TOGAF Introduction

EA 101 Stream

EA Practitioners’ Conference 5 June 2008

Sarina Viljoen

TOGAF Certified Practitioner, Consultant and Trainer
## Document Control

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TOGAF™

The Open Group Architecture Framework
Framework (s)?

The Zachman Classification Framework for an Enterprise™

Terminology

- Architecture
- Vision
- Change Management
- Business Architecture
- Information Systems Architectures
- Requirements Management
- Migration Planning
- Opportunities and Solutions
- Technology Architecture
- Implementation Governance

Table: Zachman Framework Classification

<table>
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<tr>
<th>WHAT</th>
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- Security Governance
- Privacy
- Information Systems Architectures
- Technology Architecture
- Information - Systems
- Business Architecture
- Architecture Vision
- Prelim: Framework and Principles
- Framework

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Enterprise Architecture Defined – Zachman & Schekkerman

Zachman’s (1996a:5) definition of enterprise architecture was: “Descriptive representations (i.e. models) that are relevant for describing an enterprise such that it can be produced to management’s requirements (quality) and maintained over the period of its useful life (change).”

“Enterprise Architecture is a complete expression of the enterprise; a master plan which acts as a collaboration force between aspects of business planning such as goals, visions, strategies and governance principles; aspects of business operations such as business terms, organisation structures, processes and data; aspects of automation such as information systems and databases; and the enabling technological infrastructure of the business such as computers, operating systems and networks,” (Schekkerman, 2004a:13).
Architecture Defined

The definition of an **architecture** used in ANSI/IEEE Std 1471-2000 is:

> “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”.

At the present time TOGAF embraces the ANSI/IEEE Std 1471-2000 terminology. In TOGAF, “Architecture” has two meanings depending upon its contextual usage:

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

> “Enterprise Architecture is about understanding all of the different elements that go to make up the enterprise and how those elements inter-relate”
About The Open Group

Global Operation
Cross-Industry
Vendor Neutral
Technology Neutral

Brings the key constituencies together in an open process

San Francisco,
Boston, UK, Tokyo, Jhb
Regional chapters
50+ staff

Industry Consortium
Not-for-profit operations
Established >20 years
~350 member organizations

Operates the industry’s premier certification service

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Activities

• Member Forums and Working Groups
  ➢ E.g. Architecture Forum

• Certification Services
  ➢ For specifications of The Open Group and other consortia

• Conferences
  ➢ Quarterly member meetings
  ➢ Architecture Practitioners Conferences
TOGAF Introduction

The Architecture Forum
TOGAF: An effective open framework and method for architecture

Architecture as a professional discipline

Adequate “Commercial Off-The-Shelf” architecture tools
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<th>Marriott International (US)</th>
<th>Oslo Software (France)</th>
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<td>National E-health Transition Authority</td>
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TOGAF Introduction

TOGAF 8 “Enterprise Edition”
TOGAF Origins

- A customer initiative

- A framework (including a method), not an architecture
  - A generic framework for developing architectures to meet different business needs
  - Not a “one-size-fits-all” architecture

- Originally based on TAFIM (U.S. DoD), enhanced by various frameworks and thinking over the years
TOGAF™ Development

1994: Requirement  
证明需要

1995: TOGAF Version 1  
证明概念

1996: TOGAF Version 2  
证明应用

1997: TOGAF Version 3  
架构构建块

1998: TOGAF Version 4  
企业连续体 (TOGAF 的背景)

1999: TOGAF Version 5  
业务场景

2000: TOGAF Version 6  
架构视图 - IEEE 1471

2001: TOGAF Version 7  
架构原则；合规性审查

2002: TOGAF Version 8  
扩展到企业架构

2003: TOGAF Version 8.1  
需求管理；治理；成熟度模型；技能框架

2006: TOGAF Version 8.1.1  
勘误及更新
Overview of TOGAF 8 Components

Enterprise Continuum

More Generic

More Specific

Foundation Architectures
Common Systems Architectures
Industry Architectures
Organization Architectures

SIB
III-RM
SAP Solution maps
IA

W3C
Sun’s JSR
Vendor Reference Models
eTOM
IIA

IBM financial services
CIM (Utility)
SCOR (SCM)

Architecture Continuum

Solutions Continuum

Architecture Board
Architecture Governance
Architecture Maturity Model
Architecture Skills Frameworks
Architecture Principles
Business Scenarios
Architecture Compliance

Architecture Contracts
Other Frameworks / Tools
Architecture Patterns
Architecture Building Blocks
Architecture Views

Requirements Management

A
Architecture Vision

B
Business Architecture

C
Information Systems Architecture

D
Technology Architecture

F
Migration Planning

G
Implementation Governance

H
Architecture Change Management

E
Opportunities And Solutions

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Vendor Reference Models

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W3C
Sun’s JSR
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eTOM
IIA

IBM financial services
CIM (Utility)
SCOR (SCM)
1. Architecture Development Method (ADM)
   - Forms the core of TOGAF

   Supported by:

2. TOGAF Enterprise Continuum
   A virtual repository of architecture assets
   Architecture assets are created or drawn from existing assets, used, modified and returned to the virtual repository that is the Enterprise Continuum, including descriptions, models and patterns

3. TOGAF Resource Base
   Processes, templates, checklists and other items from the Resource Base are deployed as methods to develop the architecture
TOGAF 8 Components

TOGAF 8.1

Architecture Development Method
- Phase Descriptions
  - Phase Inputs
  - Phase Outputs
  - Use of Keywords

Resource Base
- Case Studies
- Glossary
- Table of Views
- Reference Materials, Tools, Techniques

Enterprise Continuum
- Architecture Continuum
  - Foundation Architectures
  - TOGAF TRM
  - Common Systems Architectures
  - Industry Architectures
  - Organization Architectures
- Solutions Continuum
  - Products and Services
  - Systems Solutions
  - Industry Solutions
  - Organization Solutions

Source: SAP and Capgemini
Input into 2008 TOGAF review
TOGAF Introduction

TOGAF 8 “Enterprise Edition” – Architecture Development Method
ADM – Basic Principles

- Core focus of TOGAF

- An iterative method
  - Between phases
  - Within a phase

- Each iteration = new decisions:
  - Enterprise coverage
  - Level of detail
  - Time horizon
  - Architecture asset re-use:
    - previous ADM iterations
    - other frameworks, system models, industry models,…

- Decisions based on:
  - Competence / resource availability
  - Value accruing to the enterprise.
Preliminary: Framework/ Principles

- **Inputs**
  - TOGAF ADM
  - Other architecture framework(s), if required
  - Business Strategy, Business Principles, Business Goals, Business Drivers
  - IT Governance Strategy
  - Architecture Principles

- **Steps**
  - TOGAF ADM a generic method -- not practical to define specific steps for adapting.
  - ADM Introduction discusses issues involved and gives general guidelines.

- **Outputs**
  - Framework Definition
  - Architecture Principles
  - Restatement of Business Strategy, Principles, Goals, Drivers
Phase A: Architecture Vision

- **Inputs**
  - Request for Architecture Work
  - Business Strategy, Principles, Goals, Drivers
  - Architecture Principles
  - Enterprise Continuum - existing arch. documentation

- **Steps**
  - Project Establishment
  - Business Principles, Goals and Drivers
  - Architecture Principles.
  - Project Scope
  - Constraints.
  - Stakeholders and concerns, Business Requirements, and Architecture Vision
  - Statement of Architecture Work and Approval

- **Outputs**
  - Statement of Architecture Work
  - Refined statements of Principles, Goals, Drivers
  - Architecture Vision
  - Business Scenario
Phase B: Business Architecture

- **Inputs**
  - Request for Architecture Work
  - Approved Statement of Architecture Work
  - Refined Business Principles, Goals, Drivers
  - Enterprise Continuum
  - Architecture Vision / Business Scenario

- **Steps**
  - Describe Baseline Business Architecture
  - Identify Reference Models, Viewpoints, Tools
  - Create Architecture Model(s)
  - Select Building Blocks (e.g., business services)
  - Formal Checkpoint Review with Stakeholders
  - Complete Business Architecture
  - Perform Gap Analysis, Report

- **Outputs**
  - Statement of Architecture Work (updated)
  - Validated Business Principles, goals, drivers
  - Target Business Architecture (detailed)
  - Business Baseline (detailed)
  - Views addressing key stakeholder concerns
  - Gap analysis results
  - Tech. requirements (drivers for Tech. Architecture)
  - Business Architecture Report
  - Updated business requirements
Phase C: Info. Systems architectures

- **Inputs**
  - Applications and Data Principles
  - Request for Architecture Work
  - Statement of Architecture Work
  - Architecture Vision
  - Business Baseline
  - Target Business Architecture
  - Relevant technical requirements
  - Gap analysis (from Business Architecture)
  - Re-usable building blocks

- **Steps (for Data and Applications Arch.)**
  - Describe Baseline Architecture
  - Identify Reference Models, Viewpoints, Tools
  - Create Architecture Model(s)
  - Select Building Blocks
  - Formal Checkpoint Review with Stakeholders
  - Review Qualitative Criteria
  - Complete Architecture Description
  - Conduct Checkpoint / Impact Analysis
  - Perform Gap Analysis, Report

- **Outputs**
  - Statement of Architecture Work (updated)
  - Target Data and Applications Architectures
  - Data and Applications Architecture Views
  - Data and Applications Architecture Reports
  - Gap analyses
  - Impact Analyses
  - Updated business requirements
Phase D: Technology Architecture

- **Inputs**
  - Technical Principles
  - Request for Architecture Work
  - Statement of Architecture Work
  - Architecture Vision
  - Relevant technical requirements (previous phases)
  - Gap analyses
  - Business, Data and Applications Baselines
  - Target Business, Data, Applications Architectures
  - Re-usable building blocks

- **Steps**
  - Describe Baseline Technology Architecture
  - Identify Reference Models, Viewpoints, Tools
  - Create Architecture Model(s)
  - Select services portfolio per building block
  - Confirm business goals and objectives being met
  - Determine criteria for specification selection
  - Complete Technology Architecture
  - Perform Gap Analysis, Report

- **Outputs**
  - Statement of Architecture Work (updated)
  - Technology Baseline
  - Technology Principles
  - Technology Architecture Report
  - Target Technology Architecture
  - Technology Architecture - gap report
  - Viewpoints / views addressing stakeholder concerns.
Phase E: Opportunities & Solutions

- **Inputs**
  - Request for Architecture Work
  - Statement of Architecture Work
  - Business, Data, Applications, Technology Architectures
  - Re-usable architecture building blocks
  - Product information

- **Steps**
  - Identify business drivers constraining implementation sequence (cost reduction; service consolidation; etc.)
  - Review gap analysis generated in Phase D.
  - Brainstorm technical requirements
  - Brainstorm co-existence, interoperability requirements
  - Architecture assessment and gap analysis
  - Identify major work packages; classify as new development, purchase opportunity, reuse of existing system.

- **Outputs**
  - Impact Analysis - Project list
Phase F: Migration Planning

- **Inputs**
  - Request for Architecture Work
  - Statement of Architecture Work
  - Business Architecture
  - Data Architecture
  - Applications Architecture
  - Technology Architecture
  - Impact Analysis - Project list

- **Steps**
  - Prioritize projects
  - Estimate resource requirements and availability
  - Perform cost / benefit assessment of migration projects
  - Perform risk assessment
  - Generate implementation roadmap (time-lined)
  - Document the Migration Plan

- **Outputs**
  - Impact Analysis - Migration Plan
Phase G: Implementation Governance

- **Inputs**
  - Request for Architecture Work
  - Statement of Architecture Work
  - Re-usable solutions building blocks
  - Impact Analysis - Migration Plan

- **Steps**
  - Formulate project recommendations; for each implementation project, document:
    - scope
    - strategic requirements (from architectural perspective)
    - change requests
    - rules for conformance
    - time-line requirements from roadmap
  - Architecture Contract – document, obtain developing and sponsoring organization signatures
  - On-going implementation governance and architecture compliance review.

- **Outputs**
  - Impact Analysis – Implementation recommendations
Phase H: Architecture Change Management

- **Inputs**
  - Request for Architecture Change - technology
  - New technology reports
  - Request for Architecture Change - business

- **Steps**
  - Ongoing monitoring of technology changes
  - Ongoing monitoring of business changes
  - Assessment of changes and development of position to act
  - Meeting of Architecture Board (or other governing council) to decide on handling changes

- **Outputs**
  - Architecture updates
  - Changes to Architecture Framework and Principles
  - New Request for Architecture Work (to move to another cycle)
TOGAF Introduction

TOGAF 8 “Enterprise Edition” – Continuum & Reference Models
The “Enterprise Continuum”

Architecture Continuum

Foundation Architectures

Common Systems Architectures

Industry Architectures

Organisation Architectures

Guides & Supports

Products & Services

Systems Solutions

Industry Solutions

Organisation Solutions

Solutions Continuum

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Foundation Architecture: Technical Reference Model (TRM)

- Associated with detailed taxonomy of **services**
  - defines scope of each service category
- Identifies system-wide capabilities or “**qualities**”; e.g.:
  - Internationalization
  - Security
  - Management
Foundation Architecture: Standards Information Base (SIB)

- A database of open industry standards
- Content determined by Open Group consensus process
- Structured according to TOGAF Technical Reference Model taxonomy
- Available for public web access
  - http://www.db.opengroup.org/sib.htm
- Gateway to many linked resources
Integrated Information Infrastructure Reference Model

- A model of the key components for developing, managing, and operating an integrated information infrastructure.
  - Supporting “Boundaryless Information Flow”

- A model of a set of applications that sit on top of an application platform.

- An expanded subset of the TOGAF Technical Reference Model, using different orientation.
TOGAF Introduction

TOGAF 8 “Enterprise Edition” – Resource Base
Resource Base

- **Architecture Board**: Guidelines for establishing and operating an Enterprise Architecture Board
- **Architecture Compliance**: Guidelines and checklists for ensuring project compliance to architecture
- **Architecture Contracts**: Guidelines for architecture contracts
- **Architecture Governance**: Arrangements for effective control of IT Architecture by enterprise management
- **Architecture Patterns**: Guidelines on architecture patterns
- **Architecture Principles**: Guidelines on developing Architecture Principles; and a generic set of Architecture Principles
- **Architecture Views**: Guidelines for developing viewpoints and views in architecture models
- **Building Blocks Example**: Example illustrating use of building blocks in architecture
Resource Base (continued)

- **Business Process Domain Views**: A set of function views aligned with the business process structure of the enterprise

- **Business Scenarios**: A method for deriving business requirements for architecture and the implied technical requirements

- **Case Studies**: Real-life examples of TOGAF in use

- **Glossary**: Definitions of key terms

- **Other Architectures / Frameworks**: and relationship to TOGAF

- **Tools for Architecture Development**: Generic evaluation criteria for architecture tools

- **Zachman Framework mapping**: Mapping the TOGAF ADM to the Zachman Framework
TOGAF and Other Frameworks / Bodies of Knowledge

TOGAF8 already contains mapping to Zachman Framework
White Papers http://www.opengroup.org/architecture/wp/ map

- TOGAF8 and COBIT4 (Real IRM)
- TOGAF8 and DODAF (collaboration including Raytheon and MITRE Corporation)
- TOGAF8 and ITIL (Merck Serono International SA)
- TOGAF to OMG’s MDA modeling standards
TOGAF 8 Certification

A vendor-neutral, global basis of certification to impose standards for TOGAF 8 within the industry

Architects trained in the use of TOGAF 8

Training courses which instruct in TOGAF 8

Architecture tools which support TOGAF 8
TOGAF Certified Individuals

Top 10 Countries

- USA 29%
- UK 24%
- Canada 10%
- India 8%
- Japan 7%
- South Africa 6%
- Singapore 4%
- Australia 6%
- Germany 3%
- Netherlands 3%

2Q 07
TOGAF 8 global, online testing

Thomson Prometric now live......
TOGAF 8 Core Training Materials

TOGAF
Version 8 Enterprise Edition

Personal Certification Course

A four-day taught course for:
• IT Architecture students and practitioners

A single-day course for:
• Senior managers (needing an overview)
TOGAF Introduction

And finally..
TOGAF 8 Summary

• An effective, industry standard framework and method for enterprise architecture.

• Complementary to, not competing with, other enterprise frameworks

• A repository of best practice
  ➢ “Demystifies” architecture development

• A framework and method for achieving the “Boundaryless Information Flow” vision
Conclusions

- Adopt and use TOGAF
  - An effective, industry standard framework and method for enterprise architecture.
  - Vendor, tool, and technology neutral
  - Complementary to, not competing with, other frameworks

- Join and participate in the Architecture Forum
  - Worldwide forum for Architecture practitioners
  - Network with peers and industry experts
  - Contribute to / leverage work in progress
  - Help further development of Enterprise Architecture as a discipline and a profession
How to Download TOGAF™

- If your organization is a member of The Open Group Architecture Forum, you may download and use TOGAF™ Version 8 "Enterprise Edition" internally under a personal annual Member License.

- If you are a non-member, you may download TOGAF™ Version 8 "Enterprise Edition" under a free, personal, 90-day Evaluation License; and you may then go on to use it internally under a free, perpetual, Corporate License or a free, perpetual, Academic License, if you wish. Alternatively, you may take out an annual Commercial License.

- For further information and the download links, go to: www.opengroup.org/architecture/togaf8/downloads.htm
For More Information . . .

The Architecture Forum:

- [http://www.opengroup.org/architecture/](http://www.opengroup.org/architecture/)

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- [http://www.opengroup.org/architecture/togaf8-doc/arch/](http://www.opengroup.org/architecture/togaf8-doc/arch/)

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