

e-Framework, SOA and Enterprise Architecture

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The Open Group

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Questions to be answered

◆ The following questions will be answered:

- ◆ Who are The Open Group?
- ◆ What is an Enterprise Architecture?
- ◆ What is TOGAF?
- ◆ How Enterprise Architectures are developed?
- ◆ What else do we need?

The Open Group

- ◆ A global not-for-profit Consortium
- ◆ Over 250 corporate members representing a wide range of company sizes, industries and public/private organizations
- ◆ Estimated 6000 active participants in 19 Countries
- ◆ Customers
 - ◆ Banks and Financial Services
 - ◆ Lawyers
 - ◆ Government Departments & Agencies
 - ◆ Manufacturers
 - ◆ Retail
- ◆ Suppliers
 - ◆ Systems Vendors
 - ◆ Middleware and Application Developers
 - ◆ Integrators, IT Architects and Consultants
- ◆ Academia

UK Academic Members

- ◆ Cardiff University School of Computer Science – UK
- ◆ Centre for Software Reliability, City University – UK
- ◆ University of Kent – UK
- ◆ Network Research Group, University of Plymouth – UK
- ◆ The University of Reading – UK
- ◆ University of York, Department of Computer Science – UK



Global Academic Members

- ◆ aicas GmbH – Germany
- ◆ Applied Research Lab/The Pennsylvania State University – USA
- ◆ California State University, Monterey Bay – USA
- ◆ Carnegie Mellon University, Software Engineering Institute – USA
- ◆ Embedded Systems Laboratory, Massachusetts Institute of Technology – USA
- ◆ Focus on the Family – USA
- ◆ Forschungszentrum Informatik – Germany
- ◆ Georgia Institute of Technology – USA
- ◆ Grant MacEwan College – Canada
- ◆ INESC-ID – Portugal
- ◆ Kyoto University – Japan
- ◆ Lawrence Technological University – USA
- ◆ Macquarie University – Australia
- ◆ Massachusetts Institute of Technology - Lincoln Laboratory – USA
- ◆ Monash University – Australia
- ◆ N2 Services, Inc. – USA
- ◆ National University of Singapore – Singapore
- ◆ NTNU – Norway
- ◆ Ohio University – USA
- ◆ Republic Polytechnic – Singapore
- ◆ Rotterdam School of Management, Erasmus University – Netherlands
- ◆ Royal Institute of Technology – Sweden
- ◆ The University of Auckland – New Zealand
- ◆ Tshwane University of Technology – South Africa
- ◆ Universidad de Cantabria – Spain
- ◆ Universitat Karlsruhe, Institute for Theoretical Computer Science – Germany
- ◆ University of Chicago, The – USA
- ◆ University of Denver – USA
- ◆ University of Idaho, Center for Secure and Dependable Systems – USA
- ◆ University of Johannesburg – South Africa
- ◆ University of New Hampshire – USA
- ◆ University of Pretoria – South Africa
- ◆ University of Technology, Sydney – Australia



Open Group's Fora

- ◆ Meeting points for Suppliers and Customers
- ◆ Each Forum is effectively an autonomous consortium operating within The Open Group
 - ◆ Direction determined by members
 - ◆ Outputs approved by members
 - ◆ Must obey some rules to respect anti-trust legislation
- ◆ Fora initiate new areas of work, sometimes in partnership with other fora
- ◆ The Open Group works towards enabling access to integrated information within and between enterprises based on open standards and global interoperability
- ◆ The Open Group's fora deliver standards, recommendations, best practice guides and common solutions for common problems



Current Open Group Fora

- ◆ This list is always changing as The Open Group reinvents itself to meet the current challenges
 - ◆ Architecture
 - ◆ Enterprise management / Quality of service
 - ◆ Grid Enterprise Services
 - ◆ Identity Management
 - ◆ Jericho Forum
 - ◆ Messaging
 - ◆ Platform
 - ◆ Real-time and embedded systems
 - ◆ Security
 - ◆ UDEF (Universal Data Element Framework)
- ◆ Also cross-Forum work groups on Service-Oriented Architecture, Semantic Interoperability, Homeland Security and Intelligent Agents

Architecture Forum

- ◆ The mission of the Forum's members is to:
 - ◆ Advance the cause of IT Architecture - in order to
 - ◆ Improve the quality of information systems
 - ◆ Move from a cottage industry to a profession
- ◆ Currently has 120 corporate members
- ◆ Original and continuing focus is TOGAF
 - ◆ Industry consensus method for developing IT architectures
 - ◆ Tool-, technology- and vendor-neutral
- ◆ Extended focus
 - ◆ Going beyond the method
 - ◆ Supporting all aspects of a successful IT Architecture Practice including:
 - ◆ Architecture Tools
 - ◆ IT Architecture Practitioners

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Some definitions

- ◆ The primary purpose of an Enterprise Architecture is to **inform, guide, and constrain the decisions** for the enterprise especially those **related to IT investments**.
 - ◆ *US Chief Information Officer Council*
- ◆ Enterprise Architecture is about **understanding all of the different elements that go to make up the enterprise** and how those elements interrelate.
 - ◆ *Institute For Enterprise Architecture Developments*
- ◆ Enterprise architecture consists of the **vision, principles, standards and processes that guide the purchase, design and deployment of technology** within an enterprise.
 - ◆ *Forrester Research*



What is an Enterprise?

- ◆ Any collection of organizations that has a common set of goals and/or a single bottom line
- ◆ An enterprise could be:
 - ◆ A government agency
 - ◆ A whole corporation
 - ◆ A division of a corporation
 - ◆ A single department
 - ◆ A chain of organizations linked by common ownership
 - ◆ An "extended enterprise" including partners, suppliers and customers, as well as internal business units
- ◆ For TOGAF it is immaterial which of these definitions applies
- ◆ BUT TOGAF does require the scope of the enterprise to be
 - ◆ Clearly defined
 - ◆ Agreed by all concerned
 - ◆ Documented and made available
 - ◆ Understood to be the same by all concerned

The Zachman Framework

<u>What?</u>	<u>How?</u>	<u>Where?</u>	<u>Who?</u>	<u>When?</u>	<u>Why?</u>
Data	Function	Network	People	Time	Motivation

Some day you are going to wish you had every one of these primitive models:

- enterprise wide;
- horizontally integrated across the rows;
- vertically integrated down the columns;

at an excruciating level of detail.

That is the baseline for managing change.

John Zachman

<u>Planner's Viewpoint</u> Contextual
<u>Owner's Viewpoint</u> Conceptual
<u>Designer's Viewpoint</u> Logical
<u>Builder's Viewpoint</u> Physical
<u>Sub-contractor's Viewpoint</u>
<u>Functioning Enterprise</u>

Scope
Business Models
Systems Models
Technology Models
Detailed Representations
Actual Systems

Being explicit

- ◆ Dictionary definition of explicit
 - ◆ Distinctly expressing all that is meant
 - ◆ Leaving nothing merely implied or suggested
 - ◆ Unambiguous and clear
- ◆ If you do NOT explicitly describe all aspects of your Enterprise:
 - ◆ **You cannot understand**
 - ◆ What you have
 - ◆ How it works
 - ◆ What it does
 - ◆ Why it does it
 - ◆ You cannot **share** your understanding with **others**
 - ◆ To gain their agreement
 - ◆ To identify the basis of their disagreement
 - ◆ You cannot **decide** how to improve anything
 - ◆ You cannot **plan** how to change anything

Defining an IT Architecture

ANSI/IEEE Standard 1471-2000 IEEE Recommended Practice for Architectural Description of Software-Intensive Systems

- ◆ Conceptually an IT Architecture 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.
- ◆ Practically it is represented in Architectural Descriptions from the viewpoints of the Stakeholders

Questions to be answered

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TOGAF Perceptions

- ◆ We are NOT talking about rocket science
- ◆ We ARE talking about:
 - ◆ Using common sense
 - ◆ Being systematic
 - ◆ Avoiding misunderstandings
 - ◆ Knowing what we are doing before we start
 - ◆ Knowing why we are doing it
 - ◆ Learning from the best practice of others
 - ◆ Treating the user as a partner
 - ◆ Talking to business users in business terms
 - ◆ Recording what, where, when, how, who and WHY
 - ◆ Ensuring buy-in by the organization
 - ◆ Using common sense
- ◆ In other words we are talking about having a systematic reason for doing all the things we know we really ought to do

Why TOGAF

- ◆ TOGAF is developed to:
 - ◆ Encourage the development of IT Architectures
 - ◆ Embody best practice lessons already learnt
 - ◆ Learn from the approaches taken in other industries
 - ◆ Be vendor-neutral and so generally applicable
 - ◆ Be tailorable to meet different organisation and industry needs
 - ◆ Overcome misunderstanding by promoting the business benefits of IT Architecture
 - ◆ Be a continuing base of IT Architecture knowledge
 - ◆ to which all can contribute and
 - ◆ from which all can benefit

What is TOGAF?

- ◆ Vendor-neutral – developed by user consensus
- ◆ A valuable tool for:
 - ◆ Designing a broad range of architectures
 - ◆ Assisting the evaluation of different architectures
 - ◆ Selecting and building the right architecture for an organization
- ◆ Accompanied by a rigorous Architecture Development Method to guide the way from the Foundation Architecture to an organization specific Architecture
- ◆ TOGAF is an architecture framework not an architecture

An Architecture Framework

- ◆ An Architecture framework is a tool for:
 - ◆ Designing a broad range of architectures
 - ◆ Assisting the evaluation of different architectures
 - ◆ Selecting and building the right architecture for an organization
 - ◆ Is more than a framework for categorizing architecture artefacts
- ◆ It embodies best practice and acknowledged wisdom
- ◆ It presents a set of services, standards, design concepts, components and configurations
- ◆ It guides the development of specific architectures

An Architecture Framework

- ◆ Use of a framework leads to:
 - ◆ The use of common principles, assumptions & terminology
 - ◆ The development of information systems with better integration and interoperability, especially with respect to issues that affect the whole enterprise
- ◆ THE BAD NEWS!
 - ◆ A framework does not make Architecture design an automatic process
 - ◆ It is a valuable aid to experienced and knowledgeable IT Architects
- ◆ THE GOOD NEWS!
 - ◆ A framework does not make Architecture design an automatic process
 - ◆ It is a valuable aid to experienced and knowledgeable IT Architects

TOGAF working with other frameworks

- ◆ TOGAF provides a reliable, practical method – the ADM – for defining business needs and developing architectures
- ◆ A number of other enterprise frameworks exist
- ◆ Many are only frameworks for classifying architecture products
- ◆ Others do not include reference models
- ◆ Others are based on prescriptive industry specific architectures
- ◆ TOGAF is neutral towards tools and technologies
- ◆ TOGAF can be (and has been) used to develop the products associated with any recognized enterprise framework such as:
 - ◆ the Zachman Framework
 - ◆ FEAF
 - ◆ MoDAF
- ◆ TOGAF is designed to be used with whatever set of deliverables the TOGAF user feels is most appropriate

Benefits of TOGAF to the architect

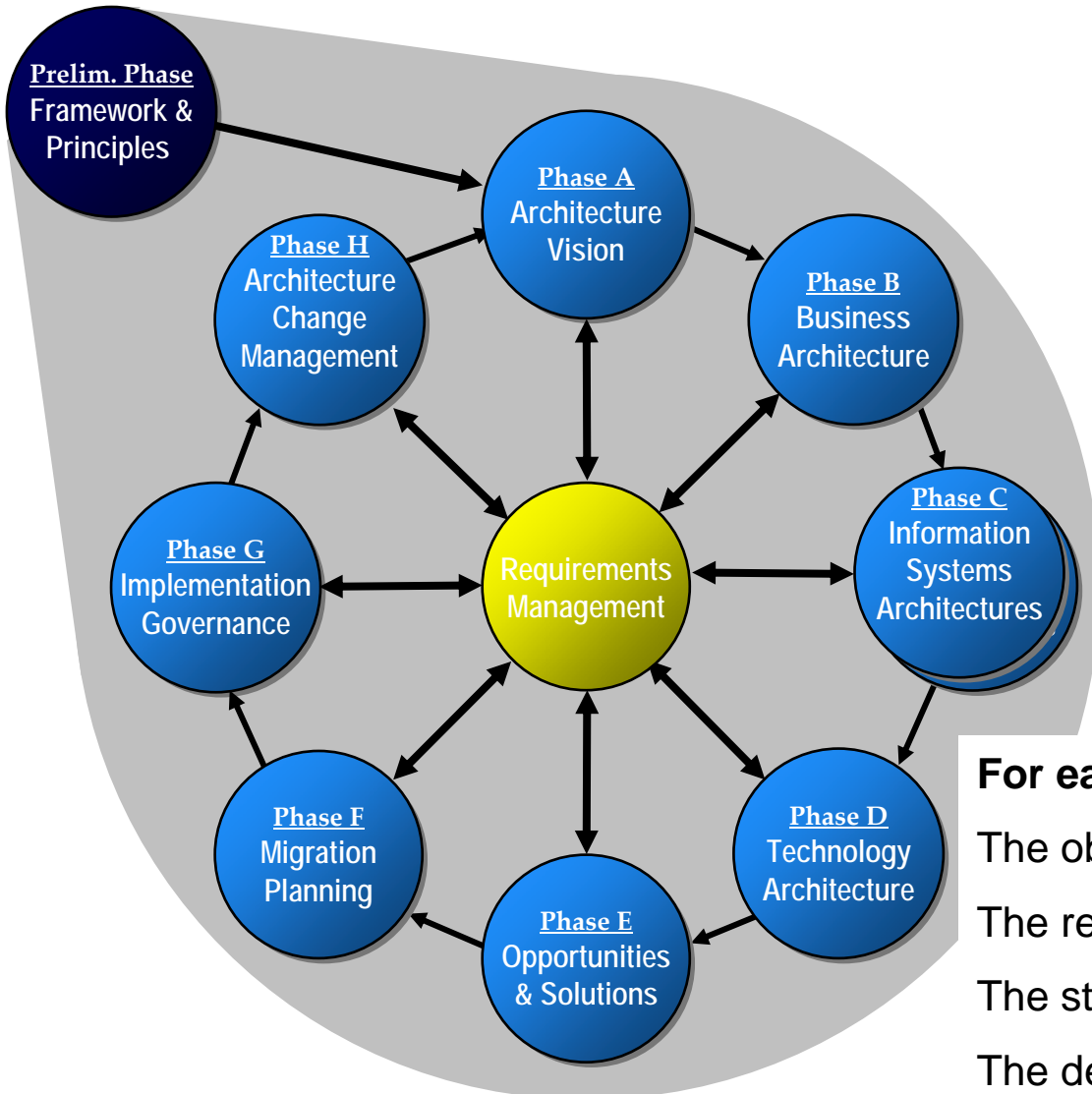
- ◆ Avoids regular reinvention of the wheel
- ◆ Provides a corporate memory of previous successes and failures
- ◆ Ensures completeness of the design process
- ◆ Provides access to accumulated best practice wisdom
- ◆ Avoids communication difficulties within the team
- ◆ Protects against staff turnover
- ◆ The professional approach
- ◆ “Best endeavor” legal defense - just in case



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TOGAF 8 ADM



For each Phase TOGAF defines

- The objectives of the Phase
- The required input information
- The steps to complete the Phase
- The deliverables from the Phase

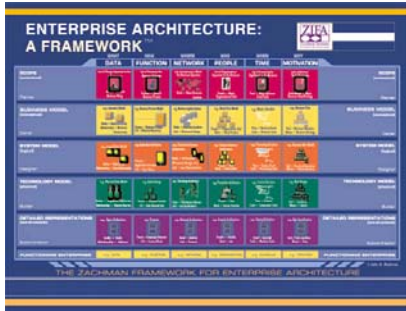


Questions to be answered

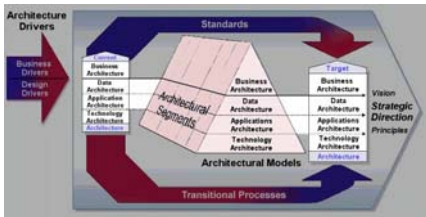
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Supporting industry integration

TOGAF

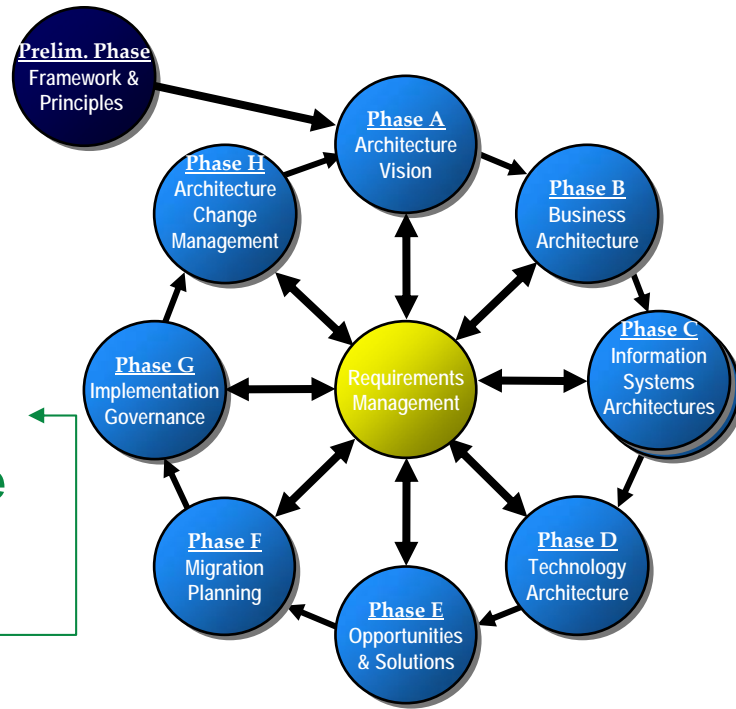


Zachman Framework



Federal Enterprise Architecture Framework

Support or Guidance



TOGAF ADM
Architecture Development Method

Other Frameworks

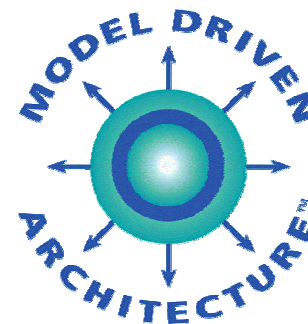
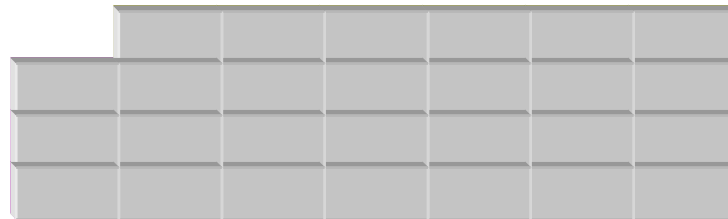
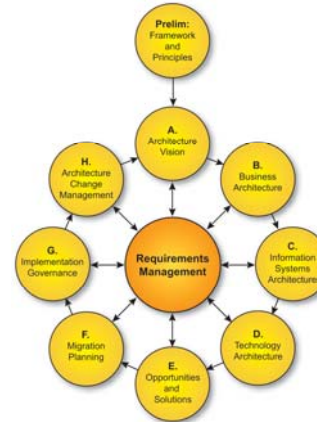


TOGAF/ MDA Alignment

- ◆ TOGAF ADM
 - ◆ Enterprise Architecture Development Method

- ◆ TOGAF or any other framework

- ◆ The OMG Model Driven Architecture
 - ◆ A Software Architecture and Development Approach



The emerging profession

- ◆ The breaking down of barriers within and between enterprises demands a city planner perspective of the enterprise architecture
- ◆ Enterprises need assurance that the staff or service providers they hire have the skills and experience necessary to address the complexities of enterprise architecture
- ◆ Professional enterprise architects need a recognized, portable and professional grade qualification

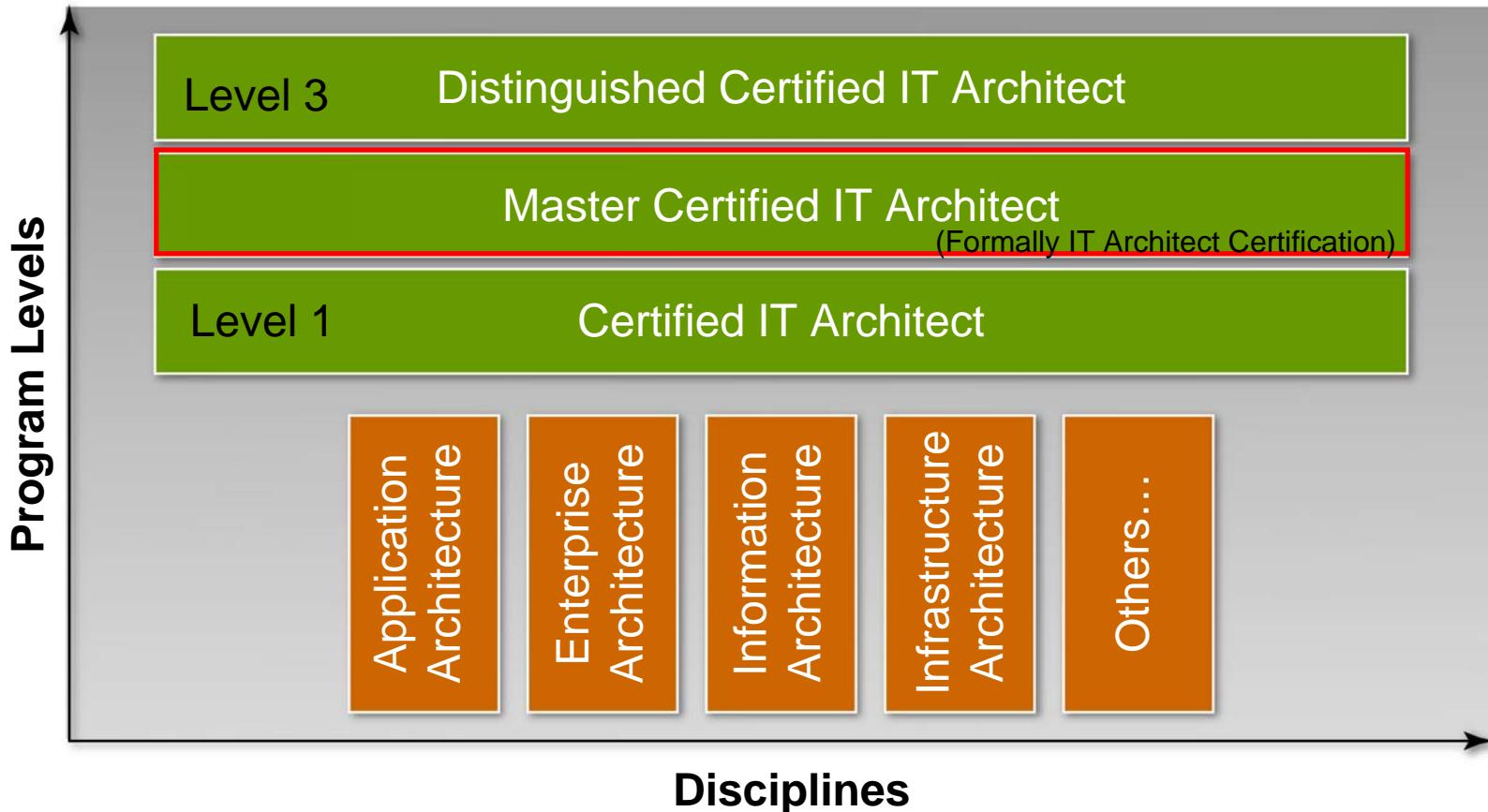


Architect Certification

◆ Positioning

	Knowledge	Experience
Industry Best Practice	TOGAF	IT Architect
Commercial Solutions		

ITAC Program – Certification Levels & Disciplines



Note: Discipline names and definition are evolving



Questions answered

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