Platform Engineering for AI Governance: Turning Regulations into Runtime-Verified Policies

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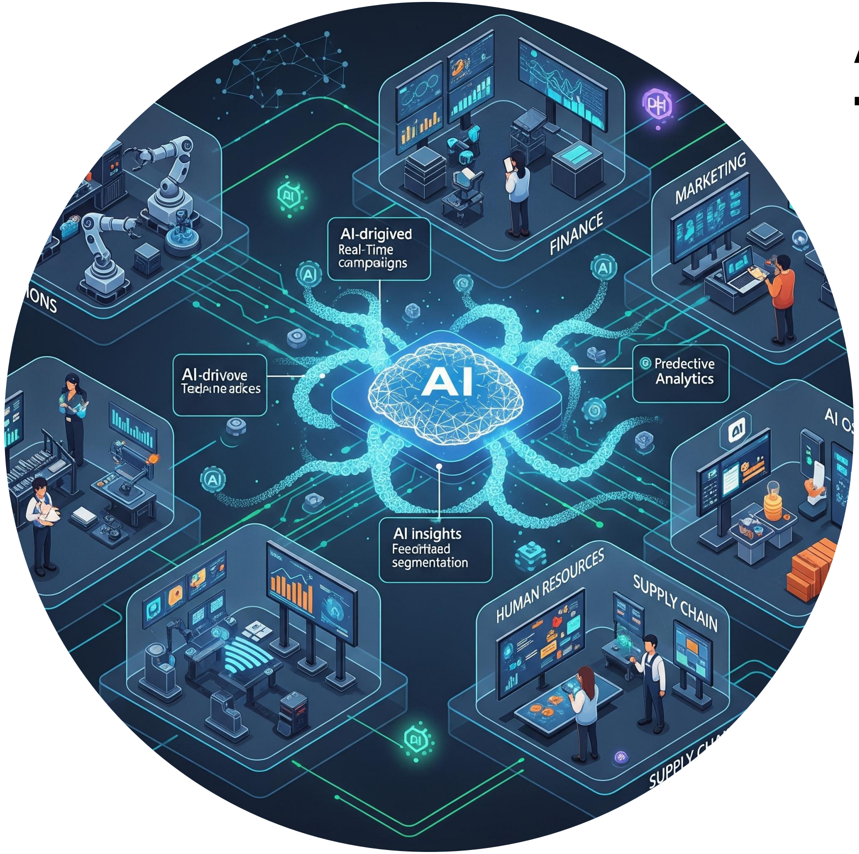
Takeaway

Platform Engineering is the most viable provider of the "Deterministic Layer" required for Agentic AI Survival

1. **Enforce Model Independence:** Decouple business logic from foundation models to survive correlated upstream failures.

2. **Guarantee Traceability:** Immutable, deterministic logs are the only way to satisfy the evidence requirements of post-2025 insurance policies and arriving regulations.

3. **Implement Governance-as-Code:** Actively reject non-compliant agentic/model behavior



AI is a Capability, Not a Tool

- **Resources:** Data, Compute (GPUs), Models, Talent, Capital, etc.
- **Processes:** MLOps, RAG Pipelines, Red Teaming, Governance, training, fine-tuning, monitoring, etc.
- **Values (Priorities):** Determining acceptable trade-offs (e.g., Accuracy vs. Latency, Innovation Speed vs. Safety Compliance, etc.)

AI Creates a Novel Risk Profile

1 **Non-Deterministic Execution:** Probabilistic outputs break traditional QA and reduce insurability forcing a commercial correction that increases adoption costs

2 **Ubiquity & Shadow AI:** Low barrier to entry coupled with low organizational AI literacy expand security risks

3 **Regulatory Complexity:** Global and state-level patchwork of AI regulations increase the cost of compliance when present and increase innovation/adoption tax when uncertain

4 **Correlated Failures drive Aggregated Risk:** Foundation Model dependencies create failure synchronization at scale with unpredictable scope

Why Platform Engineering for AI Capability Implementation

1. Insulate business value streams from self-serve sanctioned AI infrastructure implementation

2. Define and enforce enterprise-wide AI interaction semantics (entitlements, observability, model routing, compliance enforcement, escalation, etc.)

3. Facilitate the creation of a shared language across functions for communicating risks and opportunities of AI integration

4. Build domain-specific runtime containers for deterministic execution with plug-in architecture for business units

The How: Four-Layer Contract Loops Architecture

1 **Regulatory Layer:** encodes the non-negotiable legal constraints externally imposed on the system. Derived directly from laws like the EU AI Act or GDPR.

2 **Governance Layer:** encodes the organization-wide internally imposed mandates governing the enterprise's involvement in AI development and deployment.

3 **Domain Layer:** Defines roles, responsibilities, and operational semantics of end-to-end value streams.

4 **Operation Layer:** Defines the semantics of a single operation on one or more value stream(s).

The How: Domain and Operation Contracts

1 Responsibility/Roles/Inputs/Outputs

2 Preconditions/Postconditions

3 Success/Failure End Conditions

4 Escalation Semantics

The How: Contract Loops Architecture Constraints

1 Assume-Guarantee scheme from upper layer to lower layer to support scaling oversight

2 Cryptographic Agent Identity

3 Agent Outputs are Proposals not Decisions that must be checked using multi-model antagonism

4 Tamper-proof logging of orchestration, delegation, execution, and escalation

The How: Contract Discovery Workflow

1 Map use case to value stream

2 Determine which operations on the value stream are going to be handled by AI agent(s)

3 Determine outer loop requirements for each operation if any

4 Define a contract for each operation in machine-readable format (e.g. JSON)

Benefits for the Enterprise

1. Model vendor independence with hot swapping against contracts
2. Regulatory adaptability without taxing innovation agility
3. Non-repudiation lowers compliance cost and maintains insurability
4. Leverages existing capabilities reducing execution risks of transformation
5. Secure multi-agent orchestration across business units and externally
6. Enables Governance-as-code and Adaptive GovOps

Thank You!

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