

The Most Dangerous AI Failure Isn't a Crash. **It's a Confident Half-Truth.**

In architecture, engineering, and construction, incomplete information doesn't just underperform. It kills.

SWIPE →

Why AEC Cannot Afford Half-Truths

- 01** Why AI produces confident, incomplete answers
 - 02** The liability AI itself cannot bear
 - 03** What deterministic deployment actually requires
 - 04** The oversight layer that closes the gap
-

33–79%

Hallucination Rate, Depending on Task Complexity

When confronted with a knowledge gap, LLMs don't acknowledge absence. They fabricate — and present the fabrication with full confidence.

Source: Talkspace / OpenAI testing, 2025

1 in 5

AI Coding Suggestions Contain Factual Errors

AI coding assistants hold accuracy rates of just 50–65%. In a deterministic domain like structural design, that variability is a liability, not a feature.

Source: Augmentcode, 2025

91.5%

Structured human-in-the-loop validation raises error detection from just 18.9% to 91.5%. Oversight isn't a formality — it's the control that actually works.

Source: eajournals, Human-in-the-Loop Architectures, 2025



The most dangerous phrase in AI-enabled engineering is "the system said so."

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Probabilistic vs. Deterministic

PROBABILISTIC AI

Varied outputs for identical inputs

Optimised for fluency, not verification

Fine for exploratory design phases

DETERMINISTIC SYSTEMS

Identical outputs for identical inputs

Auditable, traceable, rule-based

Required for safety-critical decisions

AI Assumes No Responsibility.

If an AI system is deployed without rigorous testing and human oversight, negligence claims attach to the firm — not the system. The system cannot be held negligent, cannot defend its reasoning, and cannot testify about what it considered or rejected. Most vendor contracts disclaim liability and require the deployer to indemnify them. The firm bears unlimited liability; the AI bears none.

Requirements for Safe Deployment

Human-in-the-loop → Defined accuracy criteria → Full traceability → Explainability → Continuous monitoring → Contractual liability

The full governance framework and EU AI Act requirements:

terencekok.com/blog/hidden-risk-incomplete-ai-answers-why-aec-cannot

The Guard Cannot Be Lowered. It Must Be Installed.

AI is a powerful tool. But in AEC, it requires more expert human oversight, not less.



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