

Enterprise Architecture Maturity Assessment Framework 2.0

A Modern Enterprise Architecture Maturity Model for Strategy Alignment, Capability Management, Data, Cloud, AI, Governance, Automation, and Measurable Business Outcomes

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Abstract:

Enterprise Architecture maturity is no longer defined only by the existence of standards, repositories, principles, and review boards. Modern enterprises require architecture practices that influence strategy, business capability investment, cloud transformation, data products, AI adoption, platform engineering, security, and measurable business outcomes. This paper proposes an Enterprise Architecture Maturity Assessment Framework 2.0 that evaluates maturity across strategy alignment, business architecture, application rationalization, data architecture, integration, cloud and platform architecture, security, AI governance, portfolio governance, operating model, tooling, metrics, and continuous improvement. The framework introduces five maturity levels from Initial to Adaptive, evidence-based scoring, weighted dimensions, target-state profiles, and improvement roadmaps. It enables organizations to benchmark current capability, prioritize investment, and measure progress while avoiding maturity assessments that focus only on documentation. The proposed model positions Enterprise Architecture as an outcome-oriented management capability for digital and AI-enabled enterprises.

Keywords — Enterprise Architecture Maturity, EA Assessment, Capability Maturity, TOGAF, Business Architecture, AI Governance, Cloud Architecture, Architecture Governance, Digital Transformation, EA Metrics

I. INTRODUCTION

Enterprise Architecture maturity models help organizations understand how consistently architecture shapes decisions and outcomes. However, older models often emphasize process formalization and repository completeness rather than strategic influence and measurable value.

Framework 2.0 expands maturity assessment to include cloud, data products, AI, automation, product operating models, platform engineering, and outcome measurement.

II. ASSESSMENT OBJECTIVES

The assessment should identify current maturity, business-critical gaps, target maturity by dimension, investment priorities, and measurable improvement actions.

Maturity is not an end state. Different business units may require different target levels depending on scale, regulation, complexity, and transformation ambition.

III. MATURITY LEVELS

Level 1 - Initial is reactive and person-dependent. Level 2 - Repeatable introduces basic standards and governance. Level 3 - Defined establishes enterprise-wide methods and ownership.

Level 4 - Managed uses metrics, automation, portfolio integration, and measurable outcomes. Level 5 - Adaptive continuously optimizes architecture using real-time insight, policy automation, and feedback.

IV. STRATEGY AND BUSINESS ALIGNMENT

Assessment criteria include architecture participation in strategy, business capability planning, investment prioritization, target operating models, and transformation roadmaps.

Higher maturity is demonstrated when architecture decisions can be traced directly to strategic outcomes and business metrics.

V. BUSINESS ARCHITECTURE MATURITY

This dimension assesses capability maps, value streams, operating models, information concepts, organization design, and dependency analysis.

Advanced maturity uses capability intelligence to prioritize funding, identify redundancy, and support strategic scenario planning.

VI. APPLICATION AND TECHNOLOGY PORTFOLIO

Maturity includes application inventory quality, lifecycle management, rationalization, technical debt visibility, standards, and modernization planning.

Higher maturity connects portfolio decisions to capabilities, costs, risks, business value, and transformation sequencing.

VII. DATA, INTEGRATION AND PLATFORM MATURITY

The model evaluates data ownership, semantics, data products, API governance, event-driven integration, cloud platforms, and reusable platform services.

Advanced organizations use policy-as-code, automated controls, observability, and standardized platform patterns.

VIII. SECURITY, RISK AND RESILIENCE

Architecture maturity includes security-by-design, risk integration, privacy, resilience, continuity, and traceable exceptions.

Mature practices embed control requirements into architecture patterns and delivery pipelines instead of relying only on manual review.

IX. AI AND AUTONOMOUS SYSTEMS MATURITY

Assessment covers AI strategy alignment, model governance, Agentic AI, Responsible AI, human oversight, AI security, and lifecycle management.

Higher maturity establishes enterprise AI inventories, risk tiers, reusable controls, evaluation pipelines, and continuous monitoring.

X. GOVERNANCE AND DECISION RIGHTS

The framework assesses architecture principles, review processes, waivers, escalation, standards ownership, and decision accountability.

Governance maturity improves when controls are risk-based, automated where possible, and integrated with portfolio and product governance.

XI. TOOLING AND KNOWLEDGE MANAGEMENT

Architecture repositories should connect business capabilities, applications, data, technology, roadmaps, risks, and decisions.

Advanced practices integrate architecture knowledge with delivery, CMDB, portfolio, cloud, data, and governance systems.

XII. METRICS AND VALUE MEASUREMENT

Useful measures include decision lead time, reuse, standards compliance, technical debt reduction, application rationalization, cloud cost optimization, risk reduction, and business capability outcomes.

Maturity scoring should therefore combine practice evidence with measurable business results.

XIII. SCORING METHOD

Each dimension can be scored from 1 to 5 using defined evidence criteria. Weighted scores should reflect enterprise priorities rather than treating all dimensions equally.

Assessment teams should record evidence, confidence, gaps, target maturity, accountable owners, and due dates for improvement actions.

XIV. IMPROVEMENT ROADMAP

The roadmap should prioritize foundational capabilities first, such as ownership, principles, decision rights, repository integrity, and portfolio transparency.

Later stages can add automation, advanced analytics, AI-assisted architecture, policy-as-code, and adaptive governance.

XV. CONCLUSION

Enterprise Architecture Maturity Assessment Framework 2.0 provides a modern and evidence-based method for evaluating EA capability across digital, cloud, data, and AI domains.

It shifts maturity assessment from documentation completeness toward strategic influence, measurable outcomes, and continuous enterprise adaptation.

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