

Smart Foundry Whitepaper: Enterprise AI Architecture

Executive Perspective

Enterprises are rapidly investing in AI, yet most initiatives fail to move beyond experimentation.

Smart Foundry positions AI as a system architecture challenge—requiring integration, governance, and operational rigor.

We bridge strategy and execution to deliver production-ready AI platforms.

Market Challenge

Organizations struggle with fragmented AI solutions, lack of governance, and unclear ROI.

Without architectural discipline, AI systems become costly, unreliable, and disconnected from business workflows.

Reference Architecture

A modern enterprise AI system includes LLMs, retrieval pipelines, vector storage, APIs, and orchestration layers.

Cloud-native services such as AWS Bedrock, Lambda, and S3 enable scalable, secure implementations.

Architecture—not models—is the differentiator.

RAG and Enterprise Data

Retrieval-Augmented Generation connects AI to enterprise knowledge.

Key components include embeddings, vector databases, and retrieval pipelines.

This ensures outputs are accurate, contextual, and aligned to business data.

Agentic Systems

AI agents extend capabilities beyond chat into execution.

They plan, act, and integrate across enterprise systems such as APIs, DevOps tools, and data platforms.

This enables automation of complex workflows.

LLMOps Lifecycle

Production AI requires lifecycle management including prompt versioning, testing, deployment, and monitoring.

Continuous evaluation ensures quality, performance, and cost control.

Cost and Performance

AI systems must optimize token usage, latency, and infrastructure costs.

Caching, batching, and retrieval optimization are key strategies.

Security and Governance

AI introduces new risks including prompt injection and data leakage.

Robust access control, encryption, and guardrails are essential.

Observability and Evaluation

AI systems require tracing, logging, and evaluation frameworks.

Understanding model behavior is critical for reliability and improvement.

Conclusion

AI success depends on architecture, lifecycle management, and integration—not experimentation.

Smart Foundry delivers enterprise-grade AI systems that perform.