

Carnegie Mellon University

School of Computer Science



Enterprise Architecture Standards for Education®

Knowledge and Skill Areas (KSAs) Version 7.0 © 2024

Beginning
Architect

(0-2 Years of
Experience)

Mid-Level
Architect

(3-5 Years of
Experience)

Senior
Architect

(6-10 Years of
Experience)

Chief
Architect

(10+ Years of
Experience)

Related
Course or
Seminar
Name

Area 1 KSAs: Fundamental Concepts and Practices

1.1	Architecture and Design for the Digital Age	x	x	x	x
1.2	Key Architecture Terms and Concepts	x	x	x	x
1.3	Core Elements of a Complete Architecture Approach	x	x	x	x
1.4	Value and Risk in Doing Enterprise Architecture	x	x	x	x
1.5	Architecture as a Baseline for Other Best Practices	x	x	x	x
1.6	Architecture in Strategic and Business Planning	x	x	x	x
1.7	Architecture in Data and Application Management	x	x	x	x
1.9	Architecture in Network and Cloud Management	x	x	x	x
1.10	Architecture in Risk Management	x	x	x	x
1.11	Participating in an Architecture Project	x	x	x	x
1.12	Career Paths and Continuous Learning	x	x	x	x

Fundamentals of Enterprise
Architecture (Required for CEA)

Area 2 KSAs: Implementing Concepts and Methods

2.1	Setting up the Program Office and Doing Projects		x	x	x
2.2	Building and Growing a Winning Architecture Team		x	x	x
2.3	Doing Architecture Work at Various Levels of Scope		x	x	x
2.4	Developing and Implementing a Stakeholder Value Scorecard		x	x	x
2.5	Selecting and Using Architecture Tools and Repositories		x	x	x
2.6	Scoping and Documenting the Current Architecture		x	x	x
2.7	Scoping and Documenting the Future Architecture		x	x	x
2.8	Developing the Architecture Management & Transition Plan		x	x	x
2.9	Using Architecture to Support Planning and Decision-Making		x	x	x
2.10	Managing Architecture Projects		x	x	x
2.11	Communicating with Stakeholders		x	x	x
2.12	Doing Program and Project Audits		x	x	x

Advanced Enterprise Architecture
(Required for CEA)

Area 3 KSAs: Architecture for Mergers & Acquisitions

3.1	How Architecture Can Help in Mergers and Acquisitions		x	x	x
3.2	Architecture Contributions When Selling an Organization		x	x	x
3.3	Architecture Contributions When Acquiring an Organization		x	x	x

Architecture for
Mergers and Acquisitions

3.4	Architecture Support in Cultural Evaluation/Managing Change		x	x	x	Enterprise Architect Mergers & Acquis	
3.5	Architecture Support for the Due Dilligence Process		x	x	x		
3.6	Architecture Contributions to Pre-Merger Planning		x	x	x		
3.7	Architecture Contributions to Post-Merger Tactical Planning		x	x	x		
3.8	Architecture Contributions to Post-Merger Strategic Planning		x	x	x		
3.9	Architecture Contributions to Post-Merger Restructuring		x	x	x		
3.10	Reference Architectures and Organization-wide Standards		x	x	x		
3.11	Architecture with Different Organizational Structures		x	x	x		
3.12	Architecture Considerations in Evaluating Disruption Sources		x	x	x		
Area 4 KSAs: Auditing the Maturity and Value of Architecture Programs & Projects							Architecture Program & Project Auditing
4.1	Overview of the EA Audit Method (EAAM)		x	x	x		
4.2	Audit Engagement Type 1: Initial Quickview		x	x	x		
4.3	Audit Engagement Type 2: In-Depth Audit		x	x	x		
4.4	Audit Engagement Type 3: Special Focus Audit		x	x	x		
4.5	Audit Area 1: Architecture Governance		x	x	x		
4.6	Audit Area 2: Architecture Approach		x	x	x		
4.7	Audit Area 3: Documentation Completeness - Current Views		x	x	x		
4.8	Audit Area 4: Documentation Completeness - Future Views		x	x	x		
4.9	Audit Area 5: Documentation Completeness - Transition Plan		x	x	x		
4.10	Audit Area 6: Architecture Utilization		x	x	x		
4.11	Audit Area 7: Architecture Maturity		x	x	x		
4.12	Audit Reporting & Implementing Changes		x	x	x		
Area 5 KSAs: Using Architecture to Support Risk Management & Security							Architecture for Risk Management and Security
5.1	The Risk Management Framework		x	x	x		
5.2	Risk Tolearance and Control Selection		x	x	x		
5.3	Security Architecture Area 1: Governance		x	x	x		
5.4	Security Architecture Area 2: Process Controls		x	x	x		
5.5	Security Architecture Area 3: Personnel Controls		x	x	x		
5.6	Security Architecture Area 4: Data & Privacy Controls		x	x	x		
5.7	Security Architecture Area 5: Application Controls		x	x	x		
5.8	Security Architecture Area 6: System Controls		x	x	x		
5.9	Security Architecture Area 7: Infrastructure Controls		x	x	x		
5.10	Security Architecture Area 8: Physical Controls		x	x	x		
5.11	Security Architecture at the Core and Perimeter		x	x	x		
5.12	Security Architecture and Continuous Monitoring		x	x	x		
Area 6 KSAs: U.S. Federal and State Government Architecture Methods							chitecture
6.1	Overview of Governmentl Architecture Law & Policy		x	x	x		
6.2	The Common Approach to Federal EA		x	x	x		
6.3	Levels of Scope for Federal EA Activities		x	x	x		

6.4	Basic Elements of a Federal Agency EA Program			x	x	Federal Enterprise Architecture
6.5	State-Level EA Approach			x	x	
6.6	Federal EA Documentation Set - Design			x	x	
6.7	Federal EA Reference Models - Analytics			x	x	
6.8	Federal EA - Collaborative Planning Method - Projects			x	x	
6.9	Federal EA and the NIST Risk Management Framework			x	x	
6.10	DOD Architecture Framework Overview			x	x	
6.11	GAO EA Management Maturity Framework			x	x	
6.12	Future Trends in Federal and State EA			x	x	
Area 7 KSAs: Architecture Consulting Concepts and Practices						
7.1	The Consultant as Trusted Advisor				x	Successful Enterprise Architecture Consulting
7.2	Packaging and Communicating Your Product				x	
7.3	Building and Managing the Architecture Consulting Team				x	
7.4	Winning and Keeping Clients in Up and Down Markets				x	
7.5	Requests for Proposal - Responses and Offers				x	
7.6	Award, Team Formation, and Project Kickoff				x	
7.7	Managing Project Scope and Customer Expectations				x	
7.8	Keeping the Customer Delighted and Handling Problems				x	
7.9	Seeing Around Corners for Your Client and You				x	
7.10	Concluding an Engagement and Team Dissolution				x	
7.11	Improving Your Services Through Lessons Learned				x	
7.12	Dealing with the Competition				x	
Area 8 KSAs: Big Architecture - Very Large Scale Implementations						
10.1	What is Big Architecture?				x	Very Large Scale Enterprise Architecture Projects
10.2	Architecting a Global Enterprise - The Approach				x	
10.3	Architecting a Global Enterprise - Scoping & Chunking				x	
10.4	Architecting a Global Enterprise - Executive & Staff Support				x	
10.5	Architecting a Global Enterprise - Reference Architectures				x	
10.6	Architecting a Global Supply Chain - Requirements & Roles				x	
10.7	Architecting a Global Supply Chain - Build, Buy, or Rent				x	
10.8	Architecting a Global Supply Chain - Risk & Security				x	
10.9	Architecting a Global Data Warehouse - Requirements & Roles				x	
10.10	Architecting a Global Data Warehouse - Standards				x	
10.11	Architecting a Global Data Warehouse - Build, Buy, or Rent				x	
10.12	Architecting a Global Data Warehouse - Risk and Security				x	
Area 9 KSAs: Modeling and Documentation Skill Building						
9.1	Communicating Documentation Value to Stateholders	x	x	x	x	Seminar: Architecture Artifacts
9.2	Developing Strategic Plans and SWOT Analyses	x	x	x	x	
9.3	Developing and Using Operational Scenarios	x	x	x	x	

9.4	Business Process Modeling	x	x	x	x	Architecture Modeling Analysis and Design
9.5	Data Modeling - Entities and Objects	x	x	x	x	
9.6	Data Modeling - Warehouses and Marts	x	x	x	x	
9.7	Application Modeling - Enterprise Service Buses and APIs	x	x	x	x	
9.8	Network Modeling - Voice, Data, Video, and Mobile	x	x	x	x	
9.9	Depicting Cloud Environments and Services	x	x	x	x	
9.10	Depicting Security Control Sets and Solutions	x	x	x	x	
9.11	Developing Overview Diagrams for Management	x	x	x	x	
9.12	Using Documentation Tools and Repositories	x	x	x	x	
Area 10 KSAs: Agile Architecture for 90-Day Rapid Business Improvement						
10.1	Establishing the Scope and Goals of the RBI Project		x	x	x	
10.2	Sprint #1 - Strategic Planning and Scenarios Update		x	x	x	
10.3	Sprint #2 - Business Unit Operating Plan Updates / Scorecards		x	x	x	
10.4	Sprint #3 - Investment Portfolio Priority Update / Scorecard		x	x	x	
10.5	Spring #4 - Project Portfolio Update / Scorecard		x	x	x	
10.6	Sprint #5 - Legal Considerations and Regulatory Checks		x	x	x	
10.7	Sprint #6 - Full-Lifecycle Knowledge & Data Management		x	x	x	
10.8	Spring #7 - Flowing in New Products & Avoiding Disruptors		x	x	x	
10.9	Sprint #8 - Integrating Logistics and Supply-Chains		x	x	x	
10.10	Sprint #9 - Skills Inventory & Workforce Plan Update		x	x	x	
10.11	Sprint #10 - Contracting and Acquisition Plan Update		x	x	x	
10.12	Consolidating and Presenting RBI Project Results		x	x	x	
Area 11 KSAs: Remote Productivity Reference Architectures						Course: Remote Productivity Reference Architectures
11.1	The Global Telework Phenomenon		x	x	x	
11.2	Management View: Productivity		x	x	x	
11.3	Employee View: Flexibility		x	x	x	
11.4	The Business Architecture		x	x	x	
11.5	The Technology Architecture		x	x	x	
11.6	Integrating Business and Technology		x	x	x	
11.7	Online Collaboration Platforms/Methods		x	x	x	
11.8	Cybersecurity and Data Privacy Issues		x	x	x	
11.9	Productivity Metrics and Dashboards		x	x	x	
11.10	Approaches to Pay and Incentives		x	x	x	
11.11	Linkage to Enterprise Architecture		x	x	x	
11.12	Ensuring Agility in Telework Processes		x	x	x	
Area 12 KSAs: IT Security and Data Privacy Architecture						Data Privacy
12.1	The Context of Enterprise Architecture		x	x	x	
12.2	Executive-Level Value Delivery for IT Security Architecture		x	x	x	

12.3	Management-Level Value Delivery for IT Security Architecture		X	X	X	Course: IT Security and Data Architecture	
12.4	Technical Staff-Level Value Delivery for IT Security Architecture		X	X	X		
12.5	Security and Privacy Control Catalog		X	X	X		
12.6	Determining Data and System Sensitivity and Protections		X	X	X		
12.7	Cloud-Services for IT Security		X	X	X		
12.8	NIST Risk-Management Framework		X	X	X		
12.9	Incident Response Procedures		X	X	X		
12.10	System and Data Collection Approvals to Operate		X	X	X		
12.11	Cybersecurity and Data Privacy Skill Sets		X	X	X		
12.12	Future Trends in Cybersecurity and Data Privacy		X	X	X		
Area 13 KSAs: Using Artificial Intelligence in Enterprise Architecture (AI-EA)							Seminar: Digitizing Work Processes
13.1	What is Artificial Intelligence and Machine Learning?		X	X	X		
13.2	Which Areas of EA can AI Help		X	X	X		
13.3	The Need For Data Tagging of Processes, People, Assets		X	X	X		
13.4	AI Support for Strategic Goal Attainment Tracking		X	X	X		
13.5	AI Support for Tracking Goals and Business Activities		X	X	X		
13.6	AI Support for Process Automation (RPA)		X	X	X		
13.7	AI Support for Database Normalization and Migration		X	X	X		
13.8	AI Support for Systems & Software Development		X	X	X		
13.9	AI Support for Project Management		X	X	X		
13.10	AI Support for Application Programming		X	X	X		
13.11	AI Support for Infrastructure Design		X	X	X		
13.12	AI Support for Personnel Performance Tracking		X	X	X		

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