% Portfolio Oversight

A major UK mutual insurer managed over 100,000 commercial addresses. Under a legacy manual model, site visits covered only 10% of the portfolio, leaving 90% exposed to unrecognized hazard risk. By deploying an API-first architecture processing 500,000 properties annually with 100+ data points each, they transformed to 100% real-time oversight. Assessment cycles collapsed from 18 months to near real-time, freeing engineers for strategic consulting. [CD]

7.2 Loss Frequency Reduction Through Verified Data

In US wildfire-prone zones, a carrier utilized verified property-level data to assess defensible space: the zero-to-five-foot zone around structures. By using verified environmental data rather than self-reported assertions, they achieved a 60% reduction in loss frequency for properties meeting specific mitigation criteria.[P] This demonstrates that exposure intelligence drives direct loss ratio outperformance.

7.3 Frontier Insurers' Benchmarks

Industry benchmarks corroborate these results. Accenture reports that AI and automation technologies can reduce underwriting processing times by 60–70%,[26] while McKinsey estimates that up to 70% of underwriting tasks are now automatable with existing technologies.[25]

Trust Dimension	Market Expectation	Evidence Source
London specialty carrier	AI-enhanced UW with enriched data	Quote cycle: 3–4 days to 30 mins [AR]
UK cyber/SME MGA	Single-click straight-through processing	50% of submissions auto-processed [P]
US personal lines carrier	Verified defensible-space data	60% loss frequency reduction [P]
Australian insurer venture arm	Structured property data in claims	35% claims cycle time reduction [P]
Data orchestration platform	System-to-system integration	4 hrs vs. typical 6 wks; 80%+ automation [P]

8. Implementation Roadmap: The Path to Adoption

Executing a modernization strategy requires a departure from traditional, multi-year IT transformation cycles. The research consensus is clear: Embed within existing workflows, prove accuracy on a narrow segment first, and show underwriters they can trust the output by providing full provenance, timestamps, and confidence scores.[P]

> "Where do great data initiatives go to die in your organization? The space between the proof of concept and production. Budget ownership evaporates. The champion moves on. The pilot rots."
>
> — Market consensus across multiple interviews

8.1 Phase 1: The 2-Week Diagnostic

Insurers begin with a high-level diagnostic of their current portfolio. By running a live processing of a sample of several thousand risks through an API-first enrichment engine, leadership can quantify the extent of unrecognized hazard risk and data breakage. For US carriers, this diagnostic includes rebuild cost accuracy analysis using the Intelligent Rebuild Cost Platform. This produces a board-ready business case for premium recapture and loss ratio stabilization.[P]

8.2 Phase 2: The 90-Day Sandbox

A live test could focus on mid-market commercial property ($5M to $50M TIV) in a defined geography with high data friction or a larger commercial portfolio.[P] Success metrics include reduction in referral rates (targeting below 15%) and quote turnaround time (targeting under 30 minutes). The 90-day trust criteria are non-negotiable: accuracy benchmarks above 90% on core attributes, full source attribution for every data point, and an immutable audit record.[P]

8.3 Phase 3: Workflow Integration

Risk intelligence is integrated into the existing underwriting workbench (e.g., Guidewire, Duck Creek, Majesco, Salesforce, Chubb Studio). This ensures underwriters do not leave their primary environment, a frequent cause of innovation failure. Enrichment must be delivered as part of the triage gateway to enable automated decisioning.[P]

Phase	Duration	Target Outcome
Diagnostic	2 weeks	Quantified data tax and unrecognized hazard risk; board-ready business case
Sandbox testing	90 days	Proven accuracy vs. broke data; referral reduction; underwriter trust scores
Workflow integration	3–6 months	API-delivered enrichment embedded in underwriting workbench
Scale and automate	Ongoing	70%+ STP for mid-market commercial property risks

9. Vision 2030: Predictive Underwriting and Cognitive Infrastructure

By 2030, property underwriting will move from periodic snapshot analysis to continuous monitoring and real-time adjustment. Five converging market forces are accelerating this transition:

- AI underwriting adoption is scaling rapidly, but requires structured, verified property data it cannot generate itself.
- Climate-driven loss volatility is exposing the financial consequences of incomplete data.
- Reinsurance and regulatory requirements increasingly demand granular, auditable exposure data.
- Commercial real estate recovery is driving increased underwriting volume, requiring scalable data infrastructure.

Persistent protection gaps — Swiss Re estimates that only 43% of global economic disaster losses were insured in 2024, leaving a $1.8 trillion shortfall — are forcing the industry to confront the exposure data gap.[P][AR][29]

9.1 Forward-Looking Catastrophe Models and Climate Drift

Future catastrophe models will shift from backward-looking historical analysis to forward-looking climate forecasting. Cognitive infrastructure — the fusion of knowledge, processes, and streaming data from satellite and IoT — will allow carriers to anticipate the migration of flood, subsidence, and wildfire zones rather than reacting after a catastrophic season.

The UK illustrates the urgency. The Environment Agency's updated NaFRA2 assessment places 6.3 million properties in England at risk of flooding, a figure projected to reach 8 million — one in four properties — by mid-century under current climate scenarios.[30] Subsidence is emerging as the next major climate-driven peril: UK domestic subsidence payouts reached £307 million in 2025, the highest on record, while the British Geological Survey estimates shrink-swell costs rising from £400 million to over £600 million annually by 2050.[31]

In the United States, the combination of wildfire zone expansion, severe convective storm frequency increases, and coastal flood risk acceleration demands property-level intelligence that ZIP code-level models cannot provide. Intelligent AI's Rebuild Cost Platform becomes particularly critical in this context: As climate drift forces rebuilds under new building codes in new risk zones, the gap between historical cost data and actual replacement cost will widen further without automated, forward-looking cost intelligence.

9.2 From Repair and Replace to Predict and Prevent

The ultimate goal of AI-native underwriting is the transition to a prevention economy. Insurers act as resilience partners, using real-time data to help clients mitigate risk before a loss occurs. FM Global's model proves this is achievable: Clients reduced loss expectancies by $1.052 trillion in 2024 through 46,245 completed risk improvement projects, all driven by granular property data. [AR] The question is how to deliver this model at scale, beyond a mutual structure, to the broader commercial market.

> "The market will move faster than most carriers expect. The ones who fix the data problem first will own the best risks."
>
> — SVP Product Management, US personal lines carrier

Conclusions

The commercial property insurance market stands at a crossroads. The risk intelligence gap — characterized by 93% of UK properties insured for an incorrect amount and 90% of US commercial buildings carrying inadequate coverage[12] — is significantly driven by an industrial-era data architecture attempting to manage 21st-century risks. In the UK alone, 6.3 million properties sit in flood-risk zones, with climate projections pushing that figure to 8 million by mid-century.[30] In the United States, building code drift, tariff-driven construction inflation, and labor shortages have rendered historical property records functionally obsolete. The data required to price these risks with high confidence is often incomplete, fragmented, or not readily usable in many carriers' current systems.

The technology to resolve this problem exists today. The evidence is clear: FM Global's 51.5% loss ratio in 2024, despite elevated catastrophe activity, highlights the resilience of an engineering-led underwriting model built on high-quality, risk-level data.[AR] Across the broader market and in specific case studies, carriers deploying API-first enrichment have reported 60% loss frequency reductions through verified property data,[P] quote cycles compressed from days to under 30 minutes,[AR], and up to 50% of submissions auto-processed through straight-through workflows.[P] McKinsey estimates that up to 70% of underwriting tasks are automatable with current technology.[25]

For Chief Underwriting Officers and senior underwriting leadership, the mandate is clear. Adopting an automated, API-first risk intelligence layer — complemented in the US market by Intelligent AI's Rebuild Cost Platform for sum insured accuracy —is rapidly becoming a practical requirement for sustainable capital management, robust regulatory documentation, and consistent underwriting discipline under the EU AI Act and NAIC Model Bulletin.[22][27] Carriers that close the data gap earlier are likely to compete more effectively for better-quality risks and more favourable reinsurance terms.

> "The biggest bottleneck is not capacity. It is operating models."
>
> — Innovation leader, global broke

The Ask: Allocate a 90-day live-test window. Process 200 to 500 historical submissions with known outcomes through Intelligent AI's Risk API and, for US portfolios, Intelligent AI's Rebuild Cost Platform. Compare enriched data against broker-submitted data and claims experience. Quantify the "data tax". Present the business case to the board with a measurable path to loss ratio improvement, premium recapture, and operational efficiency gains. The evidence base for action is substantial, and there is a clear opportunity to drive competitive advantage in the industry right now.

Research Methodology

This paper is the product of a rigorous, multi-method research program designed to bridge the gap between published market data and the lived operational reality of commercial property underwriting. The research was conducted between January and March 2026 and synthesized primary and secondary sources across European and North American markets.

Research Design

The study employed a convergent mixed-methods design, combining quantitative market analysis with qualitative primary research. This approach was selected to triangulate findings across multiple evidence streams: published industry data, regulatory filings, and first-person practitioner testimony.

Primary Research: Structured Practitioner Interviews

The centerpiece of the research was a series of 20 in-depth, semi-structured interviews conducted with senior practitioners representing diverse roles across the insurance ecosystem. Interviewees included Chief Underwriting Officers, Heads of Data and Analytics, Chief Product Officers at insurtech firms, specialty MGA leaders, global broking placement heads, risk engineers, and reinsurance executives.

Each interview followed a semi-structured format lasting between 45 and 60 minutes. Geographies covered include the US, UK, Europe, Latin America, and Australia. The research also incorporates insights from speaking engagements at leading conferences and Reuters Insurance Events underwriting panel insights.

All interview participants were assured confidentiality regarding proprietary performance metrics, with attribution limited to publicly available statements or generalized role-based descriptions.

Primary Research: Conference Insights

The research was further enriched by insights gained through direct participation in industry conferences and events, including underwriting panels at Reuters Insurance Events. These forums surfaced emerging themes around AI adoption barriers, data standardization initiatives, and cross-market regulatory developments.

Secondary Research: Annual Reports and Industry Analysis

A systematic analysis was conducted across 30+ annual reports from leading P&C insurers, reinsurers, and specialist carriers: AIG, Allianz, Aon, Aviva, AXA, Beazley, Brit, Canopius, Chaucer, Chubb, CNA Financial, FM Global, Generali, Hiscox, Intact, Liberty Mutual, Lloyd's of London, Marsh McLennan, MS Amlin, Munich Re, QBE, Swiss Re, The Hartford, Tokio Marine Kiln, Travelers, WTW, and Zurich. Additional secondary research includes 20+ industry reports from LexisNexis, McKinsey, Accenture, Deloitte, Oliver Wyman, BCIS, Gallagher, and the Insurance Information Institute.Readers should interpret conclusions in light of these tiers. Where the argument rests on E1/E2, it is grounded in independently verifiable statistics. Where it relies on E3/E4, it reflects structured expert judgement and scenario thinking, offered to inform board-level debate rather than prescribe a single "right answer."

Evidence Confidence Framework

Level	Definition	Examples
E1 Verified	Quantitative facts drawn from audited filings, regulator-recognised statistics, or established industry studies, such as insurer annual reports, Aon and Swiss Re catastrophe data, Rebuild Cost Assessment UK underinsurance studies, Kroll/Triple-I US underinsurance findings, and LexisNexis research on COPE and data accuracy.	FM Global ~51.5% loss ratio; Hiscox quote reduction; Intact 500+ AI models
E2 Derived	Calculations or ratios that logically follow from E1 data (for example, converting "7% accurately insured" into "93% insured for an incorrect amount", or expressing Brit's LA wildfire reserve gap as £112.7m). These are explicitly labelled as derived rather than independently measured.	Industry COPE completeness 4–6/10; $112.7M Brit gap
E3 Judgement	Quantified estimates and portfolio-level impact ranges derived from 20 structured executive interviews and practitioner case studies (for example, "BI underpriced by a factor of 3–5x", "risk selection is 2–4x more valuable than pricing precision", or loss-ratio uplift ranges from advanced analytics). These are not presented as universal market statistics; they represent consensus views from experienced market participants and are marked as [P] in the source key.	STP improvement projections; 5–10pt loss ratio potential
E4 Hypothesis	Directional statements about future market structure, adoption timelines, and competitive dynamics (for example, the expected window for broker-enabled COPE APIs or the evolution toward cognitive underwriting infrastructure). These are clearly framed as scenarios or hypotheses that require ongoing validation, not as forecasts or commitments.	Competitive window timing; broker COPE API within 12–18 months

Source Attribution Key

[P] = Primary research: 20 structured executive interviews, CUO survey, 2026 conference sessions, Reuters Insurance Events. January–March 2026. Alchemy Crew Ventures.

[AR] = Annual reports and investor presentations (FY2023–2025): AIG, Allianz, Aon, Aviva, AXA, Beazley, Brit, Chubb, CNA Financial, FM Global, Generali, Hiscox, Intact, Liberty Mutual, Lloyd's of London, Marsh McLennan, MS Amlin, Munich Re, Swiss Re, The Hartford, Tokio Marine Kiln, Travelers, WTW, and Zurich.

[CD] = Company disclosure: Intelligent AI and partner company disclosures, attributed where used.

Limitations

This research focuses on the commercial property insurance sector within the US and UK markets. The executive interviews, while representative of diverse roles across the value chain, reflect a purposive sample rather than a statistically randomized selection. Readers should consider these boundaries when applying the findings to other markets or contexts.

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About Intelligent AI — Intelligent Risk API and Intelligent Rebuild Cost Platform

Intelligent AI is a property risk intelligence company that delivers verified, structured, API-first property data at the point of underwriting decision. The Intelligent Risk API platform ingests a property address and returns over 100 structured data points across six categories: structural attributes, occupancy intelligence, fire protection data, natural peril exposure, human-made risk signals, and forward-looking climate projections. Developed with institutional credibility through Lloyd's Lab, the platform serves insurers, reinsurers, brokers, and MGAs globally.

The Intelligent Rebuild Cost Platform, available in the US market, automates the delivery of accurate, forward-looking rebuild cost data. Unlike legacy calculators that rely on broad regional averages, the platform factors in real-time construction cost indices, local labor market conditions, and jurisdiction-specific building code requirements to deliver sum insured accuracy at a portfolio scale.

Both products are designed as infrastructure, not applications: a pre-competitive data-quality layer that enhances every carrier's AI investment. The platforms integrate via RESTful APIs into existing underwriting workbenches and policy administration systems, delivering enrichment in seconds with full provenance, confidence scores, and audit trails that meet Solvency II governance standards.

For enquiries: anthony.peake@intelligentai.co.uk | intelligentai.co.uk

About Alchemy Crew Ventures

Alchemy Crew Ventures is an enterprise AI and insurance transformation advisory firm led by Sabine VanderLinden. Founded in 2020, the firm advises insurers, reinsurers, big tech, tech ventures, and institutional investors on translating emerging technology capability into measurable portfolio outcomes. VanderLinden brings over 25 years of insurance and financial services experience, from Lloyd's of London regulatory oversight through senior technology leadership at IBM, FICO and Pega, to co-founding Startupbootcamp InsurTech and Hartford's InsurTech Hub — where she worked with 30+ corporate insurers and accelerated over 100 startup ventures.

Most technology adoption in insurance stalls between pilot and production. Alchemy Crew exists to close that gap. The firm's proprietary DIVAAA™ framework — Discover, Investigate, Validate, Adopt, Activate, Amplify — provides a structured methodology for moving from problem identification to enterprise-scale deployment, refined through hundreds of carrier engagements. Unlike traditional consulting or CVC models, DIVAAA™ prioritises adoption over ownership: only ventures that demonstrate measurable results in paid pilots advance to full integration.

The firm's research practice produces evidence-based market intelligence for C-suite and board-level audiences, combining structured executive interviews, annual report analysis, and primary data collection to meet the evidentiary standards expected by Chief Underwriting Officers and portfolio managers. This paper is a product of that practice.

For enquiries: sabine@alchemycrew.ventures | alchemycrew.ventures

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Anthony Peake, CEO, Intelligent AI
Sabine VanderLinden, CEO, Alchemy Crew Ventures
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