

The TOGAF® Cheat Sheet, v0.2

I created this executive summary of the TOGAF 9.1 spec for students of my Udemy course, Become an Enterprise Architect with TOGAF 9.1 Certification! *This is meant as a supplemental download to the course – something you can print and take with you to study once you've gone through the course and read through the spec. Think of it as a "tiny coin-pocket guide". It is not meant to replace taking the course.*

Speaking of the course, don't forget it's at https://www.udemy.com/togaf-enterprise-architect/ . I know you probably have that memorized, but I'll include the link here just in case. As always, contact me for additions, corrections, comments or questions.

Chapter 1: Introduction

TOGAF – The Open Group Architecture Framework, version 9.1, launched 1 Dec 2011

> Based on the Technical Architecture Framework for Information Management (TAFIM) developed by the U.S. Department of Defense

"Enterprise" – any collection of organizations that has a common set of goals

> For example, an enterprise could be a government agency, a whole corporation, a division of a corporation, a single department, or a chain of geographically distant organizations linked together by common ownership.

"Architecture Framework" – (1) a method for defining the target state of an enterprise, (2) a set of tools, (3) a common vocabulary, (4) list of recommended standards and compliant products

Chapter 2: Core Concepts

"Architecture" – (1) A formal description of a system, or a detailed plan of the system at component level to guide its implementation, or (2) The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time

"Baseline" – the current state of a system

"Target" – the future state of a system

The four types of architecture that TOGAF deals with: **Business**, **Data**, **Application**, **Technology**

The **Architecture Development Method (ADM)** is a tested and repeatable process for developing architectures

The phases of the ADM are:

- **Preliminary Phase** – preparation and initiation activities
- **Phase A: Architecture Vision** – creating the high-level target architecture
- **Phase B: Business Architecture** – more detail to baseline and target business architectures
- **Phase C: Information Systems Architecture** – more detail to baseline and target data and application architectures
- **Phase D: Technology Architecture** – more detail to baseline and target technology architectures
- **Phase E: Opportunities & Solutions** – initial implementation planning, and creation of work packages
- **Phase F: Migration Planning** – detailed implementation plan
- **Phase G: Implementation Governance** – architectural oversight of the implementation
- **Phase H: Architecture Change Management** – procedures for managing change post-implementation
- **Requirements Management** – the process of managing change requests throughout the ADM

"Deliverable" – a contracturally-specified work product

"Artifact" – catalogs (lists), matrices (relationships), and diagrams that go into deliverables, and usually represent one **view** of the architecture

"Building block" – a potentially reusable component of business, IT or architectural capability

> **"Architecture Building Block (ABB)"** – describes a required capability but do not specify how it should be implemented
>
> **"Solution Building Block (SBB)"** – represent components that will be used to implement the capability

Deliverables contain **artifacts** (catalogs, matrices, and diagrams) which describe **building blocks**.

> Example: The architecture definition document (deliverable) may contain a process flow diagram (artifact) that describes a call handling process (building block).

"Enterprise Continuum" – a view of the architecture repository that provides methods to classify the architecture and solution artifacts from generic Foundation Architectures to Organization-Specific Architectures.

> **"Architecture Continuum"** – the architecture components of the enterprise continuum that describes a capability but not how to implement it
>
> **"Solutions Continuum"** – the solutions/technical components of the enterprise continuum that describes how to implement an architecture

"Architecture Repository" – supports the Enterprise Continuum by providing by a place to store the outputs of the ADM, and classify them by their level of abstraction (generic to specific).

The architecture repository contains:

- **Architecture metamodel** – tailored ADM
- **Architecture landscape** – the baseline architecture
- **Reference library** – contains external reference models
- **Standards information base (SIB)** – contains external standards
- **Governance log** – a record of architecture governance activity
- **Architecture capability** – parameters, structures, process for architecture governance

"Enterprise Architecture Capability" – business capability for architecture, using organization structures, roles, responsibilities, skills, and processes.

In order to have enterprise architecture capability and organization must also have the following:

- Financial management
- Performance management
- Service management
- Risk management
- Resource management
- Communications and stakeholder management
- Quality management
- Supplier management
- Configuration management
- Environment management

It's important to note that these things **are not provided by TOGAF**. For instance, "financial management", control of your company's revenues and expenses, is an accounting function and not something the architect needs to have control of. But you cannot create an effective business process if you are not in control of the company's finances.

But of course, a company's business goals will be to "make a profit" and control/reduce expenses, the above items affect the architecture function, but the architect is not signing contracts with suppliers or ensuring the company has enough staff in each department.

TOGAF can be used with many other architecture frameworks, such as ITIL, CMMI, COBIT, PRINCE2, PMBOK, and MSP. You do not need to know how to adapt TOGAF, nor the details of any of these other frameworks, for the level 1 certification exam.

Chapter 3: Definitions

I recommend reading the definitions from the spec:
http://pubs.opengroup.org/architecture/togaf9-doc/arch/chap03.html

Chapter 4: Release Notes

Chapter not needed for the exam.

Chapter 5: ADM, Introduction

"Architecture Development Method (ADM)" – a method for developing and managing the lifecycle of an enterprise architecture; also can be looked at as a process for filling an architecture repository

"Enterprise Continuum" – categorizes architectural source material

"Architecture Repository" – a practical implementation of an Enterprise Continuum

"Foundation Architecture" – the most generic types of architecture building blocks, that are broadly applicable. The TRM (technical reference model, to be discussed later) is an example of a foundation architecture.

The ADM is **iterative**:

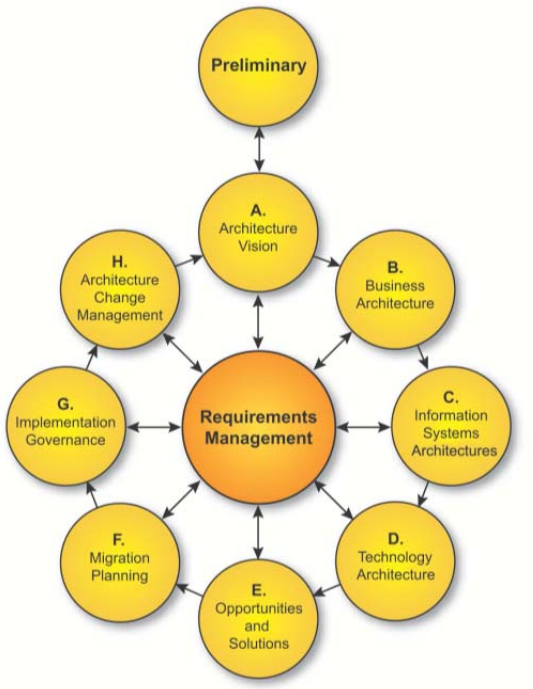
- Over the whole process (i.e. Phase H ends and goes into a new Phase A)
- Between phases (i.e. going through Phase C: Information Systems Architecture may reveal new business processes, which forces you to go back to Phase B: Business Architecture and revise the Business Architecture documents)
- Within phases (i.e. it make take several passes to get the detailed target business architecture before you can move on to the next phase)

For each iteration of the ADM, you must decide the **four dimensions of scope**:

- The **breadth** of coverage of the enterprise to be defined
- The **level of detail** to be defined
- The **time period** to do the work
- Which of the four **architecture domains** (BDAT) to focus on

The ADM may be, but doesn't have to be, **tailored** to specific needs.

The basic structure of the ADM is:



Each phase has outputs, and the ADM standard numbering is:

- **Version 0.1** represents a high-level outline
- **Version 1.0** represents a formally-reviewed, detailed document

"Architecture Governance" – the method by which compliance to the ADM is managed

"Governance Repository" – similar to the architecture repository, this contains documents relating to the governance of the architecture process, specifically:

> **Reference Data** – documents from the architecture repository, including a description of the governance process itself
>
> **Process Status** – the state of the governance process, including compliance assessments, compliance requests, and dispensations
>
> **Audit Information** – record all completed governance actions

The three levels of **architecture integration** across the enterprise are:

- **Strategic architecture** (enterprise vision)
- **Segment architecture** (at a business-unit or department level)
- **Capability architecture** (specific applications)

Chapter 6: ADM, Preliminary Phase

Objectives: (1) Determine the Architecture Capability desired by the organization; (2) Establish the Architecture Capability

Approach: Defining ‘‘where, what, why, who, and how we do architecture’’ in the enterprise concerned

Inputs: External standards and anything internal you have (not specifically important for the exam)

Steps: (1) Scope the enterprise organizations impacted; (2) Confirm governance and support frameworks; (3) Define and establish enterprise architecture team and organization; (4) Identify and establish architecture principles; (5) Tailor TOGAF and, if any, other selected Architecture Frameworks; (6) Implement architecture tools

Outputs: (1) Organizational Model for Enterprise Architecture; (2) Tailored Architecture Framework ; (3) Initial Architecture Repository, populated with framework content; (4) Restatement of, or reference to, business principles, business goals, and business drivers; (5) Request for Architecture Work (optional) ; (6) Architecture Governance Framework

Chapter 7: ADM, Phase A: Architecture Vision

Objectives: (1) Develop a high-level aspirational vision of the capabilities and business value to be delivered as a result of the proposed enterprise architecture; (2) Obtain approval for a Statement of Architecture Work that defines a program of works to develop and deploy the architecture outlined in the Architecture Vision

Approach: The Architecture Vision provides a first-cut, high-level description of the Baseline and Target Architectures, covering the business, data, application, and technology domains. These outline descriptions are developed in subsequent phases. Business scenarios are an appropriate and useful technique to discover and document business requirements, and to articulate an Architecture Vision that responds to those requirements.

Inputs: External standards, and the outputs of the preliminary phase (not specifically important for the exam)

Steps: (1) Establish the architecture project; (2) Identify stakeholders, concerns, and business requirements; (3) Confirm and elaborate business goals, business drivers, and constraints; (4) Evaluate business capabilities; (5) Assess readiness for business transformation; (6) Define scope; (7) Confirm and elaborate Architecture Principles, including business principles; (8) Develop Architecture Vision; (9) Define the Target Architecture value propositions and KPIs; (10) Identify the business transformation risks and mitigation activities; (11) Develop Statement of Architecture Work; secure approval

Outputs: (1) Approved Statement of Architecture work; (2) Refined statements of business principles, business goals, and business drivers; (3) Architecture principles; (4) Capability Assessment; (5) Tailored Architecture Framework; (6) Architecture Vision; (7) Draft Architecture Definition Document, Version 0.1; (8) Communications Plan; (9) Additional content populating the Architecture Repository

Chapter 8: ADM, Phase B: Business Architecture

Objectives: (1) Develop the Target Business Architecture that describes how the enterprise needs to operate to achieve the business goals, and respond to the strategic drivers set out in the Architecture Vision, in a way that addresses the Request for Architecture Work and stakeholder concerns; (2) Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Business Architectures

Approach: The Business Architecture describes the product and/or service strategy, and the organizational, functional, process, information, and geographic aspects of the business environment. A knowledge of the Business Architecture is a prerequisite for architecture work in any other domain (Data, Application, Technology), and is therefore the first architecture activity that needs to be undertaken. In practical terms, the Business Architecture is also often necessary as a means of demonstrating the business value of subsequent architecture work to key stakeholders, and the return on investment to those stakeholders from supporting and participating in the subsequent work. The normal approach to Target Architecture development is top-down. In the Baseline Description, however, the analysis of the current state often has to be done bottom-up, particularly where little or no architecture assets exist.

Inputs: External standards, and the outputs of the previous two phases (not specifically important for the exam)

Steps: (1) Select reference models, viewpoints, and tools; (2) Develop Baseline Business Architecture Description; (3) Develop Target Business Architecture Description; (4) Perform gap analysis; (5) Define candidate roadmap components; (6) Resolve impacts across the Architecture Landscape; (7) Conduct formal stakeholder review; (8) Finalize the Business Architecture; (9) Create Architecture Definition Document

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document, Version 1.0; (3) Business Architecture components of an Architecture Roadmap

Chapter 9: ADM, Phase C: Information Systems Architecture

Objectives: (1) Develop the Target Information Systems (Data and Application) Architecture, describing how the enterprise's Information Systems Architecture will enable the Business Architecture and the Architecture Vision, in a way that addresses the Request for Architecture Work and stakeholder concerns; (2) Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Information Systems (Data and Application) Architectures

Approach: Phase C involves some combination of Data and Application Architecture, in either order.

Inputs: External standards, the outputs of the first two phases, and the business requirements from Phase B (not specifically important for the exam)

Steps: Detailed steps for Phase C are given separately for each architecture domain: (1) Data Architecture; (2) Application Architecture

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document; (3) Draft Architecture Requirements Specification; (4) Information systems components of an Architecture Roadmap

Chapter 10: ADM, Phase C: Data Architecture

Objectives: (1) Develop the Target Data Architecture that enables the Business Architecture and the Architecture Vision, while addressing the Request for Architecture Work and stakeholder concerns; (2) Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Data Architectures

Approach: Understanding data management, data migration and data governance, as well as taking in key data related documents from the architecture repository

Inputs: External standards, the outputs of the first two phases, and the business requirements from Phase B (not specifically important for the exam)

Steps: (1) Select reference models, viewpoints, and tools; (2) Develop Baseline Data Architecture Description; (3) Develop Target Data Architecture Description; (4) Perform gap analysis; (5) Define candidate roadmap components; (6) Resolve impacts across the Architecture

Landscape; (7) Conduct formal stakeholder review; (8) Finalize the Data Architecture; (9) Create Architecture Definition Document

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document; (3) Draft Architecture Requirements Specification; (4) Data Architecture components of an Architecture Roadmap

Chapter 11: ADM, Phase C: Application Architecture

Objectives: (1) Develop the Target Application Architecture that enables the Business Architecture and the Architecture Vision, while addressing the Request for Architecture Work and stakeholder concerns; (2) Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Application Architectures

Approach: Taking in key data related documents from the architecture repository including generic business models and application models such as III-RM

Inputs: External standards, the outputs of the first two phases, the business requirements from Phase B, and the data requirements from Phase C (not specifically important for the exam)

Steps: (1) Select reference models, viewpoints, and tools; (2) Develop Baseline Application Architecture Description; (3) Develop Target Application Architecture Description; (4) Perform gap analysis; (5) Define candidate roadmap components; (6) Resolve impacts across the Architecture Landscape; (7) Conduct formal stakeholder review; (8) Finalize the Application Architecture; (9) Create Architecture Definition Document

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document; (3) Draft Architecture Requirements Specification; (4) Application Architecture components of an Architecture Roadmap

Chapter 12: ADM, Phase D: Technology Architecture

Objectives: (1) Develop the Target Technology Architecture that enables the logical and physical application and data components and the Architecture Vision, addressing the Request for Architecture Work and stakeholder concerns; (2) Identify candidate Architecture Roadmap components based upon gaps between the Baseline and Target Technology Architectures

Approach: Taking in key data related documents from the architecture repository including existing IT services, the Technical Reference Model (TRM), generic technology models from the industry, and generic technology models that are common systems architecture

Inputs: External standards, the outputs of the first two phases, and the architecture definition from Phase B & C (not specifically important for the exam)

Steps: (1) Select reference models, viewpoints, and tools; (2) Develop Baseline Technology Architecture Description; (3) Develop Target Technology Architecture Description; (4) Perform gap analysis; (5) Define candidate roadmap components; (6) Resolve impacts across the Architecture Landscape; (7) Conduct formal stakeholder review; (8) Finalize the Technology Architecture; (9) Create Architecture Definition Document

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document; (3) Draft Architecture Requirements Specification; (4) Technology Architecture components of an Architecture Roadmap

Chapter 13: ADM, Phase E: Opportunities and Solutions

Objectives: (1) Generate the initial complete version of the Architecture Roadmap, based upon the gap analysis and candidate Architecture Roadmap components from Phases B, C, and D; (2) Determine whether an incremental approach is required, and if so identify Transition Architectures that will deliver continuous business value

Approach: Concentrates on "how" to deliver the architecture defined in Phases A-D. This phase starts the implementation and migration plan (it's completed in the next phase). This takes the architecture roadmap done in the last phase, and breaks it up into work packages, and transition architectures, leading to a schedule - the implementation and migration plan.

Inputs: External standards, the outputs of the architecture definition phases B, C & D, change requests, and the draft roadmap from the last three phases (not specifically important for the exam)

Steps: (1) Determine/confirm key corporate change attributes; (2) Determine business constraints for implementation; (3) Review and consolidate gap analysis results from Phases B to D; (4) Review consolidated requirements across related business functions; (5) Consolidate and reconcile interoperability requirements; (6) Refine and validate dependencies; (7) Confirm readiness and risk for business transformation; (8) Formulate Implementation and Migration Strategy; (9) Identify and group major work packages; (10) Identify Transition Architectures; (11) Create the Architecture Roadmap & Implementation and Migration Plan

Outputs: (1) Refined and updated versions of the Architecture Vision phase deliverables, where applicable; (2) Draft Architecture Definition Document; (3) Draft Architecture Requirements Specification; (4) Capability Assessments; (5) Architecture Roadmap; (6) Implementation and Migration Plan, version 0.1

Chapter 14: ADM, Phase F: Migration Planning

Objectives: (1) Finalize the Architecture Roadmap and the supporting Implementation and Migration Plan; (2) Ensure that the Implementation and Migration Plan is coordinated with the enterprise's approach to managing and implementing change in the enterprise's overall change portfolio; (3) Ensure that the business value and cost of work packages and Transition Architectures is understood by key stakeholders

Approach: The focus of Phase F is the creation of an Implementation and Migration Plan in co-operation with the portfolio and project managers

Inputs: External standards, the outputs of the all the previous phases, the architecture requirements from Phases B, C and D, the architecture roadmap, and the draft implementation plan from the previous phase (not specifically important for the exam)

Steps: (1) Confirm management framework interactions for Implementation and Migration Plan; (2) Assign a business value to each work package; (3) Estimate resource requirements, project timings, and availability/delivery vehicle; (4) Prioritize the migration projects through the conduct of a cost/benefit assessment and risk validation; (5) Confirm Architecture Roadmap and update Architecture Definition Document; (6) Complete the Implementation and Migration Plan; (7) Complete the architecture development cycle and document lessons learned

Outputs: (1) Implementation and Migration Plan, Version 1.0; (2) Finalized Architecture Definition Document; (3) Finalized Architecture Requirements Specification; (4) Finalized Architecture Roadmap; (5) Re-Usable Architecture Building Blocks; (6) Requests for Architecture Work for a new iteration of the ADM cycle (if any); (7) Implementation Governance Model (if any); (8) Change Requests for the Architecture Capability arising from lessons learned

Chapter 15: ADM, Phase G: Implementation Governance

Objectives: (1) Ensure conformance with the Target Architecture by implementation projects; (2) Perform appropriate Architecture Governance functions for the solution and any implementation-driven architecture Change Requests

Approach: Phase G establishes the connection between architecture and implementation organization, through the Architecture Contract.

Inputs: External standards, the architecture definition, the architecture requirements, the roadmap, unsigned architecture contracts, and the implementation and migration plan (not specifically important for the exam)

Steps: (1) Confirm scope and priorities for deployment with development management; (2) Identify deployment resources and skills; (3) Guide development of solutions deployment; (4) Perform enterprise architecture compliance reviews; (5) Implement business and IT operations; (6) Perform post-implementation review and close the implementation

Outputs: (1) Architecture Contract (signed); (2) Compliance Assessments; (3) Change Requests; (4) Architecture-compliant solutions deployed

Note: The implemented system is actually an output of the development process. However, given the importance of this output, it is stated here as an output of the ADM.

Chapter 16: ADM, Phase H: Architecture Change Management

Objectives: (1) Ensure that the architecture lifecycle is maintained; (2) Ensure that the Architecture Governance Framework is executed; (3) Ensure that the enterprise Architecture Capability meets current requirements

Approach: The goal of an architecture change management process is to ensure that the architecture achieves its original target business value. This includes managing changes to the architecture in a cohesive and architected way.

Inputs: External standards, the architecture definition, the architecture requirements, the roadmap, the signed architecture contract, and all change requests from various sources (not specifically important for the exam)

Steps: (1) Establish value realization process; (2) Deploy monitoring tools; (3) Manage risks; (4) Provide analysis for architecture change management; (5) Develop change requirements to meet performance targets; (6) Manage governance process; (7) Activate the process to implement change

Outputs: (1) Architecture updates (for maintenance changes); (2) Changes to architecture framework and principles (for maintenance changes); (3) New Request for Architecture Work, to move to another cycle (for major changes); (4) Statement of Architecture Work, updated if necessary; (5) Architecture Contract, updated if necessary; (6) Compliance Assessments, updated if necessary

Chapter 17: ADM Architecture Requirements Management

Objectives: (1) Ensure that the Requirements Management process is sustained and operates for all relevant ADM phases; (2) Manage architecture requirements identified during any

execution of the ADM cycle or a phase; (3) Ensure that relevant architecture requirements are available for use by each phase as the phase is executed

Approach: A dynamic process whereby requirements for enterprise architecture and subsequent changes to those requirements are identified, stored, and fed into and out of the relevant ADM phases, and also between cycles of the ADM. This center phase is a continuous process of handling change during all cycles of the ADM.

Inputs: Documents from the architecture repository (not specifically important for the exam)

Steps: *This is different than the other ADM phases.* Works in conjunction with the various phases of the ADM to prioritize and record change. This is where the determination is made whether to implement a change in this cycle, or defer it to the next cycle. If the decision is to implement the change, the impact needs to be assessed, and gap analysis revised.

Outputs: (1) Requirements Impact Assessment; (2) Updated Architecture Requirements Specification, if necessary

Chapter 18 and on

More to come in v0.2!

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