

Enterprise Architecture Principles			IT Strategy Themes				
Principle		Rationale	Advancing the University	Effective Information Stewardship	University Operational Excellence	IT Functional Excellence	IT Complexity Reduction
Business							
BUS1	Innovation Innovate for competitive advantage through differentiation and productivity	Helps realise competitive advantage and drives improvements in efficiency and productivity.	✓				
BUS2	Priority Prioritize satisfying business needs over all other considerations.	Architecture gives most benefit when closely aligned with business strategy and goals	✓		✓		
BUS3	Agility Promote business agility and adaptability.	Empowers the business to adapt to changing business environment.	✓		✓		
BUS4	Value Maximize the value of information assets and optimize their return on investment (ROI).	Organizing and managing the key information assets of the University drives the business processes needed to run the enterprise	✓		✓		
Information							
INF1	Accountability Ensure that all information assets have an identified business owner who is accountable to the University and track and record all actions and events that lead to access or changes in information.	Those with the most knowledge of the data are best placed to make rational and coherent decisions. It is imperative to track all changes and access in order to enforce non-repudiation of actions.		✓	✓		
INF2	Availability Deliver information where and when needed, via multiple channels, to maximize its value as an asset, while ensuring that Confidentiality is enforced.	University business should not be limited or constrained by lack of available information wherever and whenever needed..		✓	✓		
INF3	Confidentiality Prevent unwanted access to information, limiting Availability to those with legitimate rights. Protect it in transit, at rest and in storage.	The University must respect the law, fulfill contractual obligations and protect the value of its information assets.		✓	✓		
INF4	Dependability Ensure consistency and predictability using appropriate constraints and controls.	Consistency and predictability reduce risks, lower costs and help increase the value of information assets.		✓	✓		
INF5	Information Life Cycle Take full account of the time dimension of information based on the standard Information Management Life Cycle.	Information must be actively managed throughout its life cycle and securely and efficiently disposed of at end of life.		✓	✓		
INF6	Integrity Prevent or detect and repair unwanted changes to information.	Data quality is a major factor in preserving and enhancing the business value of information assets.		✓	✓		

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Application							
APP1	Coherence Ensure services are coherent and comprehensible in their own right. Restrict the scope of a service to a distinct and well-defined function or problem.	Easy to understand services are easy to combine, use and get value from.				✓	✓
APP2	Hiding Hide the internal details of services from consumers to avoid creating dependencies on internal structures and logic that may change. Handle errors and exceptions where they occur to prevent 'cascading errors syndrome'.	Keeping the internal structures and logic of services private from consumers of the services frees them to use and combined services in the way that best suits the business of the University.				✓	
APP3	Interoperability Maximize interoperability by using common standards and mechanisms for the exposure and use of services.	Enables systems and services to communicate and work together for greater synergy and efficiency.				✓	✓
APP4	Plug and Play Implement new services by assembling available services, components and resources in preference to writing new code.	Next generation application development is based on assembling building block components and services rather than bespoke software development. This increases speed of delivery, flexibility and reliability.				✓	✓
APP5	System Life Cycle Plan and manage application services throughout their entire life-cycle, including the 'end of life' phase.	Applications and services should be actively managed throughout their life cycle to extract maximum benefit for lowest cost.				✓	
APP6	Reuse Maximize reuse by designing services that are useful to the largest possible number of consumers.	Reusing existing services and systems reduces the work required to implement new ones.				✓	✓
Technology							
TEC1	Capacity Planning Use capacity planning to optimize the sizing of infrastructure and ensure there is enough headroom for planned growth.	Oversized infrastructure wastes money and increases energy consumption.				✓	✓
TEC2	Green Reduce power consumption, heat and carbon footprint where possible. Get carbon accounts from suppliers and work to reduce.	Reduces immediate and consequential costs.				✓	
TEC3	Monitor Deploy automatic monitoring tools that cover application and data services as well as the underlying infrastructure.	Real-time monitoring allows immediate action to resolve failures and incidents with minimal cost and disruption to the business.				✓	
TEC4	Rationalize Minimize redundancy and reduce duplication.	Helps reduce complexity and promotes greater efficiency.				✓	✓

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TEC5	Simplify Reduce complexity for greater flexibility and lower cost.	Lowers costs through economies of scale and reduces overhead of managing complexity.				✓	✓
TEC6	Standardize Adopt and enforce standards to improve operability and achieve economies of scale.	Standardization helps achieve economies of scale, reduces complexity and improves flexibility				✓	✓
TEC7	Tiering Adopt a tiered infrastructure for greater security, resilience and efficiency.	Separation of concerns between infrastructure tiers improves security and allows greater efficiency and flexibility.				✓	
TEC8	Virtualize Reduce dependency on hardware and promote flexibility, agility and sharing of resources through virtualization.	Virtualization promotes flexibility, allows more efficient use of hardware resources and reduces energy consumption				✓	✓

IT Strategy Drivers

These are the strategic themes from the IT Strategy, modelled as ‘drivers’ in the diagram.

Advancing the University	Deliver game-changing advances in technology support for academic research, learning and teaching, and providing a distinctive student experience.
Effective Information Stewardship	Focus on capturing, storing and providing effective and secure access to a wide range of information sets.
IT Complexity Reduction	Reduce complexity across the University including business, application and technology layers.
IT Functional Excellence	Strive for excellence in all IT capabilities including service management, staff skills base, development and networking, effective IT procurement, diverse funding sourcing, and selective introduction of internal charging.
University Operational Excellence	Improve how departments and functions operate across the University, including as facilitators to Sustainable Excellence improvements. This driver focuses on underlying step-change enhancements, carbon reduction initiatives and staff skills developments

Goals

There are a number of specific goals that arise from the strategy drivers.

Business Agility	Maximise business agility including the ability to work from almost anywhere and have information and functionality delivered where and when needed.
Competitive Advantage	Achieve competitive advantage through optimal application services implemented using optimal technology investment.
Information Security Goals	Specific Goals for Information Security.
ISO 27001	Formal ISO certification for defined units, combined with general compliance for the University as a whole.

Maximum Business Value of Information	Seek to maximise the business value of the University's information.
Maximum Return on IT Investment	Achieve the highest possible ROI on investment in information assets subject to security and good information management constraints.
Minimum Information Risk	Minimum information risk consistent with achieving the University's other objectives.
NHS IG Toolkit	Compliance and certification under NHS Information Governance.
Operational Efficiency	High operational efficiency and productivity through optimal automation with services perfectly suited to business needs.
Reduce Carbon Footprint	Reduce the carbon account of the University and suppliers.
User Engagement	Engage the users through social networking, gmaification etc.

Glossary

ROI	Return on Investment.
ISO	International Standards Organisation.

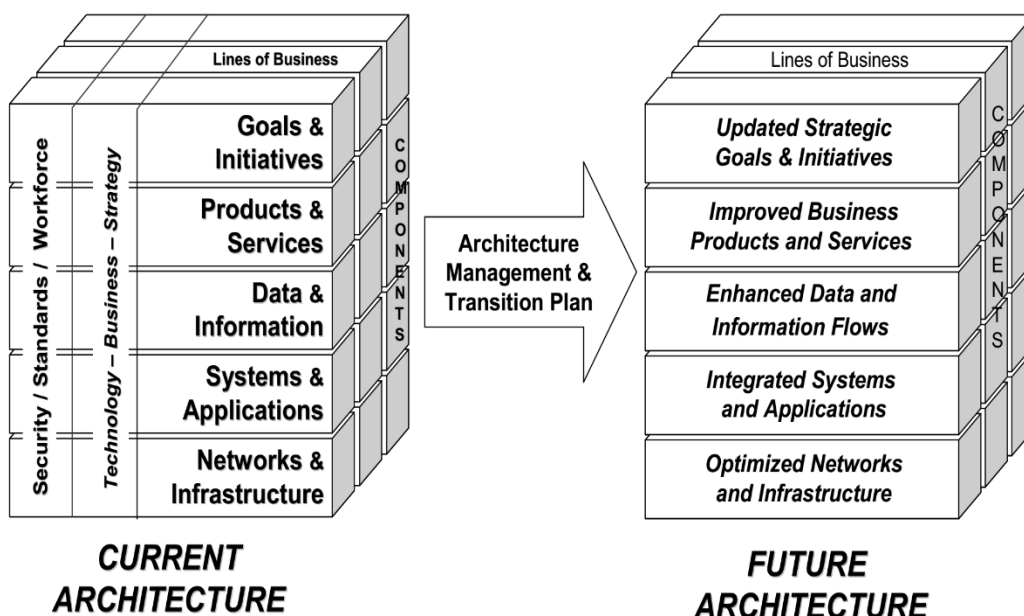


EA Theory and Practice / EA Basic Concepts

The Concept of Enterprise Architecture - Defined

Enterprise Architecture: The analysis and documentation of an enterprise in its current and future states from a strategy, business, and technology perspective. **$EA = (S + B + T)G$**

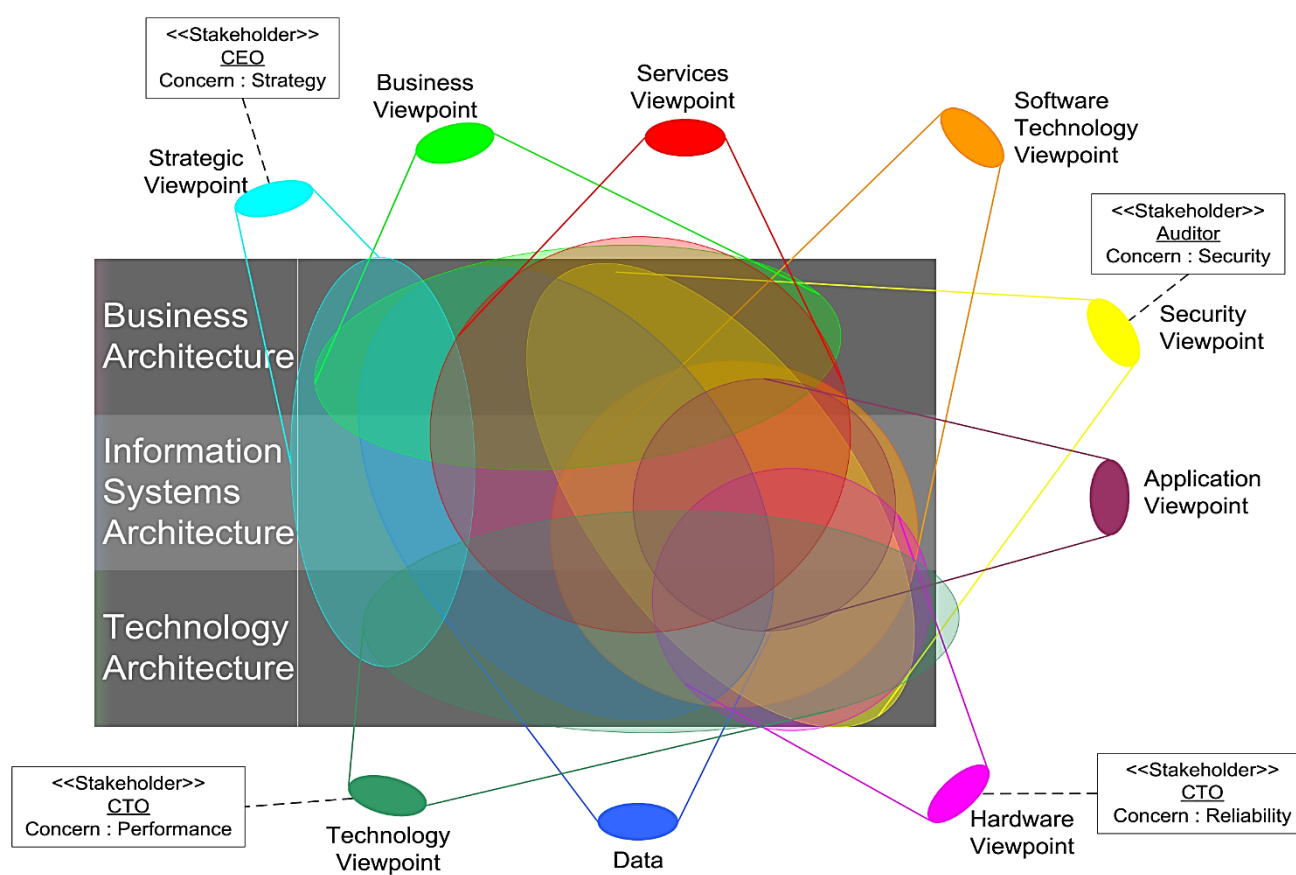
An Introduction to Enterprise Architecture © 2005



Rational System Architect tool

- ▶ A **repository** based enterprise modeling capability
- ▶ collaborative **capture & modeling*** of the enterprise architecture
- ▶ **Imports** assets & **exports** share EA information for re-use and publication
- ▶ Support **frameworks** & reference models out-of-the box
- ▶ Supports architectures of :
 - enterprise strategy & initiatives
 - business processes, organization (dept/people)
 - information flows
 - Applications
 - Data, hardware, network & infrastructure elements
 - ... and their interdependencies
- ▶ SA's modeling capability spans the enterprise, from high level enterprise strategy to supporting infrastructure and everything in between.
- ▶ Produce **Meaningful Views, impact analysis reports** -Gain **Valuable Insight**

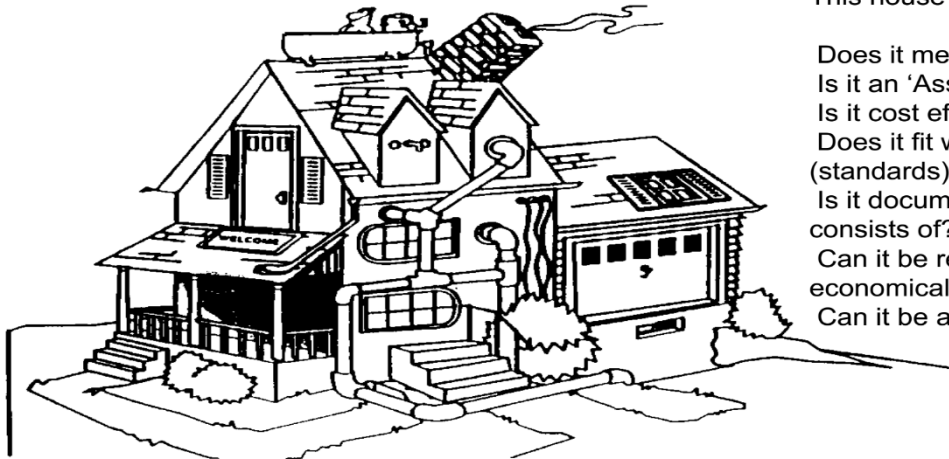
Multiple views to all the Stakeholders





Winchester House Syndrome

Yesterday's management approaches are not working in today's complex and fast-paced environment.

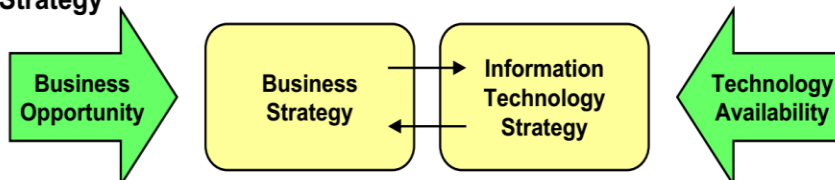


This house may function, but...

- Does it meet business objectives?
- Is it an 'Asset Junkyard'?
- Is it cost effective?
- Does it fit with the community (standards)?
- Is it documented - who knows what it consists of?
- Can it be repaired easily or economically?
- Can it be adapted to changing needs?

'If you don't know where you're going, any road will get you there.'
Lewis Carroll

Strategy



If you do not know where you are, a map will not help.

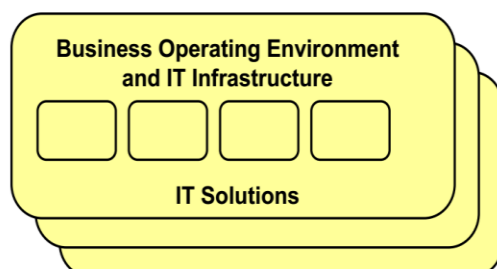


If you do not know where you are going, any road will do.



The Gap

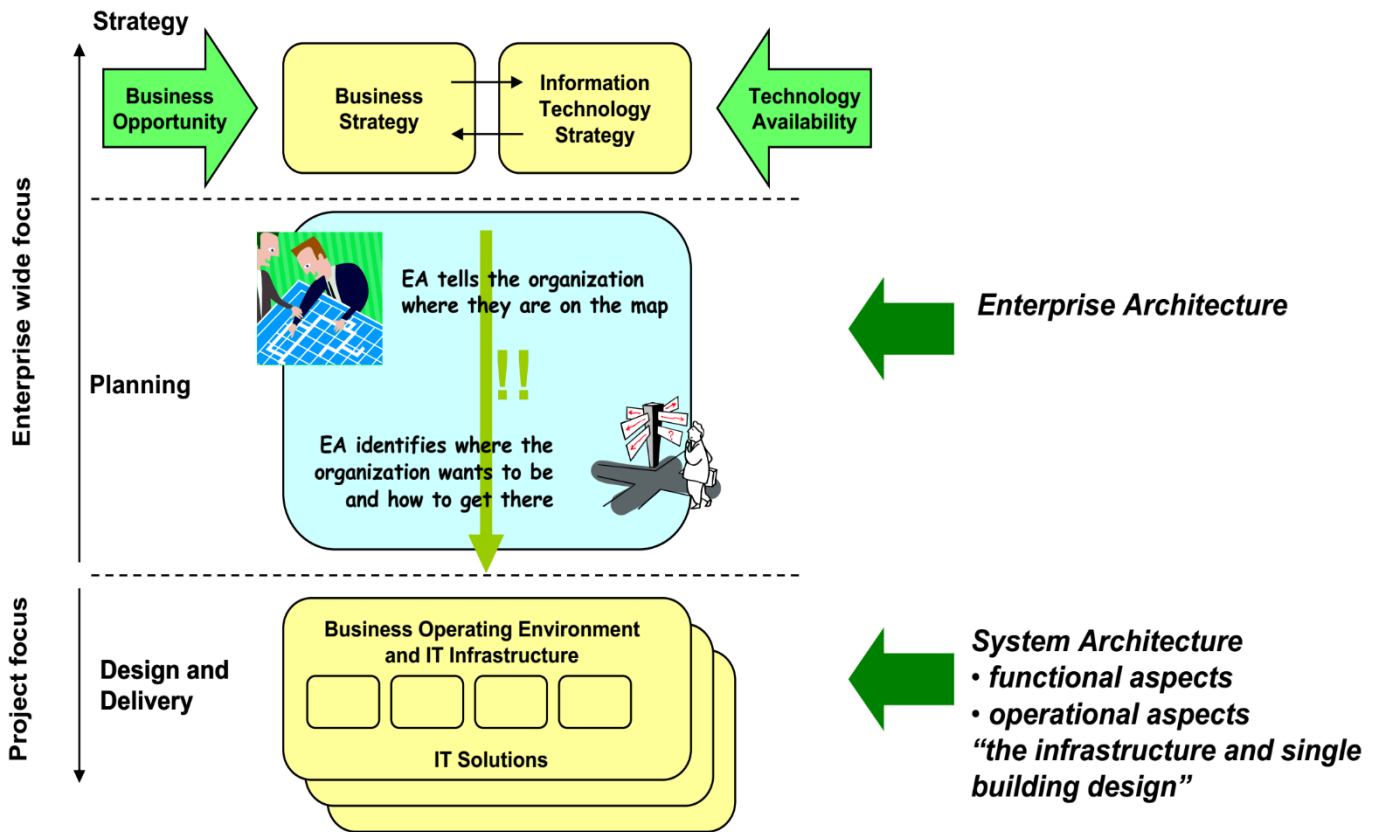
Design and Delivery



System Architecture

- functional aspects
- operational aspects
- "the infrastructure and single building design"*

Enterprise Architecture provides the vital linkages between “strategy” and “implementation”



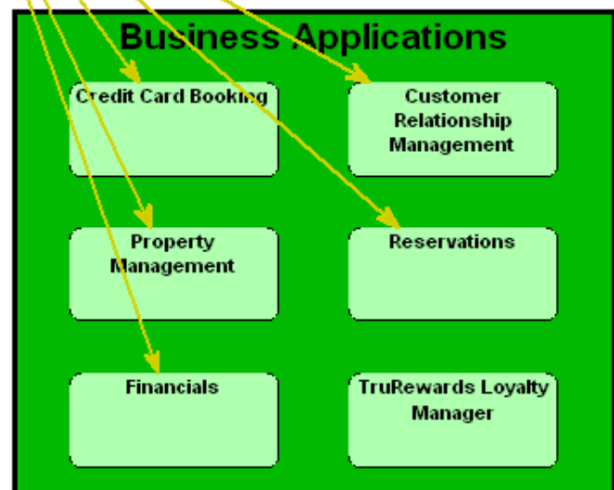
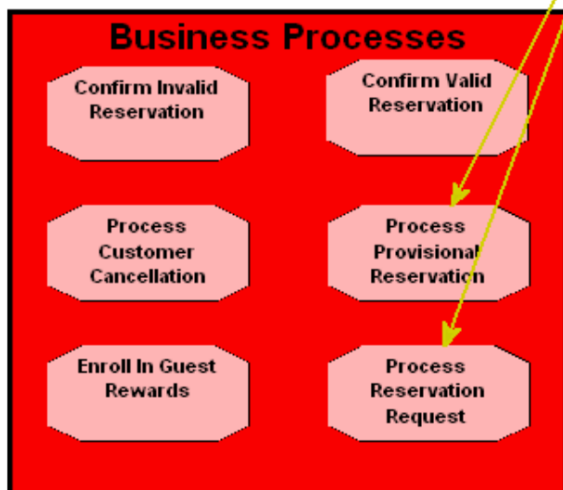
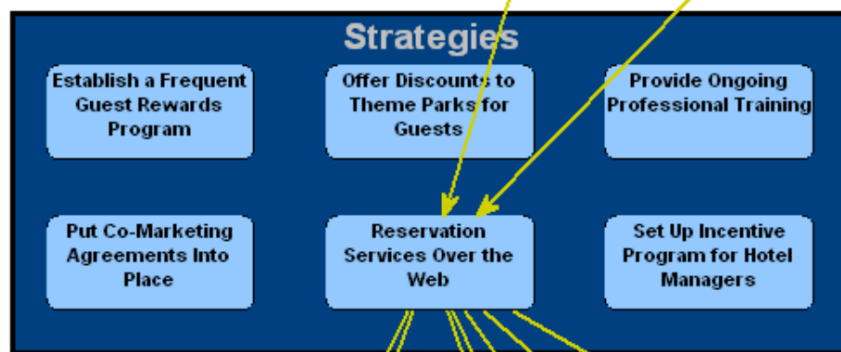
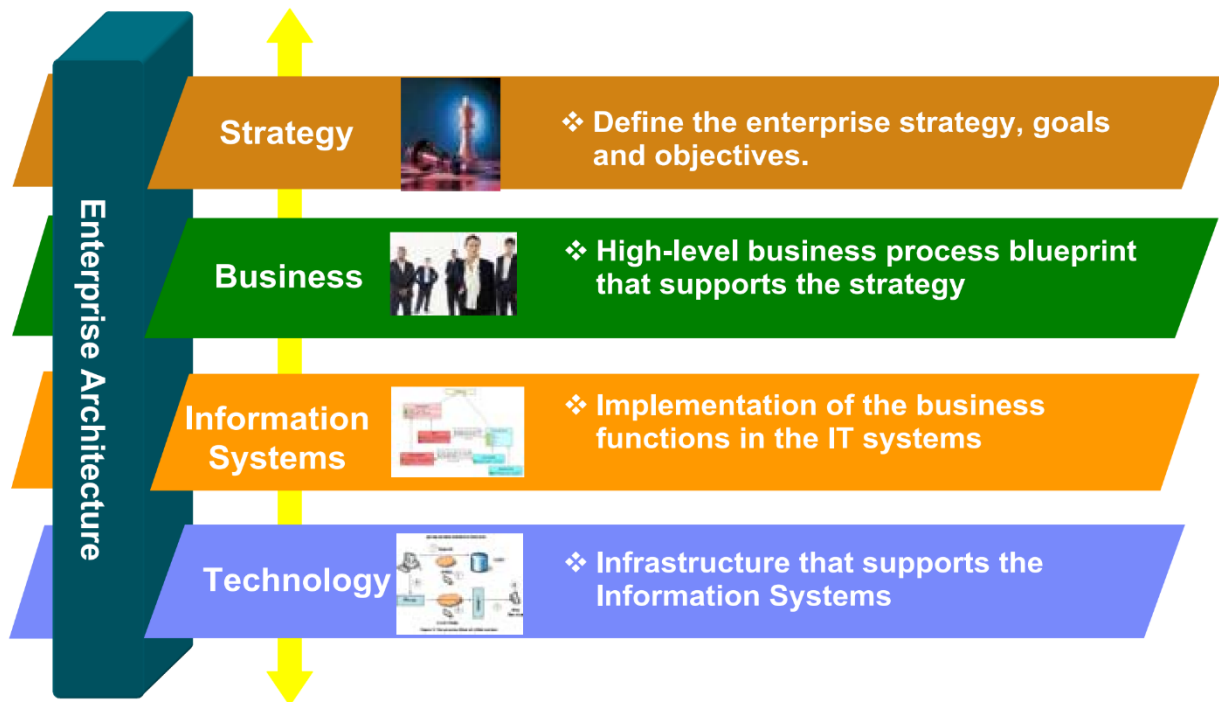
So we recognise two different types of IT Architect...

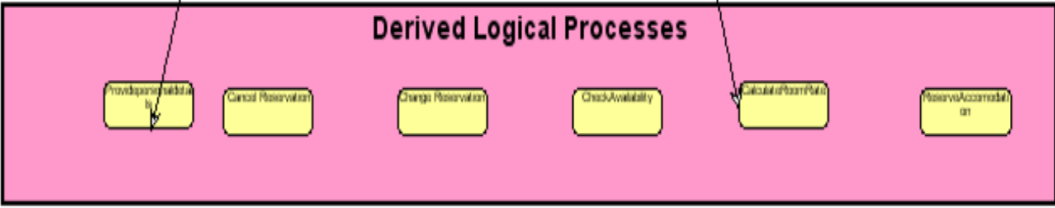
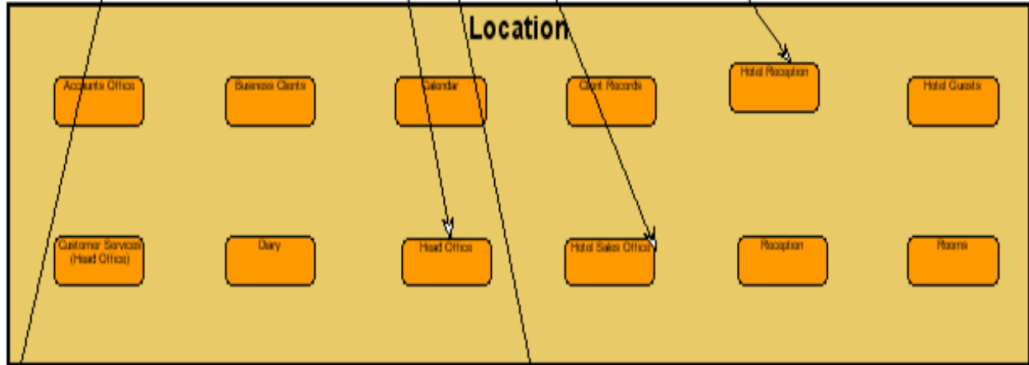
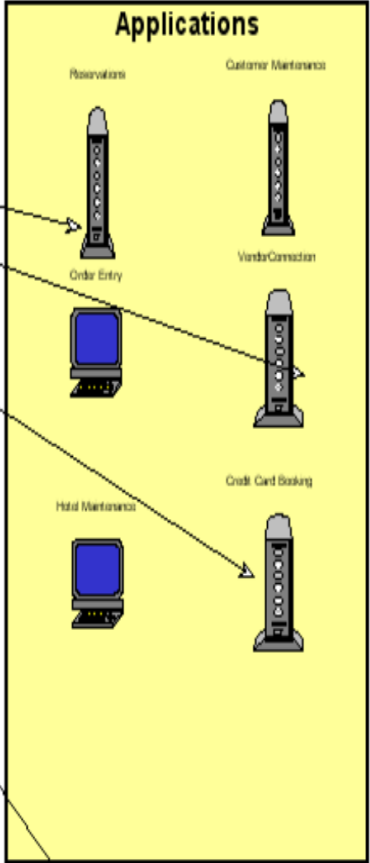
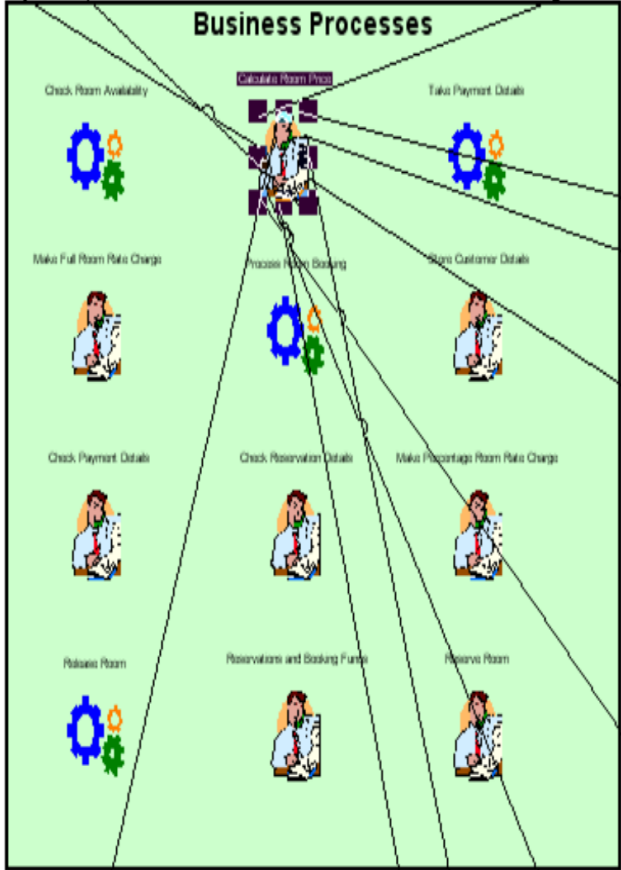
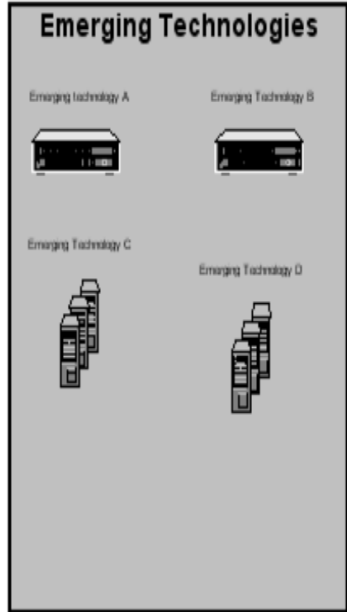
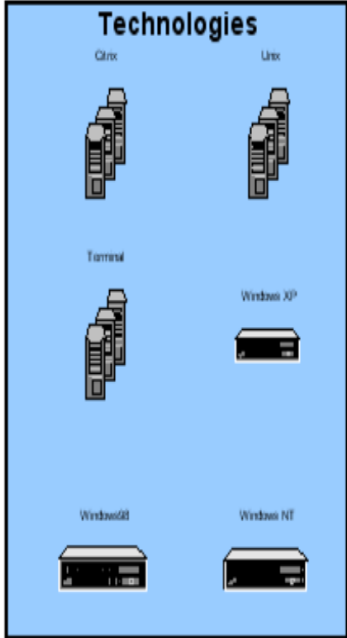
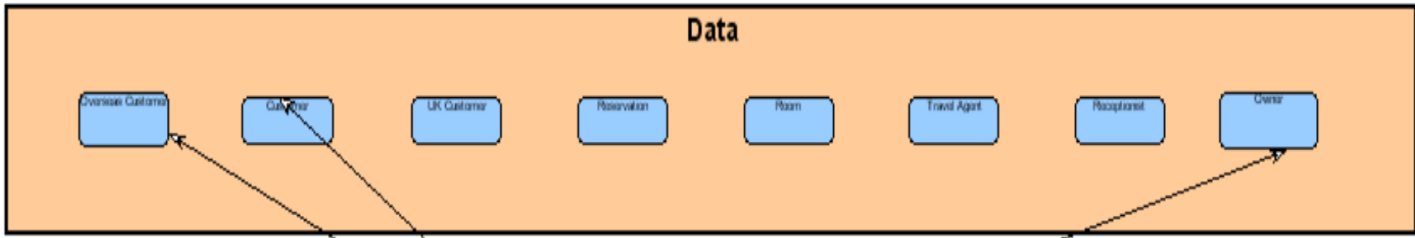
- ...Are responsible for ensuring the design of IT based business solutions meet the functional and non-functional requirements, within the constraints of budget, time, skills and other givens (such as IT Standards)

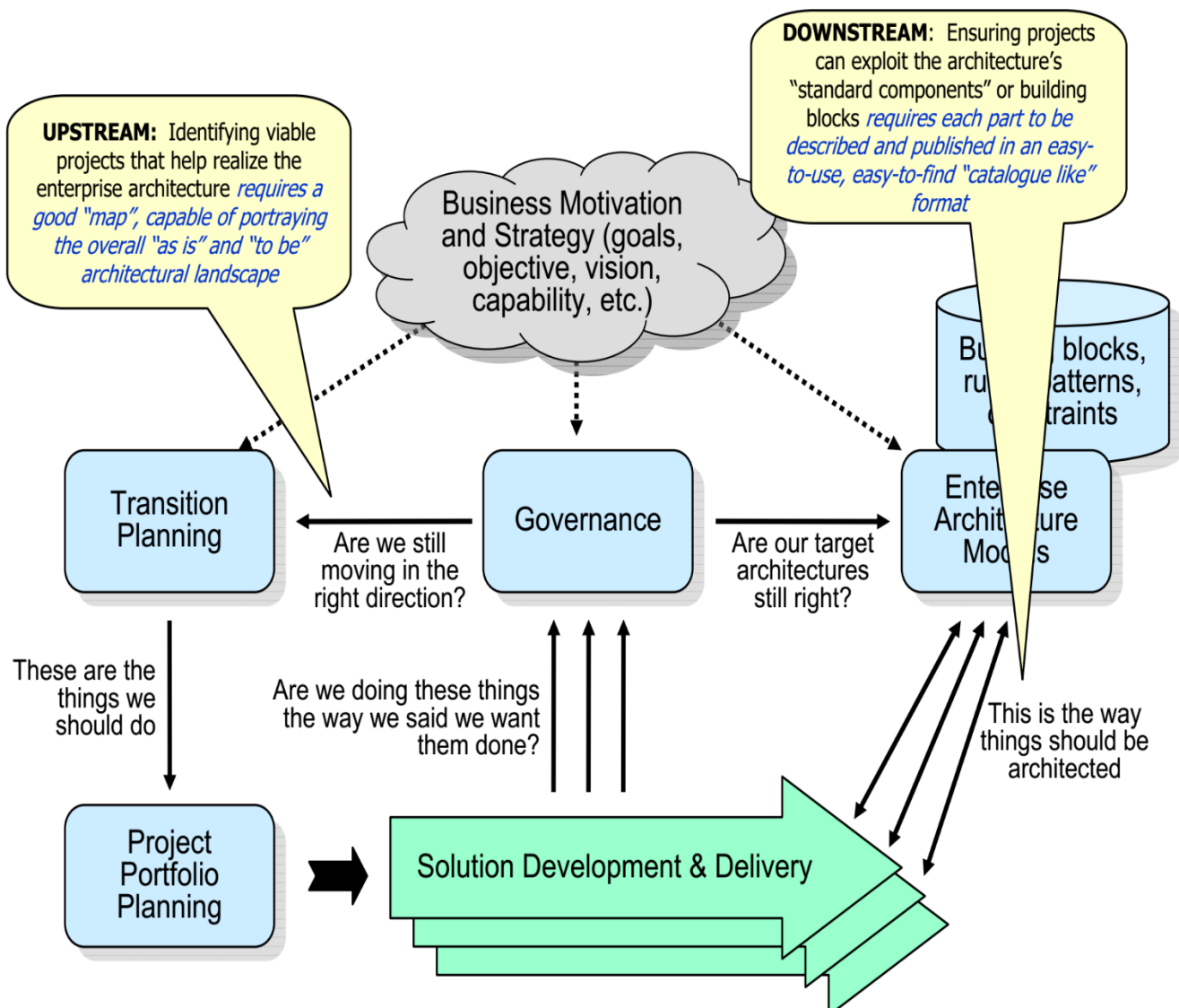
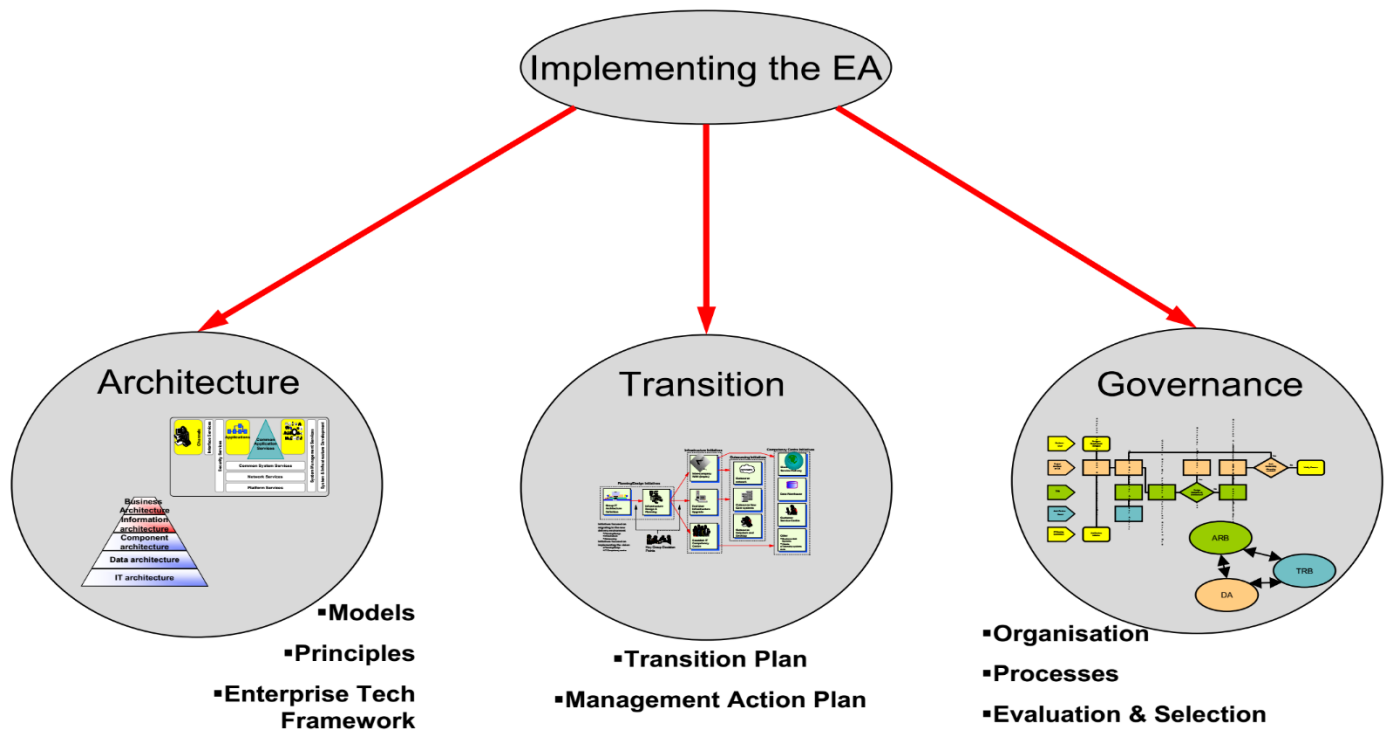
“Solution Architects”

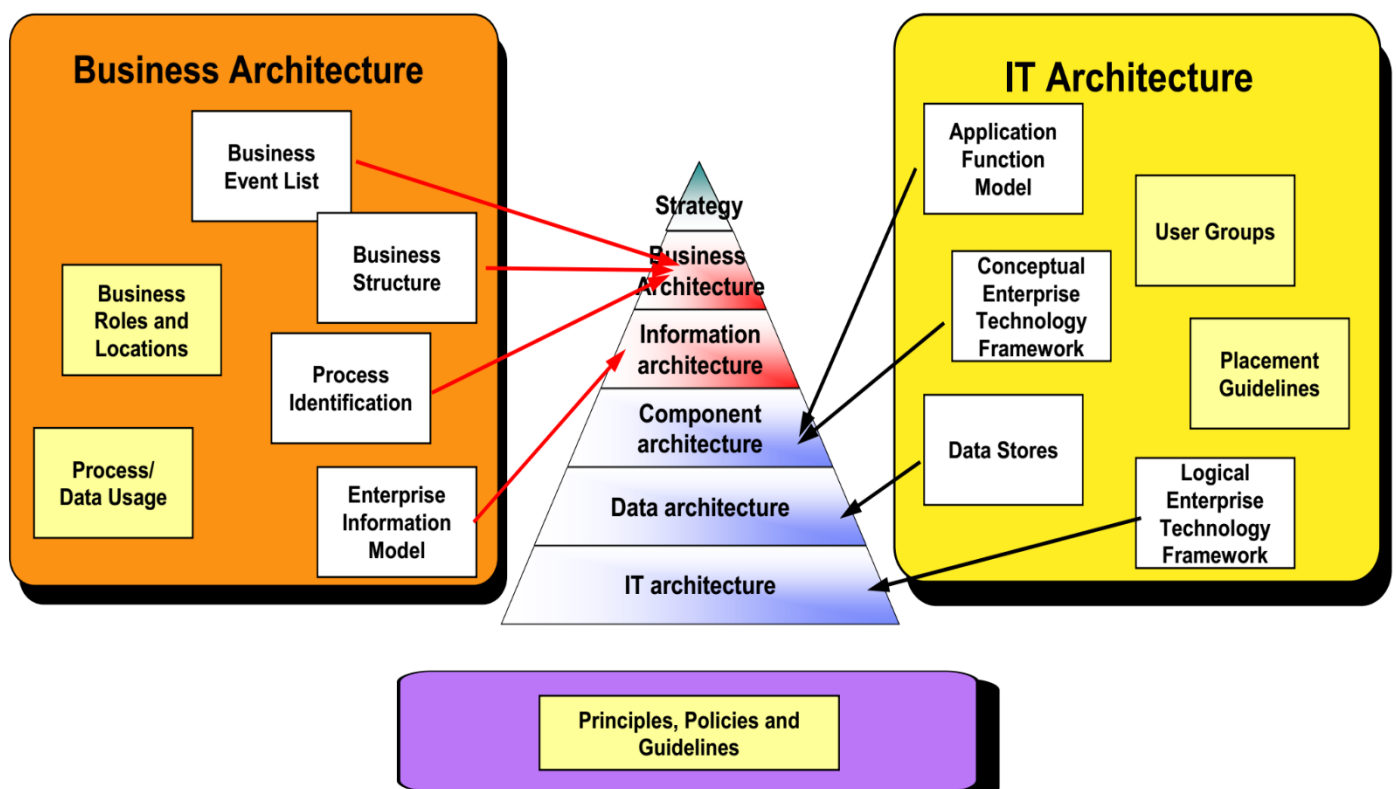
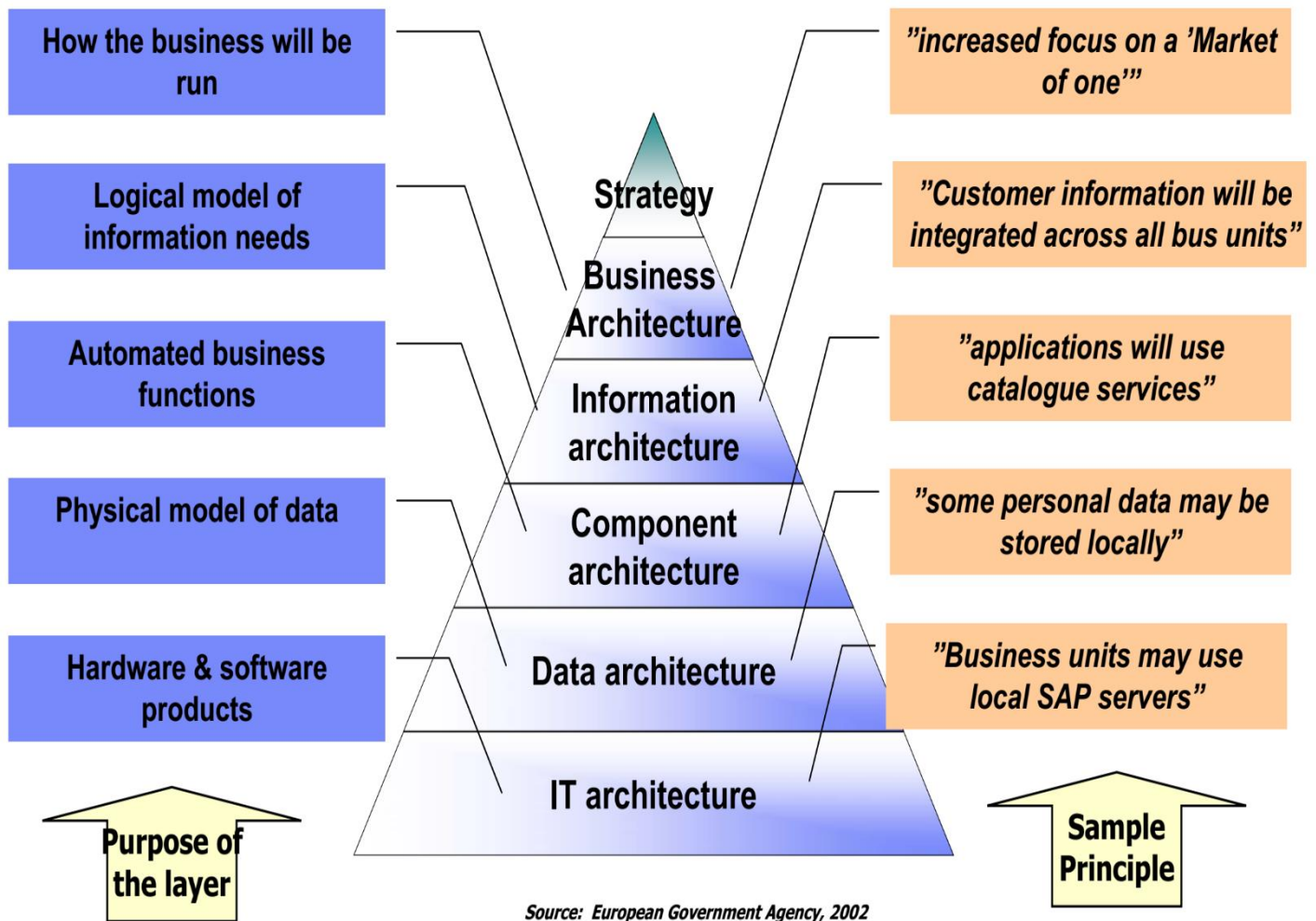
- ...Are responsible for ensuring an IT Organisation approaches the identification, specification and implementation of these IT based business solutions in a co-ordinated and standardised manner, aligned to the Enterprise’s Business and IT Strategies.

“Enterprise Architects”

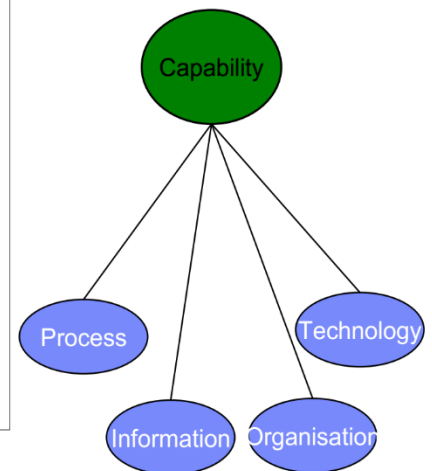
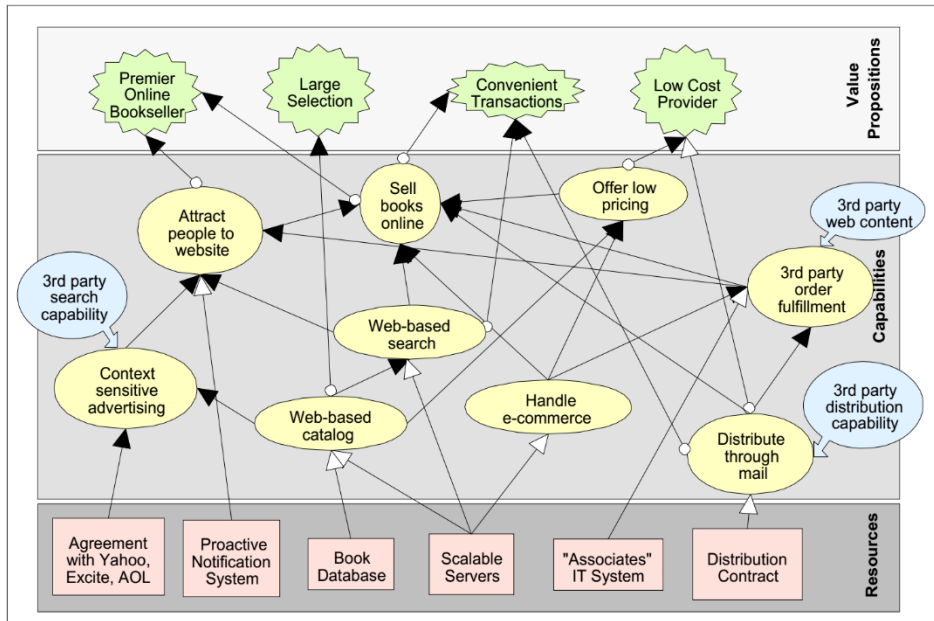








Enterprise Capabilities: Linking Strategy to Architecture (Example Amazon)



A **Business Component** is a part of an enterprise that has the potential to operate autonomously, for example, as a separate company, or as part of another company.

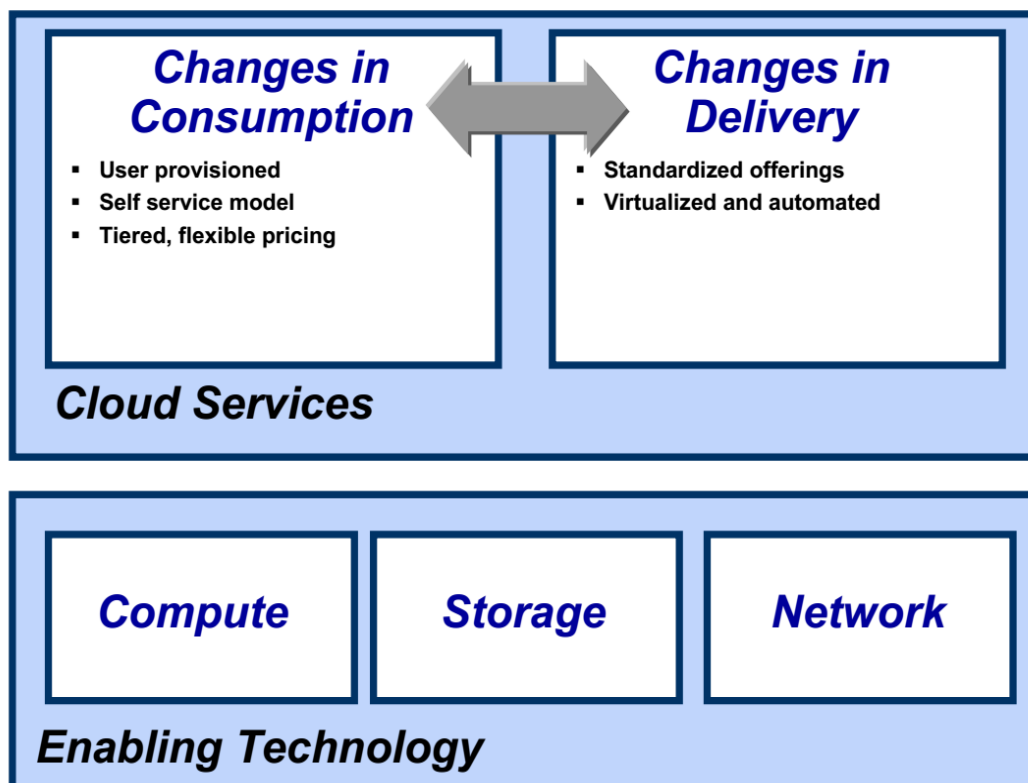
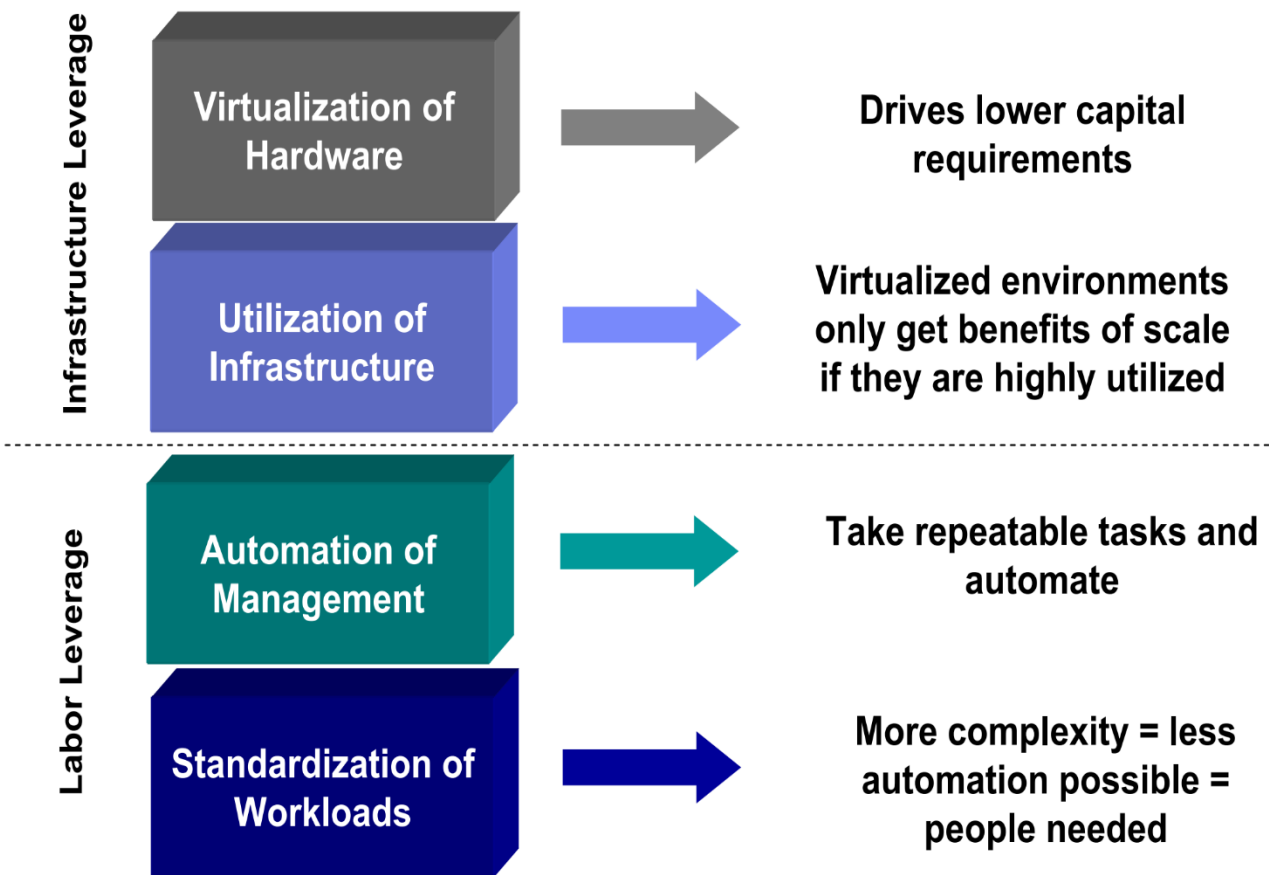
Columns are Business Competencies, defined as large business areas with characteristic skills and capabilities, for example, product development or supply chain.

An **Operational Level** characterizes the scope of decision making. The three levels used in CBM are direct, control and execute.

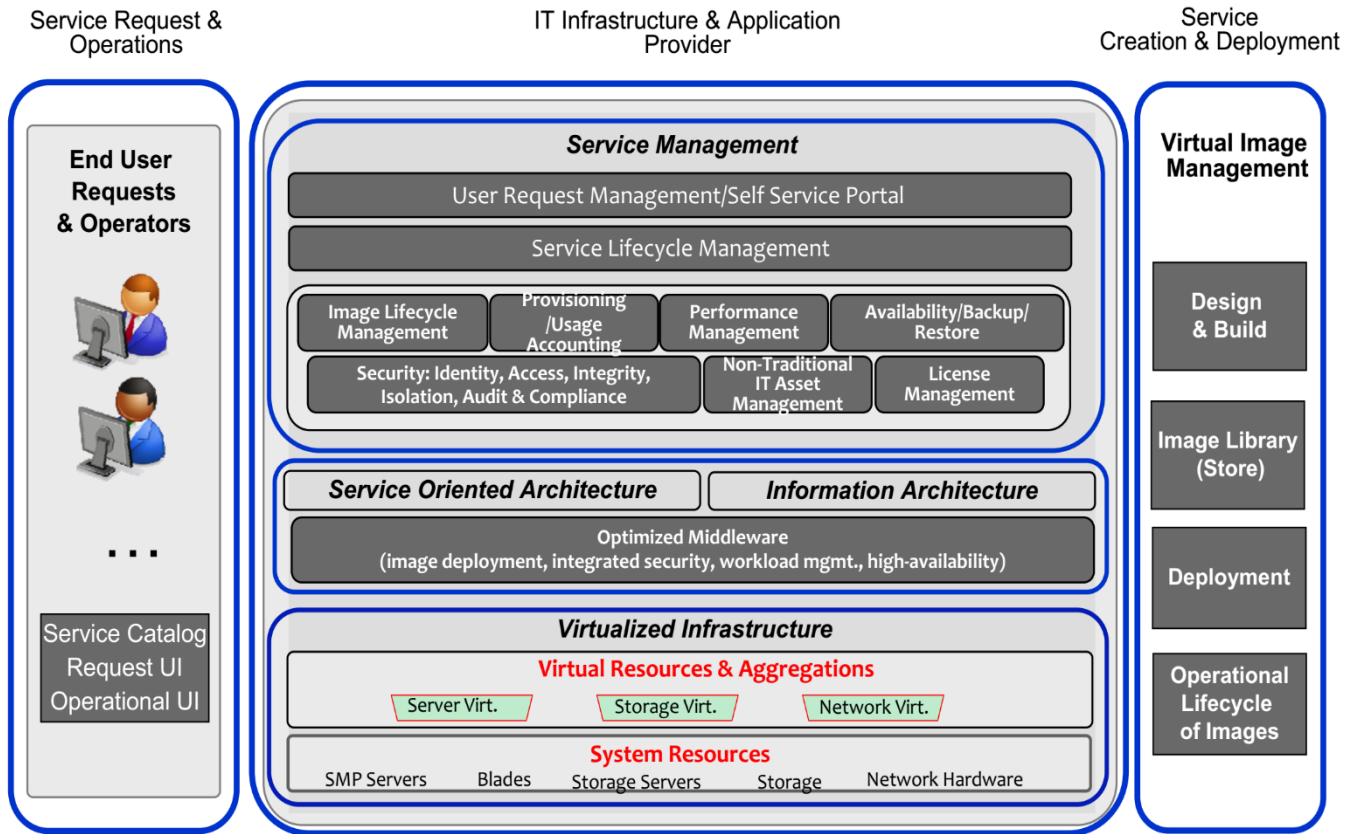
- Direct is about strategy, overall direction and policy.
- Control is about monitoring, managing exceptions and tactical decision making
- Execute is about doing the work

	Business Administration	New Business Development	Relationship Management	Servicing & Sales	Product Fulfillment	Financial Control and Accounting
Direct	Business Planning	Sector Planning	Account Planning	Sales Planning	Fulfillment Planning	Portfolio Planning
Control	Business Unit Tracking	Sector Management	Relationship Management	Sales Management	Fulfillment Planning	Compliance
	Staff Appraisals	Product Management	Credit Assessment			Reconciliation
Execute	Staff Administration	Product Directory	Credit Administration	Sales	Product Fulfillment	Customer Accounts
	Production Administration	Marketing Campaigns		Customer Dialogue	Document Management	General Ledger
				Contact Routing		

Major Factors Driving Cloud-onomics



Architectural Model for Cloud Computing



Cloud Computing Deployments and Services Models

