




The Biggest Thing Ever in Software Engineering

“A visual language for visualising, specifying, constructing and documenting software intensive systems”





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    graph TD
      Diagram --> StructureDiagram[Structure Diagram]
      Diagram --> BehaviorDiagram[Behavior Diagram]
      StructureDiagram --> ClassDiagram[Class Diagram]
      StructureDiagram --> ComponentDiagram[Component Diagram]
      StructureDiagram --> ObjectDiagram[Object Diagram]
      StructureDiagram --> CompositeStructureDiagram[Composite Structure Diagram]
      StructureDiagram --> DeploymentDiagram[Deployment Diagram]
      StructureDiagram --> PackageDiagram[Package Diagram]
      BehaviorDiagram --> ActivityDiagram[Activity Diagram]
      BehaviorDiagram --> UseCaseDiagram[Use Case Diagram]
      BehaviorDiagram --> StateMachineDiagram[State Machine Diagram]
      BehaviorDiagram --> InteractionDiagram[Interaction Diagram]
      InteractionDiagram --> SequenceDiagram[Sequence Diagram]
      InteractionDiagram --> CollaborationDiagram[Collaboration Diagram]
      InteractionDiagram --> TimingDiagram[Timing Diagram]
      InteractionDiagram --> IdentificationDiagram[Identification Diagram]
  
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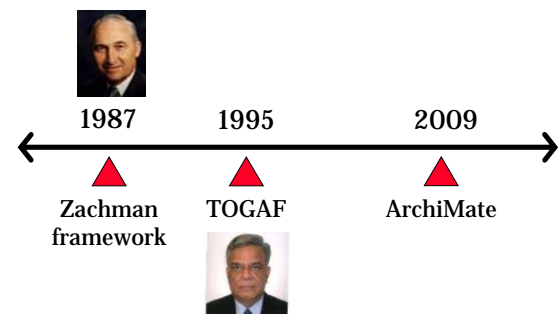
UNIFIED MODELING LANGUAGE

ArchiMate: An Open Standard for Enterprise Architecture Modelling

“A language for constructing, visualising, and analysing enterprise architectures”

Milestones in the History of Enterprise Architecture





1987 Zachman framework

1995 TOGAF

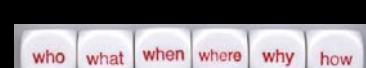
2009 ArchiMate

The Five “W”s (plus one “H”) Formula

ArchiMate: The Next Big Thing in Enterprise Architecture

1. The Why of ArchiMate
2. The Who, When & Where of ArchiMate
3. The What of ArchiMate
4. The How of ArchiMate



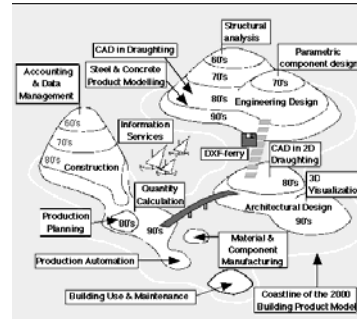
What is Enterprise Architecture?



“Always design a thing by considering it in its next larger context – a chair in a room, a room in a house, a house in an environment, an environment in a city plan”

– Eliel Saarinen

Consequences of non-architected development: “Islands of Automation”



Enterprise architecture vs software development

	Scope	Level of detail	Purpose
Software development	Single system	Internal structure	Building and construction
Enterprise architecture	Whole enterprise	External structure	Planning, integration, alignment

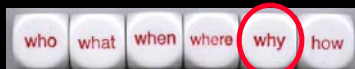
Architecture vs urban planning



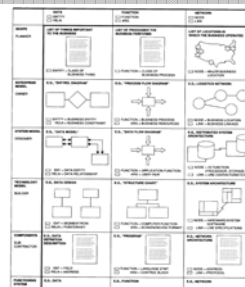
▶ 1/4: The Why of ArchiMate

ArchiMate: The Next Big Thing in Enterprise Architecture

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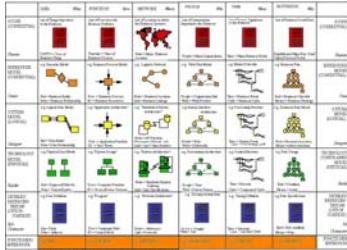


The Zachman Framework (1987)




Source: Zachman, J. A. (1987). A Framework for Information Systems Architecture. *IBM Systems Journal*, 26(3), 276-292.

The Extended Zachman Framework (1992)



Source: Sowa, J. F., & Zachman, J. A. (1992). Extending and Formalising the Framework for Information Systems Architecture". IBM Systems Journal, 31(3), 590-616.

Balance sheet for the Zachman Framework

Strengths (+)	Weaknesses (-)
Understandability Completeness 	Complexity Lack of detail Lack of supporting notations "One model per cell" assumption "No new methods" assumption Lack of progress

▶ 1/4: The Why of ArchiMate

TOGAF

Architecture Development Method (ADM)

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Making standards work[®]



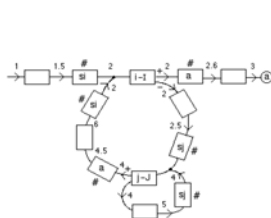
▶ 1/4: The Why of ArchiMate

Balance sheet for TOGAF

Strengths (+)	Weaknesses (-)
International standard Governance framework Regularly updated (V9)	Highly complex ROI Lack of supporting notations

▶ 1/4: The Why of ArchiMate

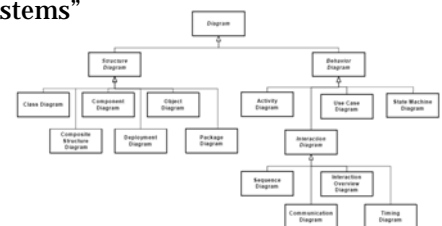
Visual notations have been used in IT practice since its earliest beginnings



Source: Goldstine, H. H., & von Neumann, J. (1947). *Planning and coding of problems for an electronic computing instrument*. Report prepared for the US Army Ordnance Department.

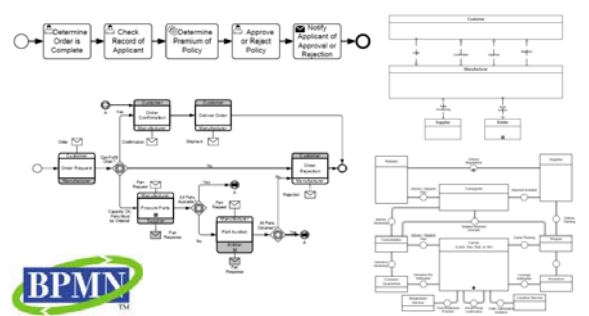
Software engineering

"A visual language for visualising, specifying, constructing and documenting software intensive systems"



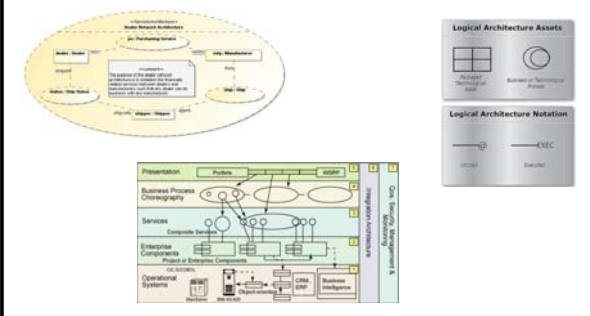
▶ 1/4: The Why of ArchiMate

Business process modelling



▶ 1/4: The Why of ArchiMate

Service Oriented Architecture



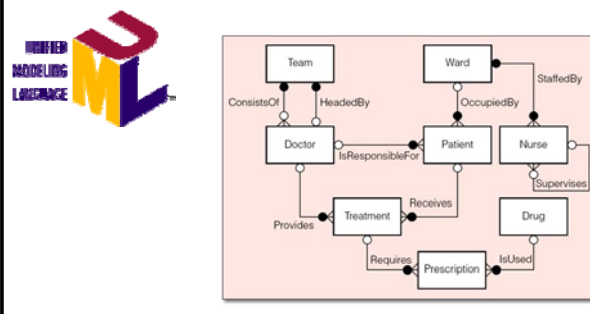
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The Zachman Framework

	DATA	FUNCTIONS	NETWORKS	PHYSICAL	TIME	AGENTS/ROLES	VALUES
CONTEXT (SCOPE)	Business Objectives	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
PLANS	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
SYSTEMS	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
TECHNOLOGICAL ARCHITECTURE	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
OPERATIONAL ARCHITECTURE	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
IMPLEMENTATION ARCHITECTURE	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
CONSTRUCTION ARCHITECTURE	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values
DETAILED ARCHITECTURE	Business Data	Business Processes	Business Information Systems	Business Technology	Business Time	Business Roles	Business Values

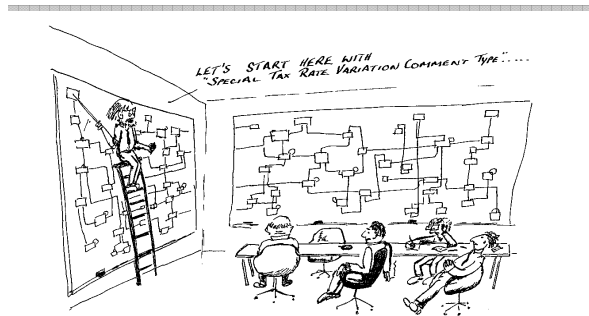
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Adapt existing notations



▶ 1/4: The Why of ArchiMate

Why this will never work



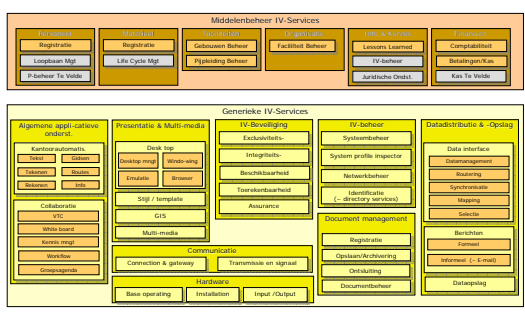
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Why this will never work



▶ 1/4: The Why of ArchiMate


Develop informal notations



► 1/4: The Why of ArchiMate

ArchiMate: The Next Big Thing in Enterprise Architecture

1. The Why of ArchiMate
2. The Who, When & Where of ArchiMate
3. The What of ArchiMate
4. The How of ArchiMate



The Where of ArchiMate



► 2/4: The Who, When and Where of ArchiMate

The Who (and How Much) of ArchiMate



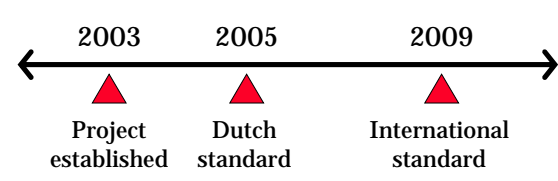
► 2/4: The Who, When and Where of ArchiMate

ArchiMate and me



► 2/4: The Who, When and Where of ArchiMate

The When of ArchiMate



► 2/4: The Who, When and Where of ArchiMate

ArchiMate: The Next Big Thing in Enterprise Architecture

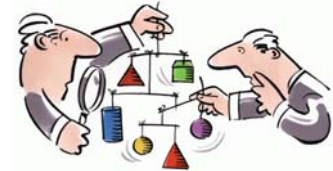
1. The Why of ArchiMate
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▶ 3/4: The What of ArchiMate

ArchiMate: A Unified Language for Enterprise Architecture Modelling

"A language for constructing, visualising, and analysing enterprise architectures"



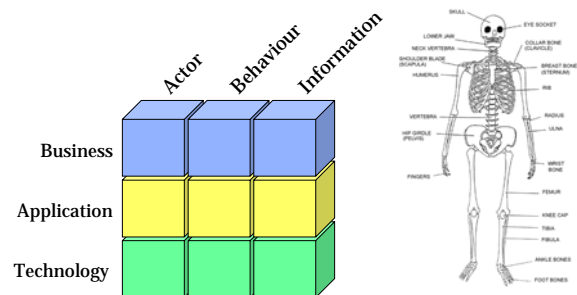
▶ 3/4: The What of ArchiMate

ArchiMate Components

1. Architectural framework
2. Metamodel
3. Visual notation
4. Governance framework
5. 3rd party tool support

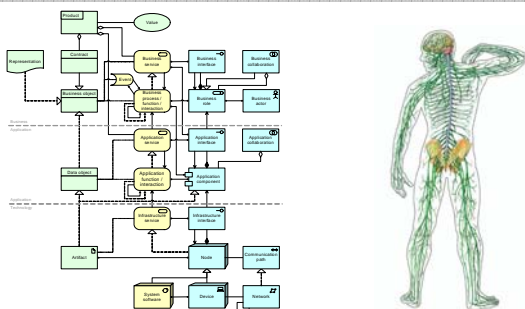
▶ 3/4: The What of ArchiMate

1. ArchiMate Framework



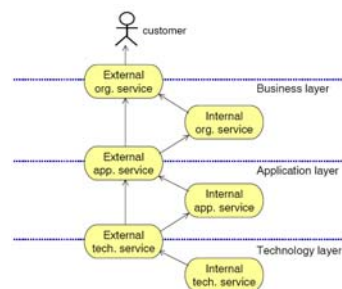
▶ 3/4: The What of ArchiMate

2. ArchiMate Metamodel



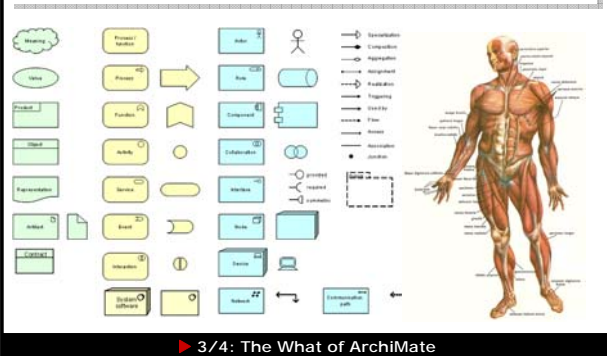
▶ 3/4: The What of ArchiMate

Service-oriented



▶ 3/4: The What of ArchiMate

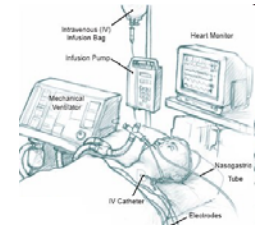
3. ArchiMate Visual Notation



4. Governance Framework

ArchiMate Forum

- ★ Development and evolution
- ★ Dissemination and adoption
- ★ Certification and training



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3/4: The What of ArchiMate

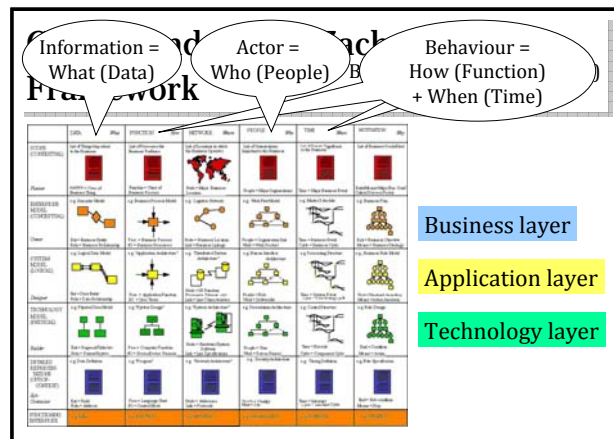
5. Third Party Tool support

Certified:

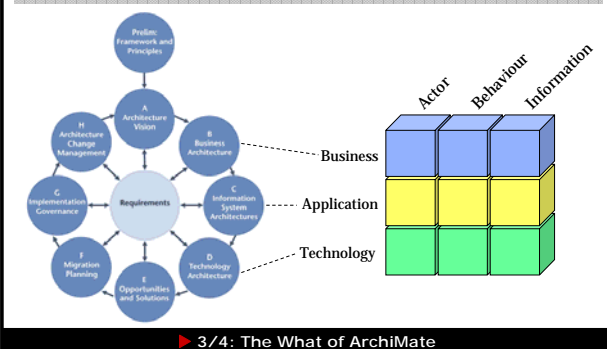
- ★ Architect by BiZZdesign
- ★ ARIS ArchiMate Modeler by IDS Scheer
- ★ Metis by Trous Technologies
- ★ Corporate Modeler by Casewise
- ★ System Architect by Telelogic (now IBM/Rational)

3/4: The What of ArchiMate

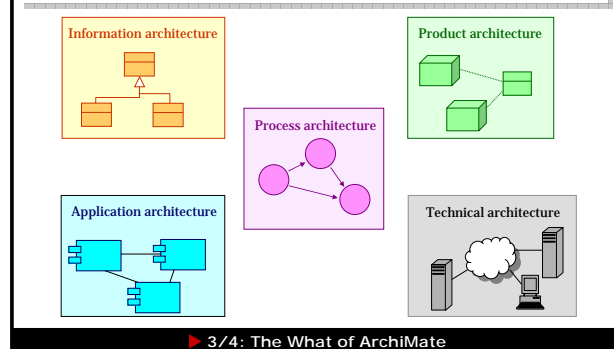
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Correspondence to TOGAF



Viewpoints



Challenging assumptions

- ★ Purpose-built EA modelling language
- ★ Single model rather than separate models for each cell

▶ 3/4: The What of ArchiMate

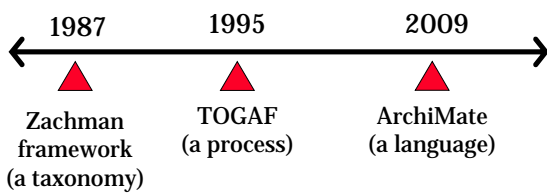
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ArchiMate: The Next Big Thing in Enterprise Architecture

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Milestones in the History of Enterprise Architecture



▶ 4/4: The How of ArchiMate

ArchiMate: The “UML” for Enterprise Architecture Modelling

“A language for constructing, visualising, and analysing enterprise architectures”



▶ 4/4: The How of ArchiMate

A common language



▶ 4/4: The How of ArchiMate

Like the Zachman framework

- ★ Free
- ★ Vendor-independent



▶ 4/4: The How of ArchiMate

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Unlike the Zachman framework

- ★ Explicit metamodel
- ★ Visual notation
- ★ International standard
- ★ Governance framework
- ★ Tool support



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Like UML

- ★ Free to use, vendor-independent
- ★ International standard
- ★ Explicit metamodel
- ★ Visual notation
- ★ Extensible, scalable
- ★ Governance framework





Unlike UML

- ★ Enterprise rather than system level
- ★ Much simpler (90/10)
- ★ Designed top down rather than bottom up
- ★ Single visual vocabulary

Complementary to

- ★ UML
- ★ Zachman framework
- ★ TOGAF

Completing the picture

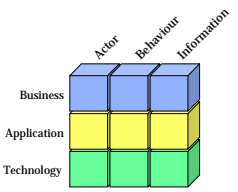
	Software engineering	Enterprise architecture
Product		
Process		

Strengths of ArchiMate

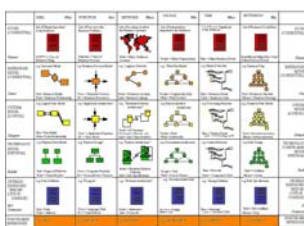
- ★ First purpose-built EA modelling language
- ★ International standard
- ★ Relatively mature (50+ registered users)
- ★ Open, non-proprietary
- ★ A “living language”
- ★ Service oriented
- ★ “UML-like”

Simplicity

3 rows x 3 columns
= 9 cells




6 rows x 6 columns
= 36 cells




▶ 4/4: The How of ArchiMate


Simplicity



ArchiMate 1.0
= 122 pages



TOGAF 9
= 778 pages





UML 2.4
= 982 pages

Weaknesses

- ★ Coverage
- ★ Communication with business stakeholders
- ★ Visual notation issues

▶ 4/4: The How of ArchiMate 57

Getting Started with ArchiMate

1. Language specification 
2. Visio template
3. Architect tool (native implementation) 

<http://www.opengroup.org/archimate/>
<http://www.bizzdesign.com>

▶ 4/4: The How of ArchiMate

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