TOGAF™ Version 9 Enterprise Edition

An Introduction

A White Paper by:

Andrew Josey, The Open Group

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TOGAF™ Version 9 Enterprise Edition: An Introduction

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Any comments relating to the material contained in this document may be submitted to:

The Open Group
44 Montgomery St. #960
San Francisco, CA 94104

or by email to:

ogpubs@opengroup.org

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Executive Summary

This document provides an introduction to TOGAF 9. Topics addressed include:

- An Introduction to TOGAF
- TOGAF, its structure and content
- The kinds of architecture that TOGAF addresses
- What's new in TOGAF 9

Introduction to TOGAF 9

TOGAF is an architecture framework – **The Open Group Architecture Framework**. Put simply, TOGAF is the *de facto* global standard for assisting in the acceptance, production, use, and maintenance of architectures. Practical and proven, it is based on an iterative process model supported by best practices and a re-usable set of existing architectural assets.

TOGAF is developed and maintained by The Open Group Architecture Forum and its 350 members. The first version of TOGAF, developed in 1995, was based on the US Department of Defense Technical Architecture Framework for Information Management (TAFIM). Starting from this sound foundation, The Open Group Architecture Forum has developed successive versions of TOGAF at regular intervals and published each one on The Open Group public web site.

This document covers TOGAF Version 9, referred to as "TOGAF 9" within the text of this document. TOGAF 9 was first published in January 2009. TOGAF 9 is an evolution from TOGAF 8.1.1 and a description of the changes is provided in Section 1.6.

TOGAF 9 can be used for developing a broad range of different enterprise architectures. TOGAF complements, and can be used in conjunction with, other frameworks that are more focused on specific deliverables for particular vertical sectors such as Government, Telecommunications, Manufacturing, Defense, and Finance. The key to TOGAF is the method – the TOGAF Architecture Development Method (ADM) – for developing an enterprise architecture that addresses business needs.

What is Architecture in the Context of TOGAF?

ISO/IEC 42010:2007[1] defines "architecture" as:

"*The fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution.*"

TOGAF embraces and extends this definition. In TOGAF, "architecture" has two meanings depending upon the context:

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

What kinds of Architecture does TOGAF deal with?

TOGAF 9 covers the development of four related types of architecture. These four types of architecture are commonly accepted as subsets of an overall enterprise architecture, all of which TOGAF is designed to support. They are shown in Table 1

[1] ISO/IEC 42010:2007, Systems and Software Engineering – Recommended Practice for Architectural Description of Software-Intensive Systems, Edition 1 (technically identical to ANSI/IEEE Std 1471-2000).

Table 1: Architecture Types Supported by TOGAF

Architecture Type	Description
Business Architecture	The business strategy, governance, organization, and key business processes.
Data Architecture[2]	The structure of an organization's logical and physical data assets and data management resources.
Application Architecture	A blueprint for the individual application systems to be deployed, their interactions, and their relationships to the core business processes of the organization.
Technology Architecture	The logical software and hardware capabilities that are required to support the deployment of business, data, and application services. This includes IT infrastructure, middleware, networks, communications, processing, and standards.

Structure of the TOGAF Document

The TOGAF 9 document is divided into seven parts, as summarized in Table 2.

Table 2: Structure of the TOGAF Document

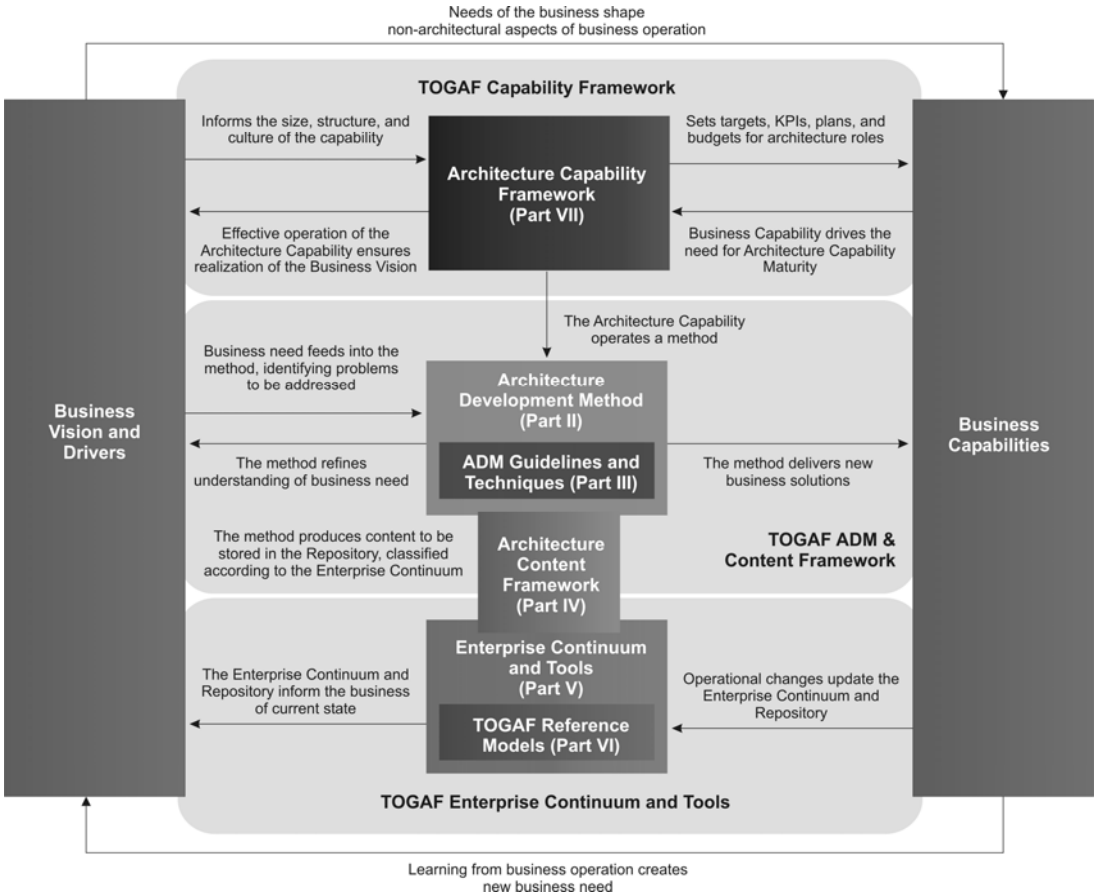
TOGAF 9 Reference	Description
Part I: Introduction	This part provides a high-level introduction to the key concepts of enterprise architecture and, in particular, to the TOGAF approach. It contains the definitions of terms used throughout TOGAF and release notes detailing the changes between this version and the previous version of TOGAF.
Part II: Architecture Development Method	This part is the core of TOGAF. It describes the TOGAF Architecture Development Method (ADM) – a step-by-step approach to developing an enterprise architecture.
Part III: ADM Guidelines and Techniques	This part contains a collection of guidelines and techniques available for use in applying the ADM.
Part IV: Architecture Content Framework	This part describes the TOGAF content framework, including a structured metamodel for architectural artifacts, the use of re-usable Architecture Building Blocks (ABBs), and an overview of typical architecture deliverables.
Part V: Enterprise Continuum and Tools	This part discusses appropriate taxonomies and tools to categorize and store the outputs of architecture activity within an enterprise.
Part VI: TOGAF Reference Models	This part provides two architectural reference models, namely the TOGAF Technical Reference Model (TRM), and the Integrated Information Infrastructure Reference Model (III-RM).
Part VII: Architecture Capability Framework	This part discusses the organization, processes, skills, roles, and responsibilities required to establish and operate an architecture practice within an enterprise.

[2] Data Architecture is called Information Architecture in some organizations.

What does TOGAF Contain?

TOGAF reflects the structure and content of an architecture capability within an enterprise, as shown in Figure 1.

Figure 1: TOGAF Content Overview



Central to TOGAF is the Architecture Development Method (documented in TOGAF 9, Part II). The architecture capability (documented in TOGAF 9, Part VII) operates the method. The method is supported by a number of guidelines and techniques (documented in TOGAF 9, Part III). This produces content to be stored in the repository (documented in TOGAF 9, Part IV), which is classified according to the Enterprise Continuum (documented in TOGAF 9, Part V). The repository is initially populated with the TOGAF Reference Models (documented in TOGAF 9, Part VI).

Architecture Development Method (ADM)

The **ADM** describes how to derive an organization-specific enterprise architecture that addresses business requirements. The ADM is the major component of TOGAF and provides guidance for architects on a number of levels:

- It provides a number of **architecture development phases** (Business Architecture, Information Systems Architectures, Technology Architecture) in a cycle, as an overall process template for

architecture development activity.

- It provides a **narrative of each architecture phase**, describing the phase in terms of objectives, approach, inputs, steps, and outputs. The inputs and outputs sections provide a definition of the architecture content structure and deliverables (a detailed description of the phase inputs and phase outputs is given in the Architecture Content Framework).
- It provides cross-phase summaries that cover requirements management.

ADM Guidelines and Techniques

ADM Guidelines and Techniques provides a number of guidelines and techniques to support the application of the ADM. The guidelines address adapting the ADM to deal with a number of usage scenarios, including different process styles (e.g., the use of iteration) and also specific specialty architectures (such as security). The techniques support specific tasks within the ADM (such as defining principles, business scenarios, gap analysis, migration planning, risk management, etc.).

Architecture Content Framework

The **Architecture Content Framework** provides a detailed model of architectural work products, including deliverables, artifacts within deliverables, and the Architecture Building Blocks (ABBs) that deliverables represent.

Enterprise Continuum

The **Enterprise Continuum** provides a model for structuring a virtual repository and provides methods for classifying architecture and solution artifacts, showing how the different types of artifacts evolve, and how they can be leveraged and re-used. This is based on architectures and solutions (models, patterns, architecture descriptions, etc.) that exist within the enterprise and in the industry at large, and which the enterprise has collected for use in the development of its architectures.

TOGAF Reference Models

TOGAF provides two reference models for possible inclusion in an enterprise's own Enterprise Continuum, namely the **Technical Reference Model** (TRM) and the **Integrated Information Infrastructure Model** (III-RM).

Architecture Capability Framework

The **Architecture Capability Framework** is a set of resources, guidelines, templates, background information, etc. provided to help the architect establish an architecture practice within an organization.

What's New in TOGAF Version 9?

TOGAF 9 provides a wide-ranging set of revisions to the TOGAF specification to improve the value of the TOGAF framework: It has been designed as an evolution from TOGAF 8.1.1, adding further detail and clarification to what is already proven. Major new features of TOGAF 9 include the following.

Modular Structure

TOGAF 9 introduces a modular structure. Content that was contained within the TOGAF 8.1.1 Resource Base has been classified and moved into parts that have a defined purpose (as opposed to generic ''resources''). The modular structure supports:

- Greater usability – defined purpose for each part; can be used in isolation as a standalone set of guidelines
- Incremental adoption of the TOGAF specification

Content Framework

TOGAF 9 includes a content framework to drive greater consistency in the outputs that are created when following the Architecture Development Method (ADM). The TOGAF content framework provides a detailed model of architectural work products.

Extended Guidance

TOGAF 9 features an extended set of concepts and guidelines to support the establishment of an integrated hierarchy of architectures being developed by teams within larger organizations that operate within an overarching architectural governance model. In particular, the following concepts are introduced:

- **Partitioning**: A number of different techniques and considerations on how to partition the various architectures within an enterprise.
- **Architecture Repository**: A logical information model for an Architecture Repository which can be used as an integrated store for all outputs created by executing the ADM.
- **Capability Framework**: A more structured definition of the organization, skills, roles, and responsibilities required to operate an effective enterprise architecture capability. The new TOGAF materials also provide guidance on a process that can be followed to identify and establish an appropriate architecture capability.

Architectural Styles

TOGAF 9, in its new Part III: ADM Guidelines & Techniques, brings together a set of supporting materials that show in detail how the ADM can be applied to specific situations:

- The varying uses of iteration that are possible within the ADM and when each technique should be applied
- The linkages between the TOGAF ADM and Service Oriented Architecture (SOA)

- The specific considerations required to address security architecture within the ADM
- The various types of architecture development required within an enterprise and how these relate to one another

Additional ADM Detail

TOGAF 9 includes additional detailed information supporting the execution of the ADM. Particular areas of enhancement are:

- The Preliminary phase features extended guidance on establishing an enterprise architecture framework and planning for architecture development.
- The Opportunities & Solutions and Migration Planning phases feature a more detailed and robust method for defining and planning enterprise transformation, based on the principles of capability-based planning.

Further Reading

Consult the TOGAF web site at www.opengroup.org/togaf for the latest information on publications and white papers.

About the Author

Andrew Josey is Director of Standards within The Open Group. He is currently managing the standards process for The Open Group, and has recently led the standards development projects for TOGAF 9, IEEE Std 1003.1-2008 (POSIX), and the core specifications of the Single UNIX Specification, Version 4. Previously, he has led the development and operation of many of The Open Group certification development projects, including industry-wide certification programs for the UNIX system, the Linux Standard Base, TOGAF, and IEEE POSIX. He is a member of the IEEE, USENIX, UKUUG, and the Association of Open Group Enterprise Architects.

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