



# **Stepping-stones of enterprise-architecture**

## **Process and practice in the real enterprise**

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**TOGAF London, April 2009**

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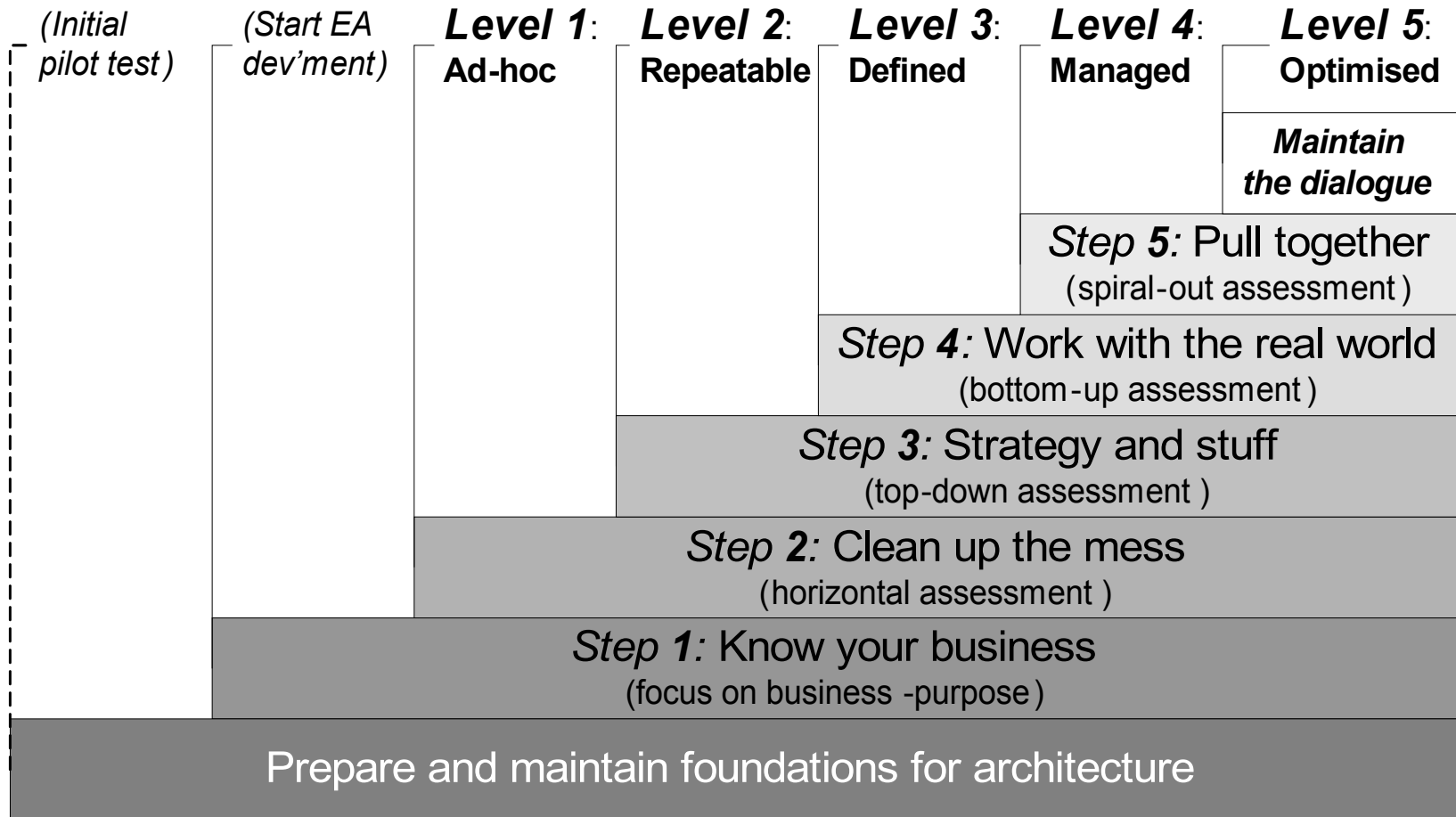
# Doing enterprise-architecture

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What do we do  
when we're doing enterprise architecture?

- **Enterprise architecture isn't a project**
  - it's more like a way of life!
- **Creating an architecture is a long-term process**
  - conventional: 1-2 years to start to see business-value
- **BUT in these times no-one will wait for value**
  - so we need to do it differently from 'the book'
- **How do we get results fast? Where do we start?**

# Use the TOGAF maturity-model



# Stepping-stones of architecture

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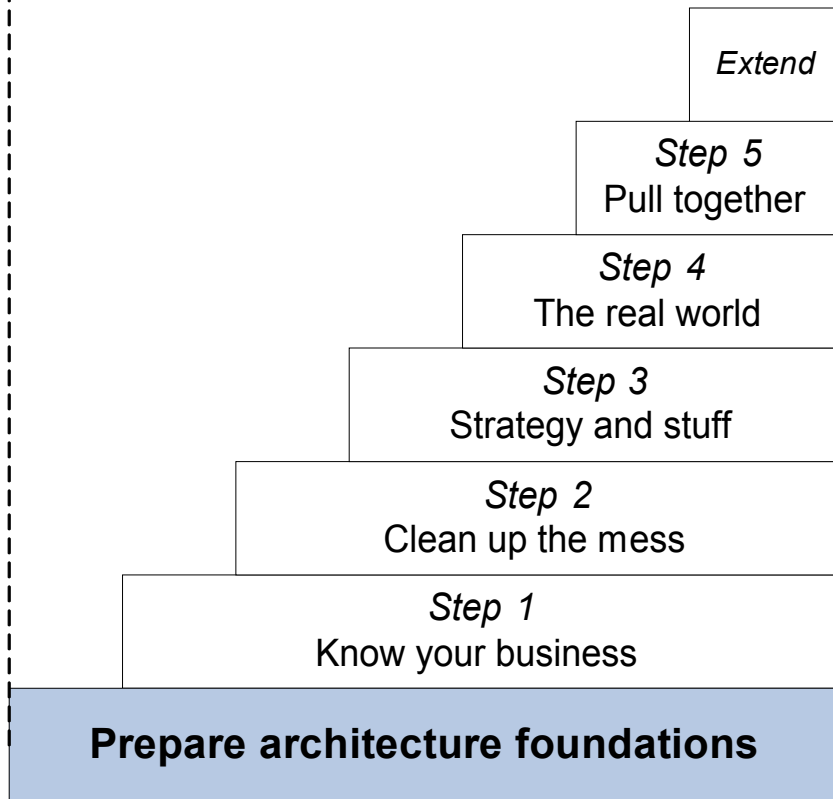
*TOGAF's model has 5 levels, hence 7 'stones'*

*Each stepping-stone builds on those before:*

- **Prepare** (and maintain) the foundations
- **Step 1:** Build an overview of the business
- **Step 2:** Clean up the mess (and keep it clean)
- **Step 3:** Guide and manage strategic change
- **Step 4:** Ensure robust resilience, continuity
- **Step 5:** Service the business' deeper needs
- **Maintain** as an enterprise-wide shared capability

# Prepare architecture foundations

(Pilot test)



- **Emphasis:** support for whole-enterprise scope
- **Examples:** business, IT-, manual- and machine-based processes, capabilities, customer, partner, supply-chain, shared enterprise

**Purpose - strategy**  
**People - governance**  
**Planning - frameworks**  
**Practice - methods**  
**Performance - metrics**

# Purpose - strategy

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- **Enterprise architecture acts as custodian for a body of knowledge on structure and purpose:**
  - “what structure changes do we need for this strategy?”
  - “what strategy can we support with this structure?”
  - “what risks, opportunities does this strategy create?”
- **Provides bridge between strategy and PMO etc**
  - *BUT NOTE* --
- **IT is only one small part of the enterprise**
  - “typically 2% to 3% of business cost” (Paul Coby, CIO of BA)
- **A real EA must have whole-of-enterprise scope**
  - it’s essential in long-term - so best to start there!

# Whole-of-enterprise architecture

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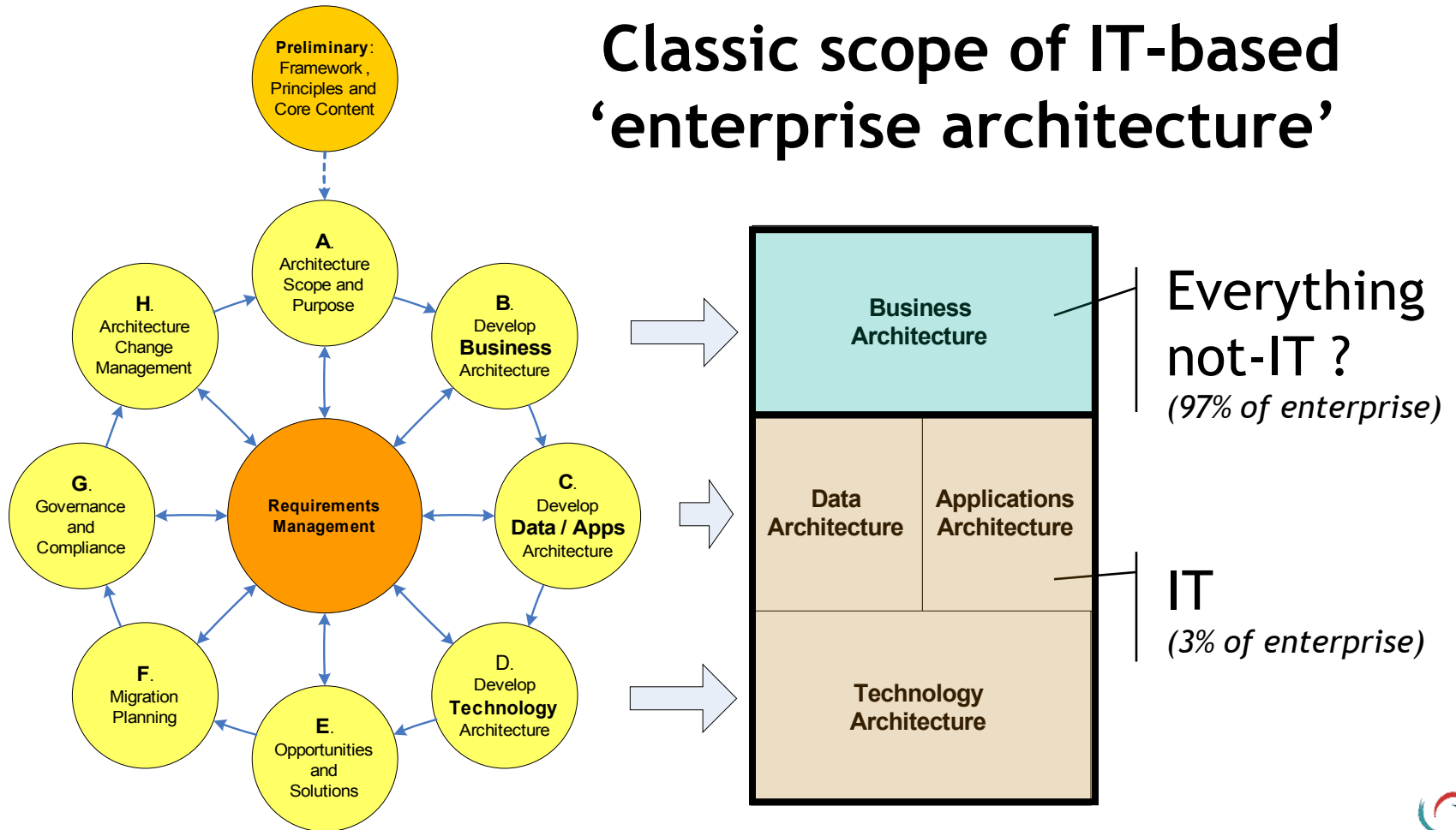
*Each EA generation has had to extend the scope:*

- **‘Classic’ EA starts with IT infrastructure**
- **IT tech-architecture depends on applications**
- **Applications-architecture depends on data**
- **Data-architecture depends on business-info need**
- **Information-architecture depends on business**
- **Business-architecture depends on enterprise**
- **Enterprise-architecture defines the context**

*An enterprise-architecture must have whole-of-enterprise scope - it's not just detail-level IT!*

# TOGAF and architecture scope

## Classic scope of IT-based 'enterprise architecture'





# Scope of IT in enterprise context

<b>Business Architecture</b>		
<b>People Integration -Architecture</b>	<b>Information Integration -Archit</b>	<b>Machine / Asset Integration -Architecture</b>
<b>Manual -Process Detail -Architecture</b>	<b>Information -Pro Detail -Architect</b>	<b>Machine -Process Detail -Architecture</b>

*IT domain*  
(typical)

## Whole-of-enterprise scope

- three layers: Business, Integration (Common), Detail
- three columns: People, Information, Physical Assets

*IT is only a small subset (not even all of Information)*

# People - governance

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- **Governance is well-described in TOGAF 9 spec**
  - Architecture Charter, Architecture Governance etc
  - but EA-governance is not a subset of IT-governance!
    - organisationally, EA should be outside IT, not subordinate to it
- **Skillsets well-described in Capability Framework**
  - but will also need broad range of skills from beyond IT, to cover needs of much broader architecture scope
- **Process-governance as per Agile, not Waterfall**
  - multiple, simultaneous, recursive architecture-cycles
- **Will need executive-level support from the start**
  - will need that support to bridge across all silos etc

# Planning - frameworks

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- Frameworks define structure and meaning
- TOGAF provides ‘Enterprise Continuum’
  - ‘Architecture Continuum’ and ‘Solutions Continuum’
  - four layers: Foundation, Common-systems, Industry and Organisation-specific
- Reference-frameworks define ‘bindedness’
  - mandatory, recommended, suggested etc
- All items ultimately anchor to base-framework
  - layers of ‘composites’ resolve to explicit ‘primitives’
- Zachman as an archetypal base-framework

# Base-framework columns

## Columns need restructure to support whole-EA

<i>(original)</i>	<i>What</i>	<i>How</i>	<i>Where</i>	<i>Who</i>	<i>When</i>	<i>Why</i>
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<i>(revised)</i>	<b>Asset</b>	<b>Function</b>	<b>Location</b>	<b>Capability</b>	<b>Event</b>	<b>Reason</b>
<i>(example segment)</i>	Object Information Relationship Value	Mechanical IT-based Manual Abstract	Physical Virtual Relational Temporal	Rules Analysis Heuristic Principle	Physical Virtual Relational Temporal	Rules Analysis Heuristic Principle

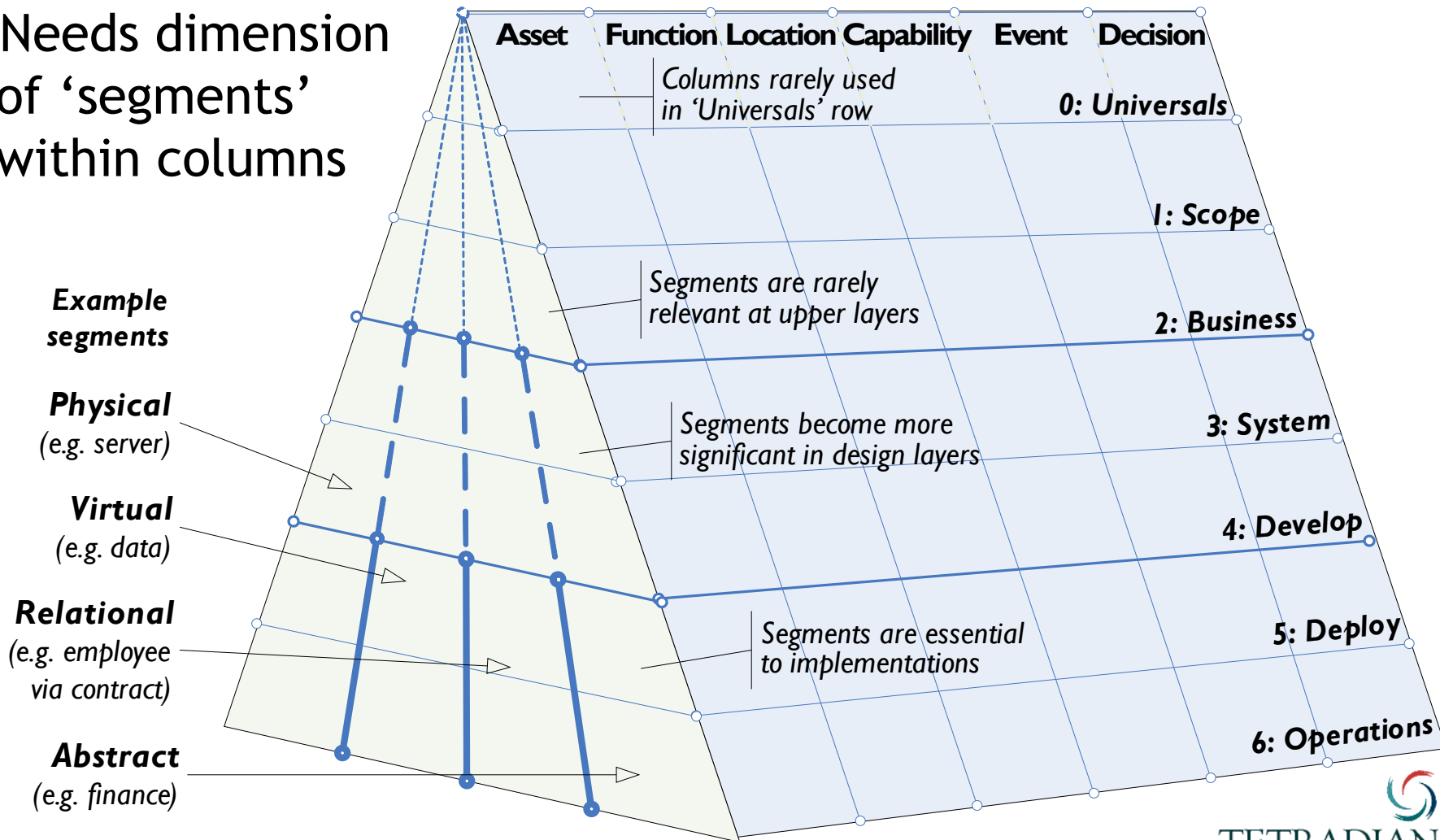
At Operations level, we should be able to describe every service as:

<i>with</i>	<i>do</i>	<i>at</i>	<i>using</i>	<i>on</i>	<i>because</i>
<asset>	<function>	<location>	<capability>	<event>	<reason>

-- this is an 'architecturally complete' pattern or composite

# Base-framework segments

Needs dimension of 'segments' within columns



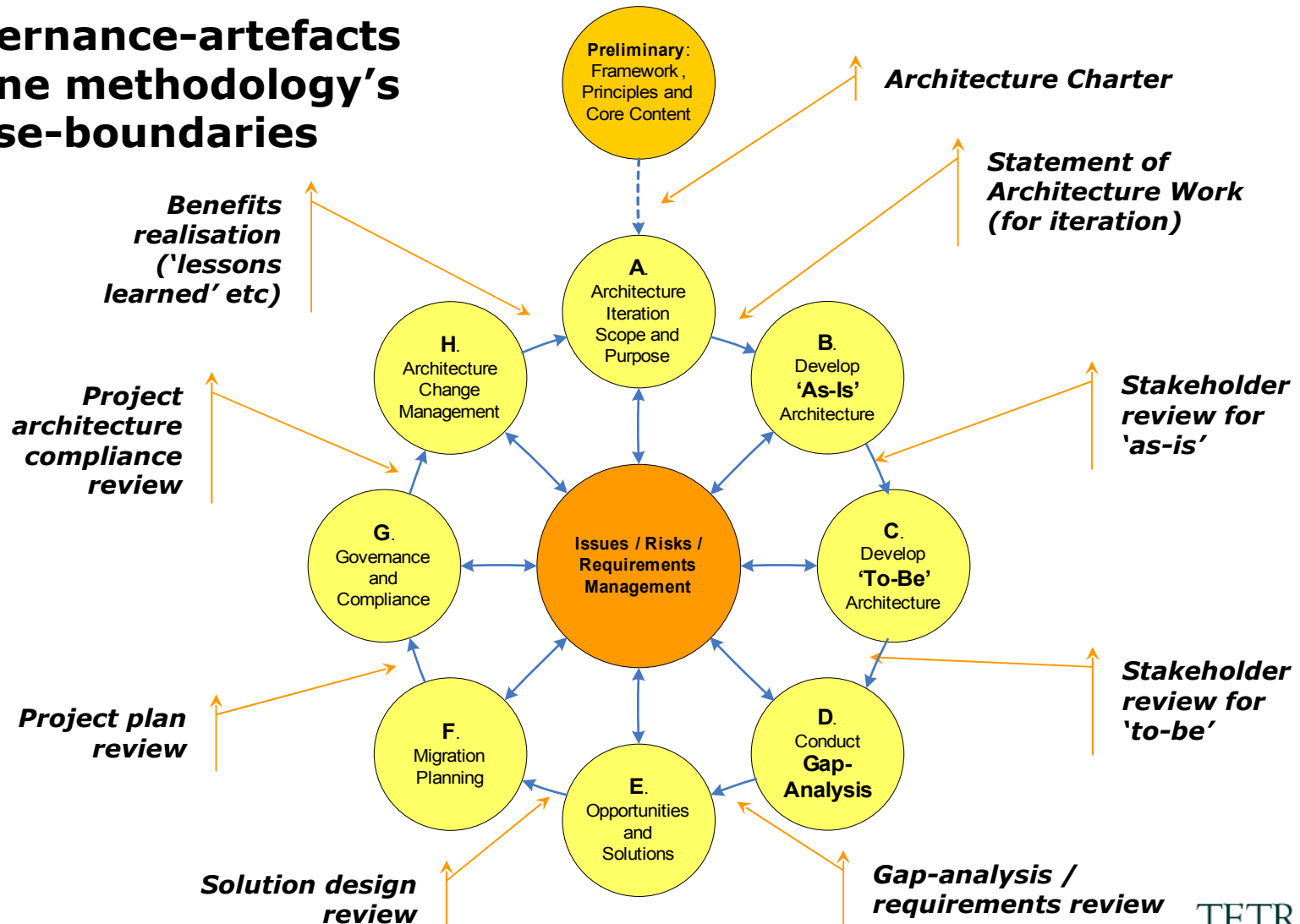
# Practice - methods

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- **TOGAF ADM as the obvious choice for method**
  - long-proven in IT-architecture
  - ADM is designed for adaptation and extension
- **Must use ADM in Agile style for rapid ROI**
  - business will not wait 2+ years before any returns!
- **TOGAF 9 has better support for iterations**
  - but may not be usable out-of-the-box for Agile
- **Amend fixed IT-centric scope of TOGAF 9**
  - ADM for whole-enterprise: Phase A=iteration scope, Phase B='as-is', Phase C='to-be', Phase D=gap-analysis

# Methods - governance for Agile EA

**Governance-artefacts define methodology's phase-boundaries**



# Performance - metrics and products

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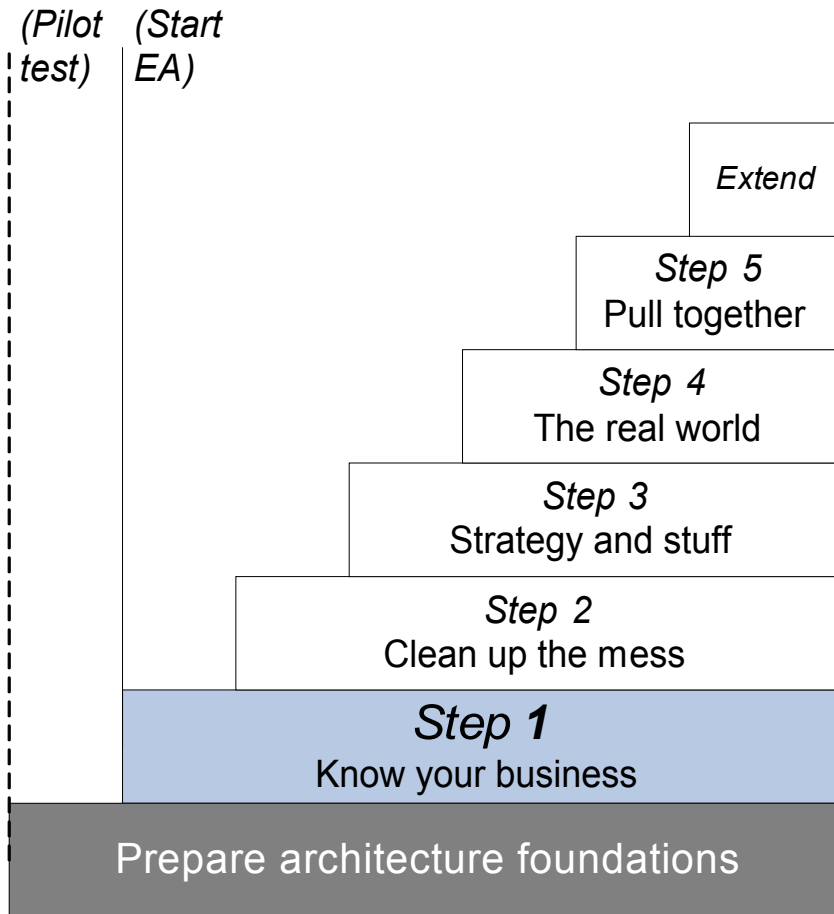
- **Need processes to measure benefits-realisation**
  - need to prove the value of enterprise architecture
  - link every iteration to explicit business value

## *Artefacts from architecture work include:*

- **Models, metamodels and reference-models**
- **Change-roadmaps and portfolio ‘blueprints’**
- **Requirements-repository**
- **Risks, opportunities and issues registers**
- **Architecture-dispensations register**
- **Glossary and thesaurus**



# Step 1: Know your business



- **Emphasis: ‘big-picture’**
- **Examples:** whole-of-enterprise overview, end-to-end and top-to-bottom integration

**1A: Vision, values, principles and purpose**  
**1B: The enterprise context**  
**1C: Functions and services**  
**1D: Architecture governance**

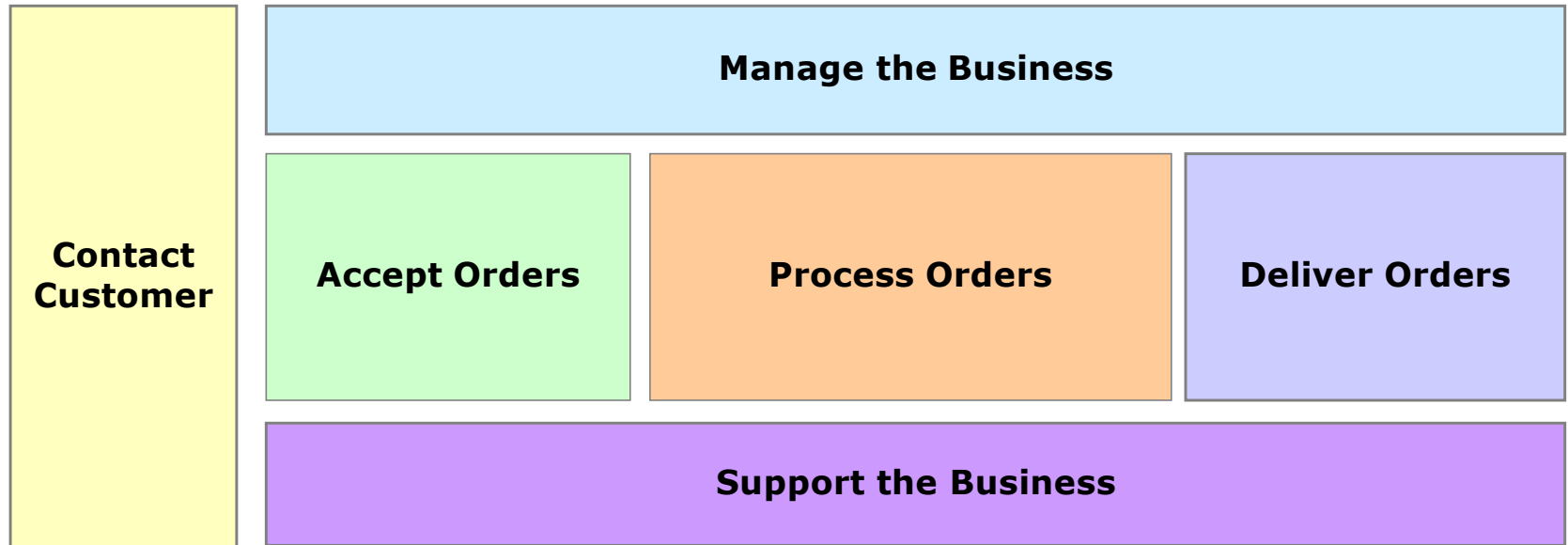
# Step 1: Know your business

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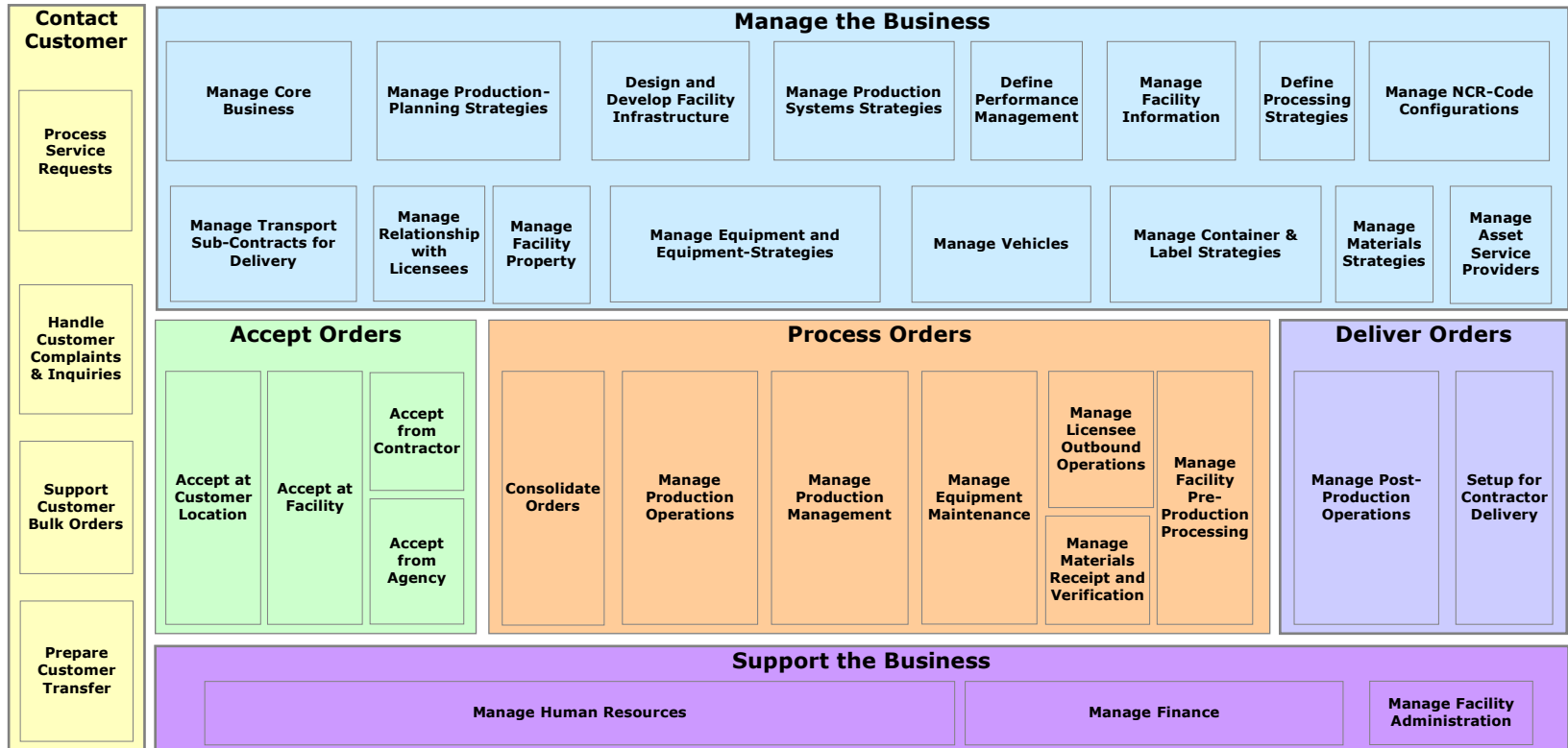
- **1A: Vision, values, principles**
  - Vision, role, mission, goal
  - Values, principles, business purpose
- **1B: The enterprise context**
  - Compliance, constraints, standards, expectations
  - Assets, locations, events
- **1C: Functions and services**
  - Services; functions; capabilities; the Function Model
- **1D: Architecture governance**
  - Creating architecture capability; creating engagement

# Function-model: tier-1 example

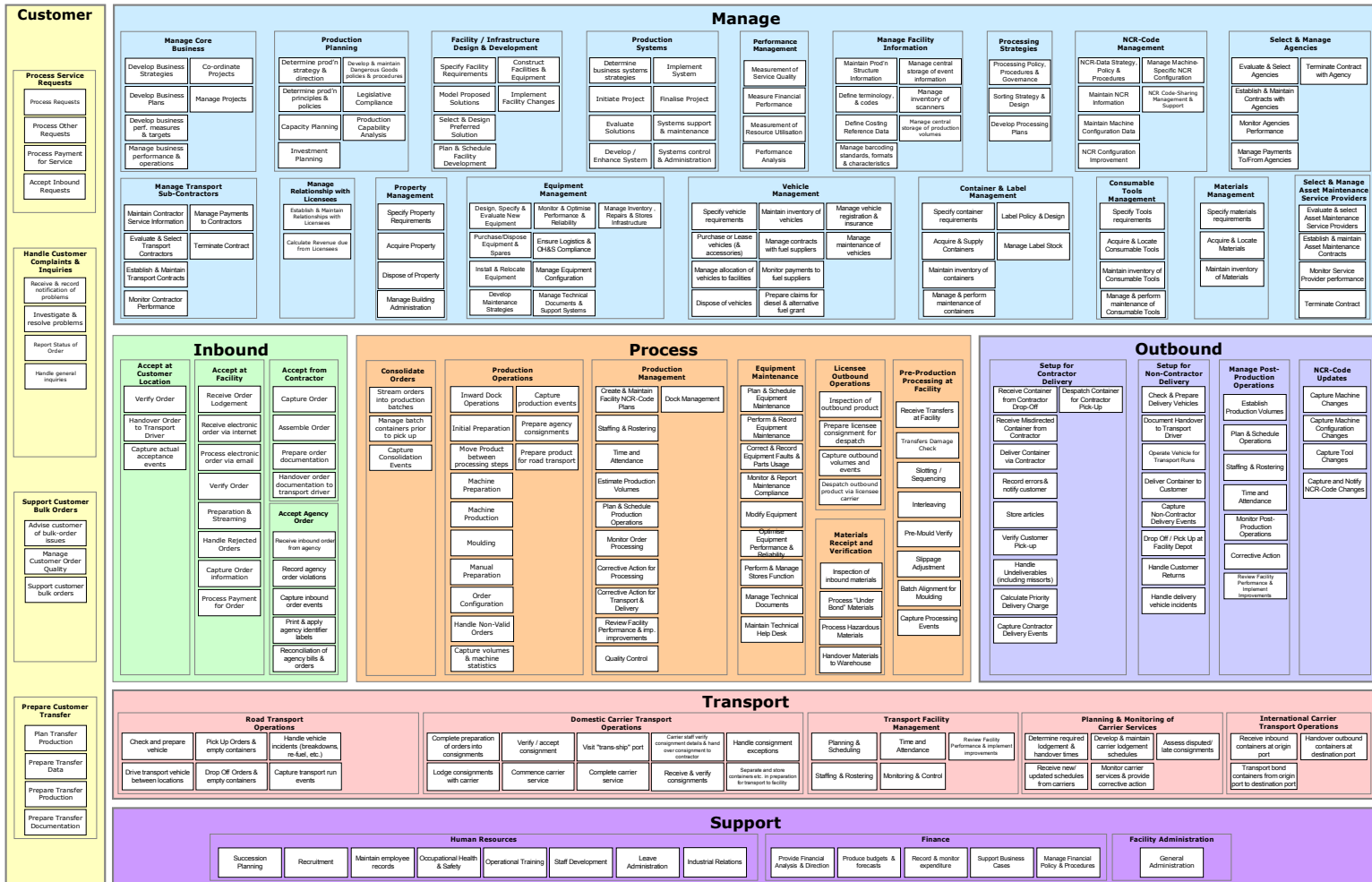
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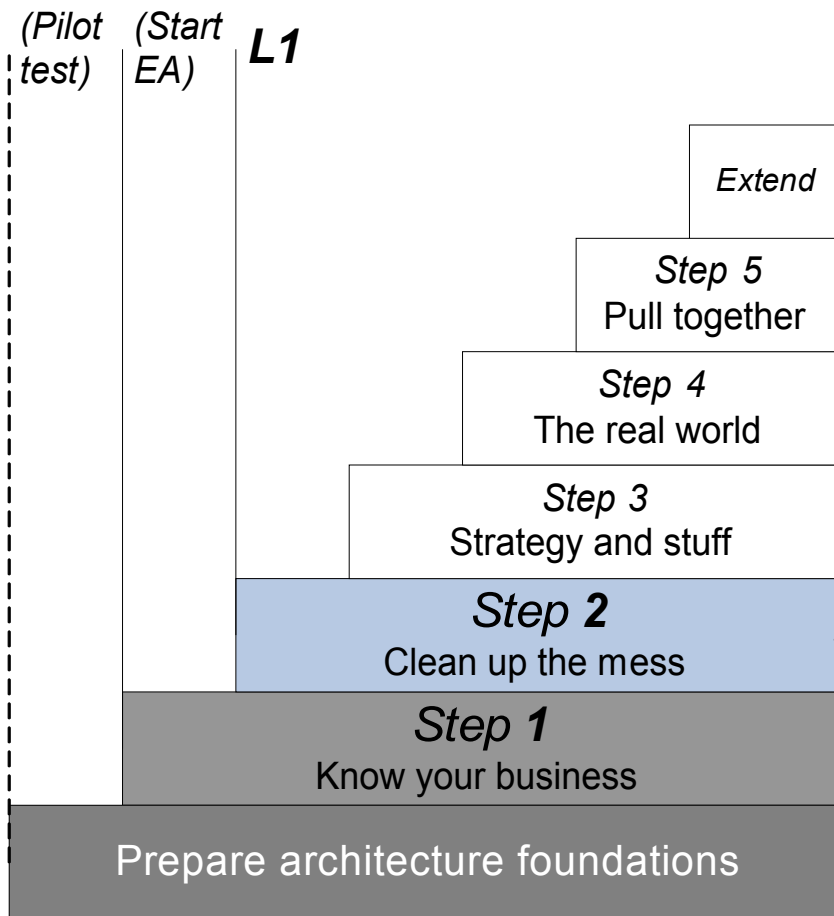
# Function-model: tier-2 example



# Function-model: tier-3 example



# Step 2: Clean up the mess



- **Emphasis:** ‘horizontal’
- **Examples:** optimise systems, reduce redundancy

**2A: Business-systems and information-systems**  
**2B: What do we have?**  
**2C: Guiding the process of change**

# Step 2: Clean up the mess

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- **2A: Business / information-systems**
  - Business systems; identifying business-systems; modelling individual business-systems
  - Information systems and ‘single source of truth’; identifying single-source-of-truth
- **2B: What do we have?**
  - Assessment for rationalisation: iteration-scope; as-is; to-be; gap-analysis for requirements
  - Implementation for rationalisation: solutions; projects; development and deployment; lessons-learned
- **2C: Guide the process of change**
  - Guiding compliance to architecture roadmap

# 2B: What do we have? [1]

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*Assessment phases* (under architecture governance):

- **Phase A: define scope for rationalisation**
  - typically defined by boundaries of Business System etc
- **Phase B: inventory the existing items in scope**
  - develop an 'as-is' inventory of the respective items
- **Phase C: identify the required rationalisation**
  - develop a 'to-be' inventory of the respective items
- **Phase D: establish gaps, change-requirements**
  - identify requirements, risks and responsibilities

*Note difference to TOGAF here - not centred on IT*



# 2B: What do we have? [2]

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*Implementation phases* (under programme governance):

- **Phase E: outline required rationalisation action**
  - guide handover of requirements to solution-architects
- **Phase F: assist detailed rationalisation-design**
  - provide architectural guidance during detailed-design
- **Phase G: assist rationalisation implementation**
  - provide architectural guidance during gateway review
- **Phase H: do rationalisation ‘lessons-learned’**
  - benefits-realisation and lessons-learned

*These phases remain similar to those in TOGAF 9*

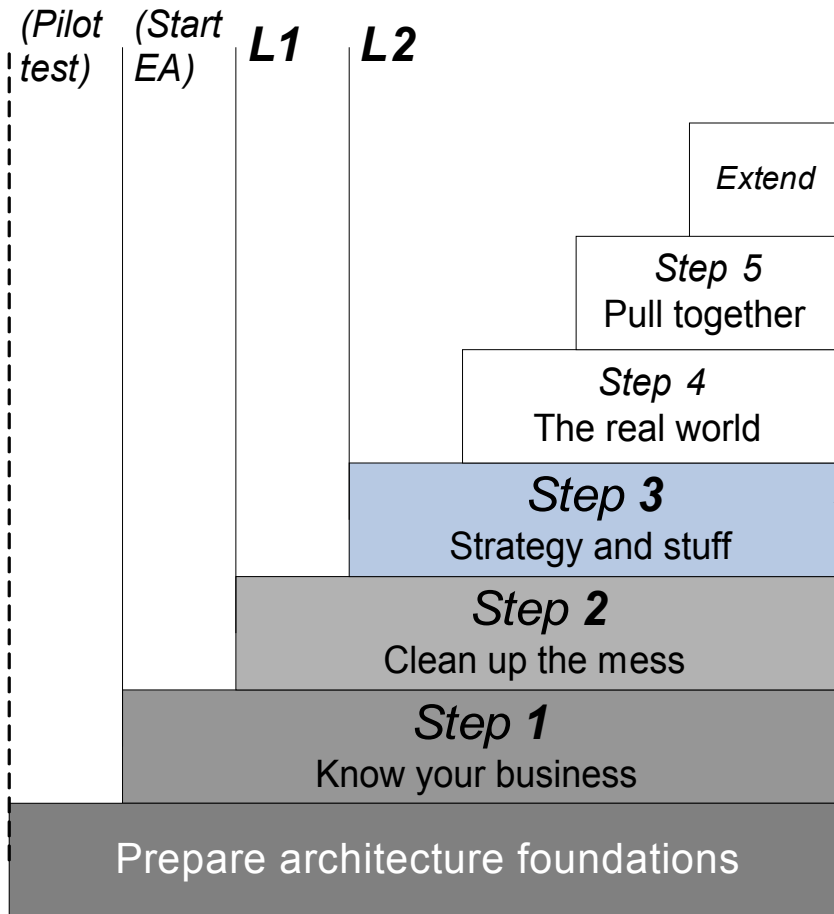
# 2C: Guide the process of change

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## *Guiding compliance to architecture roadmap:*

- **Assist in defining requirements for change**
  - (equivalent to Phases A-D)
- **Assist in solution-architecture**
  - (equivalent to Phase E)
- **Assist in detailed project-design**
  - (equivalent to Phase F)
- **Review and advise in project implementation**
  - (equivalent to Phase G)
- **Review ‘lessons-learned’ from project**
  - (equivalent to Phase H)

# Step 3: Strategy and stuff



- **Emphasis:** top-down
- **Examples:** impact of strategy, change of regulation, service-design

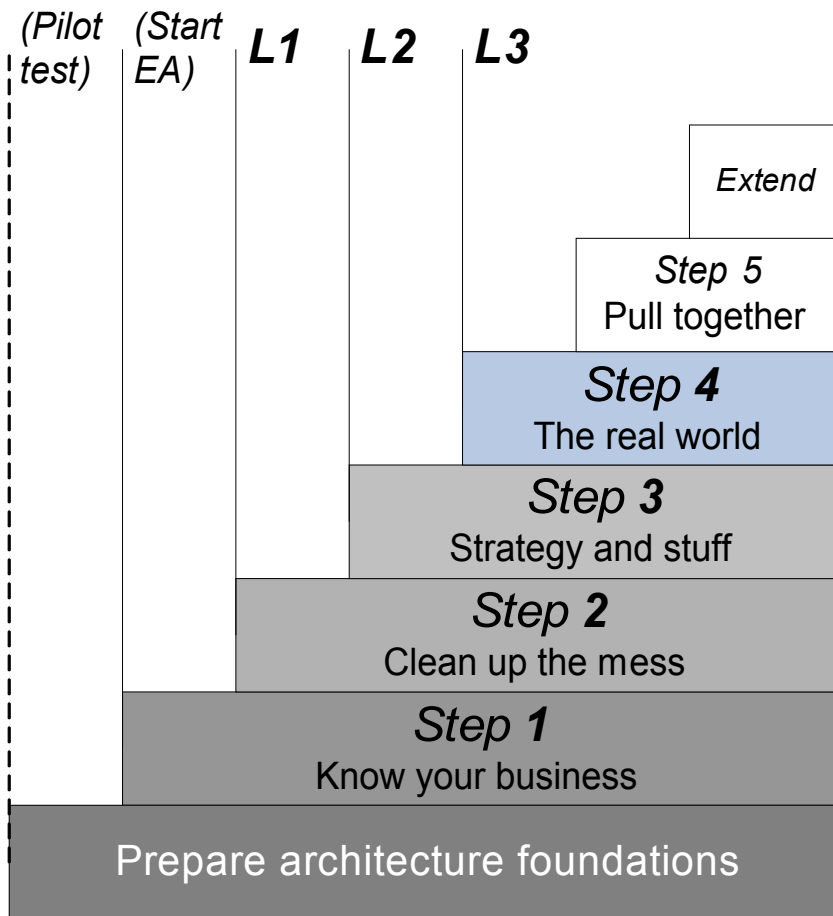
**3A:** Expand out from IT  
**3B:** This goes with that  
**3C:** Abstract-services  
**3D:** Compliance and quality

# Step 3: Strategy and stuff

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- **3A: Expand outward from IT**
  - The enterprise as whole - extending scope-awareness; including people and 'things' in the architecture
- **3B: This goes with that**
  - Strategy drives change; innovation invokes strategy
- **3C: Abstract-services**
  - Technologies and trade-offs; services in abstract; services for real
- **3D: Compliance and quality**
  - From value to quality; pervasive-services; develop awareness; develop capability; verify and audit

# Step 4: Work with the real world



- **Emphasis:** bottom-up
- **Examples:** disaster-recovery, risk-assessment, run-time load-balancing

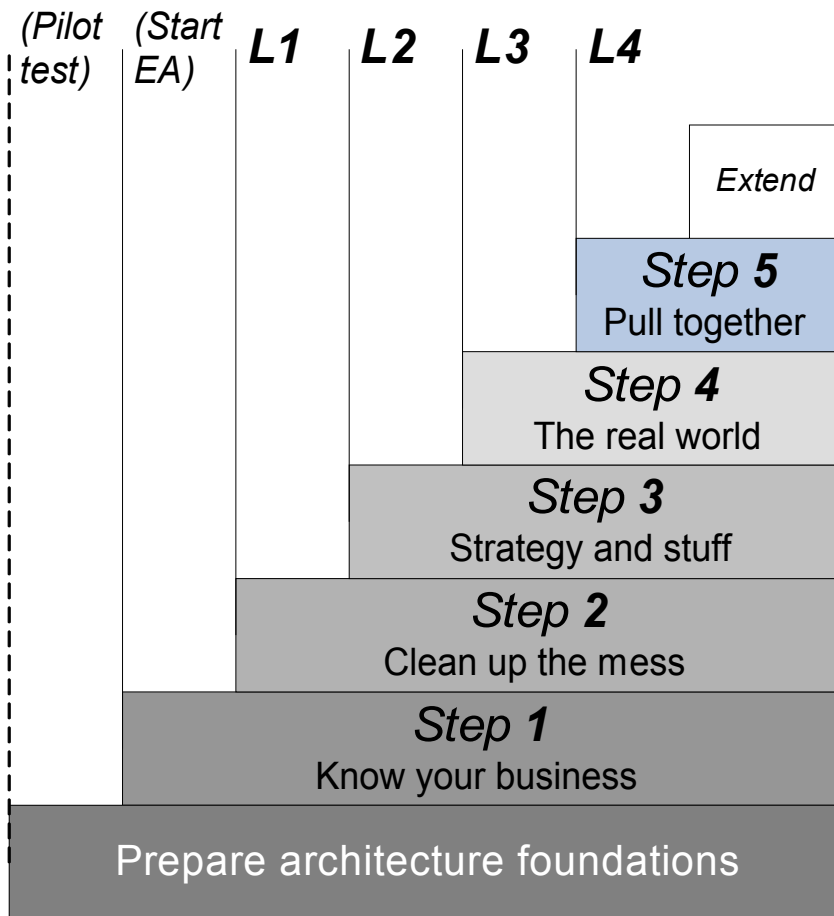
**4A: Design for service flexibility**  
**4B: Plan for business-continuity**  
**4C: From qualities to values**

# Step 4: Work with the real world

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- **4A: Design for service flexibility**
  - Design for escalation; the service of escalation
  - Design for resilience; the services balancing-act
- **4B: Plan for business-continuity**
  - The impact of disaster; impact from the bottom up; the impact dashboard
  - Fail-safe and safe-fail; design for failure
- **4C: From qualities to values**
  - Quality in practice; connecting to quality

# Step 5: Pull it all together



- **Emphasis:** ‘spiral-out’
- **Examples:** data-quality, service-management planning, business ‘pain-points’

**5A: The service-oriented enterprise**  
**5B: Dealing with ‘wicked problems’**  
**5C: Enhancing enterprise effectiveness**

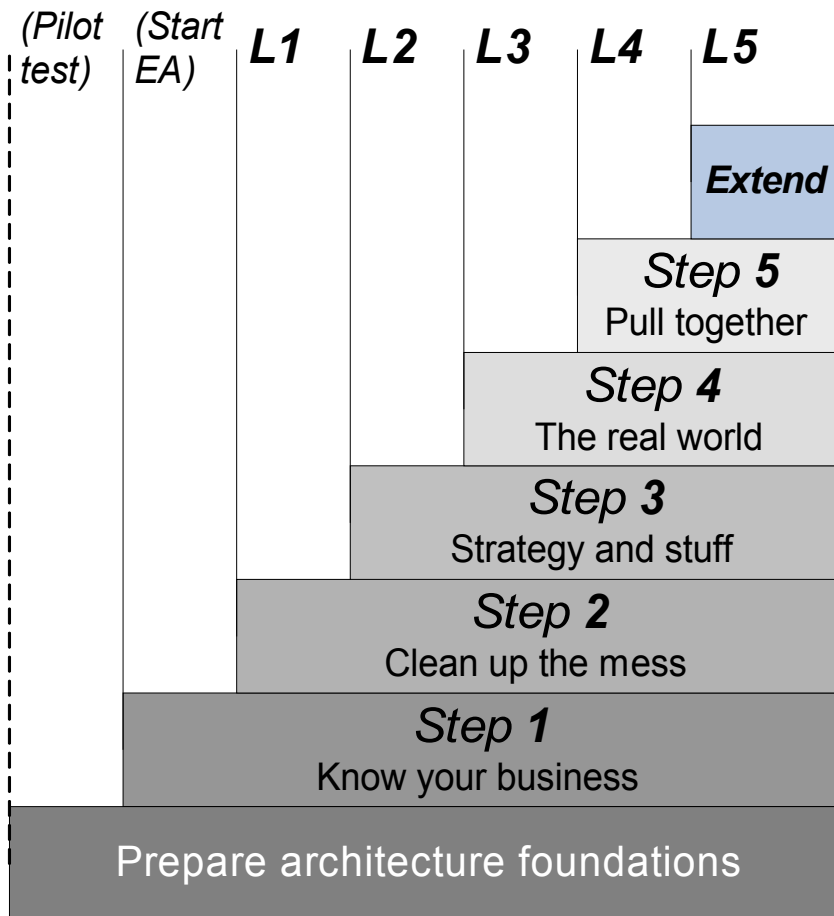
# Step 5: Pull it all together

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- **5A: Service-oriented enterprise**
  - Everything is a service; interdependencies of service
  - Being of service; responsibility, capability as services
- **5B: Deal with ‘wicked problems’**
  - Tame-problems and wicked-problems
    - technical complexity interacts with social complexity
  - Identifying ‘wickedness’; resolving wicked-problems
- **5C: Enhance effectiveness**
  - Enhancing effectiveness
    - *keywords*: efficient, reliable, elegant, appropriate, integrated
  - Reviewing effectiveness, enhancing agility



# Beyond level 5: What next?



- **Emphasis:** integration
- **Examples:** architecture as an enterprise-wide responsibility

**XA: Hands-off architecture**  
**XB: Architecture as relevance**

# Beyond level 5: What next?

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- **XA: Hands-off architecture**
  - Preparation for hands-off architecture
  - Project-gateway notification and response
  - Project-completion review
- **XB: Architecture as relevance**
  - Conferences
  - Communities of practice
  - Communication

# Summary: Doing whole-enterprise EA

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- **Adapted TOGAF-ADM for whole-enterprise EA**
  - restructure of Phases A-D to resolve IT-centrism
- **Extended-Zachman as base-framework for EA**
  - complete coverage of full whole-of-enterprise scope
- **Agile-style model permits rapid return-on-effort**
  - consistent for all architecture-iteration timescales
- **TOGAF maturity-model as ‘stepping-stones’**
  - gives graded plan for whole-enterprise architecture
- **Proven in real-world practice in and beyond IT**
  - logistics, utilities, government, telco etc

# Stepping-stones of enterprise architecture

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**Any questions?**

*(or answers, perhaps?)*

**Thank you!**

## Resources: “Tetradian Enterprise Architecture” series

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Books on enterprise-architecture by Tom Graves:

- **Real Enterprise Architecture:** beyond IT to the whole enterprise
- **Bridging the Silos:** enterprise architecture for IT-architects
- **SEMPER and SCORE:** enhancing enterprise effectiveness
- **Power and Response-ability:** the human side of systems
- **The Service Oriented Enterprise:** enterprise architecture and viable systems
- **Doing Enterprise Architecture:** process and practice in the real enterprise

See [tetradianbooks.com](http://tetradianbooks.com) for more details.