Legal-Evidence Reconstruction for Autonomous Incidents

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What Autonomous-Incident Litigation Demands

A growing volume of autonomous-vehicle, autonomous-medical-device, and autonomous-industrial-equipment incidents are reaching litigation. Plaintiffs allege the autonomous system failed; defendants assert the system operated correctly given available information; courts adjudicate based on reconstructed evidence of what the system actually did.

The relevant evidence includes: what observations were available to the system at the moment of the incident, what processing the system performed on those observations, what decisions the system reached, and crucially what governance policy was in force during the system's operation. The court's question — was this decision reasonable under the rules applicable at the time — requires all four elements.

Why Current Reconstruction Is Partial

Current autonomous-system incident reconstruction depends on log archaeology: extracting what data the system processed, what models it used, what outputs it produced. The reconstruction is structurally limited because logs typically don't preserve the policy version that gated the decisions.

When defense counsel argues 'the system operated correctly given the rules in force at time T' and the rules in force are reconstructed from non-architectural sources (engineering documentation, OTA update records, configuration management systems), the reconstruction has gaps. The gaps create reasonable doubt that affects litigation outcomes regardless of the underlying technical merit.

How Architectural Policy-Version Preservation Closes the Gap

The architectural primitive preserves policy versions alongside data with audit-grade lineage. Every policy update is a credentialed observation; every decision references the policy version under which it was evaluated; every reconstruction can walk back to the policy in force at any past time.

The court receives evidence that has structural integrity: not 'the engineering team thinks this was the policy in force' but 'the credentialed lineage shows policy version X was in force from time A to time B, replaced by policy version Y at time B, signed by these credentialing authorities.' The evidence survives challenge because the credentialing chain is auditable independent of the litigant's representation.

What This Enables for the Autonomous-Incident Legal Landscape

The autonomous-incident litigation backlog will grow as L4/L5 deployment scales. Cruise's incident, Waymo's various near-misses, the emerging robotaxi-incident category, autonomous-trucking incidents, autonomous-medical-decision incidents — each contributes to a growing case law that current architecture is not optimized to defend or prosecute.

Operators that deploy with structural policy-version reconstruction reduce their litigation exposure. Plaintiff counsel facing structurally-supported reconstruction has

fewer reasonable-doubt openings. Courts faced with structural evidence reach more confident conclusions. The patent positions the primitive at the layer where the entire autonomous-incident litigation ecosystem will benefit from architectural rather than reconstructed evidentiary support.