EU AI Act Compliance for Spatial Autonomy

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The Regulatory Frame

Annex III of the EU AI Act covers AI systems used in critical infrastructure, transport safety, law enforcement, and migration management — categories spanning most physical-autonomy deployments. High-risk classification triggers requirements for risk management systems, data governance, technical documentation, transparency obligations, and human oversight.

Article 14 (human oversight) and Article 15 (accuracy, robustness, cybersecurity) impose architectural requirements that vendor-specific platforms have to satisfy through ad-hoc engineering. The structural cost grows with deployment scale and cross-vendor integration.

Where Platform Architectures Fall Short

High-risk AI compliance presumes the deployer can demonstrate, structurally, what observations entered which decisions under what authority. Platform architectures collect this information for internal use; externalizing it for compliance audit produces engineering work proportional to deployment scale.

When the audit asks 'what authority signed this observation, what admissibility evaluation passed it, what lineage carries forward,' platform-internal answers require

reconstruction. Governed spatial mesh produces the answers structurally.

Mapping the Architecture to Article Requirements

Article 13 (transparency) maps to credentialed observation lineage. Article 14 (human oversight) maps to operator-intent substrate. Article 15 (cybersecurity) maps to governance-chain integrity monitoring. Article 17 (quality management) maps to fleet-health composite assessment.

Each architectural primitive provides the structural basis for one or more Article requirements. Compliance becomes architecturally-supported rather than implementation-dependent.

What This Enables Post-Enactment

Operators that adopt the architecture ahead of compliance mandate gain implementation-cost advantage relative to retrofit. The first-mover position on architectural compliance is structurally defensible.

The patent positions the substrate at exactly where EU AI Act enforcement (and downstream non-EU equivalents) increasingly applies pressure.