

Managing Digital Strategy to Enhance Health and Care

Partners and products for digital transformation

Dr Philip Scott MSc PhD FHEA FBCS CITP CHCIO



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

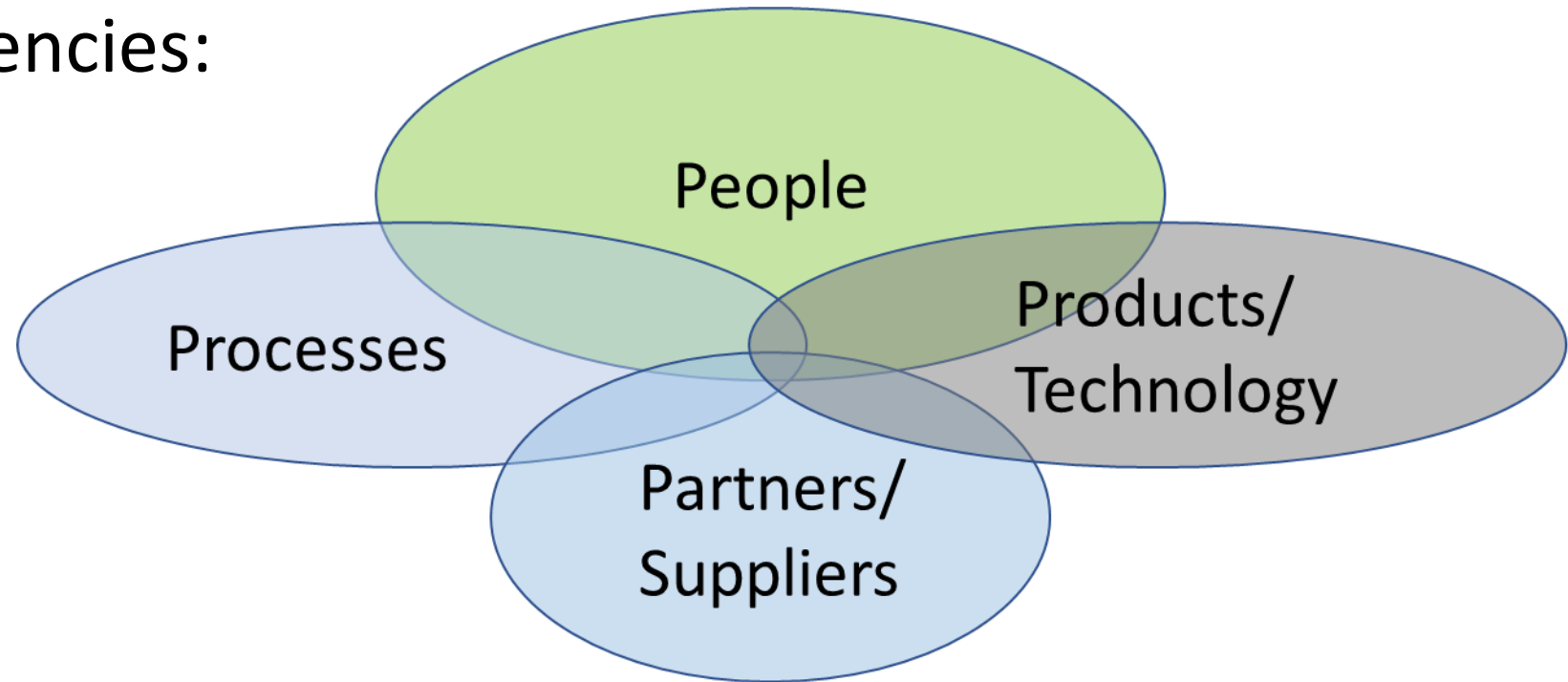
WIDI Wales Institute of Digital Information
Athrofa Wybodaeth Ddigidol Cymru

Lecture learning outcomes

- Explain the relative risks and benefits of options for acquisition strategy for digital products.
- Outline the key steps in an IT procurement.
- Evaluate the role of standards in product selection.
- Describe the purpose of enterprise architecture.

Recap

- Digital transformation has a better chance of working when it employs an appropriate implementation theory.
- Core dependencies:
 - People
 - Process
 - Products
 - Partners



Reminder, strategy = approach & principles, not detail

- Much of today's material is again underpinning detail, but...
- Have the concepts been considered at all?
- Is there an *approach* to how we will do XXX?
- Are there *principles* of how we will do (or not do) YYY?

Part 1 – Digital transformation partners

- Acquisition strategy
- Procurement
- Implementation
- Relationship management

Digital transformation needs products



Many products come from partners



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Slide 7 of 40

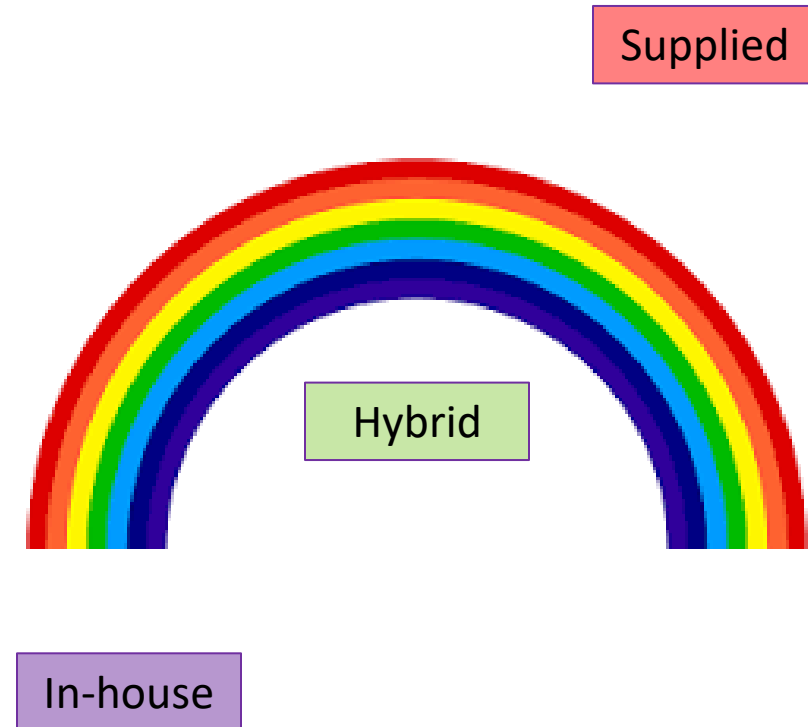
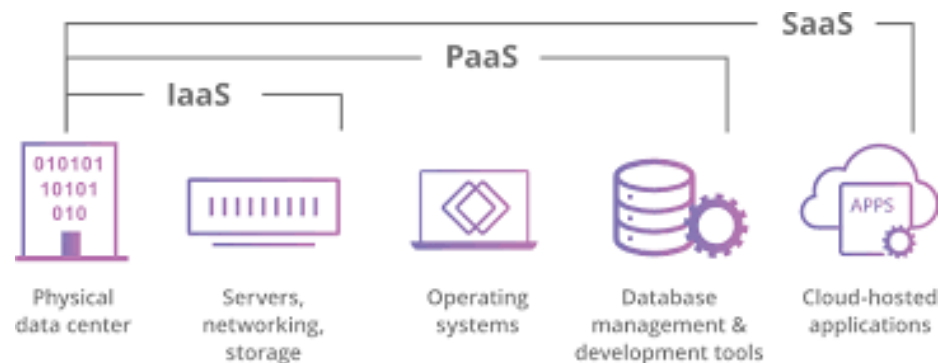


Wales Institute of Digital Information
Athrofa Wybodaeth Ddigidol Cymru

Organisations vary in their sourcing preferences

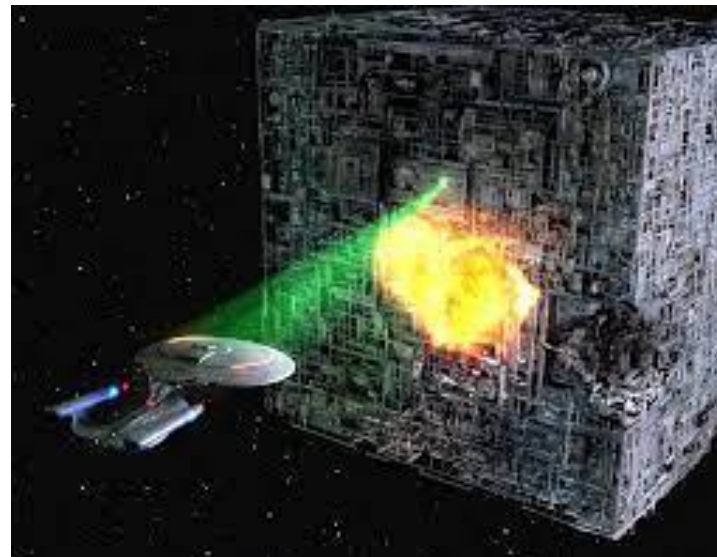
Insourcing	Using an internal service provider to manage IT services
Outsourcing	Using an external service provider to manage IT services
Co-sourcing	A combination of insourcing and outsourcing
Partnering	Formal arrangement between two or more organizations to work together to manage IT services. Usually refers strategic partnerships.
BPO	Business Process Outsourcing. Examples: payroll, billing, marketing.
ASP	Application Service Provision. An external service provider that provides IT services using applications running at their premises.
KPO	Knowledge Process Outsourcing. Examples: credit risk assessment, teleradiology reporting, specialist marketing.
Cloud	Means almost anything depending whom you ask. Typically a range of options including ASP, BPO and KPO.

Based in part on *ITIL Service Design*, Table 3.4



Acquisition strategy

- Build, buy, burn.
 - Build it yourself.
 - Buy it from a vendor.
 - Burn: drop a product if it can be assimilated.



Acquisition strategy

- Balancing the risks

- Build

- Complete in-house control over scope and timing (?)
 - Agile adaptability and affordability (?)
 - Design for convergence and integration (?)

- Buy

- Maintenance and support risk outsourced (?)
 - Vendor can pay market rates and retain skilled development teams (?)
 - Feature requests go into a long queue and may never be delivered (?)

- Burn

- Does the replacement really do everything the old product did?



Acquisition strategy

TECHNOLOGY AND INNOVATION

£450m cost of US records system is ‘chicken-feed’ says trust CEO

By Nick Carding | 18 March 2022



12 Comments



- > Two London trusts set for major digital transformation
- > CEO says hospitals cannot be run safely without electronic patient records
- > Cost of project revealed to be £450m
- > “We had to fight harder than we should have for cash”, says trusts’ digital chief

The £450m cost to install the Epic electronic patient record system across six hospitals is “chicken feed” when compared to the NHS’s overall budget, according to one trust chief.

Guy’s and St Thomas’ Foundation Trust chief executive Ian Abbs was speaking shortly after King’s College Hospitals FT secured the funding to [join neighbours GSTT in installing an EPR](#) developed by US healthtech giant Epic.

Most popular



Procurement stages

- Strategic Outline Case (SOC) for major purchases.
- Requirements analysis/specification
 - Depends on overall methodology whether aiming for full upfront specification or outline with iterative development.
 - Defined in Output-Based Specification (OBS) or Statement of Requirements (SOR).
 - Based on SOC and requirements analysis, develop Outline Business Case (OBC).
- Plan evaluation criteria/process/timescale

Standards in procurement projects

- Purchaser looks for compatibility and future-proofing.
 - Vendor wants to differentiate their product..
- Vendor looks for repeatable sales of uniform package.
 - Purchaser always has unique requirements.
- Does the product prove its conformance to the standard or just vaguely cite it?
 - What can the reference sites demonstrate in reality?
 - “HL7 compliant” – meaningless
 - “FHIR compliant” – meaningless
 - “SNOMED CT compliant” – meaningless
 - “Implements UK FHIR core profiles and NHS Wales extensions” – becoming meaningful, but how do you know it is true?

Standards in procurement projects

- Identify the relevant standards and whether emerging or mature.
- Are there “flavours” of the standard in a sector?
- What is there from ISO/BSI? Trade associations?
- Is conformance testable/certifiable? By whom? ££?
- Do extra features break the standard? (e.g. capability to store/carry extra data)
- May be ok now, but think about future integration with products from other vendors.

Procurement stages

- Pre-Qualification Questionnaire (PQQ) – usually optional, but required for ‘competitive dialogue’.
- Invitation to Tender (ITT) – the request for bids.
 - Sometimes called RFP – request for proposals.
- Evaluation
 - Document assessment.
 - Reference site visits (need clear criteria/questions).
 - Vendor presentations/demonstrations.
 - Get presentation ‘explanatory’ comments confirmed in writing.
- Requests for Clarification (RFCs).
 - May need to be open to all bidders, depending on procurement method in use.

Tendering options

- UK public bodies required to use open competitive procurement if lifetime contract value exceeds threshold.
- Thresholds were previously specified by EU, now by World Trade Organization under the international Government Procurement Agreement (GPA):
 - [PPN-0221](#)
- Thresholds vary depending which entity is the purchaser (central government or other public sector) and what is being purchased.
 - see GPA [detail](#) and [UK Annex](#)
- Welsh Government has [specific policies](#) for procurement.
- Reflect on how suppliers have to respond: bid teams are an expensive resource.

Framework contracts

- “Umbrella” contract procured centrally under open competition, provides a catalogue of goods and services.
- Can unnecessarily constrain choice of vendors but does simplify the procurement overhead.
- [Crown Commercial Service](#) publishes “pre-tendered” frameworks for public sector purchasers to use:
 - <https://www.crowncommercial.gov.uk/agreements>
- UK Government web pages on procurement have still not all been updated after Brexit, so take care what to rely upon for guidance.
 - **Always** check with local commercial procurement advisors.

Financing options

- Capital purchase with revenue support costs.
- Lease (usually hardware) can spread costs – fairly uncommon now.
- Managed service can cover whole software/hardware package, spread costs and avoid asset ownership.
 - Cloud services are a kind of managed service.
 - Some options called “Platform as a Service”.
- Payment milestones do not necessarily match delivery milestones (depends on financial deal).

Procurement stages

- Procurement decision is not what is the cheapest, but what is best VFM.
 - Business Case: Strategic fit, economic value, affordability, capability,
- Commercial negotiation
 - Leave this to the procurement specialists.
 - Results in Best And Final Offer (BAFO) – terms and price.
 - BAFO and draft contract feed into Full Business Case (FBC).
- Contract award
 - Lifetime contract value will determine what level of FBC approval is needed before signing.
 - May need legal advice (talk to procurement team).

Procurement stages

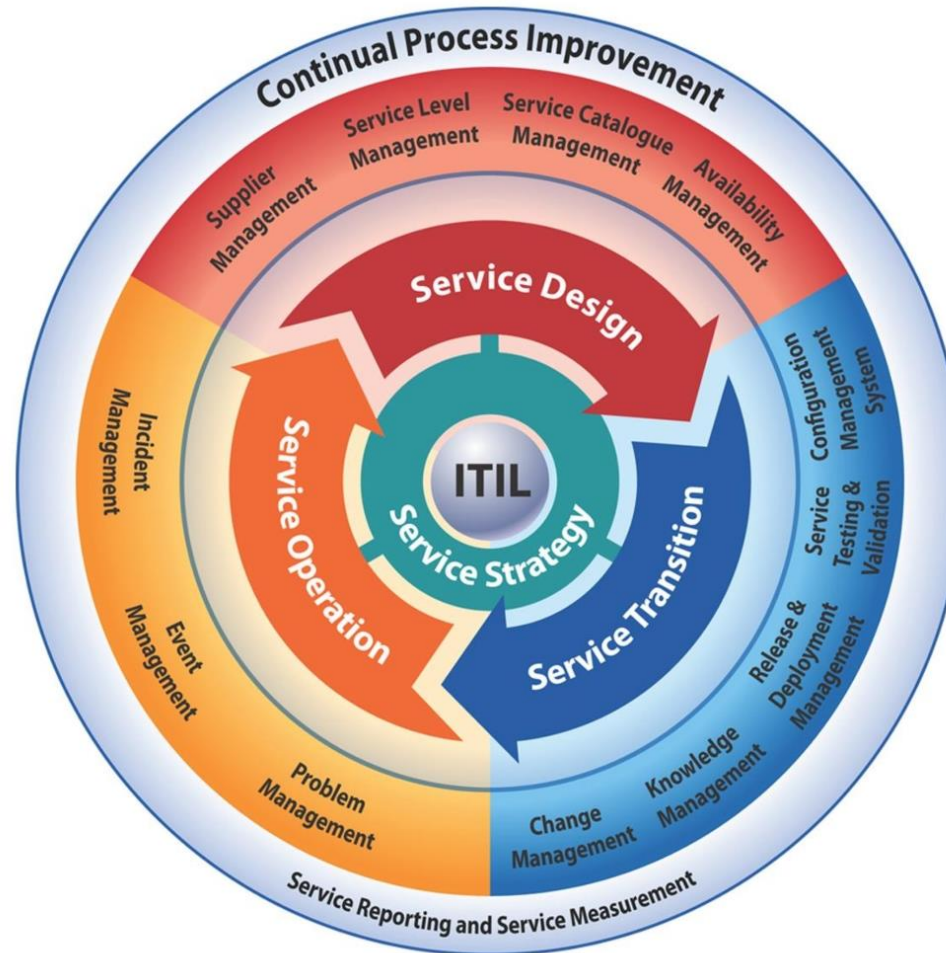
- Implementation
 - Form of contract will determine what the acceptance milestones are for the product/service.
 - Depending on product type, may involve:
 - Unit testing
 - Integration testing
 - User Acceptance Testing (UAT)
 - Refer back to Product Description quality criteria (implies you have some!)
- *Should* incorporate Disaster Recovery testing.

Managing procurement in a project

- Need to agree how Project Board will work.
- *Should* have shared governance (customer-vendor).
- May have Part A/Part B meetings for customer-only or vendor-only discussions.
 - Need to minimize this, it is not a healthy sign.
- Supplier and customer should adopt common risk and issues register and project plan (resources of both).
 - Vendor will have 'internal' versions to track earned value (£££).
- Contract should specify dispute resolution method.
 - Reference site visits should have included how disagreements or non-delivery was handled – not just the contract but the softer relationship management.
 - Constant reference to the contract is a bad sign!

Managing procurement in a project

- Need clear ownership of contract management and performance monitoring once project ends and product moves to business-as-usual.
- How are “upgrades” and technology refresh cycles managed?
- How might a company merger or acquisition affect you?
- What is the difference between a “supplier” and a “partner”? What is required?



Group discussion and feedback

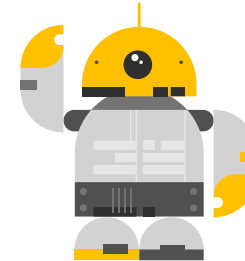
- Does your digital transformation strategy define an approach to product acquisition?
- Have procurements you know about used the steps described in this lecture? If not, what have they done?
- How well are standards understood and applied in your digital strategy and related procurements and in-house developments?
- Does your organisation have the right balance of build, buy, burn?

Part 2 – Digital transformation products

- Standards
- Enterprise architecture
- Lifecycles

Digital transformation products

Capabilities enable transformation

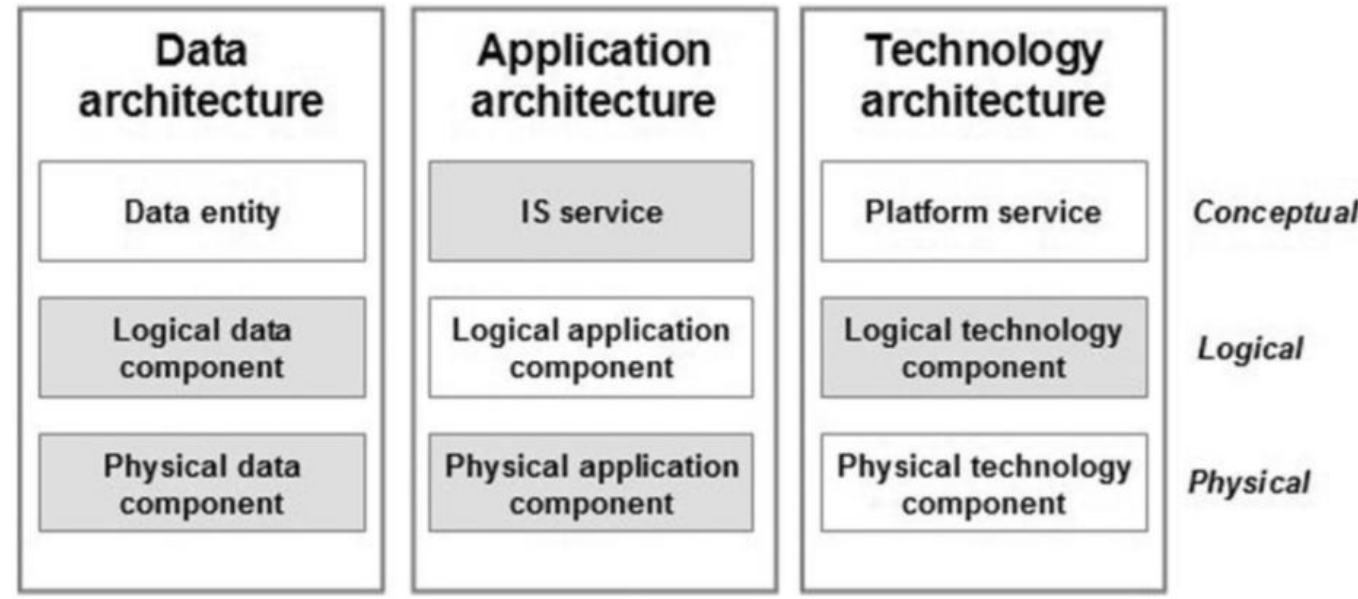


Products provide capabilities

Capabilities supported by product standards

- Data
 - FHIR, SNOMED CT, NHS Wales Data Dictionary...
- Information
 - [PRSB](#), [WISB](#)...
- Knowledge
 - [AWTTC](#), [WMAS](#), [NICE](#)
- Usability & [accessibility](#)

Enterprise architecture



“The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time.” (TOGAF)

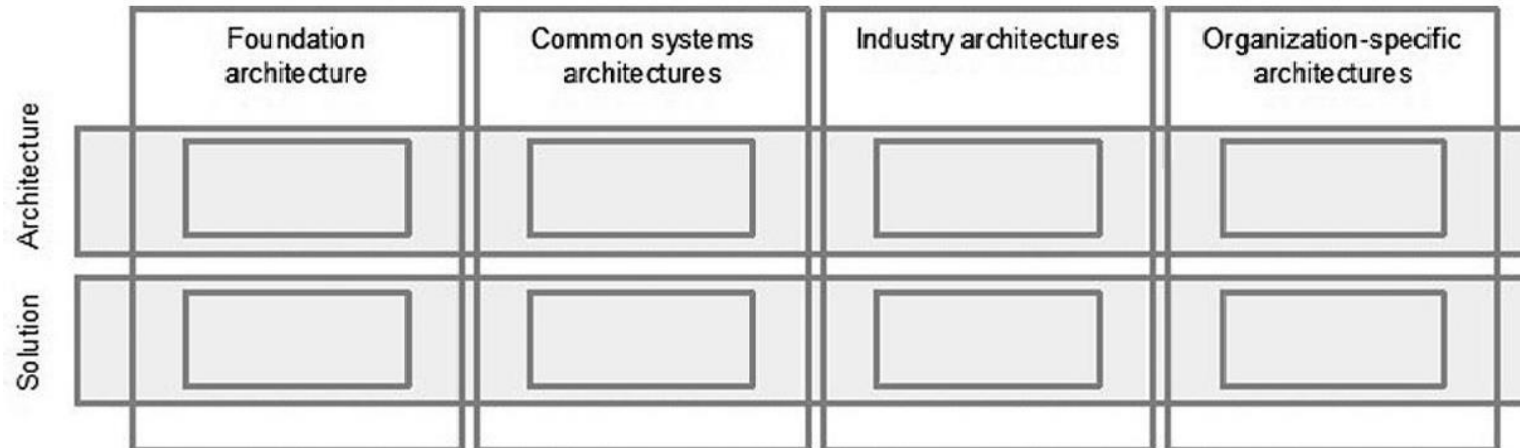
Enterprise architecture domains

- **Business architecture:** strategy, goals, business processes, functions, and organization.
- **Data architecture:** the organization and management of information.
- **Application architecture:** applications, software components, and their interactions.
- **Technology architecture:** describes the techniques and components deployed, as well as networks and the physical infrastructure upon which the applications and data sources run.

Enterprise architecture continuum

Describes levels of abstraction/applicability:

- Foundation (common components, e.g. from TOGAF Reference Model)
- Industry-specific (domain model, e.g. banking, healthcare, aerospace, manufacturing...)
- Organisational (e.g. British Airways, Barclays Bank, DHCW, Carmarthenshire CC...)



Enterprise architecture example design artefacts

- Goal diagram

Name	Goal diagram
Experts	General management, organization unit directors.
Designers	Business analysts.
Recipients	Architecture cycle stakeholders, general management and business architects, application architects, CIOs.
Aim	To define the goals/objectives that will guide the changes that are to be made to the enterprise and IS. To quantify objectives and allocate them. To provide a rational basis for the assignment of priority levels to goals/objectives.
Useful preliminary information	Previously identified goals, enterprise drivers, SWOT analyses, earlier marketing studies.

Enterprise architecture example design artefacts

- Requirements diagram

Name	Requirements analysis diagram; requirements catalog.
Experts	Business experts, business managers, application architects.
Designers	Business analysts, application architects (non-functional requirements).
Recipients	Business architects, application architects, software designers.
Aim	To define the specifications for evolutions to the business architecture and the IS. To translate goals into detailed requirements on enterprise architecture components. Define benefits, costs, risks.
Useful preliminary information	Goals of the enterprise, business architecture, application mapping.

Enterprise architecture example design artefacts

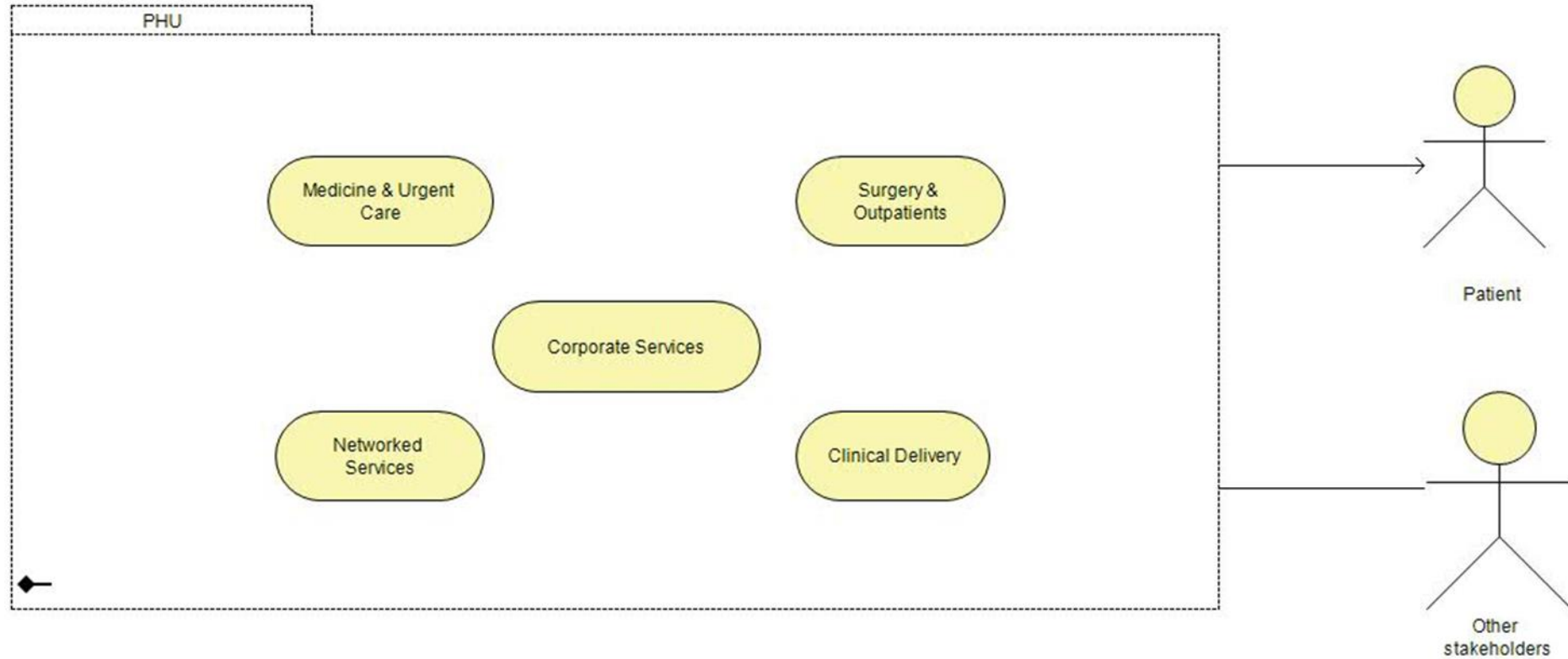
- Requirements diagram

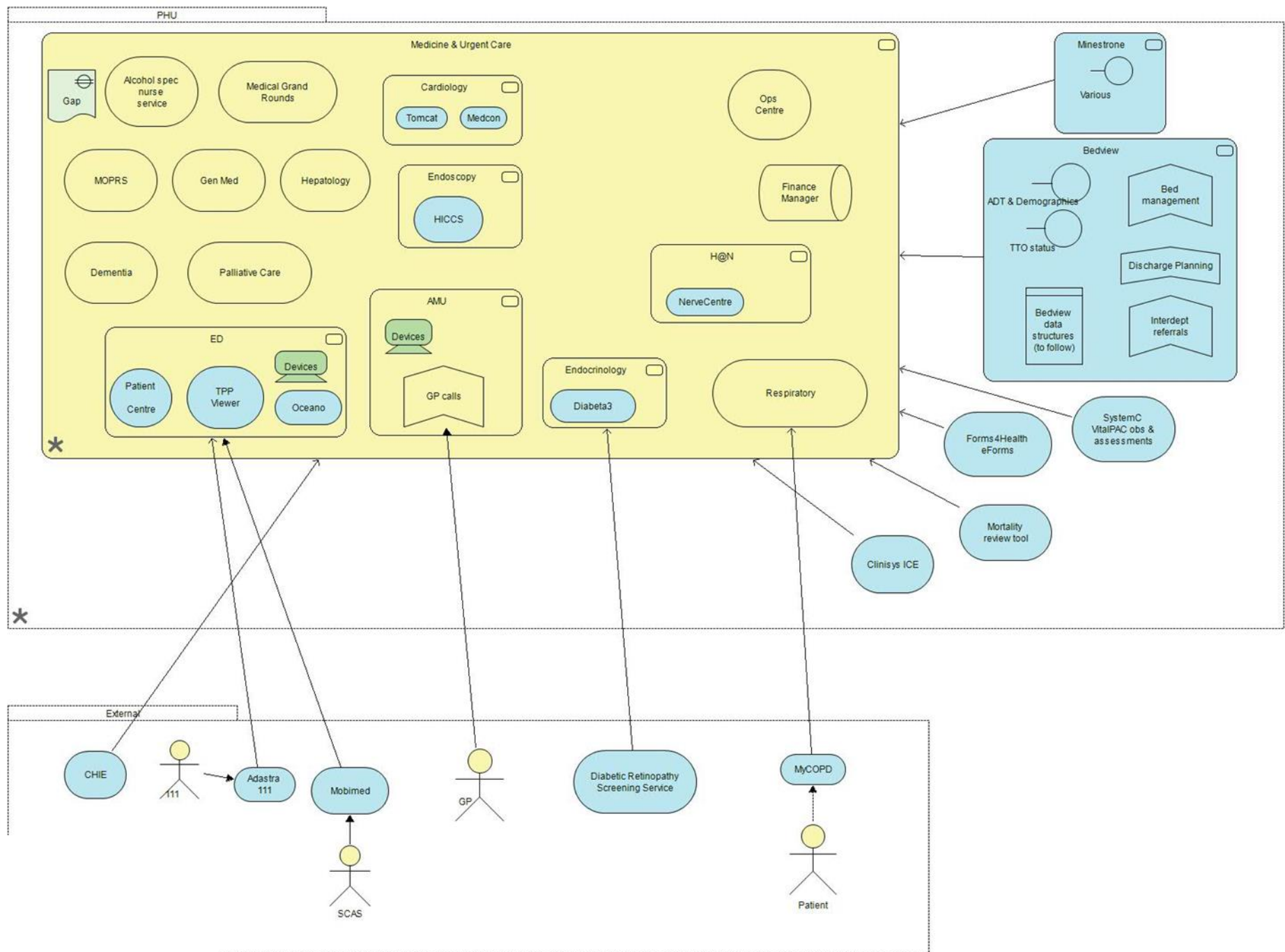
Criteria	Description
Assignable	This requirement can be assigned to a component of the system, where it can be implemented
Attainable	The requirement is technically feasible, in the context of budgetary and time constraints
Complete	All known requirements are documented and all the conditions under which the requirement applies are identical. Requirements must contain the information necessary to design a solution and to check that a solution satisfies them
Consistent	A requirement must be able to be satisfied without coming into conflict with another requirement
Correct	A requirement must precisely describe the expected function or condition. Only the initiator of the requirement (client, user, stakeholder) can judge this
Not solution-oriented	The requirement must be expressed in such a way as to leave the widest possible range of implementation options
Measurable and testable	Requirements must be designed to check whether or not the solution satisfies them
Necessary	A necessary requirement is a requirement that is essential to the satisfaction of business goals. Requirements must be traced to goals to check their necessity
Ranked	A priority is assigned to each functional requirement in order to indicate whether or not it is essential for a particular version of the system. These priority levels are used to make choices with regard to budgetary constraints
Traced	The source of the requirement must be known: a person, a business rule, a use case, and so on. Requirements must have a unique identifier
Not ambiguous	All readers must interpret the requirement in the same way. It is preferable to use simple, concise terms when writing requirements. The use of terms featuring in a previously defined business glossary helps ensure that requirements are not ambiguous
Understandable	Solution designers must be able to easily understand requirements

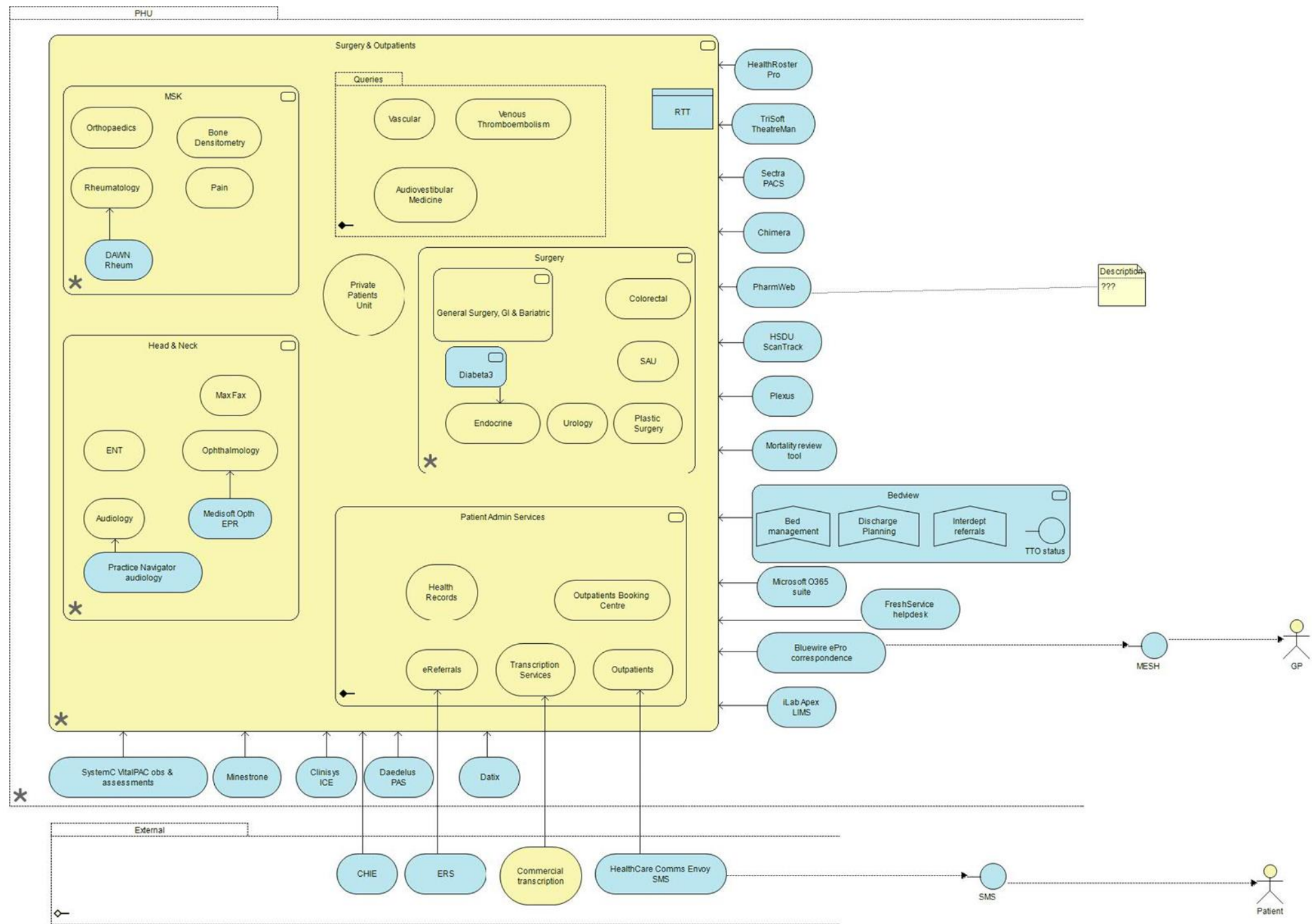
BABOK guide to good requirements specification



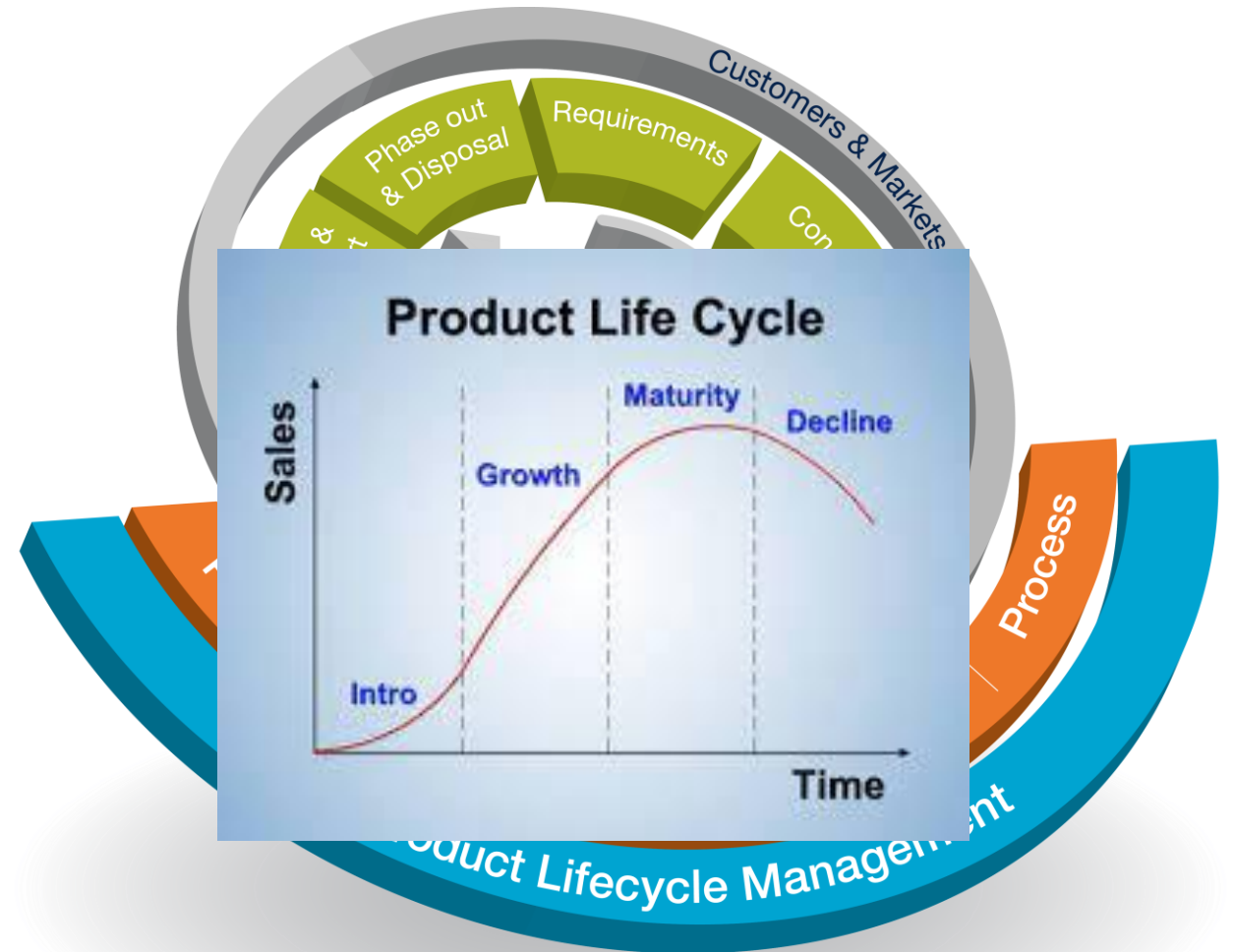
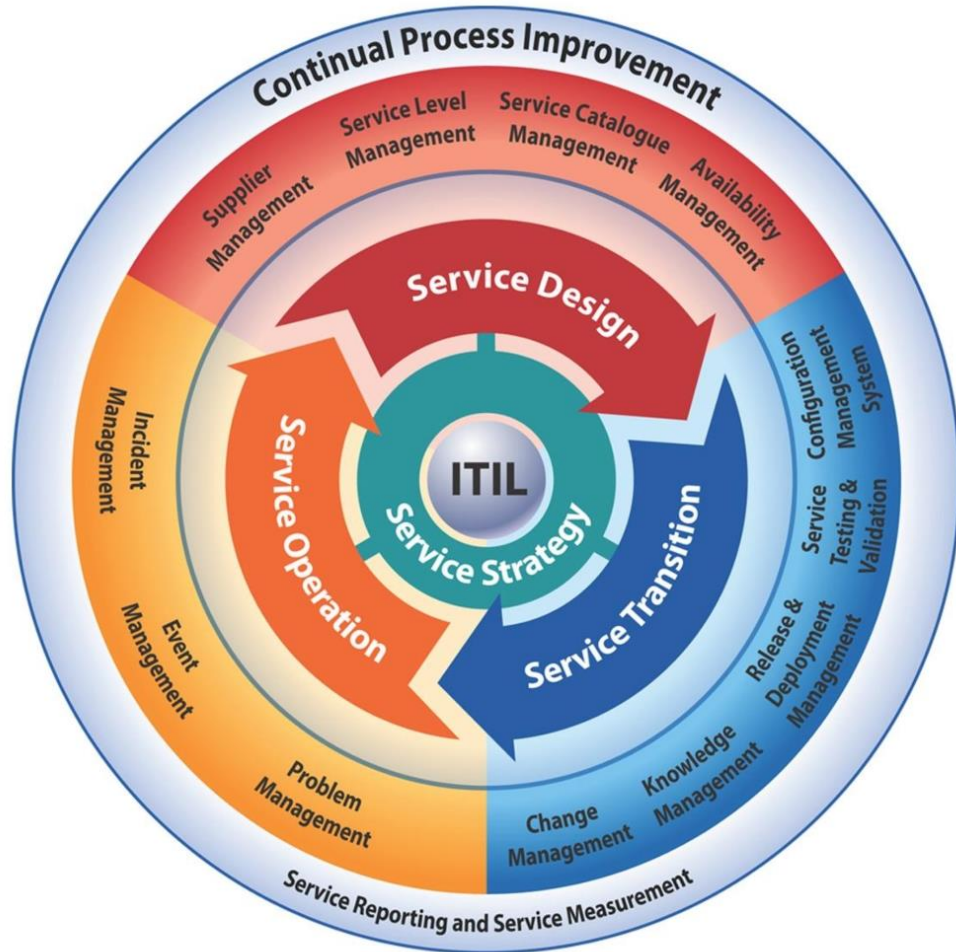
Enterprise architecture example views







Lifecycles: service versus product



Digital transformation success



Process



Products



Partners



People

Implementation Theory



Lecture learning outcomes

- Explain the relative risks and benefits of options for acquisition strategy for digital products.
- Outline the key steps in an IT procurement.
- Evaluate the role of standards in product selection.
- Describe the purpose of enterprise architecture.

Group discussion and feedback

- Does your digital transformation strategy define an approach to standards and enterprise architecture?
- How visible and comprehensive is your organisation's enterprise architecture?
- Does your organisation have a strategy to deal with product obsolescence, vendor acquisition and technology refresh?

Remaining weeks of this module

- Asynchronous learning activities for next 2 weeks.
- Final interactive session on 25 May to be delivered by Dr Ed Conley based on jointly prepared lecture slides.