

WA2322 Enterprise Architecture Practitioner's Guide (Extended)

This course lays the foundation of the core EA concepts, using TOGAF as the common vocabulary for enterprise architecture.

4 Days

How You Will Benefit

This course lays the foundation of the core EA concepts, using TOGAF as the common vocabulary for enterprise architecture. The course then focuses on practical skills to perform the foundational activities of EA: Developing a vision; establishing an architecture baseline; developing a target business architecture, target data architecture, target application architecture, and target technology architecture. It provides guidance on establishing an EA program and EA governance.

The course includes an extensive set of examples, templates, and industry references for further learning. The course includes hands-on labs for catalogs, matrices, and diagrams for all four domains.

Attend This Workshop If You Are A

- Enterprise Architect new to EA

Workshop Description

Chapter 1 - Introduction

- Introductions
- Course Outline
- Handouts & Appendices
- Practical Application: Building Skills
- Practical Application: Filling Your Toolbox
- Course Evaluation & Questions
- Course Delivery Overview

Chapter 2 - Enterprise Architecture (EA) Primer

- Architecture
- Architects
- Enterprise Architecture Definitions
- IEEE, TOGAF, & MIT Perspectives
- Group Discussion: Expectations of EA
- Enterprise Architecture Defined

- Architecture Framework: Foundation for a Common Vocabulary
- Industry EA Frameworks
- Dimensions of Architecture Scope
- Group Discussion: EA Partitioning
- Architecture Domains
- Depth: Strategic, Segment, and Capability Architectures
- Example: DOE Segment Identification
- Example: Segment Architecture
- Time: Baseline, Target, and Transition Architectures
- Various Solution Architecture Definitions
- Group Discussion: Solution Architecture
- Characteristics of a Solution Architecture
- Example Solution Architecture: SOA for Insurance
- Example Solution Architecture: Customer Contact Center
- Glossary
- Summary

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

Chapter 3 - EA Framework

- The Importance of a Framework for EA
- EA Framework Family Tree
- Group Discussion: Architecture Frameworks
- TOGAF
- TOGAF Components
- Architecture Development Method (ADM)
- Architecture Content Framework
- Views & Viewpoints
- TOGAF Viewpoints
- Catalogs, Matrices, Diagrams & Viewpoints
- Architecture Deliverables
- Group Discussion: Deliverables & Artifacts
- ADM Techniques
- ADM Guidelines
- Enterprise to Solution Architecture
- Example: Architecture Roadmap
- Zachman Framework
- Zachman Framework Matrix Overview
- TOGAF Artifacts Using the Zachman Framework
- Leveraging the Zachman Framework
- Federal Enterprise Architectural Framework (FEAF)
- Leveraging FEA
- Technique: Classified Technology Portfolio
- DoDAF / MODAF
- TRAK
- Leveraging DoDAF, MoDAF, & TRAK
- All Frameworks Have Strengths & Weaknesses
- Which Framework Should I Use?
- Summary

Chapter 4 - EA Value Proposition

- Without Architecture You Can't
- Factors Driving EA Adoption
- Accelerated Rate of Change
- EA Facilitates Change Across Units
- Greater Information Density
- Customers Expect Personalized Goods
- Traditional Industry Barriers are Disintegrating
- Impact of Diversification & Acquisitions
- Shared Resources Across Business Units
- Business Demand for Technology Continues to Grow
- Tight IT Budgets Will Persist
- Primary Drivers for EA Programs
- Summary of EA Benefits

- Digitized Platform: The Key to Agility
- Group Discussion: Benefits
- Value of EA Activities: Baseline Architecture
- Value of EA Activities: Target Architecture
- Value of EA Activities: Architecture Review
- Value of EA Activities: Governance
- Group Discussion: Obstacles
- Summary

Chapter 5 - Reference Architecture

- Reference Architecture
- Reference Architecture Components
- Reference Architecture Summarized
- Reference Architecture Context
- Architecture Principles
- Components of Principles
- Qualities of a Good Set of Principles
- EA Principles: Creation Process
- Templates: Principle & Principle Catalog
- Example: Architecture Principles
- Group Discussion: Principles
- Applying Architecture Principles
- Policies
- Template: Policy
- Example: Governance Policies
- Example: SOA Policy
- Example: Policies
- Reference Models
- Example: IBM Business Analytics & Optimization Reference Architecture
- Example: IBM Insurance Application Architecture
- Example: SOA Reference Architecture
- Example: Customer Experience Reference Architecture
- Business Scenarios
- Business Scenario Summary
- Business Scenario Outline
- Template & Example: Business Scenario
- Practices: Standards & Guidelines
- Example: Interoperability Standards
- Example: Insurance Reporting Reference Architecture
- Example: Electronic Product Code™ (EPC) Standards
- Example: Health Care Reference Architecture
- Resource: Financial Industry Organizations
- Resource: Health Industry Organizations
- Resource: Retail Industry Organizations
- Resource: Technical Organizations
- Industry Organizations

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

- Insurance Industry Standards ROI
- Requirements
- Example: Mobile Security Reference Architecture
- Example: MSRA Requirements
- Architecture Building Blocks: Reusable Requirement Sets
- Resource: NIST Security Requirements
- Example: COTS Standard Requirements Set
- Summary

Chapter 6 - Defining an Architecture Vision

- Architecture Vision
- Context Diagram
- Define The System Boundaries
- Stakeholder Matrix
- Stakeholder Map
- Example: Stakeholder Map
- Template: TOGAF Stakeholder Map Matrix
- Value Chain Diagram
- Example: Retail Vision Diagram
- Example: Customer Interaction Concept Diagram
- Example: Solution Concept Diagram
- Examples: TOGAF Vision Diagrams
- Template: Architecture Vision Deliverable
- Summary

Chapter 7 - Enterprise Architecture Baseline

- Importance of an Architecture Baseline
- Architecture Baseline Process Overview
- What are Your EA Baseline Objectives?
- Group Discussion: EA Baseline Goals & Objectives
- A Typical Place to Start
- Core Catalogs
- Core Matrices
- Templates: Baseline Collection Templates
- Creating Building Blocks from a Baseline
- What Can You Learn From Your Baseline
- Customized Taxonomy
- Baseline More Than Software
- Baseline Classified by Lifecycle
- Baseline Relationships
- Relationship Types
- Baseline Reporting
- EA Baseline Best Practices
- Summary

Chapter 8 - Architecture Requirements

- Architecture Quality Attributes
- Quality of Service Requirement Categories
- Checklist: Quality Attribute (QA) Categories
- Trade-off Analysis
- Group Discussion: Trade-offs
- Technique: Requirement Patterns
- Tool: Non-Functional Requirement Patterns
- Checklist: Requirement Statement Best Practices
- Technique: Architecture Change Cases
- Template: Elements of a Change Case
- Example: Change Case
- Eliciting Change Cases
- Group Discussion: Change Case
- Summary

Chapter 9 - Business Architecture

- Business Architecture Entities
- Business Views
- Business Catalogs
- Templates: TOGAF Business Catalogs
- Example: Medicaid Business Process
- Example: Service Function Catalog
- Example: Location Catalog
- Example: Role Catalog Structure
- Example: SOA Role Catalog (Excerpt)
- Example: Requirements Catalog
- Business Matrices
- Example: DOE Business Matrix
- Templates: TOGAF Business Matrices
- Example: Role Location Matrix
- Business Diagrams
- Example: Business Footprint Diagram
- Example: Business Service / Information Diagram
- Example: Medicaid Business Process Model
- Example: HL7 EHR Functional Model
- Example: Business Footprint Diagram
- Example: Process Flow Diagram
- Examples: TOGAF Business Diagrams
- Resource: Business Analysis Book of Knowledge (BABOK)
- Resource: Business Architecture Body of Knowledge (BIZBOK™)
- Summary

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

Chapter 10 - Data Architecture

- Data Architecture Entities
- Data Catalogs
- Templates: Data Catalog
- Example: Data Catalog
- Data Matrices
- Template: Data Matrices
- Data Diagrams
- Example: Property & Casualty Conceptual Data Model
- Example: Data Lifecycle Diagram
- Example: Data Dissemination Diagram
- Example: Data Migration Diagram
- Example: Alternative Data Migration Table
- Example: Data Security Diagram
- Example: Alternative Data Security Table
- DAMA DMBOK
- Samples: Data Diagrams
- Summary

Chapter 11 - Application Architecture

- Application Architecture Entities
- Application Catalogs
- Template: Applications Portfolio Catalog
- Example: Application Catalog
- Application Matrices
- Templates: Application Matrices
- Example: Application Matrix
- Application Diagrams
- Example: Application Communication Diagram
- Example: Application & User Location Diagram
- Example: Insurance Industry System Model
- Example: Claim Download Process
- Example: TOGAF Application Diagram Samples
- Summary

Chapter 12 - Technology Architecture

- Technology Architecture Entities
- Technology Catalogs
- Templates: TOGAF Technology Catalog Templates
- Example: Technology Catalog
- Technology Matrices
- Lifecycle Classification
- Example: Technology by TRM & Lifecycle
- Technology Diagrams
- Example: Environments & Locations Diagram
- Example: Platform Decomposition Diagram

- Example: ED High-Level Network Architecture
- Samples: TOGAF Technology Diagrams
- Summary

Chapter 13 - Architecture Deliverables

- Documentation Best Practices
- Architecture Requirements Document
- Template: Requirements Specification
- IEEE Architectural Description Document
- Template: Architectural Description Document
- TOGAF Architecture Definition Document
- Templates: Architectural Definition Document
- Group Discussion: Architecture Definition Documents
- Interface Specifications
- Interface Specification Best Practices
- Interface Design Document
- Template: Interface Design Document
- Database Design Document
- Template: Database Design Document
- Platform Design Document
- Template: Platform Design Document
- Architecture Decision Document
- Template: Architecture Decision Document
- Verbal Supports: CREST
- Group Discussion: Presentations
- Summary

Chapter 14 - Architecture Gap Analysis, Roadmap & Migration Planning

- Putting the Pieces Together
- Gap Analysis
- Gap Analysis Matrix
- Example: DOE Gap Analysis
- Consolidated Gaps, Solutions, and Dependencies Matrix
- Architecture Roadmap Table
- Transition Architectures in Context
- Architecture Roadmap
- General Roadmap Methodology
- Defining Work Packages
- Roadmap Development Strategies
- Example: High-Level Architecture Roadmap
- Example: Pharmacy Standards Roadmap
- Example: SOA Roadmap
- Example: Business Intelligence Roadmap
- Template: Architecture Roadmap
- Migration Planning

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

- Business Value Assessment Technique
- Example: Transition Milestone Table
- Example: EPA Transition Plan
- Template: TOGAF Implementation & Migration Plan Template
- Process Summary
- Summary

Chapter 15 - Patterns

- What are Patterns?
- Elements of a Pattern
- Pattern Levels
- Pattern Types
- How to Start Using Patterns?
- Common Architectural Patterns
- Layers Pattern
- Example: Retail Layered Architecture
- Object-Oriented Design Patterns
- OO Design Patterns
- Structural Design Pattern: Facade Pattern Example
- Enterprise Integration Patterns
- Messaging Systems: Overview
- Example Pattern: Pipes and Filters
- Example: Monitoring Credit Bureau
- EAA Patterns
- Model-View-Controller (MVC) Pattern
- SOA Patterns
- Example: Saga Pattern
- Business Process Patterns
- Example: Synchronizing Merge Pattern
- Configuration Management Patterns
- New Patterns Continue to Emerge
- Group Discussion: Patterns
- Summary

Chapter 16 - Architecture Tactics

- Tactics
- Availability Tactics
- Modifiability Tactics
- Performance Tactics
- Security Tactics
- Testability Tactics
- Usability Tactics
- Approach for Describing Tactics
- Group Discussion: Tactics
- Pipes & Filters: Tactics

- Service-Oriented Architecture (SOA): Tactics
- Architectural Patterns and Corresponding Tactics for Modifiability
- Summary

Chapter 17 - Architecture Techniques

- Progressive Filtering
- Rubric
- Example: Service Design Rubric
- Example: Architecture Rubric
- Refactoring
- Think About the Future, But Wait to Act
- Feature Tree
- Decision Tables
- Decision Table Example
- Flowcharts
- Strength, Weakness, Opportunity, Threat (SWOT) Analysis
- Example: SWOT Layout
- SWOT Steps
- Summary

Chapter 18 - Packaged Software and SaaS

- Alternatives to Custom Development and Hosting
- Open Source Software
- Frameworks
- Cloud Computing
- Integration of Mixed Solutions
- Implications for Architecture
- Packaged Software Advantages & Disadvantages
- SaaS Advantages and Disadvantages
- Open Source Advantages and Disadvantages
- Integration Strategies
- The API Economy
- COTS Implication: Accept Design Influence
- COTS Implication: Plan for Stability
- COTS Implication: Sustain Competency
- COTS Implication: Vendor Lock-In
- COTS Implication: Balance Business Needs & Architecture
- COTS Inherent Risks
- COTS Risk Management Strategy #1
- COTS Risk Management Strategy #2
- COTS Risk Management Strategy #3
- Group Discussion: COTS
- Typical COTS Architecture
- Summary

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

Chapter 19 - Enterprise Architecture (EA) Program

- Enterprise Architecture Scope of Work
- EA as an Enterprise Asset
- Assess Maturity
- Working with Maturity Models
- Tool: EA Maturity Assessment
- EA Transformation Process
- Establish Organizational Model
- Skills Framework
- Roles
- EA Skills
- Depth of Knowledge
- Generic Skills Matrix
- Business Skills Matrix
- EA Skills Matrix
- Program/Project Skills Matrix
- Apply Project Management Best Practices
- Communications is Very Important!
- Communications Vehicles
- EA Implementation
- EA Maintenance
- EA Action Items to Achieve Your Goals
- Top 10 Leadership Principles of EA
- Summary

Chapter 20 - EA Governance

- What is Governance?
- IT Governance Methodologies
- Characteristics of Governance
- Measures to Govern Enterprise Architecture
- Reference: Weill & Ross Framework
- IT Decision Domains
- Group Discussion
- IT Governance Archetypes
- Template: Decision Domains & Governance Archetypes Matrix
- Implementation Mechanisms
- Example: IT Governance at UPS
- Example: IT Governance at Dupont
- Most Common Governance Patterns
- Top 3 Performing Patterns
- Process: Creating an Effective IT Governance
- COBIT
- Example: Governance Structure
- Example: Governance Process Flow

- Example: Integrating Governance into the Organization
- Governance Best Practices
- Governance With Little Standards or Target
- More Governance Lessons Learned
- Summary

Chapter 21 - The EA Toolbox

- The Architecture Toolbox
- The EA Toolbox
- TOGAF Toolbox Items
- Supplementing TOGAF Toolbox Items
- Practitioner Toolbox Items
- Summary

Chapter 22 - EA Lessons Learned

- Key EA Lessons Learned
- EA Success Factors: People Skills
- Group Discussion: Lessons Learned
- EA Anti-Patterns
- Anti-Pattern: 30,000 Feet & Climbing
- Anti-Pattern: Bleeding Edge
- Anti-Pattern: Buzzword-Driven Architecture
- Anti-Pattern: Detailed Enterprise Model
- Anti-Pattern: Goldplating
- Anti-Pattern: Modeling for Modeling's Sake
- Anti-Pattern: One Truth Above All Else
- Anti-Pattern: Real-world Disconnect
- Anti-Pattern: Strive for Perfection
- Anti-Pattern: Stuck in the Weeds
- Anti-Pattern: Technology Above All
- Anti-Pattern: Tomorrow Suffers from Today
- Anti-Pattern: Ungrounded Future
- Anti-Pattern: Yesterday's Enterprise Model
- Summary

Handout 1 - Sample Principles

- Business Principles
- Data Principles
- Application Principles
- Technology Principles
- Governance Principles
- SOA Governance Principles

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

Handout 2 - System Profile Template

Handout 3 - Subsystem Profile Template

Handout 4 - Interface Profile Template

Handout 5 - Quality Attribute (QA)/Quality of Service (QoS) Categories

- Introduction
- Quality Attributes

Handout 6 - Requirement Patterns

Handout 7 - Requirement Statement Checklist

- Introduction
- Requirement Statement Review Checklist

Handout 8 - Rubric Worksheet

Handout 9 - Enterprise Architecture Maturity Scorecard

Appendix A - Reference Library

- Overview
- Industry Organizations
- References & Further Reading

Appendix B - Architecture Glossary

- ABC
- DEF
- GHI
- MNO
- PQR
- STU
- VWXYZ

Appendix C - TOGAF Glossary

- ABC
- DEF
- GHI
- MNO

- PQR
- STU
- VWXYZ

Appendix D - EA Catalogs, Matrices, & Diagrams

- Catalogs
- Matrices
- Diagrams

Appendix E - Business Process Modeling Notation

- Process Modeling Standards
- What is BPMN?
- Elements of a Process
- Basic Structure of a Process
- Using Subprocess
- The Start Event
- Normal End Events
- Abnormal End Events
- Intermediate Events
- Process State Management
- Process State Management (continued)
- Gateways
- Exclusive Condition
- Exclusive Condition Examples
- Inclusive Condition
- Parallel Execution
- Event Choice
- Merging Branches
- Merging Examples
- Looping with BPMN
- Looping Options
- More Examples
- Modeling Roles & Responsibilities
- Using Swim Lanes

Appendix F - Data Modeling Notation

- Entity Relationship Diagram (ERD)
- Cardinality
- One to One Relationship
- One to Many Relationship
- Many to Many Relationship
- Subtype Relationship

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

Appendix G - Pattern List

Appendix H - Building Modern Applications

- Next Generation Methodologies, Approaches, Tools, and Applications
- Web 2.0
- Rich Internet Client Applications
- Single Page Applications (SPA) with AngularJS
- Two-way Data Binding (the AngularJS Way)
- Other Client Side MV(C) Frameworks
- "Rich Client" - "Thin Server" Architecture
- Mobile Platforms
- Types of Mobile Applications
- Native Mobile Applications
- Mobile Web Applications
- Hybrid Mobile Applications
- Hybrid App Tools and Frameworks
- RIA as a Driving Force to Turn the "Thin Server" into Microservice(s)
- So, How Can Microservices Help Me?
- The Data Exchange Interoperability Consideration
- Microservices in Their Purest Form: AWS Lambdas
- The Microservices Architecture Design Principles
- Decentralized Processing
- Crossing Process Boundary is Expensive!
- Managing Microservices
- Traditional Enterprise Application Architecture (Simplified)
- Microservices Architecture Example (Simplified)
- Design for Failure
- Fault Injection During System Testing
- Architecting in the Cloud
- The Building Blocks of a Fault-tolerant Application on AWS
- Dev and Ops Views
- What is DevOps?
- More DevOps Definitions
- DevOps and Software Delivery Life Cycle
- Main DevOps Objectives

- The Term "DevOps" is Evolving!
- Infrastructure as Code
- Prerequisites for DevOps Success
- Alignment with Business Needs
- Collaborative Development
- Continuous Testing and Integration
- Continuous Release and Deployment
- Continuous Application Monitoring
- Standing Up DevOps
- Select DevOps Techniques and Practices
- Containerization and Virtualization
- Machine Images On Demand
- Virtualization
- Hypervisors
- Docker Containers
- Docker Containers vs Traditional Virtualization
- Docker as Platform-as-a-Service
- Docker Integration
- Docker Application Container Public Repository
- Kubernetes
- Other Containerization Systems
- Where to Use Virtualization and Containerization
- Summary

Lab Exercises

Lab 1. Reference Architectures

Lab 2. Define Your Enterprise

Lab 3. Architecture Vision Diagram

Lab 4. Business Architecture

Lab 5. Data Architecture

Lab 6. Application Architecture

Lab 7. Technology Architecture

Lab 8. Architecture Roadmap

Lab 9. Architecture Maturity Assessment

Lab 10. Architecture Services

Lab 11. Extra: Define Tactics for a Quality Attribute

Lab 12. Extra: Identifying Tactics for a Pattern

Lab 13. Extra: Architecture Techniques

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate

How to Register

- Call (613) 727-7729
- Email training@algonquincollege.com
- Register online:
www.algonquincollege.com/corporate
- Location for Open Enrolment Courses:
 - Algonquin College Learning Centre
 - 700 Sussex Drive, Ottawa, Ontario
K1N 1K4

 - Time: 8:30 a.m. to 4:00 p.m.
 - Check-in, coffee and muffins start at 7:45 a.m. Afternoon refreshment provided.
 - Group size is limited to 20.
- Dedicated sessions are available at our site or at your location.

Algonquin College Corporate Training specializes in industry-focused training solutions that equip employees with the knowledge, skills and expertise needed to succeed in their day-to-day work, to advance in their careers and to build organizational capacity.

For more information, contact us at (613) 727-7729 or visit algonquincollege.com/corporate