



The future of EA?

20 questions about
Enterprise and Solution Architecture (ESA)
with brief answers

Questions to be answered

- ▶ What did EA mean when it started?
- ▶ Didn't Zachman invent EA?
- ▶ Does EA = Enterprise Business Architecture?
- ▶ Does EA = Enterprise Technology Architecture?
- ▶ What is at the centre of EA?
- ▶ Who are most active with EA?
- ▶ Are EAs striving to document an enterprise's business systems as Zachman recommended?
- ▶ So what are EAs doing?
- ▶ Is EA documentation needed at all?
- ▶ Must architects know a standard modelling language?
- ▶ How does EA relate to other kinds of architecture?
- ▶ What is the modern EA team like?
- ▶ How do architects relate to Agile Development?
- ▶ Do people link EA and Solution Architecture?
- ▶ What are the essential skills of architects?
- ▶ How can one measure whether EA is succeeding?
- ▶ What has remained stable since EA started?
- ▶ What has change since EA started?
- ▶ How does EA relate to disruptive business and technical development?

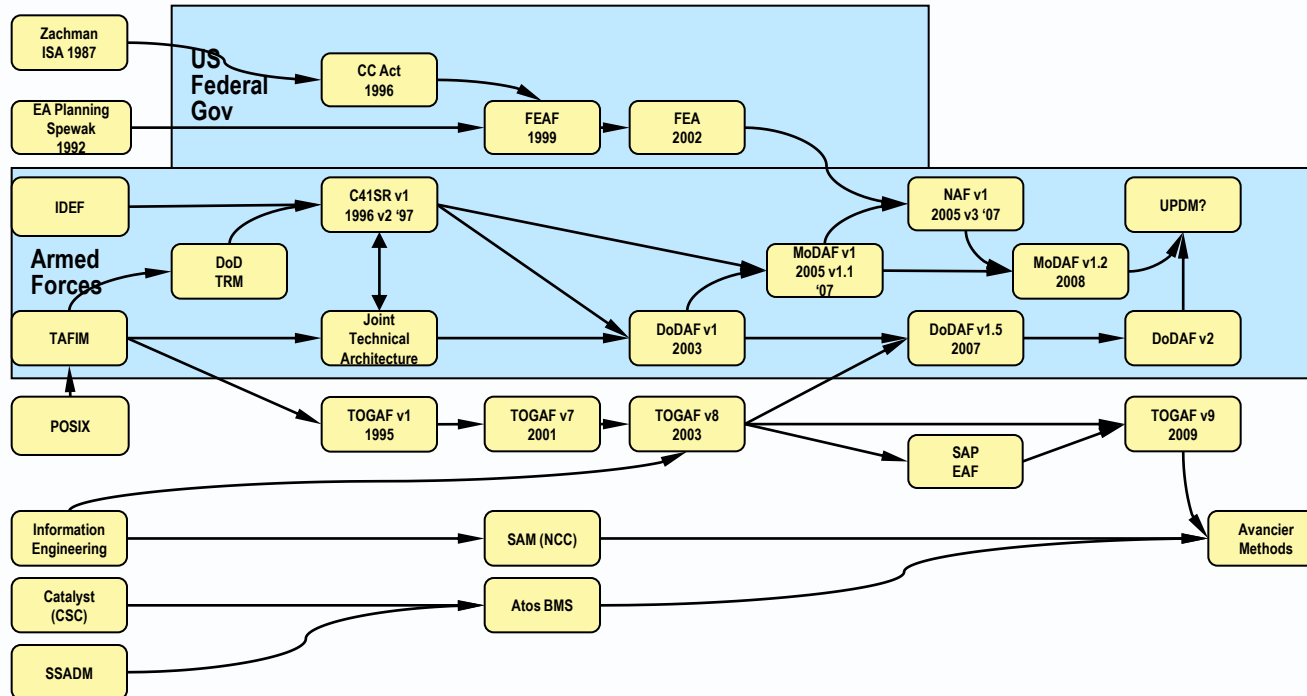
Audience poll questions - answers to be reported at the end

- ▶ Are you working in an architect role currently?
- ▶ Are you managing architects currently?

Q1) In looking to the future of EA, where should we start?

▶ “Those who cannot remember the past are condemned to repeat it.”
George Santayana

▶ It does help to understand EA history (a small fragment below)



Q2) What did EA mean when it started?

- ▶ EA grew in the 1980s out of business systems planning.

- ▶ The questions were:
 - How to support business roles and processes using digital information systems?
 - How to design the digitisation of business capabilities?
 - How to plan changes to business activity systems?

- ▶ You can find EA history references on this page
- ▶ <http://grahamberrisford.com/01EAingeneral/EA%20in%20general.htm>

▶ Promoted

- Taking a strategic view of an enterprise's "Distributed Systems Architecture".
- Dividing architecture into four architecture domains
 - as in TOGAF today.
- Documenting both baseline and target architectures
 - as in TOGAF today.
- Defining principles and standards that the target architecture should conform to
 - as in TOGAF today.

Q3) Didn't Zachman invent EA?

- ▶ No.

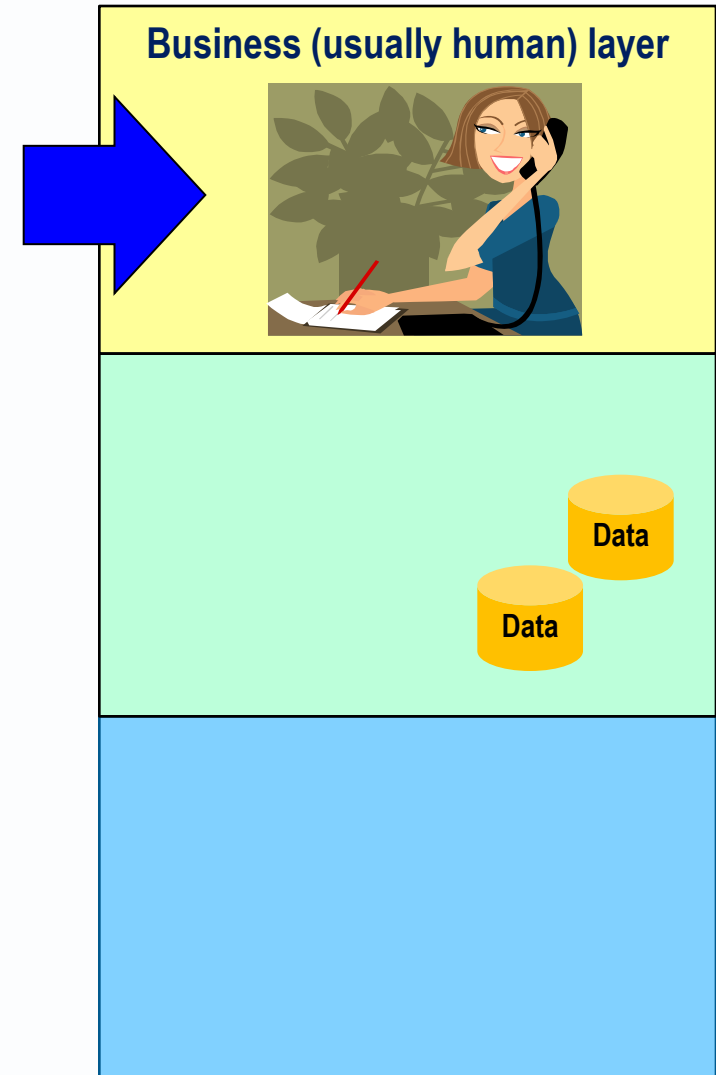
- ▶ Zachman did promote taking a more disciplined approach to the description of an enterprise's business activity systems.
 - If managers don't know what they are managing, how can they manage it?
 - The impact of any change can and should be analysed before making it.

- ▶ Therefore, the structure and behaviour of digitised business activity systems should be documented
 - in excruciating detail and at several levels of abstraction.

- ▶ Today, none of our customers use the Zachman Framework for EA

Q4) Does EA = Enterprise Business Architecture?

- ▶ Business strategy, goals and organisation/management structure
 - ▶ They inform EA
 - ▶ They can be influenced by EA
 - ▶ But are not what enterprise architects define
-
- ▶ The focus of EA is on business roles and processes that create and use business data
 - ▶ And the use of data by decision makers...



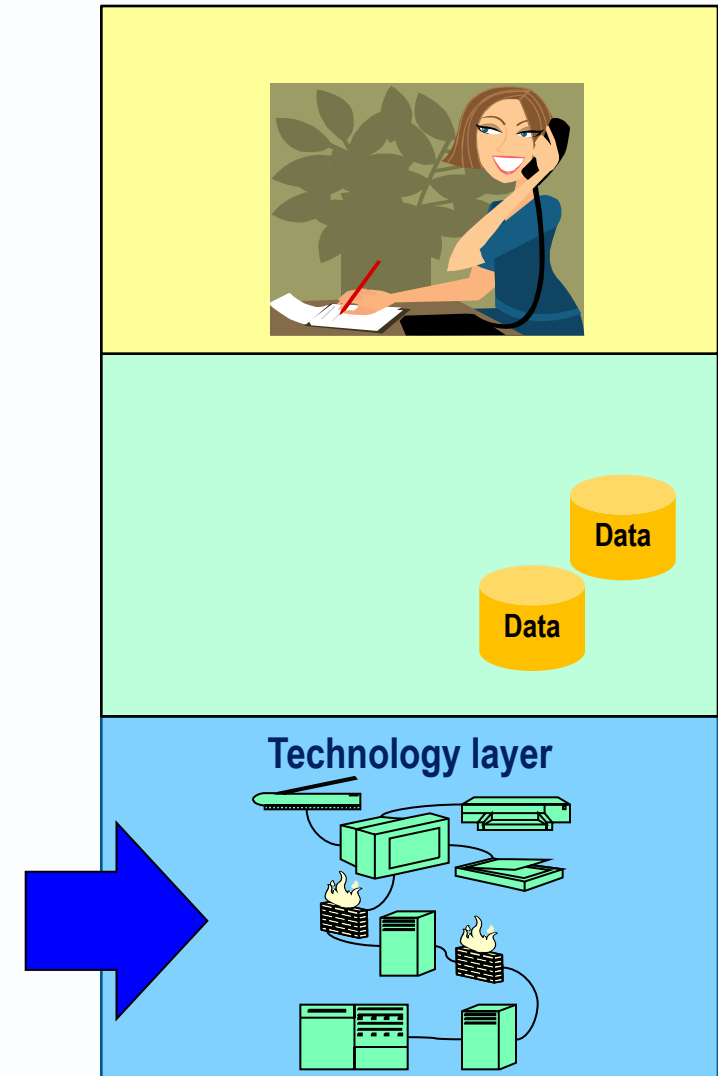
The importance of data to business decisions

- ▶ PWC's Global Data and Analytics Survey 2016 asked 2,100 executives about their decision-making
- ▶ Before 2020 my company will [I predict] decide to...
 - develop a new product or service (31%)
 - enter new markets with existing products or services (15%)
 - make strategic investments in IT (14%)
 - develop partnerships (11%)
 - change business operations (10%)
 - enter a new industry (7%)
- (Mostly to maintain or gain market leadership, or survive)
- ▶ How?
 - 08% said they are "rarely data-driven"
 - 53% said they are "somewhat data-driven"
 - 39% said they are "highly data-driven"
- ▶ 61% acknowledged their companies could rely on data analysis more and intuition less

Q5) Does EA = Enterprise Technology Architecture?

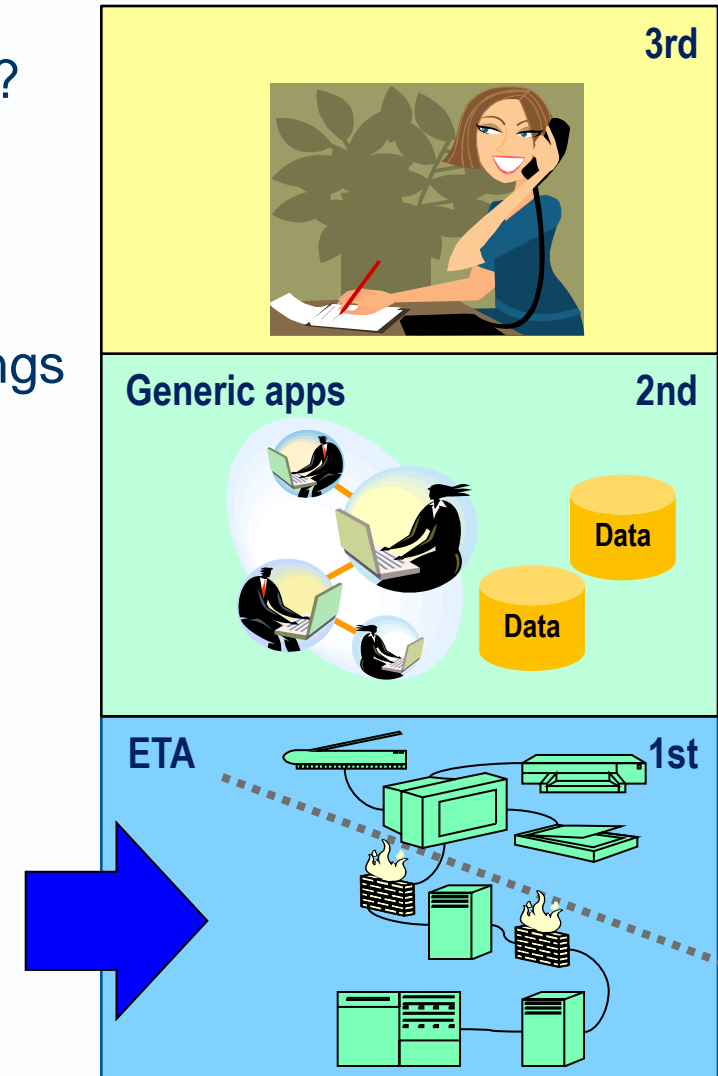
- ▶ Not *all* technologies used by a business
 - not heating and ventilation, vehicles, production lines etc.

- ▶ Enterprise architects are often involved in defining IT strategy, standards and road maps,
- ▶ But it isn't their primary purpose



On Enterprise Technology Architecture (ETA)

- ▶ Why, in some organisations, is EA limited to ETA?
- ▶ The 1st level of maturity in "EA as Strategy" (see references)
- ▶ Generic platform technologies are the easiest things to standardise across an organisation
 - The networks used by employees and customers
 - Identity management system and access controls
 - The organisation's directory.
 - Data center technologies
- ▶ This makes the higher levels of EA easier.
- ▶ However, server-side ETA concerns are shifting from the enterprise to cloud service providers.

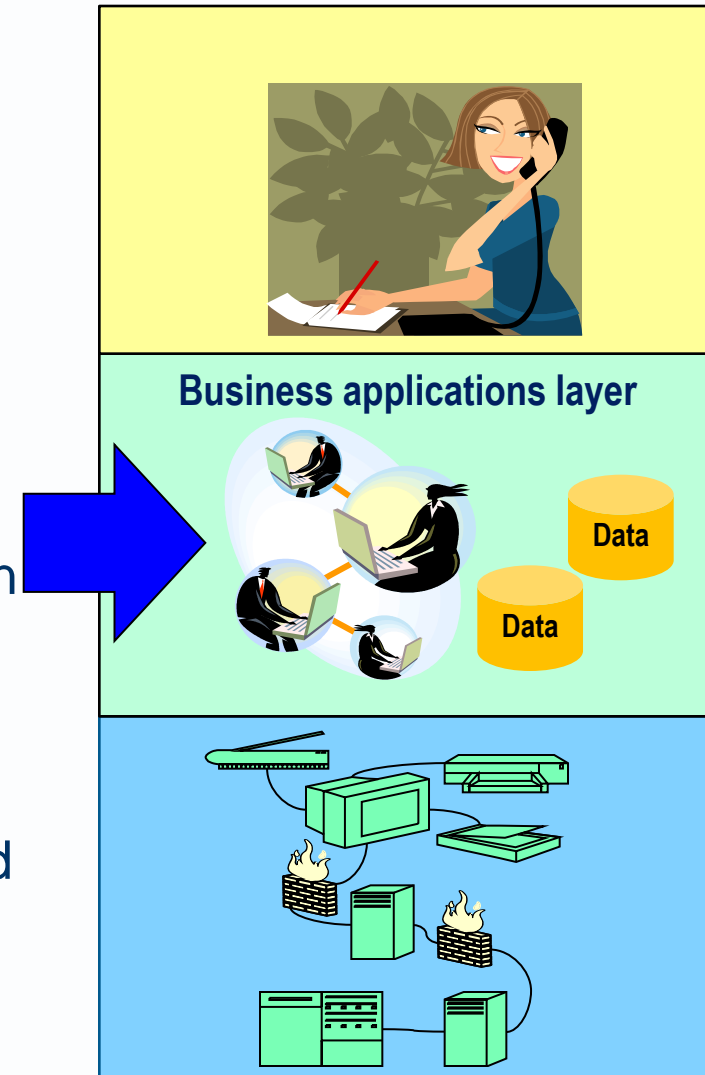


Q6) What is at the centre of EA?

- ▶ Digitisation of business capabilities that need or benefit from information systems.

"Operating model"		
Integrated	Coordinated	Unified
	Diversified	Replicated
		Standardised

- ▶ Business applications that enable business roles and processes
- ▶ Application portfolio management, standardisation and integration
- ▶ (Of course, applications serve business users and delegate work to platform/infrastructure technologies.)



ArchiMate definitions of the layers

Business layer

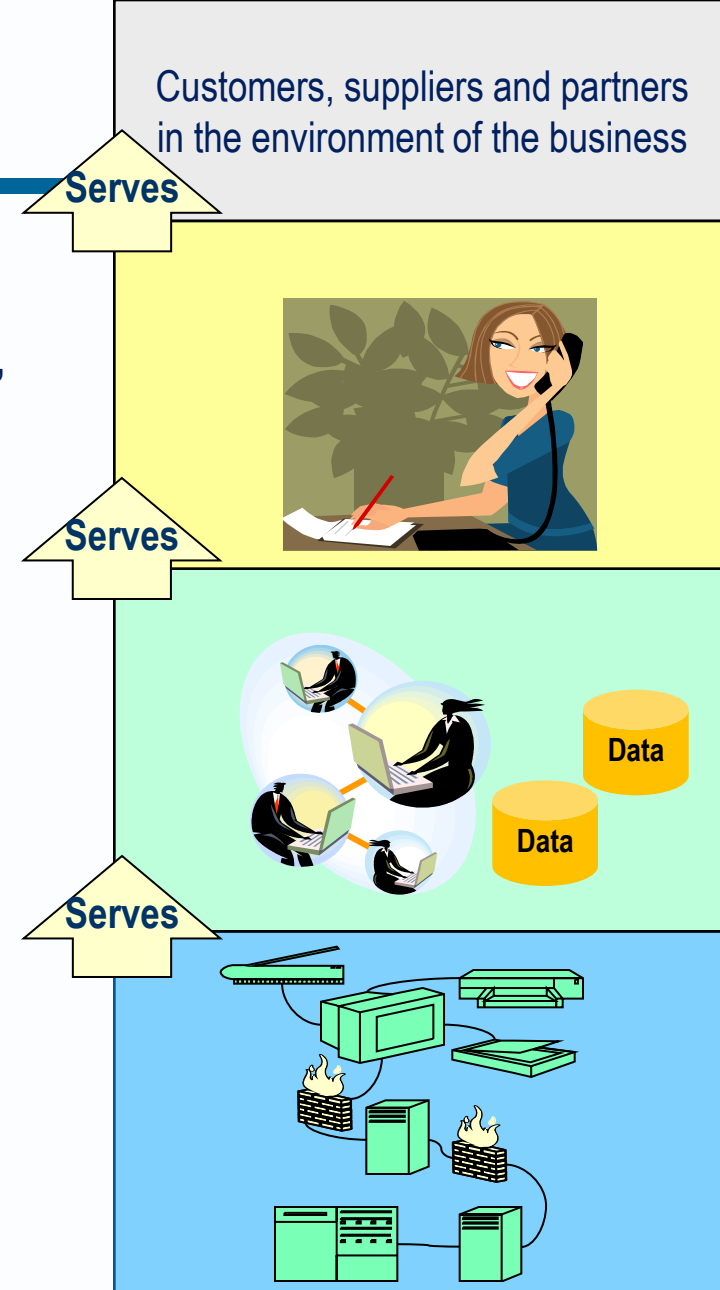
- ▶ “**offers products and services** to external customers,
- ▶ realized in the organization by
- ▶ business processes performed by business actors.”

Business applications layer

- ▶ “supports the business layer with
- ▶ **application services**, realised by
- ▶ (software) applications.”

Technology layer

- ▶ “**offers infrastructure services**
- ▶ needed to run applications, realized by
- ▶ computer and communication hardware and system software”



Q7) Who are most active with EA?

- ▶ Most active?
 - Government Institutions
 - Financial Institutions.
- ▶ Because they are essentially data processing businesses

- ▶ Most successful?
 - Medium sized organisations with
 - Cohesive business operations
 - Inter-dependent business systems and
 - Strong strategy and architecture team manager.

Q8) Are EAs striving to document an enterprise's business systems as Zachman recommended?

- ▶ Mostly not
- ▶ We can't do it
- ▶ And if we could, we couldn't maintain it.

- ▶ Engineering an airplane
 - millions of co-located elementary parts
 - the systems are hard, rigidly predefined

- ▶ Engineering an enterprise's business systems
 - *billions* of highly distributed parts
 - the systems are softer, more complex and more malleable

An Avancier customer – an EA consultant – reports his experience



- ▶ "I've seen many put top architects into what becomes **an ivory tower** .
- ▶ They over-engineer **long term target architectures no one will ever realize** .
- ▶ They do architecture for architects in a jargon that only they understand.
- ▶ **The world changes before the targets can be reached** .
- ▶ When we need to deliver something fast, they tell me “hmm.. this is on our roadmap but you have to wait 2 years for prerequisites to be in place”.

- ▶ An agile principle of value is: “Simplicity--the art of maximizing the amount of work not done”.
- ▶ Typically the work in an EA practice fluctuates according to the rate of change.
- ▶ An enterprise's strategy might be substantially reviewed (with EA input or direction) every 5 years and adjusted yearly.
- ▶ **EA effort should be pitched at the right level, understanding that rates of change differ across an organization.”**

Q9) So what are EAs doing?

- ▶ Identifying
 - data needed to enable and support business operations.
 - how technologies can best capture that data in a digital form.
 - ways to capitalise on data that has been captured.
- ▶ Standardising, integrating or optimising
 - business roles and processes
 - data created and used by business roles and processes
 - business applications that use the same or related data.
- ▶ Defining road maps for anticipated changes
- ▶ Defining standards, principles and patterns
 - to steer Solution Architects away from technical risks and sub-optimal solutions.
- ▶ Gaining the confidence of business and IT managers that their contribution is helpful.

Q10) Is EA documentation needed at all?

▶ Yes

“the EA is permanent and manages the *EA artefacts* delivered by projects.” TOGAF

- ▶ We can't (yet) model all business activity systems to the depth and breadth that Zachman recommends and TOGAF implies
- ▶ We can
 - shine a spotlight on those business activity systems where problems and opportunities arise
 - document an area as needed to make changes in the foreseeable future.
 - hope that documentation will be useful when we next need to attend to that area.

▶ Which modelling languages have you used in practice?

- UML?
- BPMN?
- ArchiMate?
- IDEF?

- Other?

Q11) Must Architects know a standard modelling language?

- ▶ Architects must describe systems
 - in the way and to the extent that is helpful
 - to them and stakeholders in the endeavour they are engaged in.

- ▶ A broad education in modelling languages is helpful.
- ▶ I'd recommend architects learn a little of
 - UML, then
 - ArchiMate, then
 - BPMN

- ▶ But expertise in modelling languages doesn't make an architect.

- ▶ The use of modelling languages rarely corresponds fully to published standards.
- ▶ The published standards are far from perfect or unambiguous.
- ▶ Common architecture terms like “interface”, “function” and “service” are widely interpreted in different ways
- ▶ This makes it hard to be sure what diagram drawers mean

Q12) How does EA relate to other kinds of architecture?

- ▶ Solution Architecture is the engine room.
- ▶ It is needed with or without EA.
- ▶ EA acts as a governance and design authority that validates Solution Architectures and steers them in cross-organisationally optimal directions.
- ▶ Solutions architects coordinate domain and technical specialists working on specific projects, and are responsible for the overall solution.

An Avancier customer – an EA consultant – reports his experience

- ▶ “EAs should steer other architects into using frameworks and meta models that fit their assignment.
- ▶ There should be no disconnect between EA and SA teams
- ▶ They should belong to the same group, with shared goals and objectives
- ▶ I also like very much the idea of having the SAs do EA work wherever possible.
- ▶ Successful EA requires that SAs take a horizontal / cross enterprise view. ”

Which level and which domain do you work in most?

Domain Level	Business	Data/Information	Applications	Infrastructure technology
Enterprise level	1 Enterprise/Business Standardisation & integration of business roles & processes Business function/capability hierarchy Business products & services catalogue Business processes and roles Etc.	2 Enterprise/Data Data standardisation & integration Data store & data flow catalogues Maps data to business functions Business data model & views of it Canonical data model(s) Core business data entity life cycles Etc.	3 Enterprise/Apps Business app standardisation & integration Business app portfolio/catalogue Maps business apps to business functions Business app life cycles and road maps Etc.	4 Enterprise/Platform Platform standardisation & integration Platform technology portfolio/catalogue Platform services portfolio/catalogue (TRM) Platform technology life cycles and road maps Etc.
Solution level	5 Solution/Business For a required system/solution: Business services Business processes and roles Mappings to goals & locations Requirements catalogues Use case diagrams and definitions Outline UI (or other I/O) designs Etc.	6 Solution/Data For a required system/solution: Maps data to processes and roles Logical data models CIA requirements Data qualities/meta data Etc.	7 Solution/Apps For a required system/solution: Maps use cases to processes and roles Maps business apps to use cases Design for NFRs Coarse-grained app components Coarse-grained sequence diagrams Etc.	8 Solution/Platform For a required system/solution: Maps platform to business apps Platform technology definitions Client & server node definitions Design for NFRs Outline deployment diagrams Outline network diagrams Etc.
Software & technical level	9 Software/Business Detailed use case definitions Detailed UI designs Governs UI implementation Etc.	10 Software/Data Detailed database design Detailed message design Governs database administration Etc.	11 Software/Apps Detailed (fine-grained) software design Governs software development Etc.	12 Software/Platform Detailed deployment diagrams Detailed network diagrams. Governs platform and network configuration Etc.

Audience poll questions - answers to be reported at the end

▶ Which architecture level do you work in most?

- Enterprise
- Solutions
- Software or other technical specialism

Level	Domain	Business	Data/ Information	Applications	Infrastructure technology
Enterprise					
Solution					
Software & Technical					

▶ Which architecture domain do you work in most?

- Business
- Data/Information
- Applications
- Infrastructure/Technology

Q13) What is the modern EA team like?

- ▶ It is now often called the “Strategy and Architecture team”.
- ▶ This team can embrace
 - Enterprise architects
 - Generalist solution architects
 - Specialist enterprise domain or technical domain architects

Level	Domain	Business	Data/ Information	Applications	Infrastructure technology
Enterprise					
Solution					
Software & Technical					

Audience poll questions - answers to be reported at the end

- ▶ If the enterprise you work in has some kind of EA or strategy and architecture team – how big is it?
- ▶ Less than 6?
- ▶ 6 to 12?
- ▶ Larger than 12?

Q14) How do architects relate to Agile Development?

- ▶ Enterprise Architects steer Solution Architects

- ▶ Solution Architects shape and steer system development
 - Be it waterfall, iterative or agile

- ▶ Solution Architecture
 - yields high-level requirements and high-level design documentation
 - as any agile development project needs.
 - ensures non-functional requirements are understood early, and that agile development allows for them.

Q15) Do people link EA and Solution Architecture?

- ▶ Some have been pursuing an outdated form of EA.
- ▶ Disconnected from Solution Architects

- ▶ Modern EA is connected to Solution Architects
- ▶ Solution Architects produce outlines and high-level designs
- ▶ These are vetted and approved (or not) by EAs against strategies and standards, principles, patterns etc.

Q16) What are the essential skills of architects?

- ▶ Long and broad experience
- ▶ Strong analytical and communication skills.
- ▶ Knowledge of the concepts and techniques in our ESA training
- ▶ Willingness and ability to do the necessary research where they don't know enough.

Q17) How can one measure whether EA is succeeding?

- ▶ Avancier.website has a substantial slide show on EA ROI metrics.
- ▶ It explains why most proposed measures are unconvincing, inc.
 - Measuring activity is not measuring success
 - And any measurable success has a thousand fathers

- ▶ The strategy and architecture team
 - works at a political level where experience and judgement matter
 - has to convince stakeholders (on a daily basis) that they are helping.
 - must gather stakeholder feedback, and respond to it.

Q18) What has remained stable since EA started?

- ▶ Recurring themes
 - "Digital transformation"
 - "Emerging technologies."
 - "Transformative/disruptive changes to business operations."

- ▶ EA has been about those things since 1980
- ▶ And about managing migrations from baseline to target systems

- ▶ In TOGAF today you see things established 30 to 40 years ago
- ▶ The importance of *integrated information* to business operations
- ▶ The need for strategic alignment of IT with business needs

- ▶ Four architecture domains
 - Business, data, apps and technology
- ▶ Four architecture “types”
 - Baseline and target architectures; principles and standards,
- ▶ A cyclical development process
 - After TAFIM, EAP and FEAF

- ▶ Optimise business systems and increase agility
 - Tidy up the mess of duplicated and overlapping systems by standardisation and integration.

- ▶ Help understanding and change impact analysis
 - Maintain an abstract description of business roles and processes and the systems they use

- ▶ Minimise business risks and maximise opportunities
 - Keep an eye on information system & technology evolution, and produce road maps where needed

- ▶ Improve business systems,
 - Improve business data quality, relevance and use.

"Operating model"		
Integrated	Coordinated	Unified
	Diversified	Replicated
		Standardised

“the EA is permanent and manages the *EA artefacts* delivered by projects.” TOGAF

Q19) What has change since EA started?

- ▶ A more pervasive, invasive and complex IS and IT estate.

- ▶ Wide area networks
 - employees carry devices and
 - customers connect from remote locations.
 - worries about availability and security of business data

- ▶ Commoditisation of apps

- ▶ Movement of infrastructure and apps into a “Cloud”

- ▶ Recognition that strategy and agility must be balanced

Q20) How does EA relate to disruptive business and technical developments?

- ▶ The strategy and architecture team may identify and research potentially disruptive developments.
 - Cloud service provision
 - Internet of Things
 - Big Data Analytics

- ▶ But few enterprises pay for pure research functions.
- ▶ Especially research not clearly connected to business operations

- ▶ When a business manager recognises potential in new processes and technologies, this may trigger a re-evaluation of the whole EA.
- ▶ The strategy and architecture team may help by using their documentation and knowledge for impact analysis.

The future of EA?

- ▶ In short, closer integration with Solution Architecture
- ▶ See the associated paper for further discussion.

Audience poll questions - answers to be reported at the end

- ▶ Do you or your architecture team use TOGAF?
- ▶ Do you or your architecture team use any other published method or framework?
- ▶ Would you or your team benefit from more education in architecture terms and concepts?

Poll responses

Collected from the first audience of this “Future of EA”
slide show

- ▶ 69% work in an architecture role currently, 38% manage architects
- ▶ 65% work mostly at the solution architecture level, 35% at the EA level
- ▶ 64% work mostly in the Application (35%) and Data (29%) domains
 - Business 12%, Infrastructure/technology 24%
- ▶ 79% have used UML, 64% have used BPMN
 - ArchiMate 29%, IDEF 0%
- ▶ 71% work with an architecture team of less than 6 people
- ▶ 78% use TOGAF (50%) and/or other framework (28%) yet
- ▶ 94% say they or their team would benefit from more education in architecture terms and concepts.



How can we help?

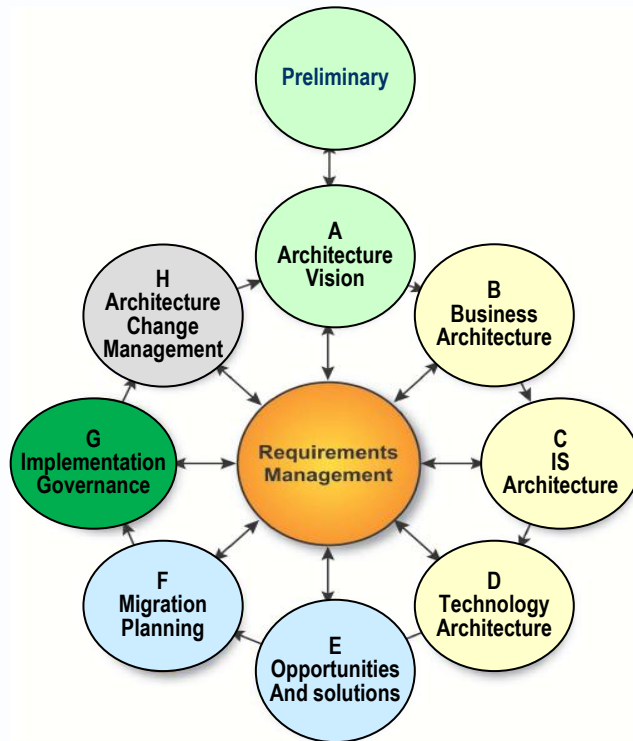


Figure 5-1 Architecture Development Cycle

- ▶ TOGAF training focuses on the Architecture Development Method
- ▶ This is a *management framework* for planning and governing a substantial transformational change to business systems.
- ▶ Training leads to examinations for TOGAF certificates.
- ▶ It does not train architects to do architecting
- ▶ Many find it abstract

Our ESA training

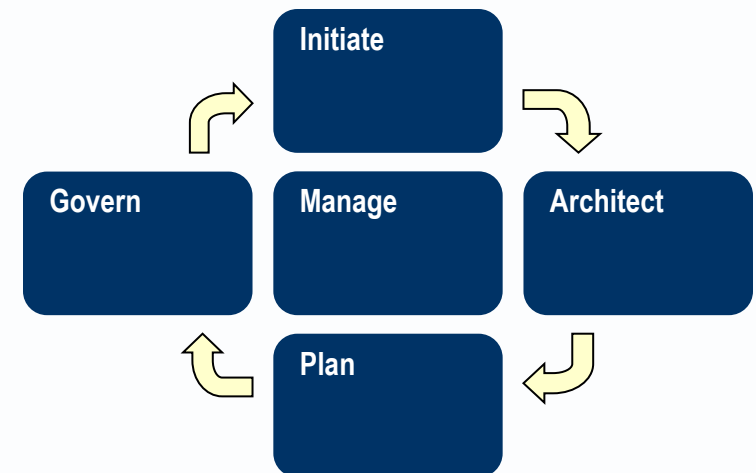
- ▶ ESA training is more general, broader and deeper than TOGAF
- ▶ Training leads to exams for AM or BCS professional certificates.
- ▶ In the USA, EAP are approved suppliers of ESA training developed by Avancier, and are accredited to run associated certification examinations for enterprise and solution architects

- ▶ “The ESA course covers the key **length and breadth of solution and enterprise architecture concepts** from foundation to advanced.
- ▶ It elaborates progressively, making it easier to comprehend architecture frameworks and methods.
- ▶ **It suits both novices** wanting progress their career **and experienced professionals** wanting to strengthen their skills and apply their knowledge across the architecture domains.”

- ▶ “The training was very helpful, with lots of experience discussed and mapping the concepts with the real-time use cases.
- ▶ It was nice to meet Graham and have an opportunity to learn from him.
- ▶ Looking forward for the practitioner training next month.”

ESA training is supported by Avancier Methods (AM)

- ▶ ESA training focuses on knowledge and skills relevant to architect roles.
- ▶ It introduces the broad sweep of architecture terms and concepts, outlines architecture frameworks and includes practical exercises.
- ▶ It is supported by AM
- ▶ This methodology grew out of answering questions asked on TOGAF and ESA courses
- ▶ It provides insights and guidance we haven't seen in other architecture frameworks.



TOGAF's ADM is a management framework that promotes the role of architects

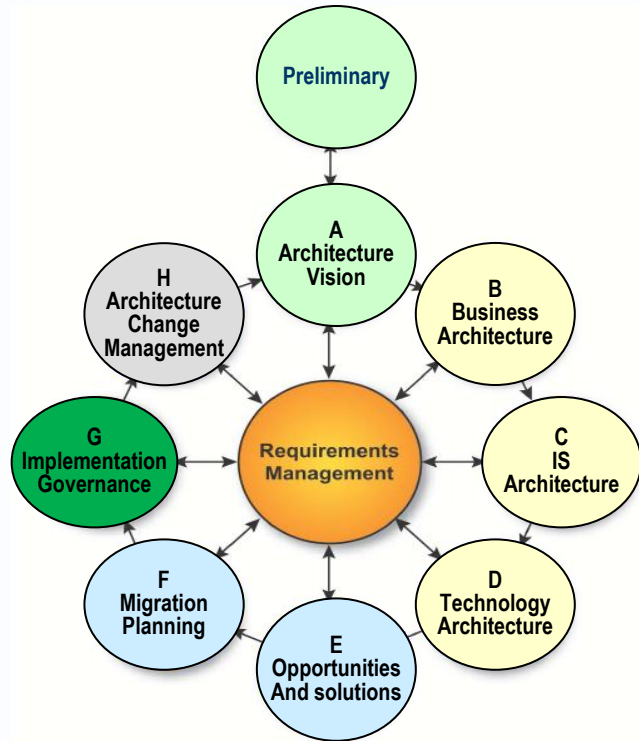
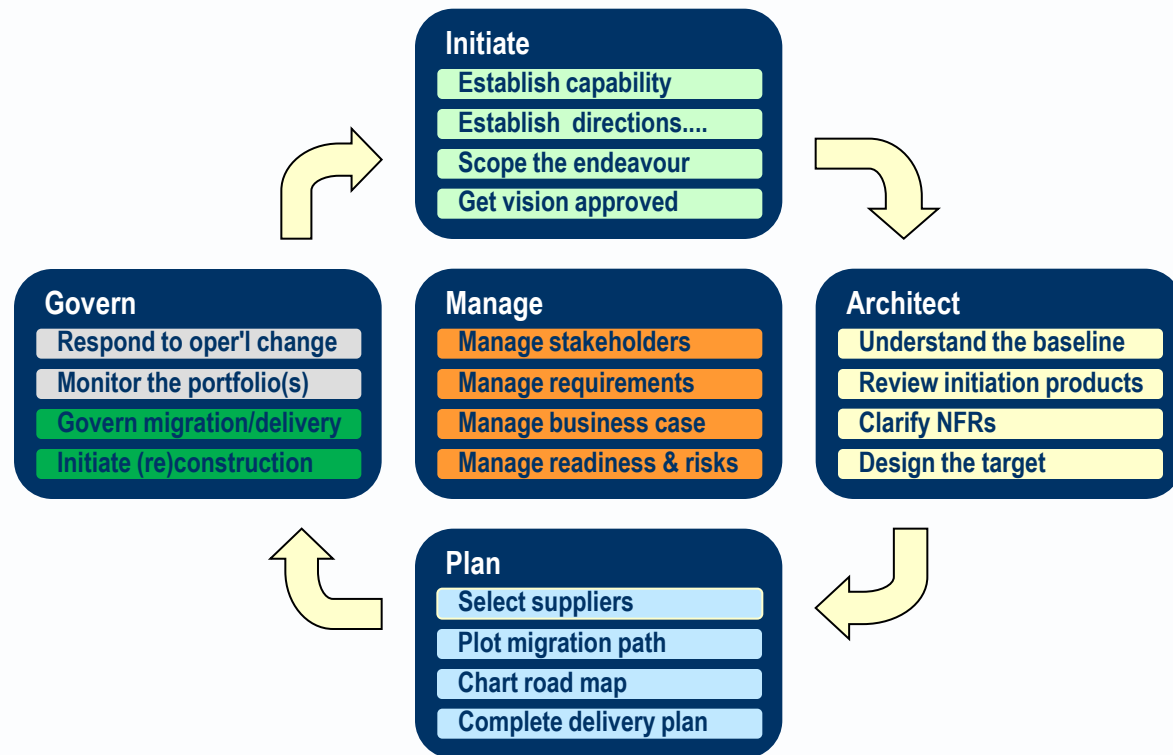
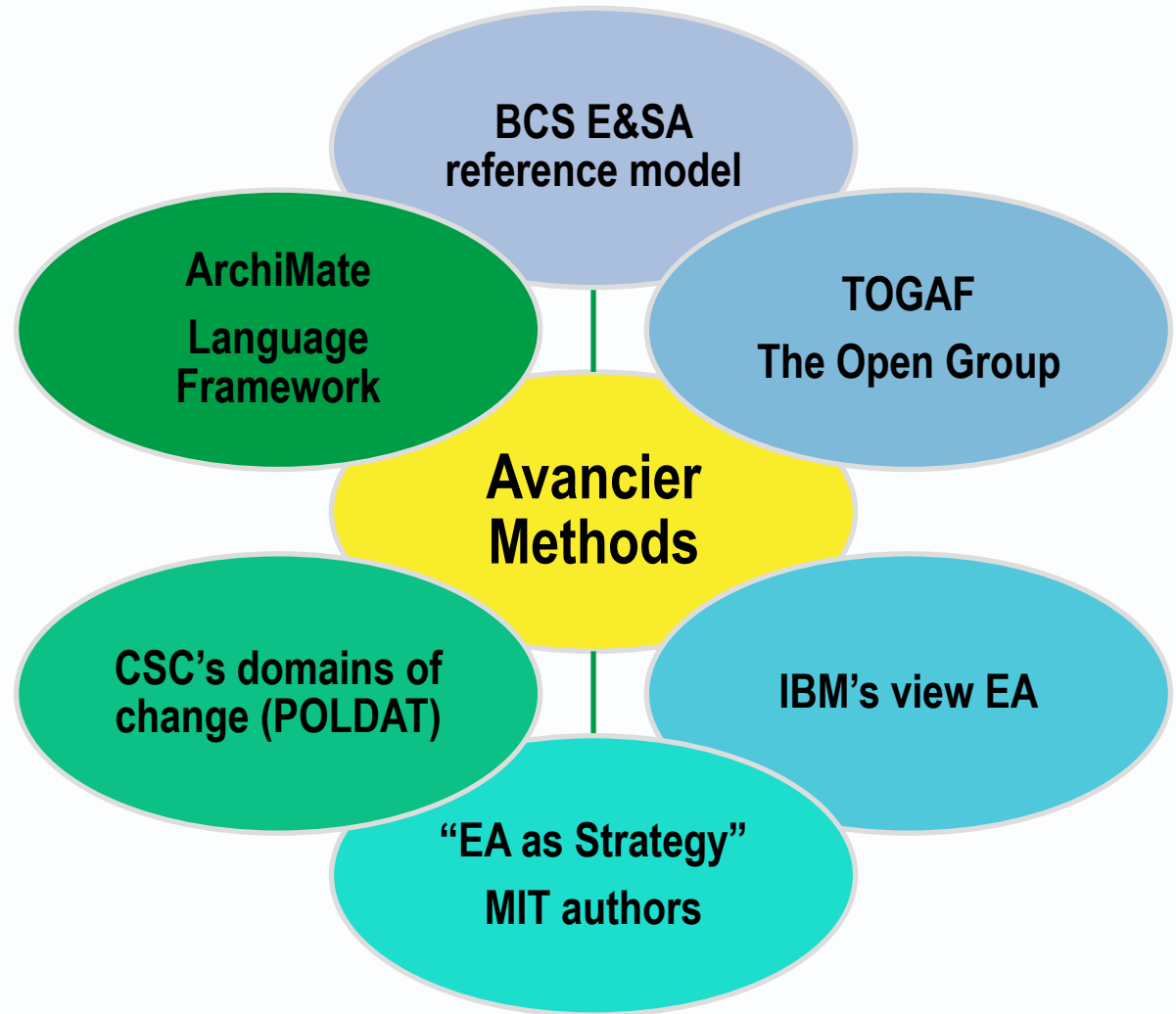


Figure 5-1 Architecture Development Cycle

AM gives architects more concrete guidance on architecting itself



- ▶ **Avancier Methods** are useful with all architecture frameworks that share similar ends and means
- ▶ <http://avancier.website>



Would you benefit from more education in architecture terms and concepts?

For training in the Americas and APAC, contact

- ▶ Dr. Steven Else or EA Principal, Inc.
- ▶ stevenelse@eapincipals.com
- ▶ Tel: (703) 333-6098
- ▶ url: www.eapincipals.com



For training UK and Europe. contact

- ▶ Graham Berrisford, of Avancier Ltd
- ▶ grahamberrisford@btinternet.com
- ▶ Tel: +44 [0]2089498077
- ▶ url: avancier.website

