



Enterprise Architecture as Strategy

**An Enterprise Services Approach
V 6.7**

Kim Horn

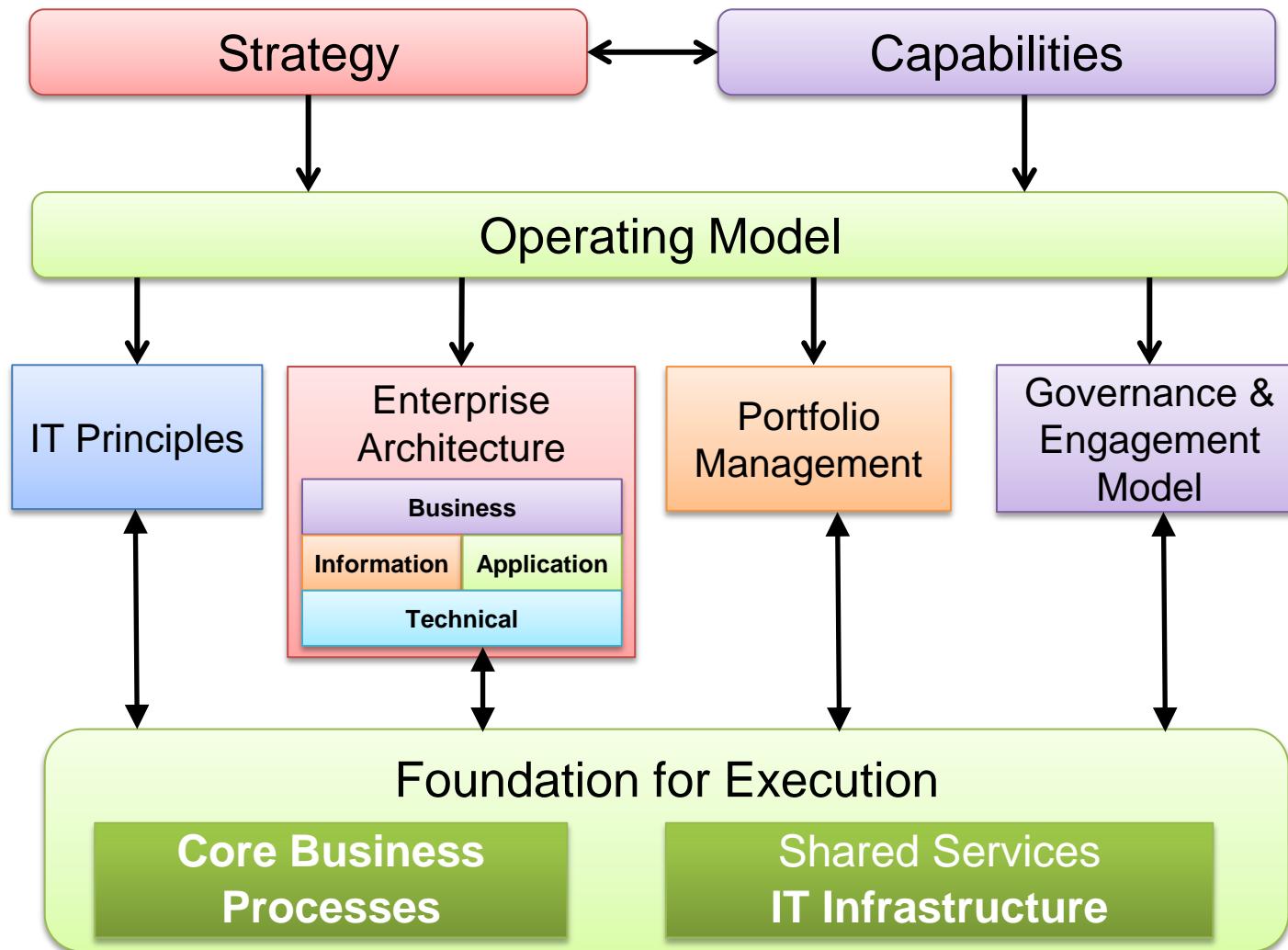


Agenda

- **Intro:** What is Enterprise Architecture (EA) ?
- **Benefits**
- **Four Domains of EA:** Business, Information, Application, Technical
- **Relationship to an Application Architecture**
- **Business Capabilities**
- **Strategy**
- **Operating Model**
- **Engagement Model**
- **The Service Oriented Enterprise and Business Modularity**
- **COBIT and EA**
- **EA Framework Models**
- **Conclusion**



Overview

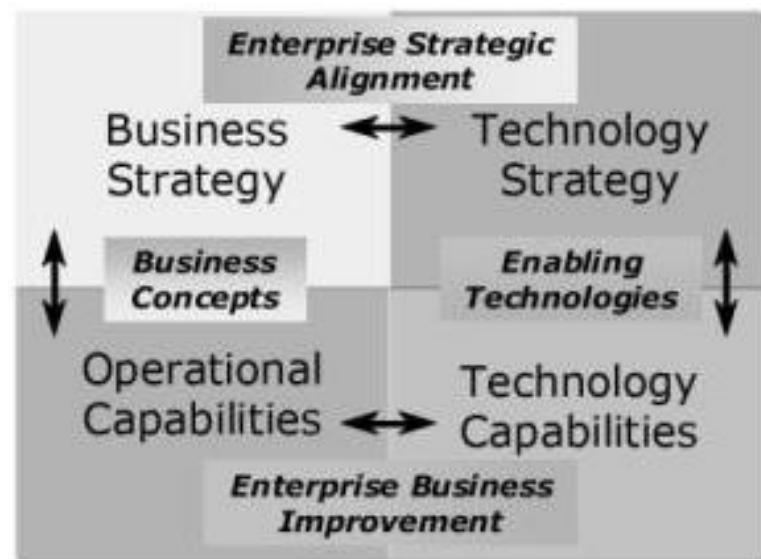




A Definition

Enterprise Architecture is a complete expression of the enterprise; a master plan which "acts as a *collaboration force*" between aspects of business planning such as goals, visions, strategies and governance principles; aspects of business operations such as business terms, organisation structures, processes and data; aspects of automation such as information systems and databases; and the enabling technological infrastructure of the business such as computers, operating systems and networks.

How to Survive in the Jungle of Enterprise Architecture Frameworks:
Creating or Choosing an Enterprise Architecture Framework (Paperback)
by Jaap Schekkerman





Other ‘Good’ Definitions

- Bernard's (2004) definition: "Enterprise Architecture is both a management programme and a documentation method that together provides an actionable, coordinated view of an enterprise's strategic direction, business processes, information flows, and resource utilization" (p. 33).
- Enterprise Architecture is the organizing logic for business processes and IT infrastructure reflecting the ***integration*** and ***standardization*** requirements of the firm's operating model.

MIT Center for Information Systems Research, Peter Weill, Director, as presented at the Sixth e-Business Conference, Barcelona Spain, 27 March 2007 (subsequent slides on Operating Models are from this material)



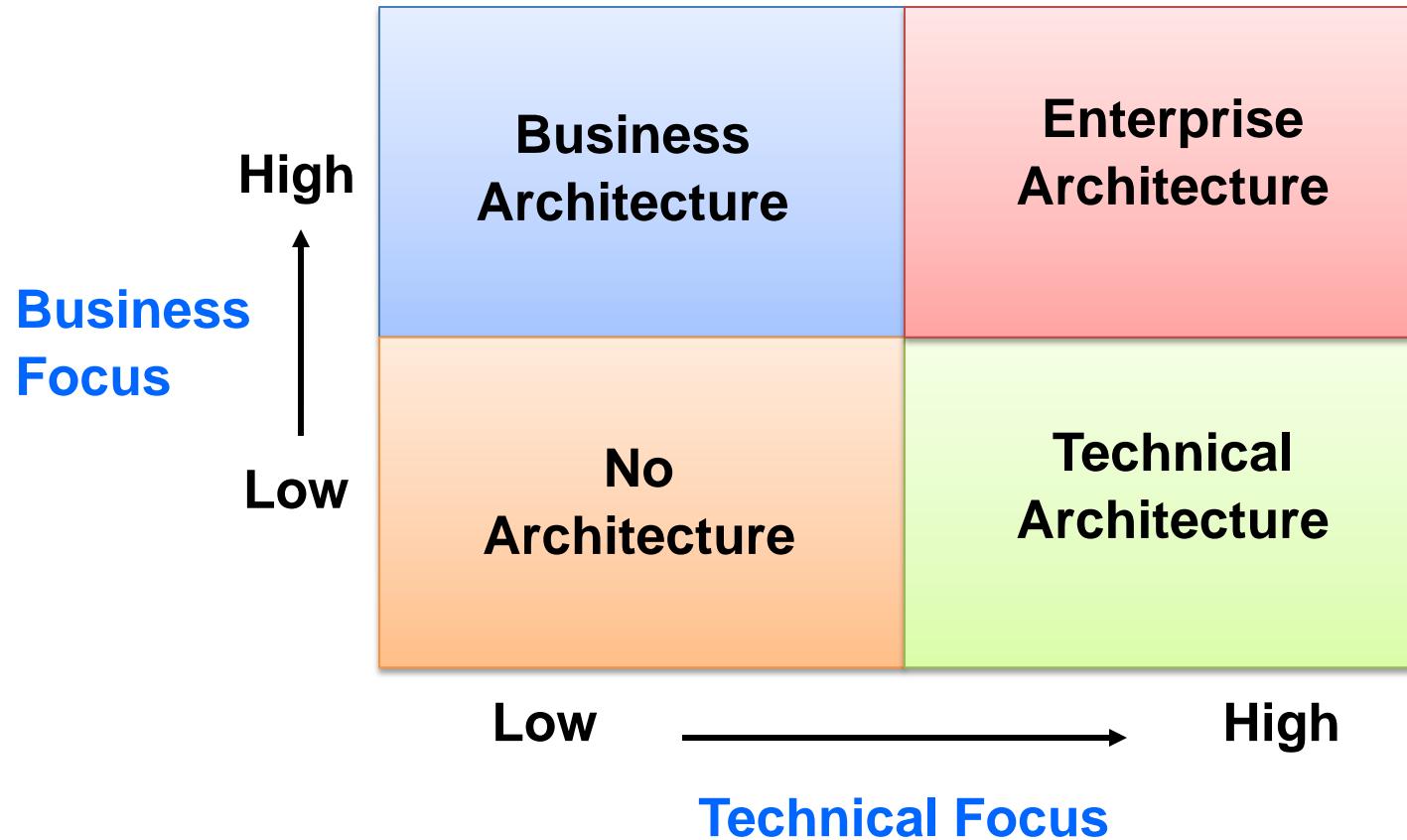
Frameworks and Programmes

An EA describes IT Assets across the Enterprise, how they are related, linking them to business processes and to the firm's strategy and goals. Some terminology:

- The **Practice** of EA makes these structures explicit in abstract architecture descriptions.
- An **EA Programme** can be defined as "dynamically guiding an organisation's IT to support the business thus reaching for a common goal in which business, information, data, and technology are integrated".
- An **EA Framework** defines what the EA programme will document and can thus be viewed as a logical structure for classifying, organising and managing complex information. Common frameworks are Zachman, TOGAF, Bernards's E3 Cube.



What does an Organisation Focus on ?





Benefits of EA ?

Enhances Strategic Business Outcomes by enabling strategic business goals:

- **Strategic Agility:** respond quickly to new market opportunities and competitor initiatives;
- **Product Leadership:** focus on new market products and services; first to market; rapid R&D;
- **Better Operational Excellence:** reduces cost, improves reliability and predictability;
- **Improved Customer Intimacy:** Utilise deep customer knowledge to provide better relationships, service and responsiveness.

Key Benefit: Provides the ability to improve communication and support decision making in a changing business.



Change: Internal Drivers

- Support New Strategy, New markets;
- Mergers and Acquisitions;
- ***Integrate*** processes across Enterprise;
- ***Standardise*** processes across Enterprise;
- Rationalise/Optimise Platforms:
 - Remove low value assets;
 - Remove costly or risky assets;
 - Reduce maintenance, licensing costs;
 - Improve re-use;
- Integrate New Technologies;
- Corporate Values;
- Resources.



Change: External Drivers

- **Market Changes:**
 - New technologies:
 - New Channels, e.g. Social Media, iPhones, FaceBook, etc
 - New Operating Models, e.g. SaaS, Cloud, etc
 - External Events, e.g. Y2K, Natural Disasters.
 - Novel or cheaper competitors;
 - Regulative/Legislative changes, e.g. SOX, HIPPA;
 - Supplier/Partner/Customer change;
- **Applications / Systems reach End Of Life**
 - No more vendor support;
 - New versions of software accepted across market, enterprise, e.g. Microsoft Strategy.



How ?

- One aspect is Portfolio Management.
 - EA provides an inventory of what we have. A portfolio of assets and resources.
 - A portfolio has value:
 - Costs (support, maintenance, licensing, etc)
 - Revenue (now or in future)
 - Risks (financial, operating, downtime, bugs, process errors, etc)
 - Can its value be optimised ?
- The inventory is critical prerequisite for any change.
 - What can we change in the portfolio ?
 - How do we do it ?
 - What is the impact and cost ?
 - Will it fulfil the Business Strategy; are there Gaps ?



How ?

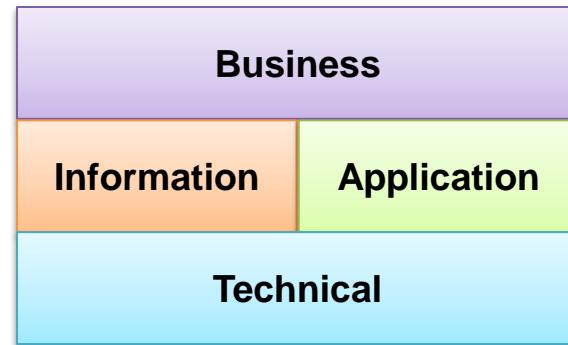
- EA makes explicit, the relationships between business strategy, goals, capability and operations, to IT strategy, capability and resources.
- Documenting the portfolio of assets and their relationships improves communication and provides a firm basis for decision making;
- Gaps in these relationships can be mapped out;
- Business and IT can now be aligned and linked:
 - Possible to trace the impact of strategic and organisational change on the IT systems.
 - Possible to trace the impact of changes to the IT systems on the business.



What is in an EA ?

An EA often includes descriptions of 4 main domains:

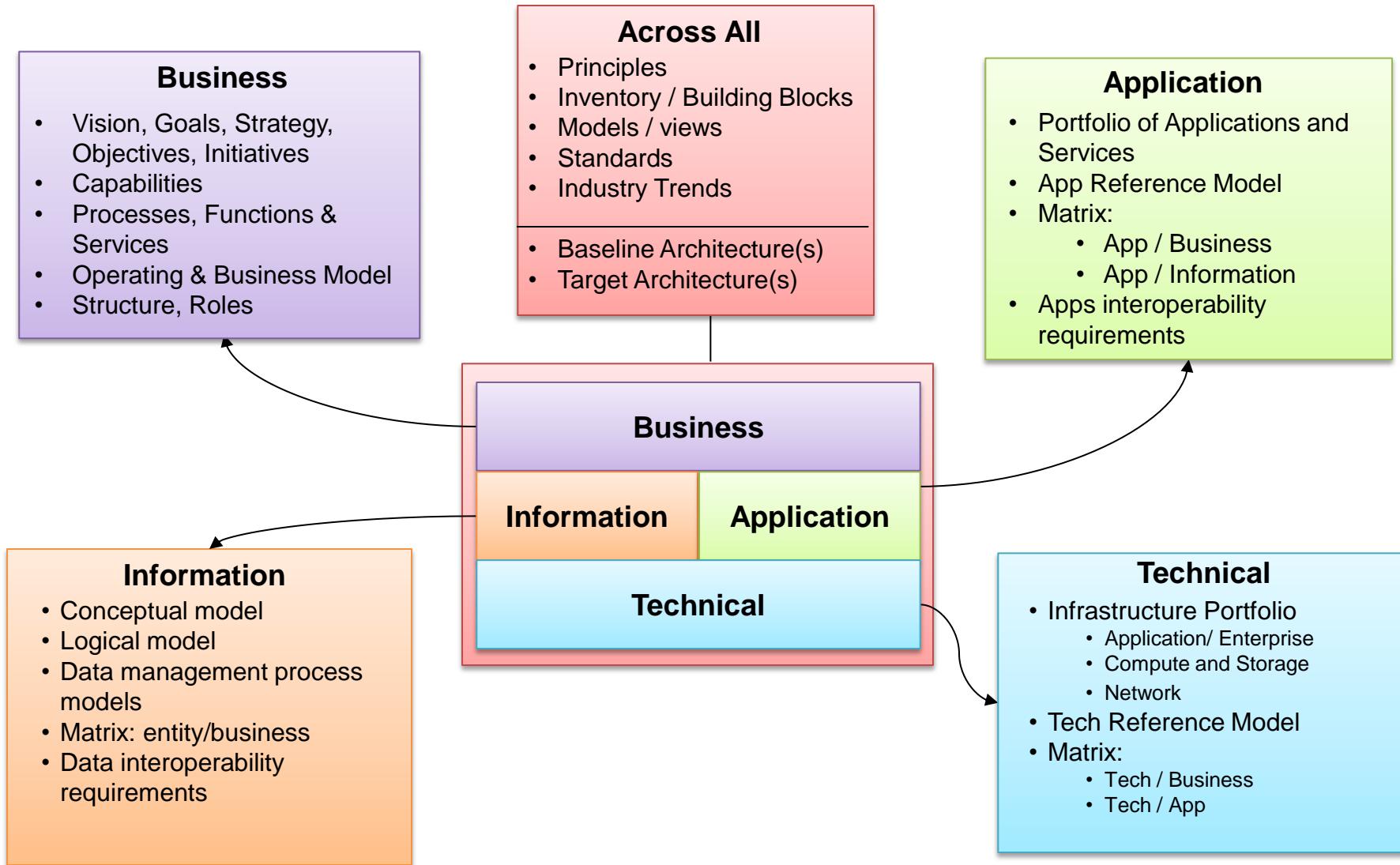
- 1) Business Architecture
- 2) Information Architecture
- 3) Application Architecture
- 4) Technical Architecture



There are shared features across all of these, e.g., baseline, target and vision components.



4 Domains of EA



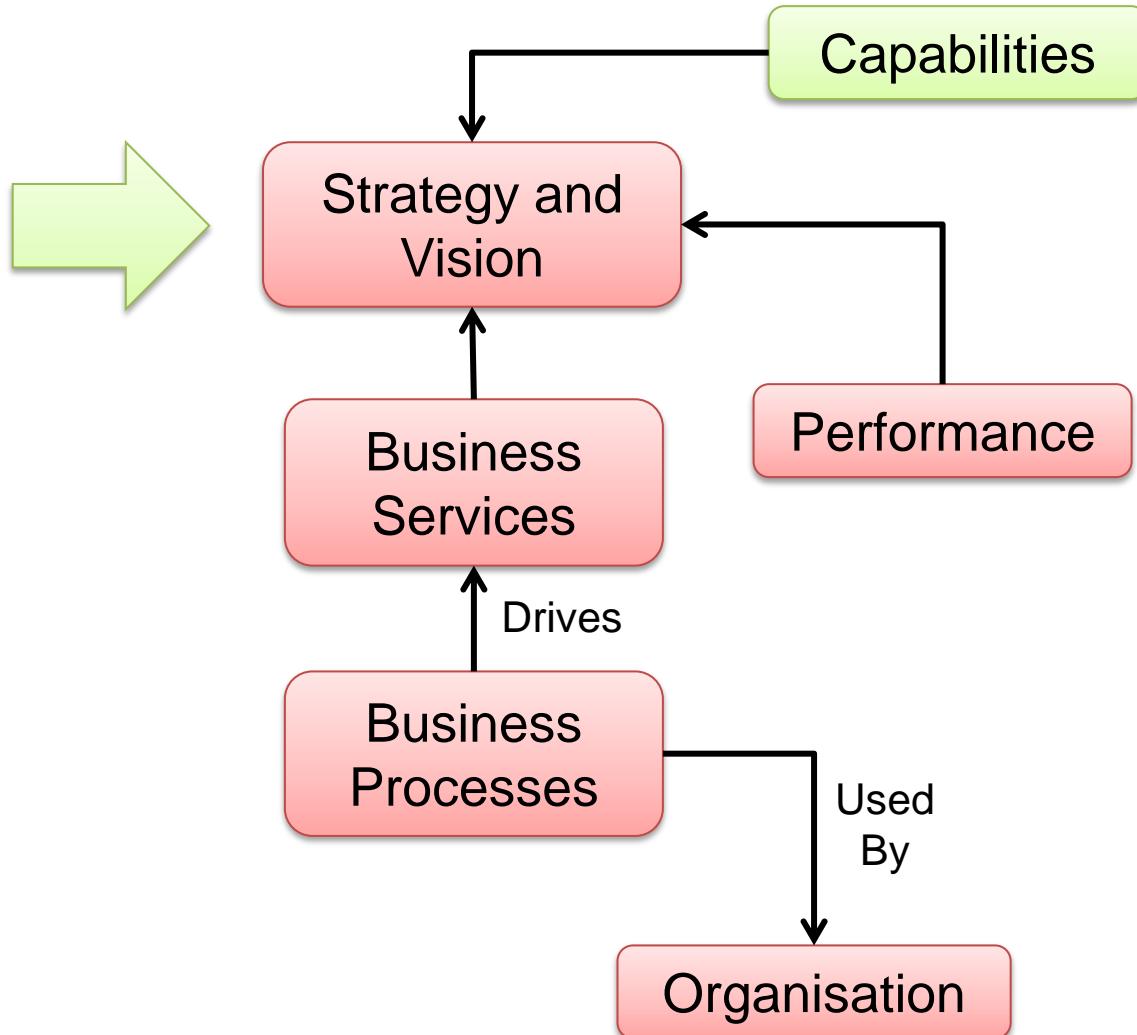


Business Architecture (BA)

- **Describes ‘What’ a Business does and ‘How’ a business works:**
 - Business Vision, Strategy, Goals, Initiatives, and Tactics;
 - Business Capabilities - the ‘What’;
 - Business Services (People, Process, Technology) – the ‘How’;
 - Organisation Structure, Corporate Policy, Governance;
 - Operating Model (as described by Ross, Weill);
 - Business Model (Activity Diagrams, Use cases, Entities class models)
 - The relationships between all of these.
- Links the Business Strategy to Operations and the Capability required to execute it.
- Guides the development of the Info, App, Tech Architectures.
- Must be effectively communicated to ensure it is understood by all stakeholders.



Business Architecture Structure





Business Architecture Views

- **Business Strategy view** : captures the strategic goals that drive an organization forward. The goals may be decomposed into various tactical approaches for achieving these goals and for providing traceability through the organization.
- **Business Capabilities view** : describes the business functional abilities expressed via business services of an enterprise and the sections of the organization that would be able performing those functions.
- **Business Knowledge view** : establishes the shared semantics (e.g., customer, order, and supplier) within an organization and relationships between those semantics (e.g., customer name, order date, supplier name). These semantics form the vocabulary that the organization relies upon to communicate and structure the understanding of the areas they operate within.
- **Business Operational view** : defines the set of strategic, core and support operational structures that transcend functional and organizational boundaries. It also sets the boundary of the enterprise by identifying and describing external entities such as customers, suppliers, and external systems that interact with the business.
- **Organizational view** : captures the relationships among roles, capabilities and business units, the decomposition of those business units into subunits, and the internal or external management of those units.



Information Architecture (IA)

- Describes “what the organisation needs to know” to run its business services, processes and operations:
 - Master Data (e.g. Customer, Product) and Metadata
 - Logical data/information assets.
 - Physical data/information assets.
 - Data/information management resources/policies.
- Application Architecture will support Business Services that access the Information (Information Exchange Model) in the IA.
- Technical Architecture will provide Infrastructure Services that store and maintain the Information.
- Hierarchy of Information Described:
 - Data Classes
 - Data Subjects
 - Data Entities



Applications Architecture (AA)

- Describes the automated Applications and Services that support the business services, processes and operations:
 - The Individual application systems and services to be deployed
 - The interactions, interdependencies and interfaces between these;
 - The services used by applications.
 - The relationship between the applications and the core business processes
 - Provides cross cutting Application Infrastructure Services, that may not relate to business processes, e.g. email, security, identity;
 - Applications will use:
 - the Information in the Information Architecture
 - the Infrastructure Services of the Technical Architecture (Hosting Platform);
 - Boundary between Application and Technical Architecture is not clear cut and is policy based.
-



Technical Architecture (TA)

- Describes the Infrastructure Services required to support the Applications.
- Defines the relationship between the technology and the core business processes.
- Includes: workstations, servers, printers, OSs, connectivity components, telecoms, networks, hosting, facilities etc.
- Also includes Application infrastructure:
 - Application Servers, DBMS's, CMS's, DAM's, etc.
 - Virtual Platforms (J2EE, .Net, Java, C#, etc)
 - Operational Infrastructure to deploy, administer, monitor and maintain applications and application services.
- Technical Architecture will need to support the integration of different Application Architectures.



IA, AA and TA

Well-designed and effective Architectures will:

- Clearly define the structure of the existing system(s) by governed architecture documents (models etc);
- Reduce the number and complexity of the interfaces between the components, improving the ease of:
 - Application portability
 - Component upgrade, exchange, development and maintenance
- Support the systemic qualities (non-functional requirements) required at the operational levels (e.g. security, performance, availability, maintainability etc);
- Provide Blue Prints and Reference Architectures re-used across implementations.
- Have defined SDLC, Deployment, Re-Use processes and practices, etc.

Have a vast array of associated artifacts, documents, models, deliverables, building blocks that need to be catalogued, maintained and managed



Shared Features across domains

- Each domain consists of a portfolio of assets (components). The EA should:
 - Identify the type of component;
 - Identify the principles and standards that apply to each component;
 - Describe what a component is assembled from;
 - Describe what components are connected to and how;
 - Describes how components interact with each other;
 - the results of those interactions;
 - how the interactions support the purpose and objectives of the system.
- Domain Specific Strategies, Policies and Governance, Migration strategies;
- Can be based on Common System and Industry Architectures, e.g. IFW, CWMM;
- Each component can be valued; has a \$ cost and risks.



Process Integration/Standardisation

Business

- Vision, Goals, Strategy, Objectives, Initiatives
- Capabilities
- Processes, Functions & Services
- Operating & Business Model
- Structure, Roles

Information

- Conceptual model
- Logical model
- Data management process models
- Matrix:
 - entity/business
- Data interoperability requirements

Process **Integration** - allows multiple business units to provide a single face to customer

- Key is Data **Standardisation** (**both syntax and semantics**). This is a significant challenge across the business.

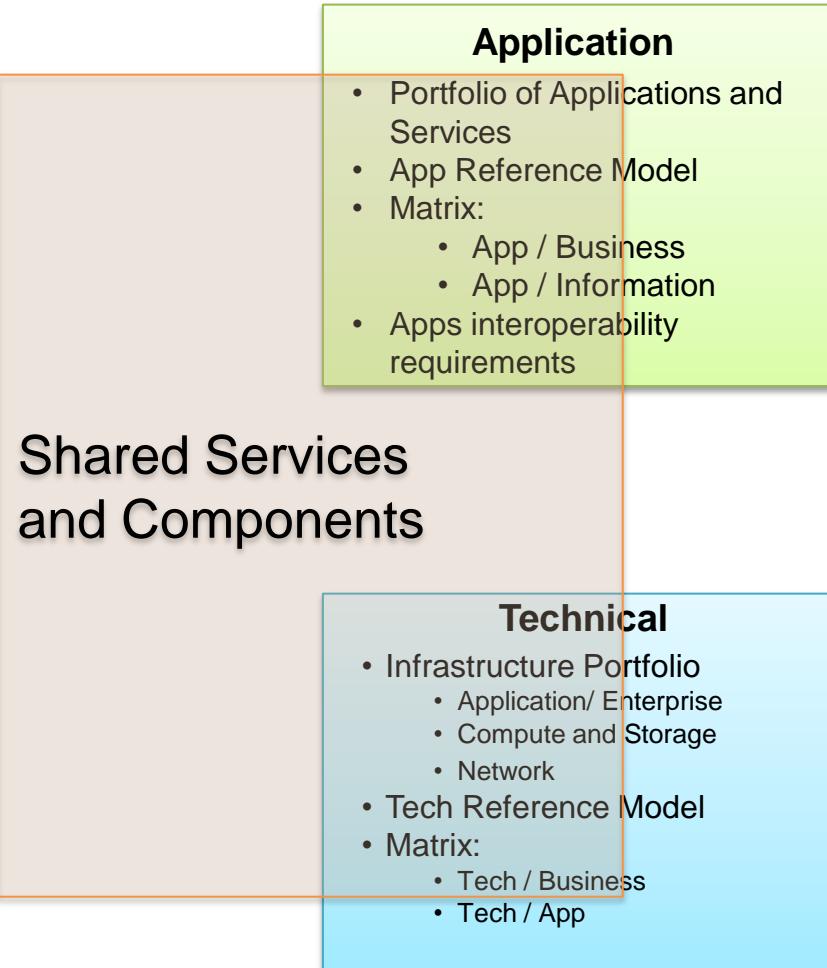
Process **standardisation** – provides a single consistent way of doing things



Shared Services and Components

Technical *Standardisation*
– facilitates common objectives, e.g. cost effective processing, negotiated vendor agreements, enterprise security

Business capabilities provide basis for Shared Services



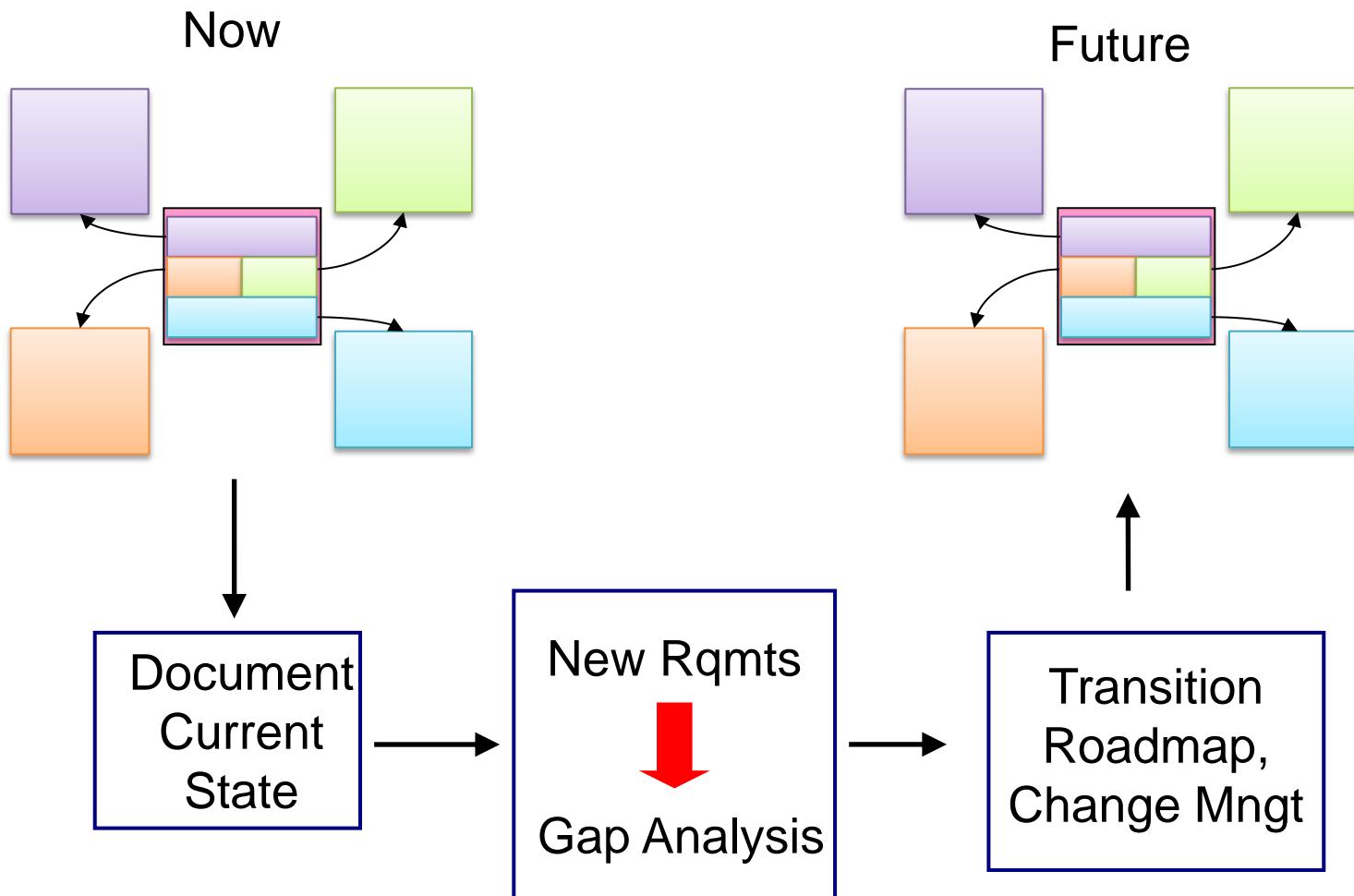


Change: EA has a Time component

- **Baseline:** Describing the enterprise now. “As-Is”
- **Target:** The architectures we are working towards in the future as the Enterprise Changes. “To-Be”;
 - This is how we will implement strategy;
 - The current program of work leading to a new changed enterprise.
- **Vision:** The architecture that is our ultimate goal; arrived at through a series of targets. Encompasses our ideals that we are striving to achieve;
- Portfolio changes over time.



Process - Gap Analysis





Gap Analysis - by Strategic Objectives

	SO1	SO2	SO3	SO4
Business	part	none	part	all	
Information	none	most	part	all	
Applications	none	part	part	all	
Technical	none	all	part	all	

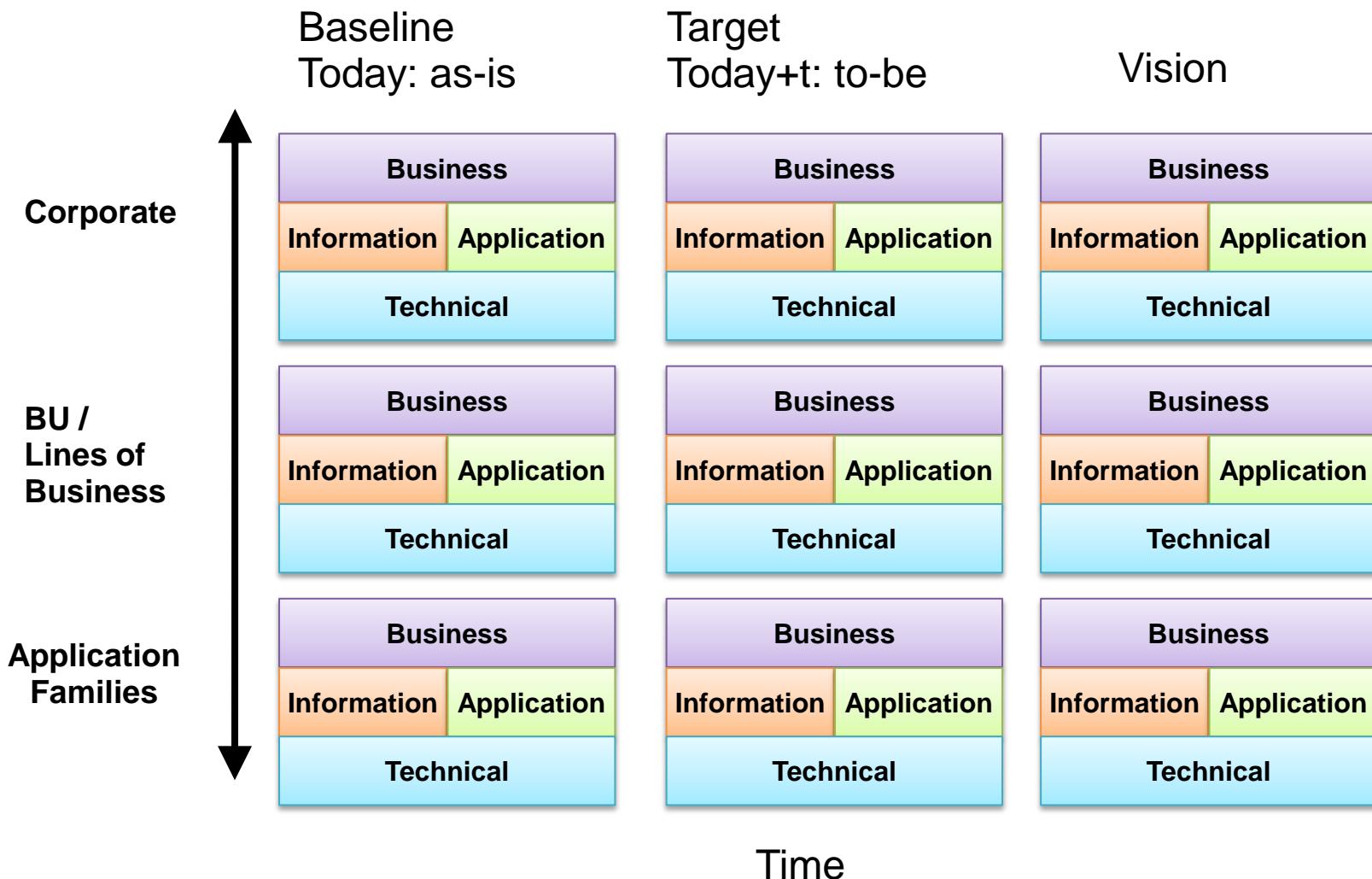
Gaps:

- People
- Process
- Tools
- Information
- Applications
- Technology
- Financials
- Facilities
- etc

- Are all Strategic Objectives (SO) implemented by the Business ?
- Do the Business implementations have the Information, Applications and Technology, Services to support them ?
- Are Capabilities requiring improvement not covered ?
- Is there any information, Apps, Technology not used by business ?
- Gap Analysis helps find new Initiatives.

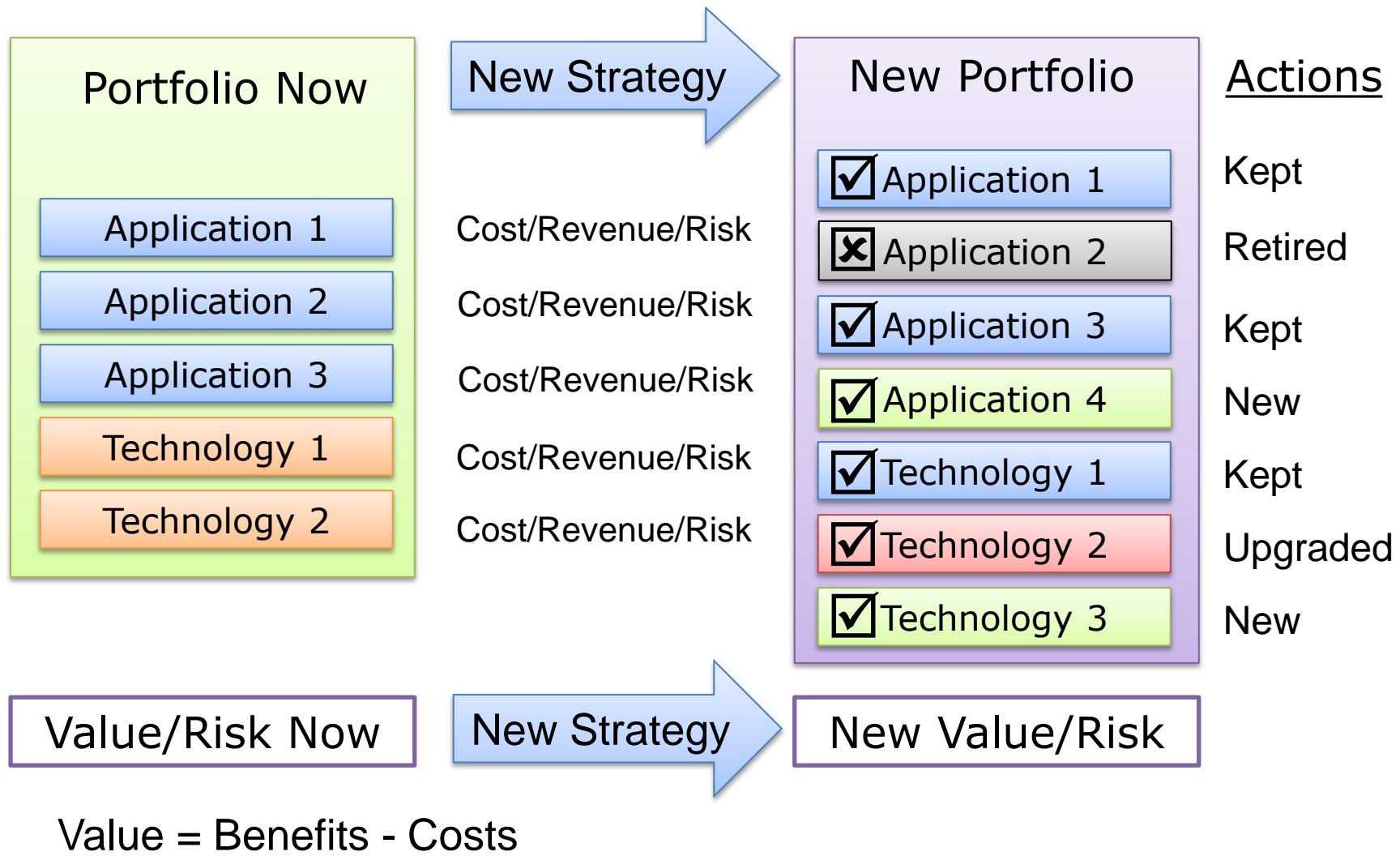


Coordinated Change Over Time





Change and Portfolio Management





Portfolio Management Includes:

Ensure the most valuable projects and approved and prioritised for implementation, disciplines are:

- ITAM - IT Asset Management:
- APM - Application Portfolio Management:
- PPM - Project Portfolio Management:



Portfolio Analysis – Asset Types

- **Strategic** – to gain competitive advantage (high risk / high return)
- **Informational** – provide information
- **Transactional** – process transactions and cut costs (low risk – solid return)
- **Infrastructure** – shared services and integration

Risk Types: Market, Financial, Organisational, Technical



IT and Application Architecture

The IT Architecture is:

“ the organising logic for data, applications, and infrastructure, captured in a set of policies, relationships, and technical choices to achieve desired business and technical ***standardisation*** and ***integration***”

Peter Weill, MIT Center for Information Systems Research

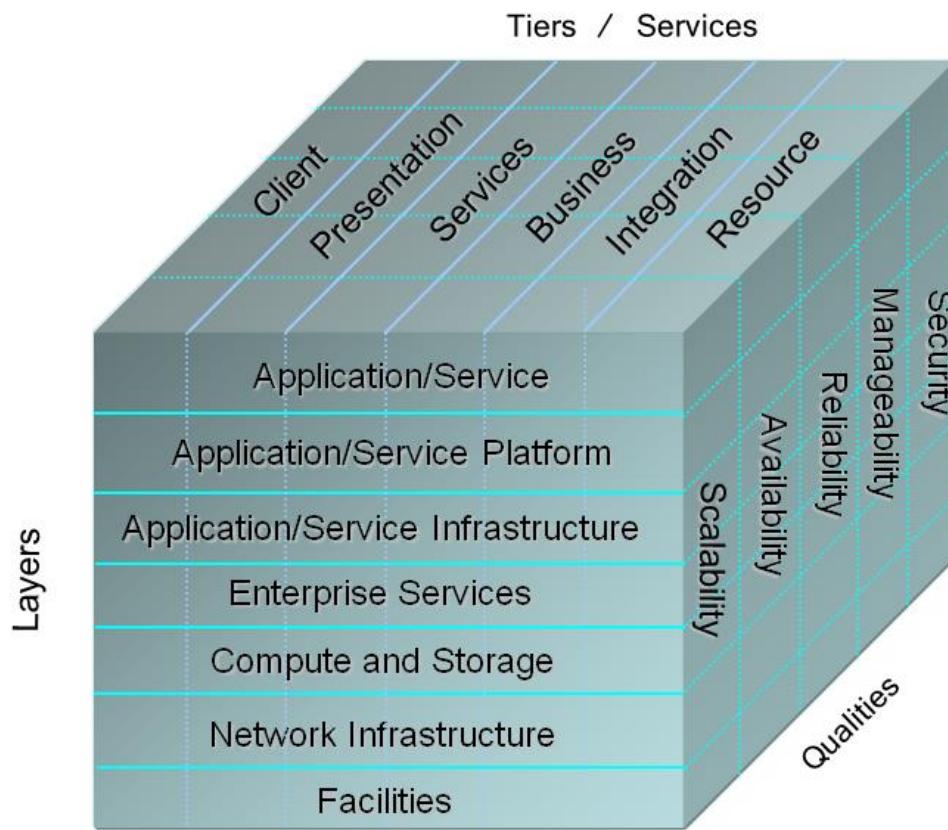


Application Architecture

An Application Architecture provides enough detail for a specific single Business Application or Service to be implemented, operated and maintained.

It Has:

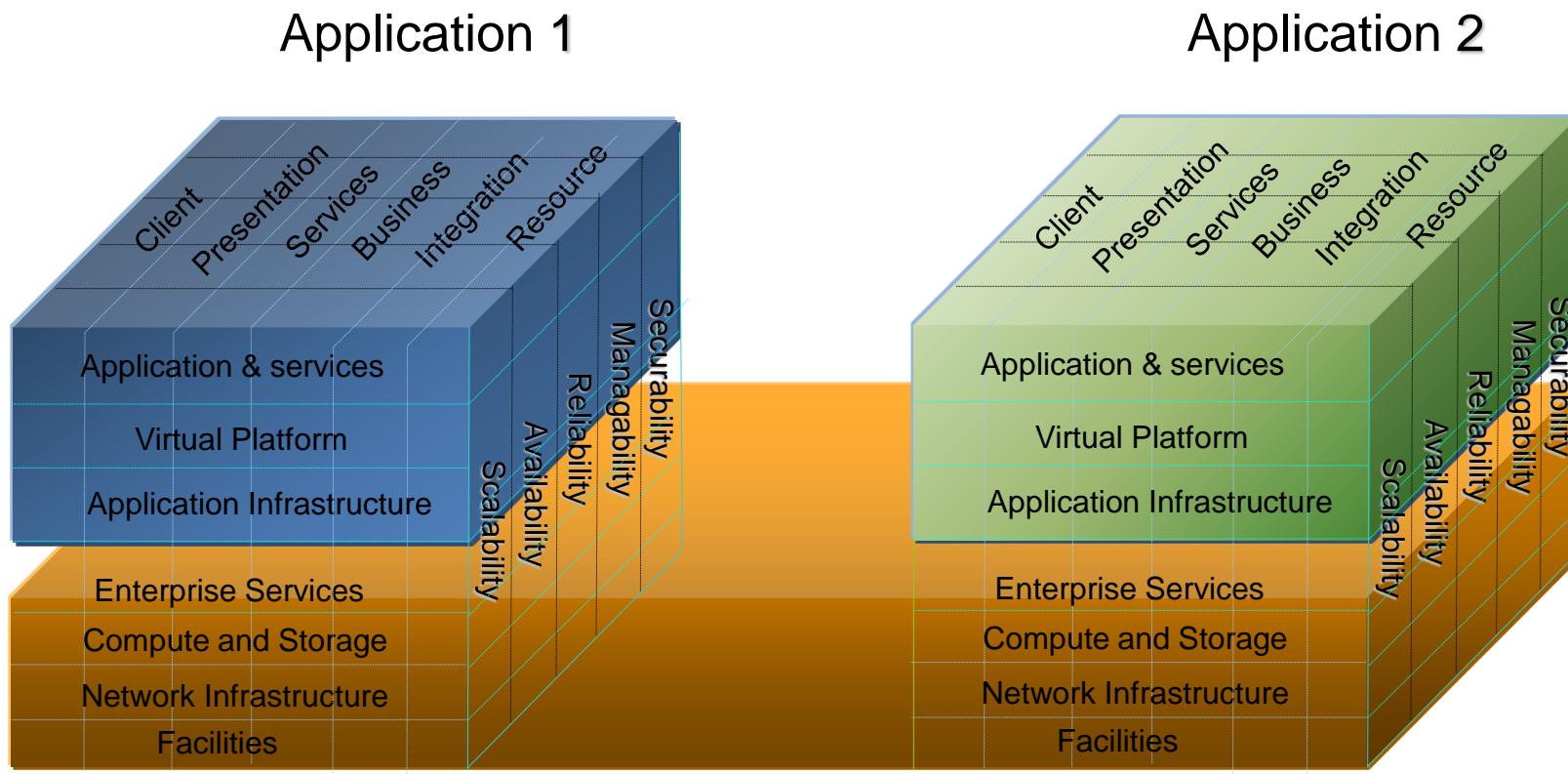
- Layers
- Tiers
- Capabilities or Qualities
(Non-functional requirements)





Applications across the Enterprise

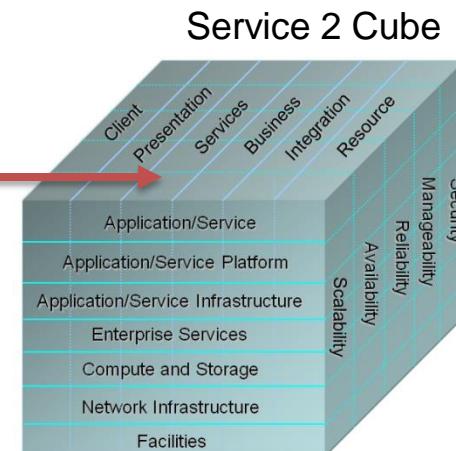
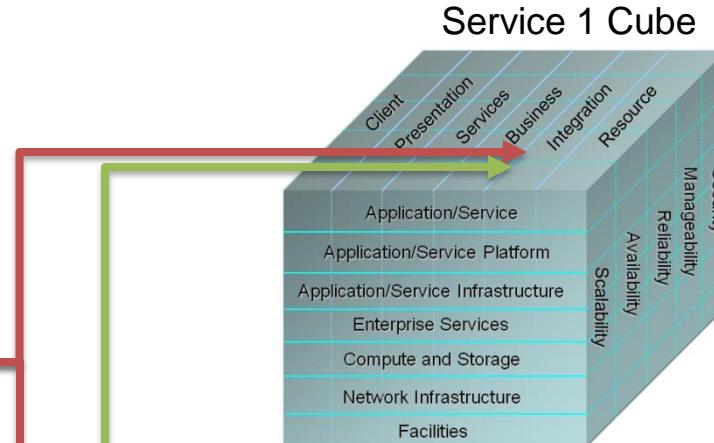
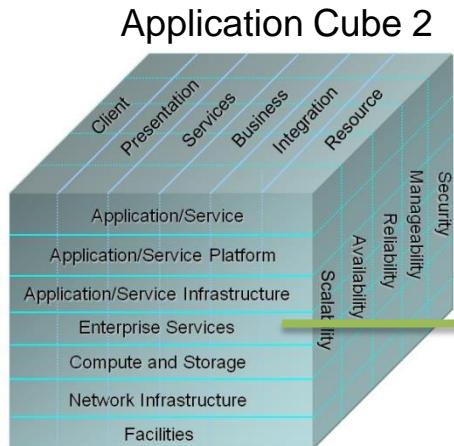
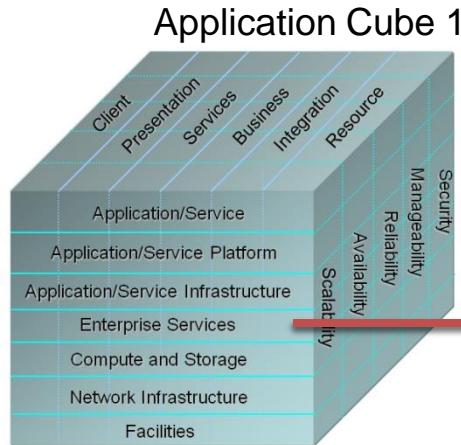
Technical Services, Hardware, Network and Facilities are shared across different Applications in the Enterprise. An EA helps map this sharing.





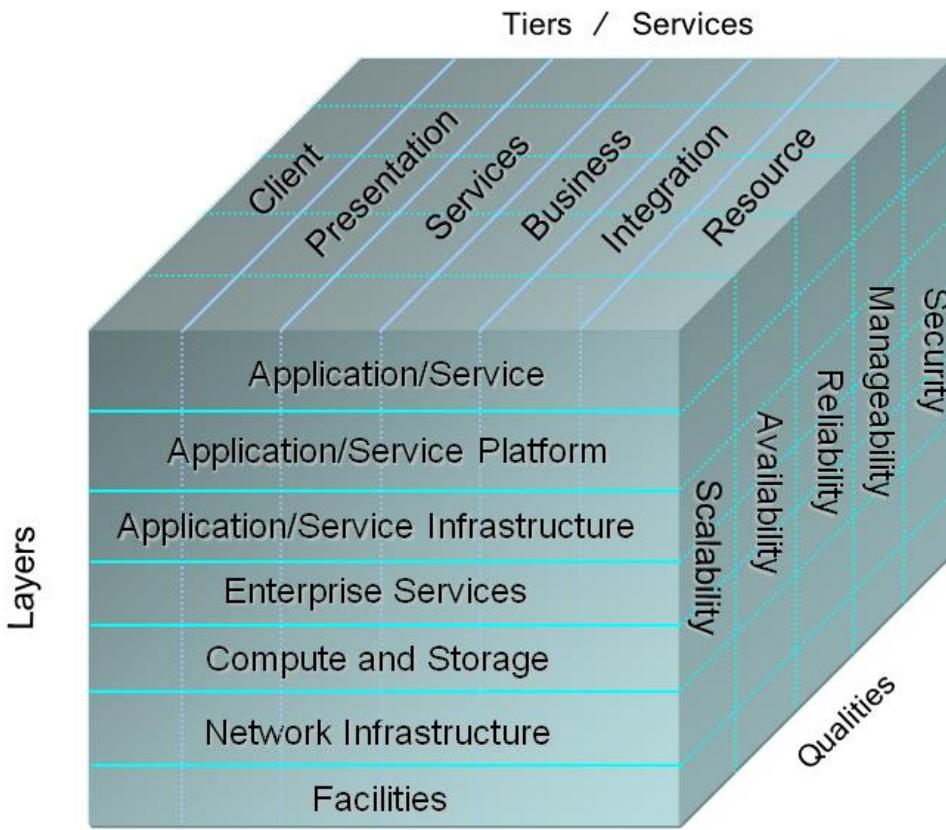
Services across the Enterprise

Applications can share Services used across the Enterprise. An EA helps map this sharing.





Where does EA begin - end ?



A critical principle articulated by EA is where the shared infrastructure stops and individual applications begin.

Do they share channels, portals, data stores, application components and integration platforms ?



Inputs to EA

An EA needs to be based on:

- Business capabilities;
- Well defined and communicated strategy;
- Operating Model to execute strategy;
- IT Principles that trace to business principles.



Business Capabilities

“A business capability is a particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome.

A capability describes what the business does (outcomes and service levels) that creates value for customers; for example, pay employee or ship product.

A business capability abstracts and encapsulates the people, process/procedures, technology, and information into the essential building blocks needed to facilitate performance improvement and redesign analysis.”

Homann, Ulrich “ A Business-Oriented Foundation for Service Orientation.” 2006



Capability Mapping

- **Capability connectors** represent the links that exist between business capabilities. Capabilities expose interfaces.
- **Business processes** describe how the business performs, or implements, the given capability, or how capabilities connect to deliver a desired outcome.
- **Business capability mapping** is the definition and clear structural outline of the capabilities and their connections that drive the activities of a typical company.

Business capabilities are the building blocks of the business architecture, so thinking of capabilities as an architectural blueprint is a good analogy, whereas the process is the implementation of that architecture at any given time.

Homann, Ulrich “A Business-Oriented Foundation for Service Orientation.” 2006



Capability Principles

- Define what the business does, not how it does it.
- Are nouns not verbs.
- Stable over time, not volatile.
- Described in business not technical terms.
- Map to but are not the same as Value Streams, Processes, LOBs, Business Units.
- Not redundant, capabilities only show up once
- One capability map for business.
- An LOB is not a capability.
- Automated capabilities are still business capabilities not IT capabilities.
- Relate to future state (to-be) IT architecture.

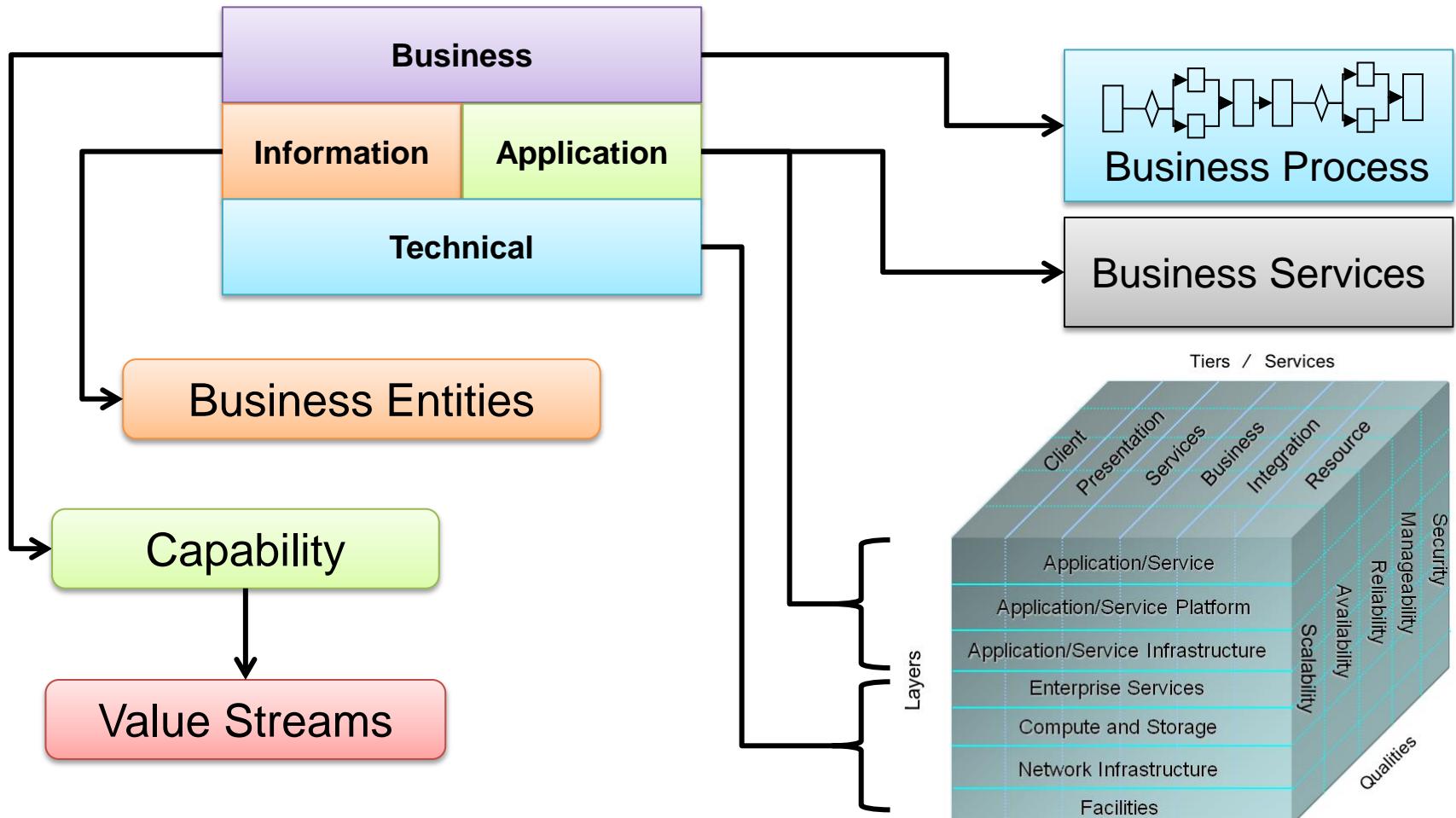


Capability Description

- **Purpose:** The purpose of why the capability is needed.
- **Business Goals and Objectives: (Strategy)** Expected outcomes resulting from the capability are expressed as strategies, objectives, and metrics. Outcomes and Objectives cross multiple capabilities.
- **Processes and Functions: (Process)** Capabilities consist of business processes and the functions that flow within and across them. The process also spans multiple business units.
- **Skills: (People)** To provide a capability requires skilled people.
- **Technologies: (Technology)** A business capability is enabled and supported by technologies, such as application software, hardware, software, and other IT services.
- **Future-State Capabilities:** Capability maps can be the basis for comparing the 'as is' and the 'to be' state, yielding a picture of capability, process, technologies and a list of gaps between the two states. The model maps capabilities to business goals, organizations, processes, and information, the future-state capabilities and so can form the basis for both IT and business planning.



Capabilities and EA





Importance of Strategy

Without a well defined and communicated Strategy an EA has no context.

Strategy Maps and Balanced Scorecard provide:

- A strategic planning and performance management system;
- Provide a way to objectively and actively define, measure, monitor and communicate strategy;
- Demonstrate an organisation's performance in meeting its objectives relating to its stakeholders;
- A change initiative for holistically visualising and communicating an organisations strategic intent;
- A framework for informing strategic prioritisation, budgeting, and improvement via strategic feedback;
- Aligns an organization behind a shared vision of success;
- Links Intangible Assets to Tangible Outcomes.



Core Concepts

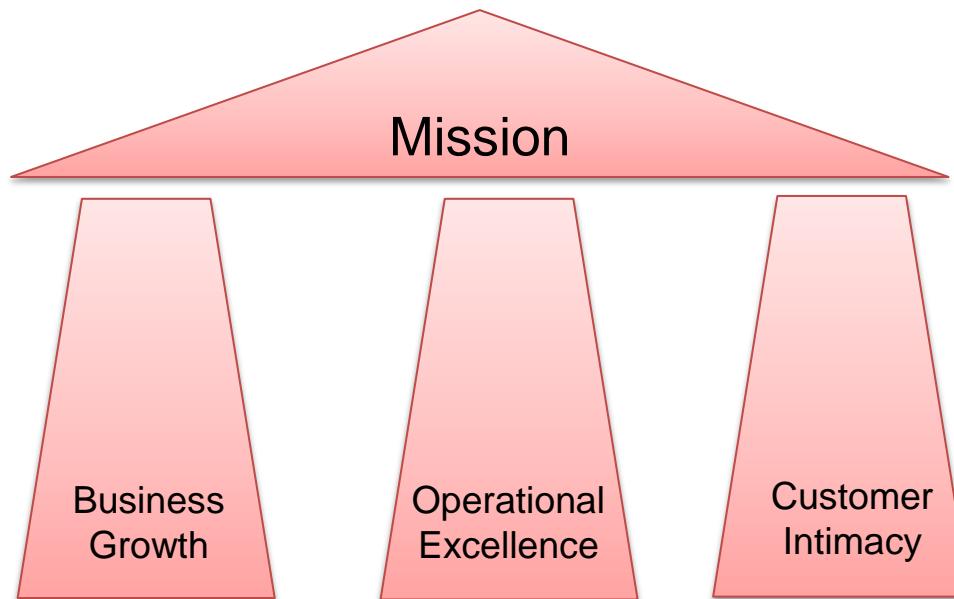
- **Strategic Objectives** are desired outcomes that help make strategy actionable. Objectives are causally related and thus have dependencies.
- **Measures** are the indicators of how a business is performing relative to its strategic objectives. Measures, or metrics, are quantifiable performance statements.
- **Targets** are the specific target values for the measures.
- **Initiatives** turn strategy into actions. They are the change process or activities designed to achieve one or more objectives. The initiative is what will move a measure toward its target value. Initiatives improve or introduce new capability. Initiatives may be large or small in scope. They generally are owned by a person or group, and are managed as programs or projects.

Objectives	Measures	Targets	Initiatives



Organised By

- **Perspectives** show how the different stakeholder's (e.g. user/customer, employees, business, shareholders, citizens) objectives are being met. Different stakeholders have different concerns and require different views. The perspectives are also causally related, e.g. Internal process are dependent on Learning & Growth.
- **Themes** are grouping of similar objectives and their measures across perspectives. Help make a complex strategy more understandable by organizing and categorizing objectives and measures. Themes are the organisation's **pillars of excellence**.



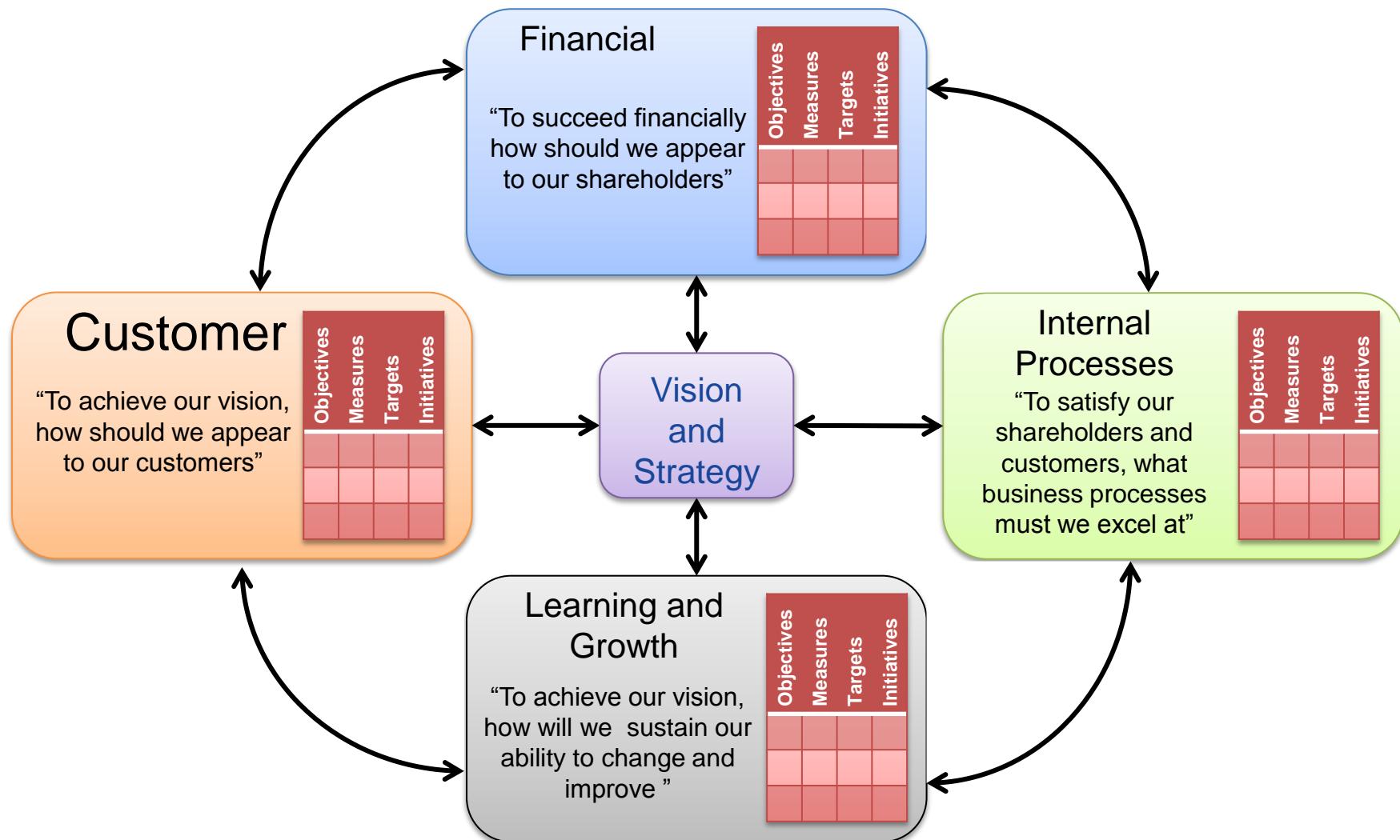


The Four Major Perspectives

- **Learning and Growth:** Looks at the future and what capabilities and tools are required to maintain growth and achieve further improvement. Determines what provides the knowledge, skills and systems that your employees will need to perform the business processes.
- **Internal Processes:** Looks at the present and indicates which internal processes should be performed with excellence to innovate and build the right strategic capabilities and efficiencies for customer and financial satisfaction.
- **Customer:** Looks at the present and indicates what should be done to deliver specific value to the market. Who are our customers and what is our value proposition ?
- **Financials:** Indicates what has happened in the past and measure what should be done to achieve the financial objectives and check the performance. Other perspectives will provide the what has to be done to eventually lead to higher stakeholder (e.g. shareholder) value.



Strategic Perspectives



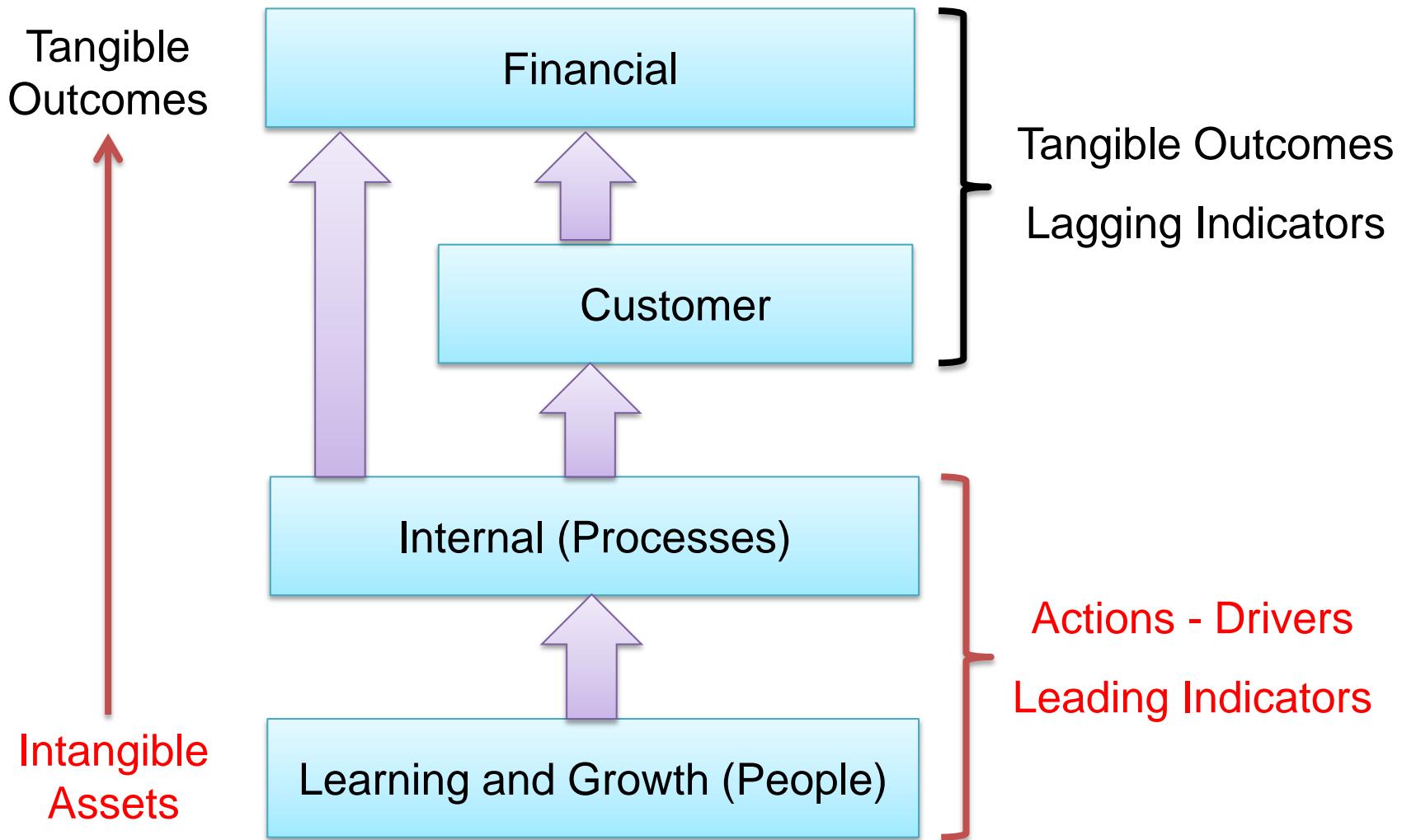


Common Strategic Themes

- **Business Growth** – drives revenue, new products, markets, or new customers or increase wallet share.
- **Operational Excellence** – reduce cost and price, improve quality, better utilise assets, efficiency, and provide ease of doing business.
- **Product Innovation** – leadership, be first to market.
- **Customer Service Excellence** - provide right products, services and experience, “the customer comes first”
- **Customer Intimacy** – build lasting bonds with customers, anticipate their needs with deep knowledge.
- **Manage Pipeline** – value chain.
- **Manage Platform** - bring together producers and consumers in high-value exchanges.
- **Strategic Partnering** – form alliances based on mutual gain.
- **Sustainability** - creates lasting value whilst also building public trust.

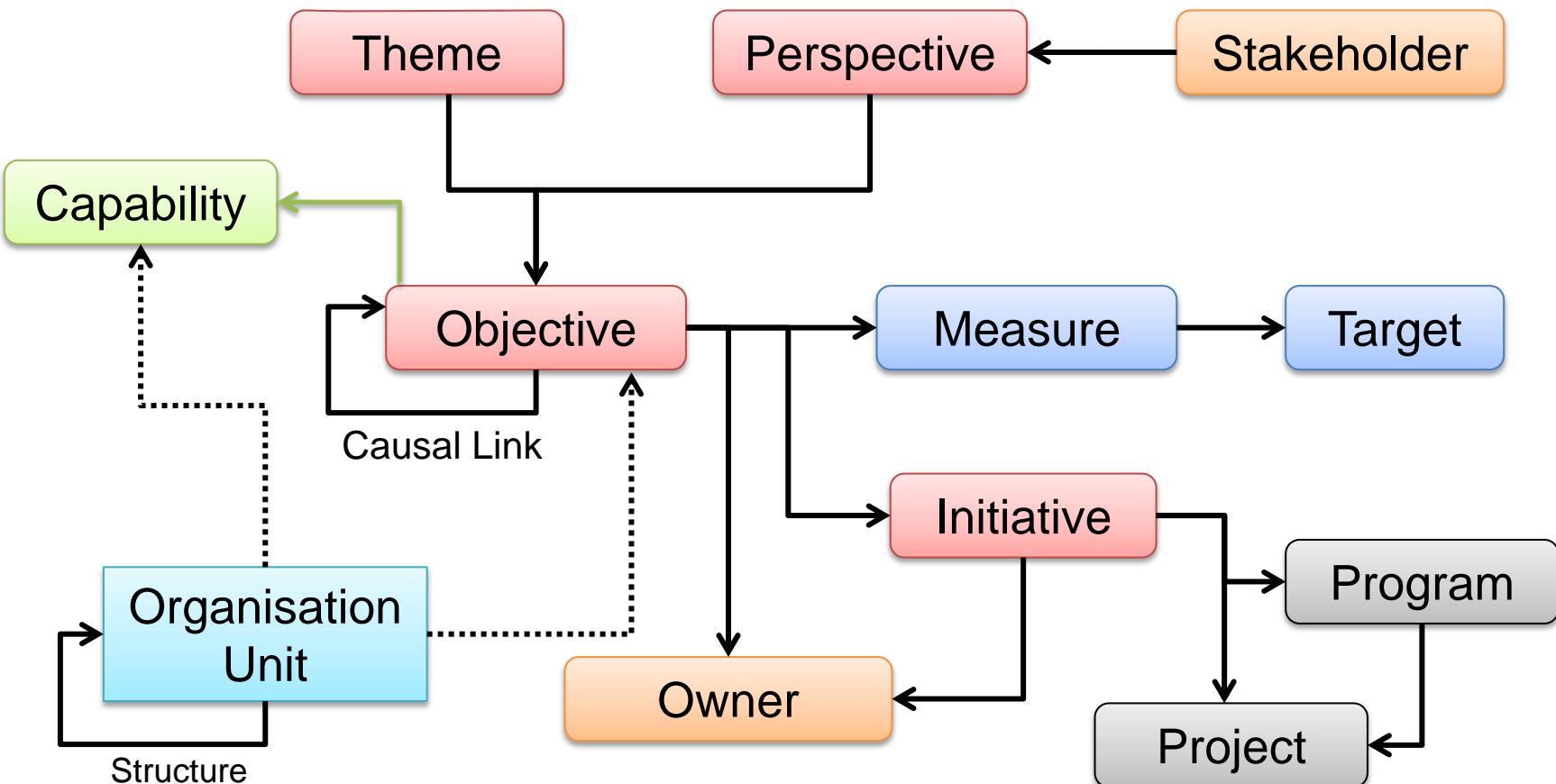


Perspectives are Causally Linked





Scorecard / Strategy Map Model



Objectives are met by new or improved capability, implemented through initiatives.

*Capabilities discussed in earlier section

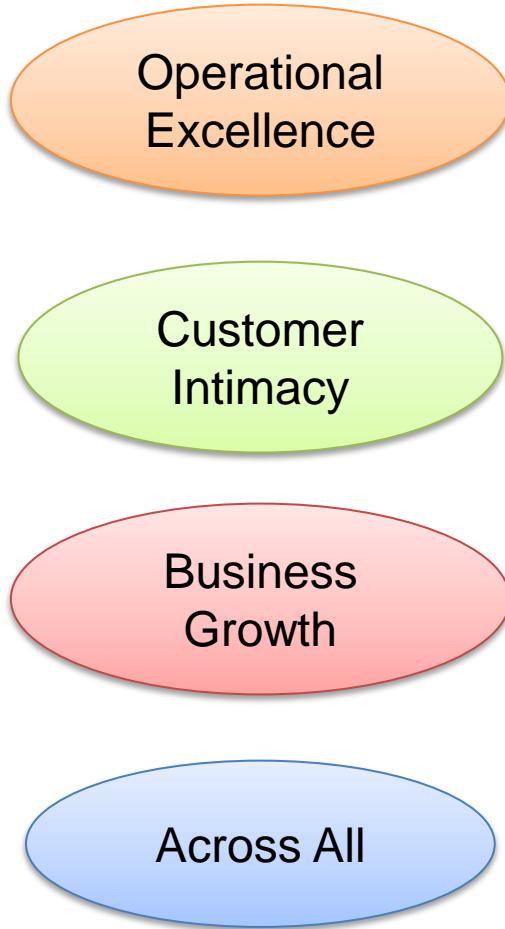


Strategy Maps – Explain Strategy

- Visually show how strategic objectives are causally related, to tell a story;
- Show how the organization plans to achieve its mission and vision by means of a linked chain of continuous improvements;
- Shows how the perspectives are causally related. The organizational capacity of Employees and Resources (***Learning and Growth***) impacts ***Financials*** through, Internal objectives (***Internal Business Processes***) and ***Customer***.
- See the impacts of budgeting and prioritization across the causal chains of initiatives; broken chains will impact strategy;
- Show Objectives organised into Themes;



Example: Product Company has 4 Themes



Reduce Costs and Improve Efficiency

Utilise deep customer knowledge to provide better relationships, service and responsiveness.

Acquire companies, increase revenue

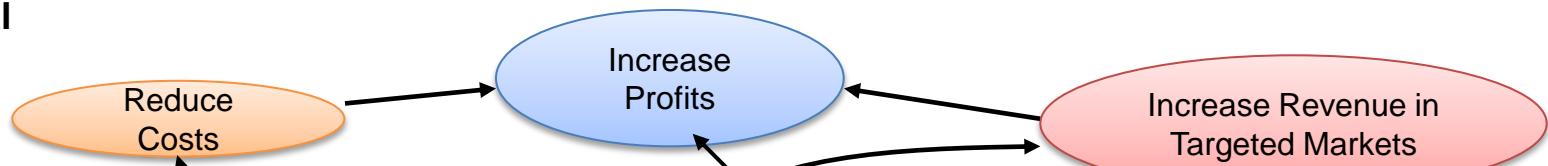
Apply to all Objectives

Colour coded for the next slide



Product Company Strategy Map by Themes

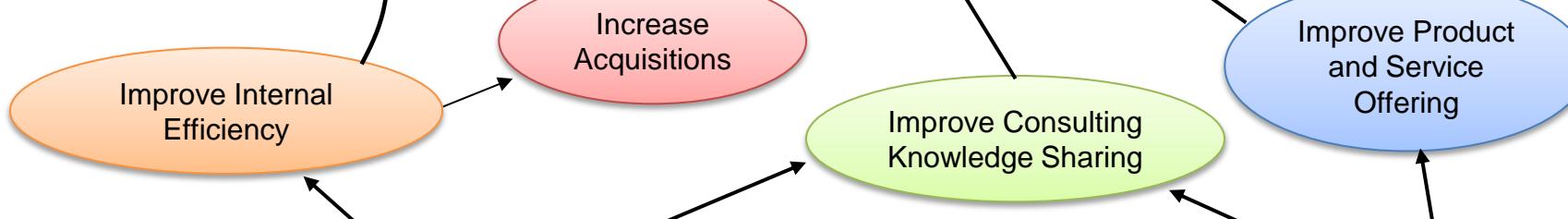
Financial



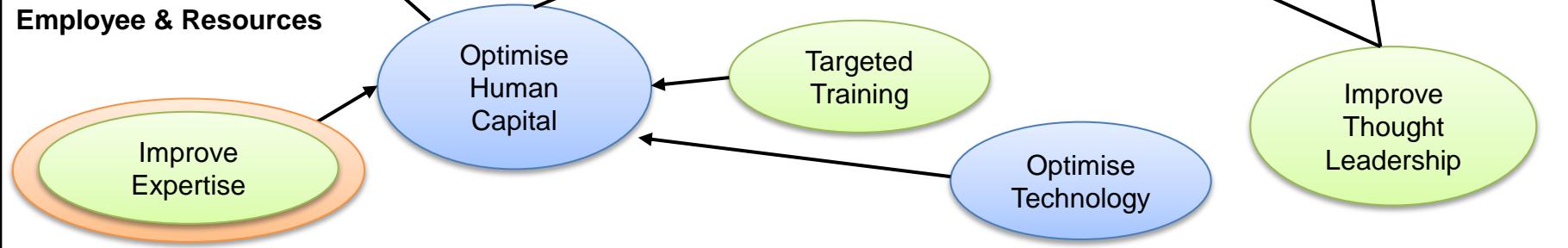
Customer



Business Processes



Employee & Resources





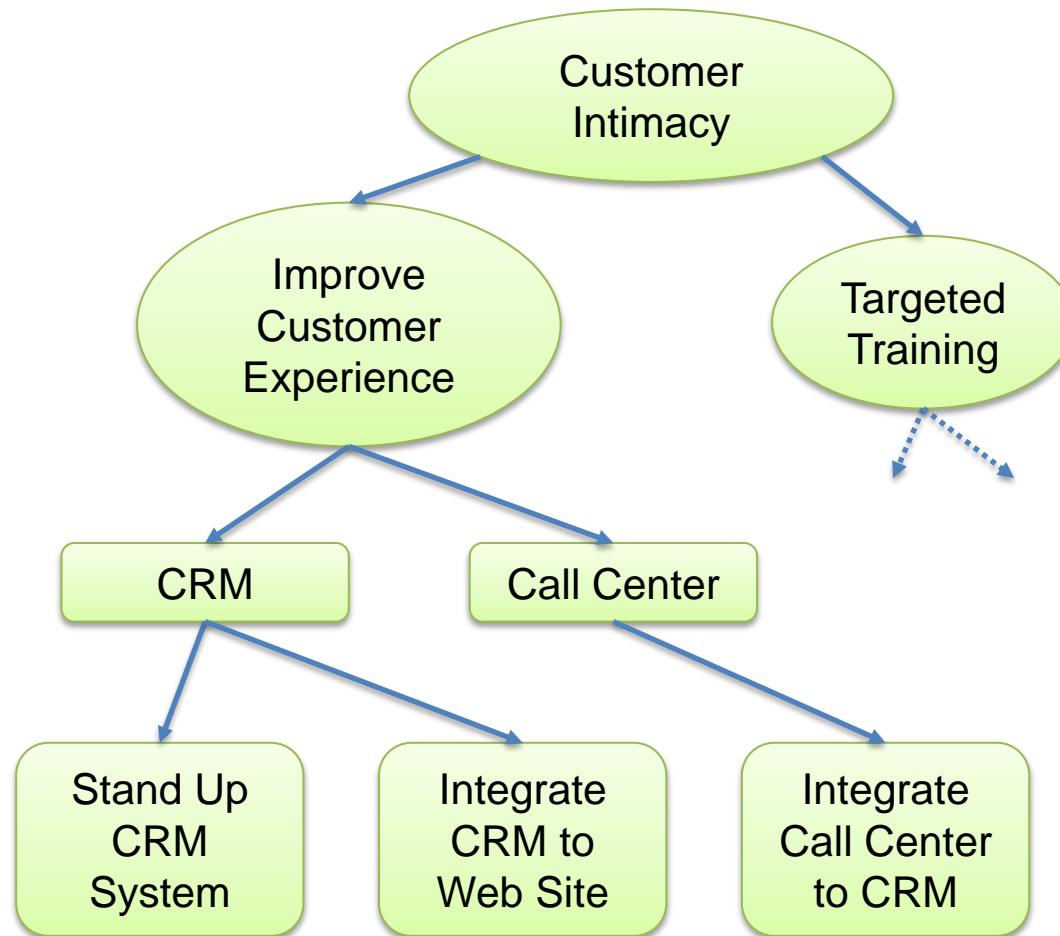
Example: Themes Organise Projects

Theme

Objectives

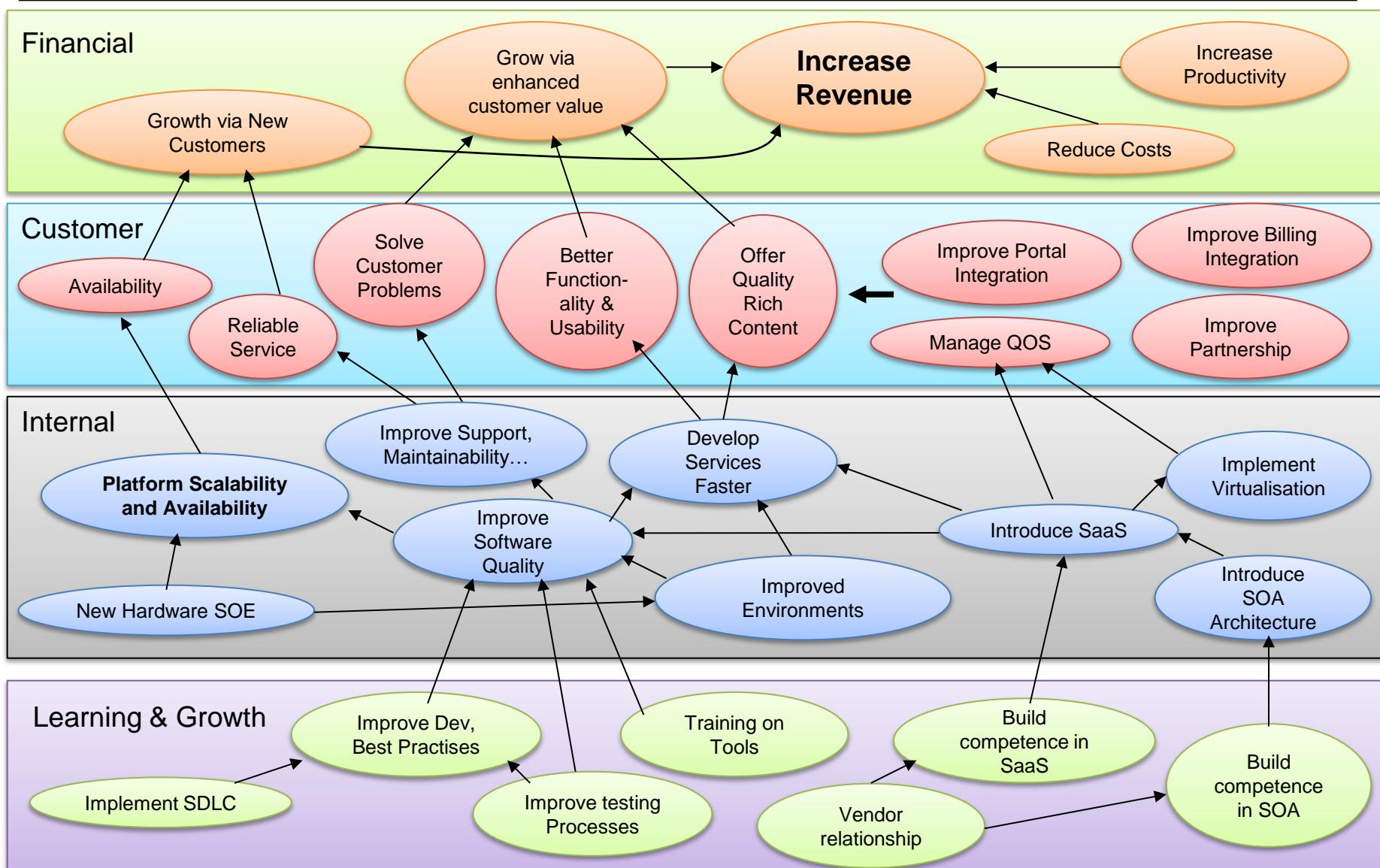
Initiatives

Projects





Example: IT Strategy Map (colors graphical only)

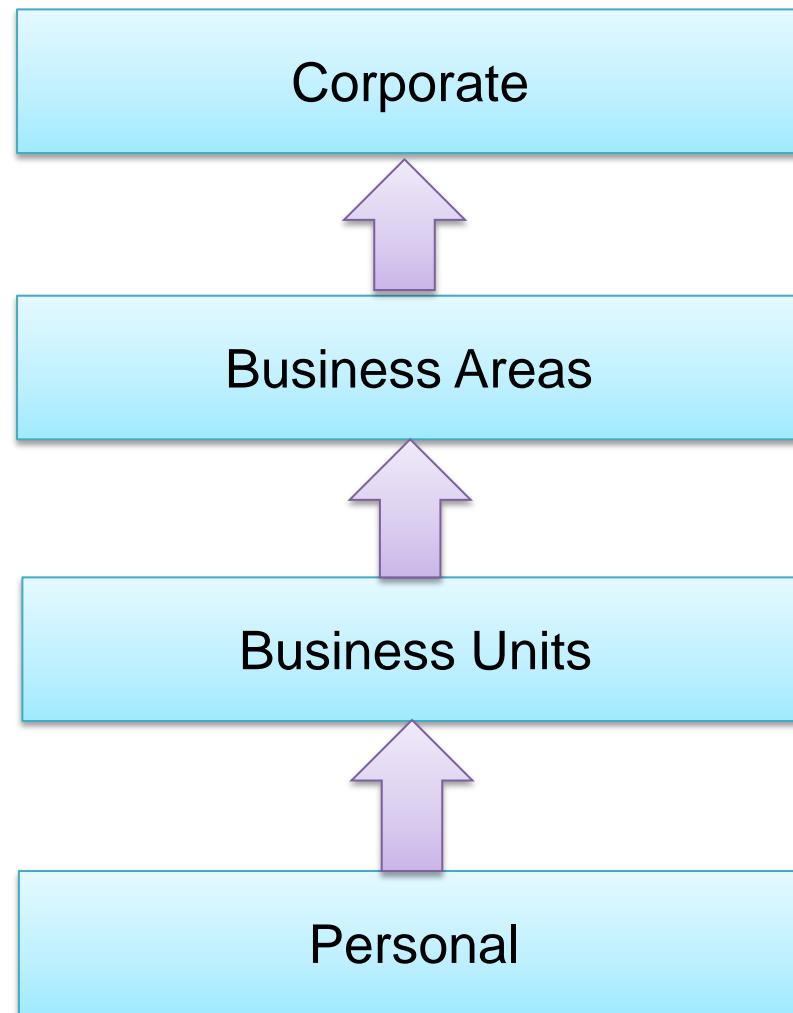




Organisation Structure

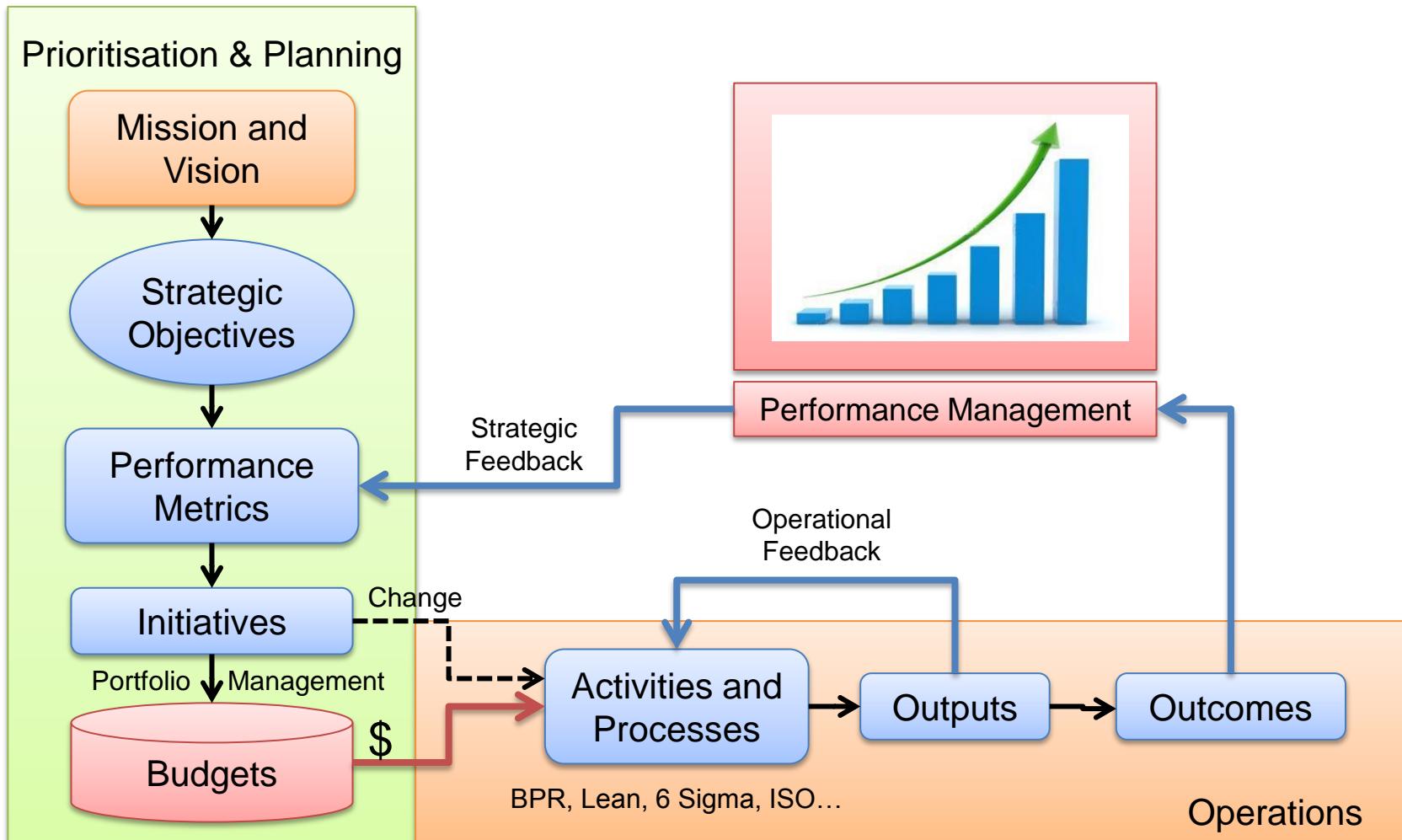
Strategy Maps and Scorecards can be developed, at each level, up and down the organisation:

- Alignment downwards
- Metrics roll up
- Contribution rolls up
 - Each person can see how they contribute to the corporations performance





Strategy, Prioritisation & Operations



Portfolio Management = IT Asset Management, Application Portfolio Management and Project Portfolio Management
- Used to prioritise Initiatives. Change constrained to funded Activities and Processes



Portfolio Stakeholder Goals

Apart from the Objectives the Stakeholders may have other concerns, e.g:

- A reduction in cost
- Ability to handle change
- Consolidation of service
- Minimise the number of tactical or interim solutions



The Third Generation Scorecard

Four Main Components:

- **A destination statement.** This is a one or two page description of the organisation at a defined point in the future, typically three to five years away
- **A strategic linkage model.** This is a version of the traditional “strategy map” that typically contains 12-24 strategic objectives segmented into two perspectives,
 - activities and
 - outcomes.
- **A set of definitions for each of the strategic objectives.**
- **A set of definitions for each of the measures** selected to monitor each of the strategic objectives, including targets.



Scorecard and Strategy Map

- Provide critical INPUT to the EA, to prioritise IT change and meet business goals. Help direct the budgeting process by:
 - See the impacts of prioritisation, are the priorities causally ordered. Prioritise by cause and effect order.
 - See the impacts of budgeting; are causal chains broken ?
- Provides OUTPUT initiatives that can be managed and measured via scorecard to determine if IT is meeting business goals;
- Strategy and Portfolio Valuation helps weigh the costs and risks and decide on what assets to keep, retire or further invest in;
- Provide a basis for Business Principles;
- Define the goals of the Operating Model;



What is an Operating Model

An operating model represents a general vision of how a company will enable and execute strategies.

- Defines the range of strategic initiatives a company can readily pursue;
- It describes how an organisation operates across both business and technology domains.
- Describes what is important for the organisation, the people processes, organisation and systems. e.g.
 - Are Business Processes *Standardised* and how ?
 - How do we *Integrate* systems, businesses, business units ?
 - Are products, customers, suppliers and their data shared ?



Importance of Operating Model

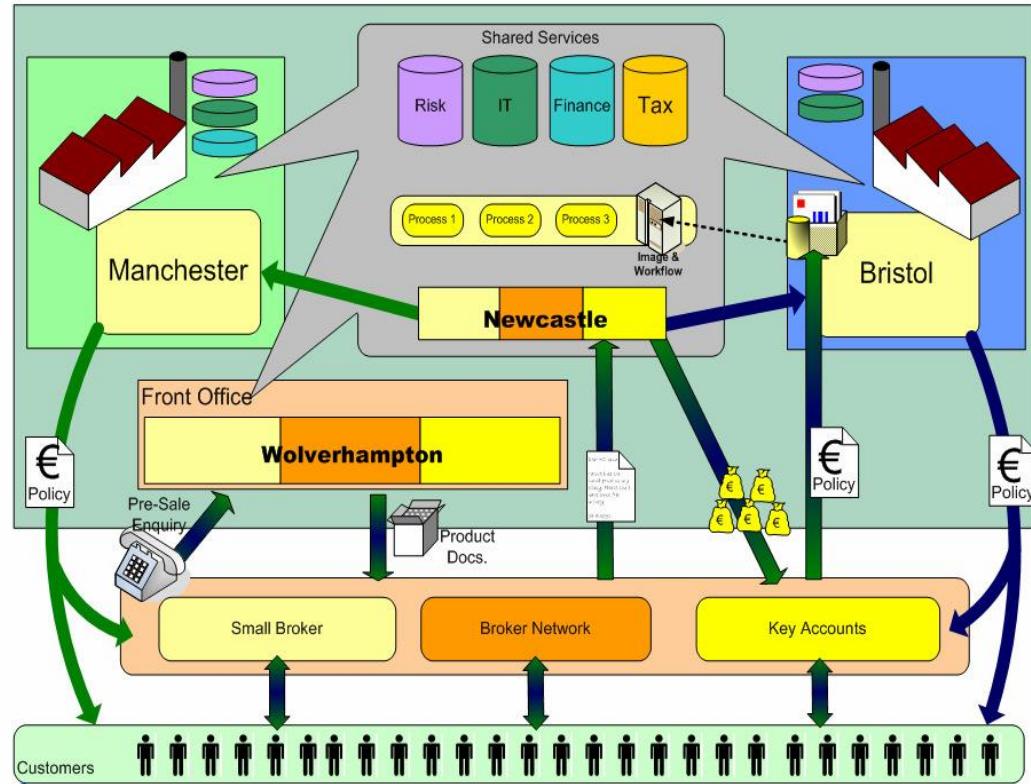
- A companies' **Operating Model** guides the development of IT and business process capabilities, to ensure that IT supports management's vision for business agility;
 - guides choices for IT investment and business process design;
- Provides the foundation that enables the company to grow its business with the ***right level*** of IT;
- The realization of the Operating Model is the implementation of business processes and the IT systems;
- There are four operating model choices: diversification, unification, coordination, and replication.



An EA Core Diagram Shows

The Helicopter View:

- Core business processes
- Key customers
- Key linking and automation technologies – middleware, portals, B2B, B2C
- Shared data driving processes – the Master Data



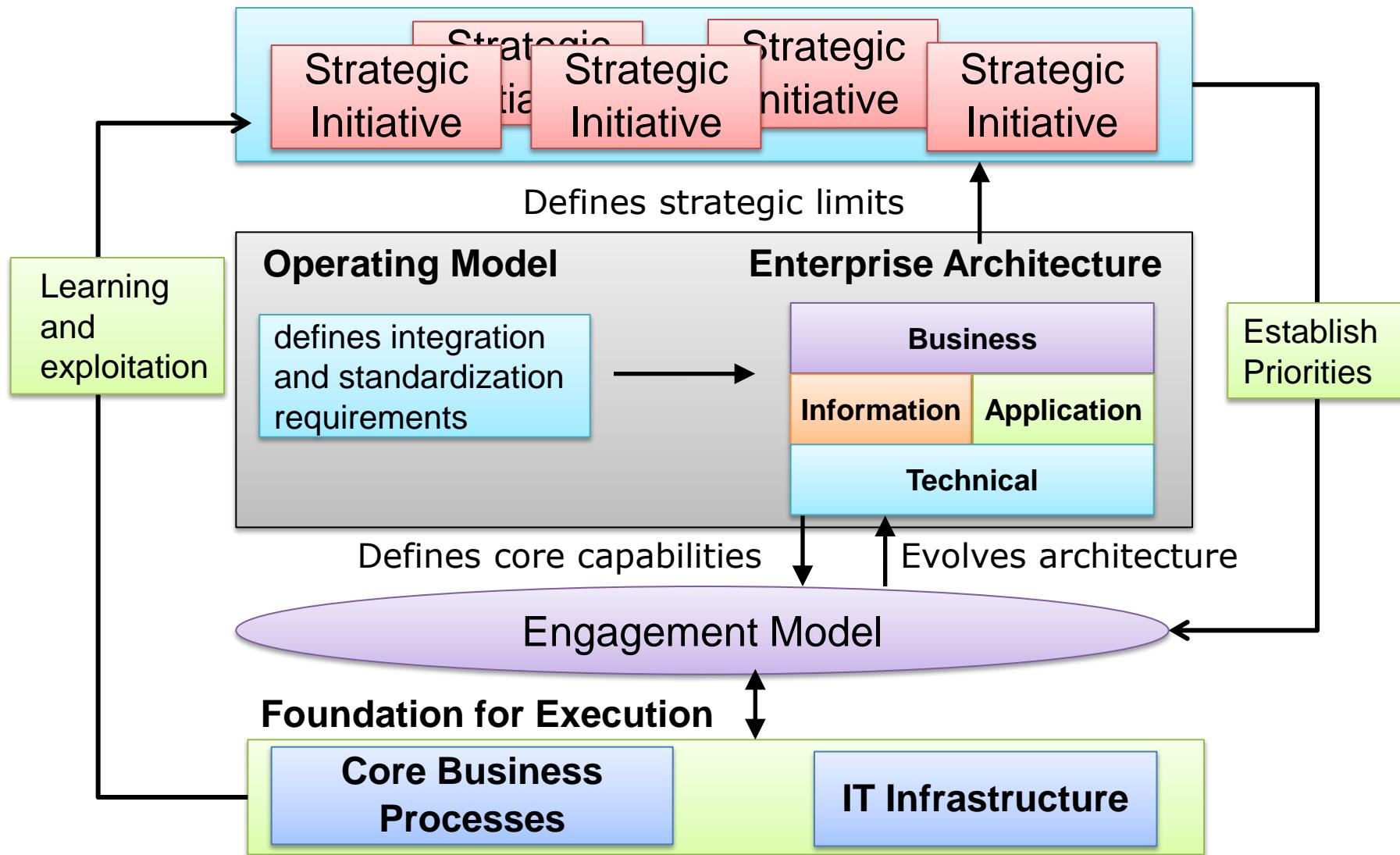


Operating Model and EA

- **Operating Model:** the desired level of business process *integration* and business process *standardisation* for delivering goods and services to customers.
- **How to get there:**
 - **Enterprise Architecture.**
 - **Governance:** decision rights and accountability for effective IT use.
- **The Assets:**
 - **Foundation for Execution:** IT infrastructure and digitized business processes automating an enterprises core capabilities.



Designing a Foundation for Execution





Key Dimensions of an Operating Model

- **Standardisation:** business processes are the same no matter who executes them or where:
 - Delivers efficiency and predictability.
 - May mean that perfectly good, but redundant, processes are ripped out and replaced.
- **Integration:** link organisational units through shared data. Delivers efficiency, coordination, transparency, and agility.

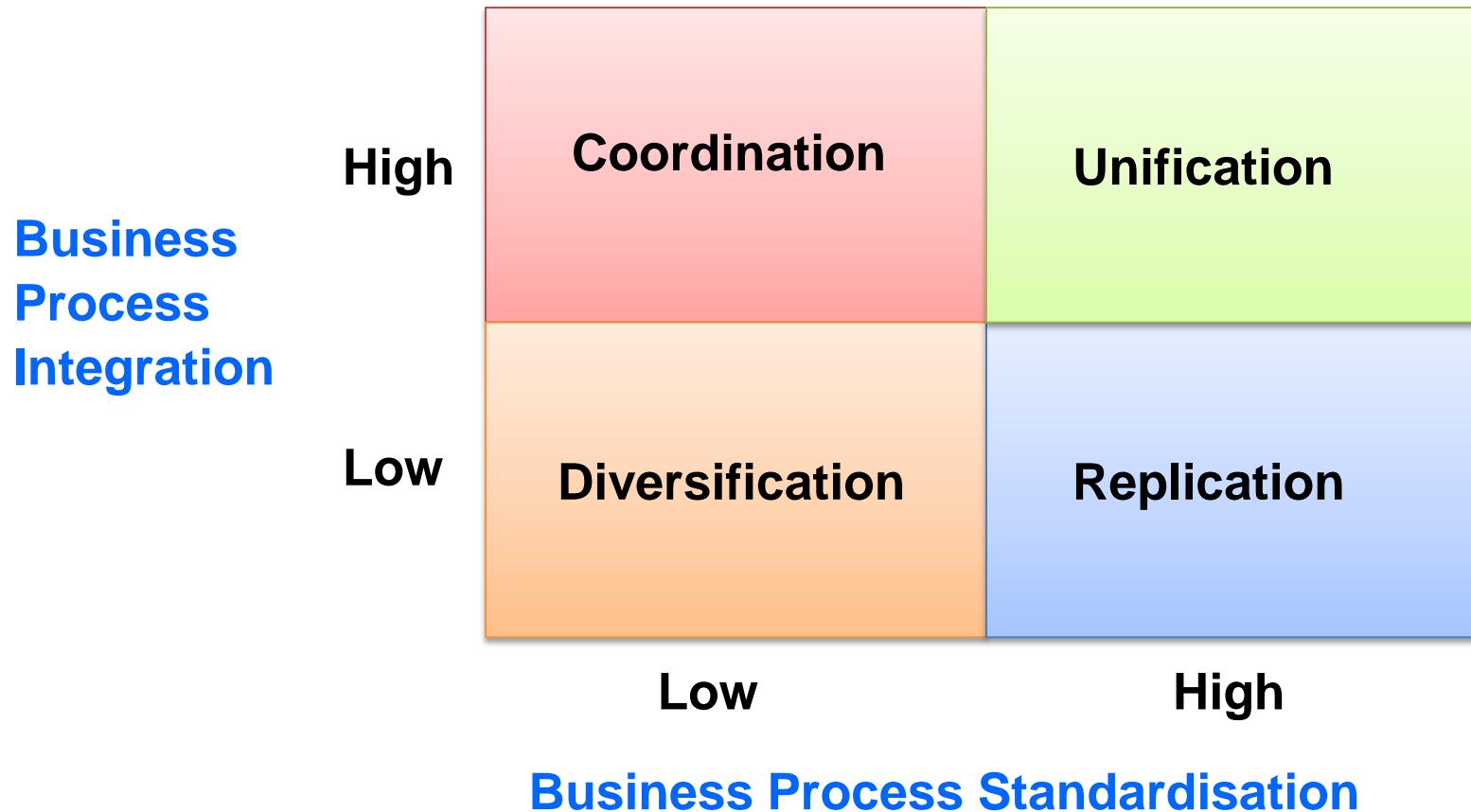


Key Questions

- **Standardisation**
 - To what extent does the company benefit by having business units run their operations in the same way ?
- **Integration**
 - To what extent is the successful completion of one business unit's transactions dependent on the availability, and timeliness of other business units data ?



Four Types of Operating Models





Characteristics of Coordination

- Shared customers, product or suppliers;
- Impact on other business unit transactions;
- Operationally unique business units or functions;
- Autonomous business management;
- Business unit control over business process design;
- Shared customer, product or supplier data;
- Consensus processes for designing IT infrastructure services;
- IT application decisions are made in business units.



Characteristics of Unification

- Customers and suppliers may be local or global
- Globally integrated business processes often with support of enterprise systems;
- Business units with similar or overlapping operations;
- Centralized management often applying functional/process/business unit matrices;
- High-Level process owners design standardized process;
- Centrally mandated databases;
- IT decisions are made centrally



Characteristics of Diversification

- Few if any shared customers or suppliers;
- Independent transactions;
- Operationally unique business units;
- Autonomous business management;
- Business unit control over business process design;
- Few data standards across business units;
- Most IT decisions are made within business units.



Characteristics of Replication

- Few if any shared customers;
- Independent transactions aggregated at a high level;
- Operationally similar business units;
- Autonomous business unit leaders with limited discretion over processes;
- Centralized (or federal) control over business process design;
- Standardized data definitions but data locally owned with some corporate aggregation;
- Centrally Managed IT services.



Operating Models & Growth Types

Business Process Integration

High

Coordination

Organic: stream of product innovations easily made available to existing customers using existing integrated channels

Acquisition: can acquire new customers for existing products but must integrate data

Unification

Organic: leverage economies of scale by introducing existing products/services in new markets; grow product line incrementally

Acquisition: can acquire competitors to leverage existing foundation; must rip and replace infrastructure

Low

Diversification

Organic: small business units may feed core business; company grows through business unit growth.

Acquisition: unlimited opportunities; must ensure shareholder value

Replication

Organic: replicate best practices in new markets; innovations extended globally

Acquisition: can acquire competitors to expand market reach; must rip and replace

Low

High

Business Process Standardisation

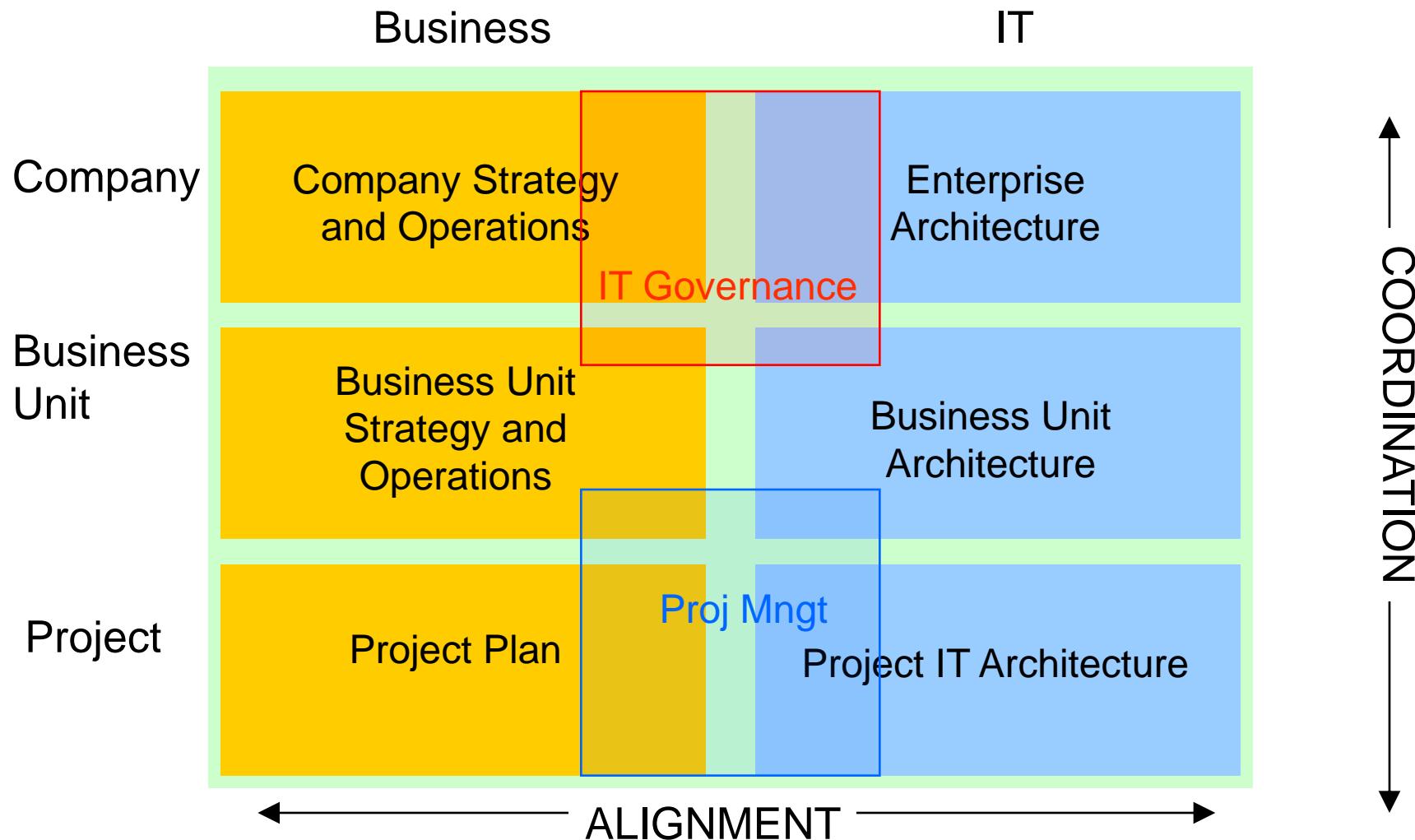


Engagement Model Challenges

- Coordinate levels:
 - **Company** : senior leaders set direction;
 - **Business Units** : leaders focus on business unit performance;
 - **Project**: focus on project success.
- Align conflicting priorities:
 - **Business**: focus on cutting costs and delivering rapid solutions;
 - **IT**: focus on most powerful risk free systems;
 - ❖ Ensure value generated from IT investments.

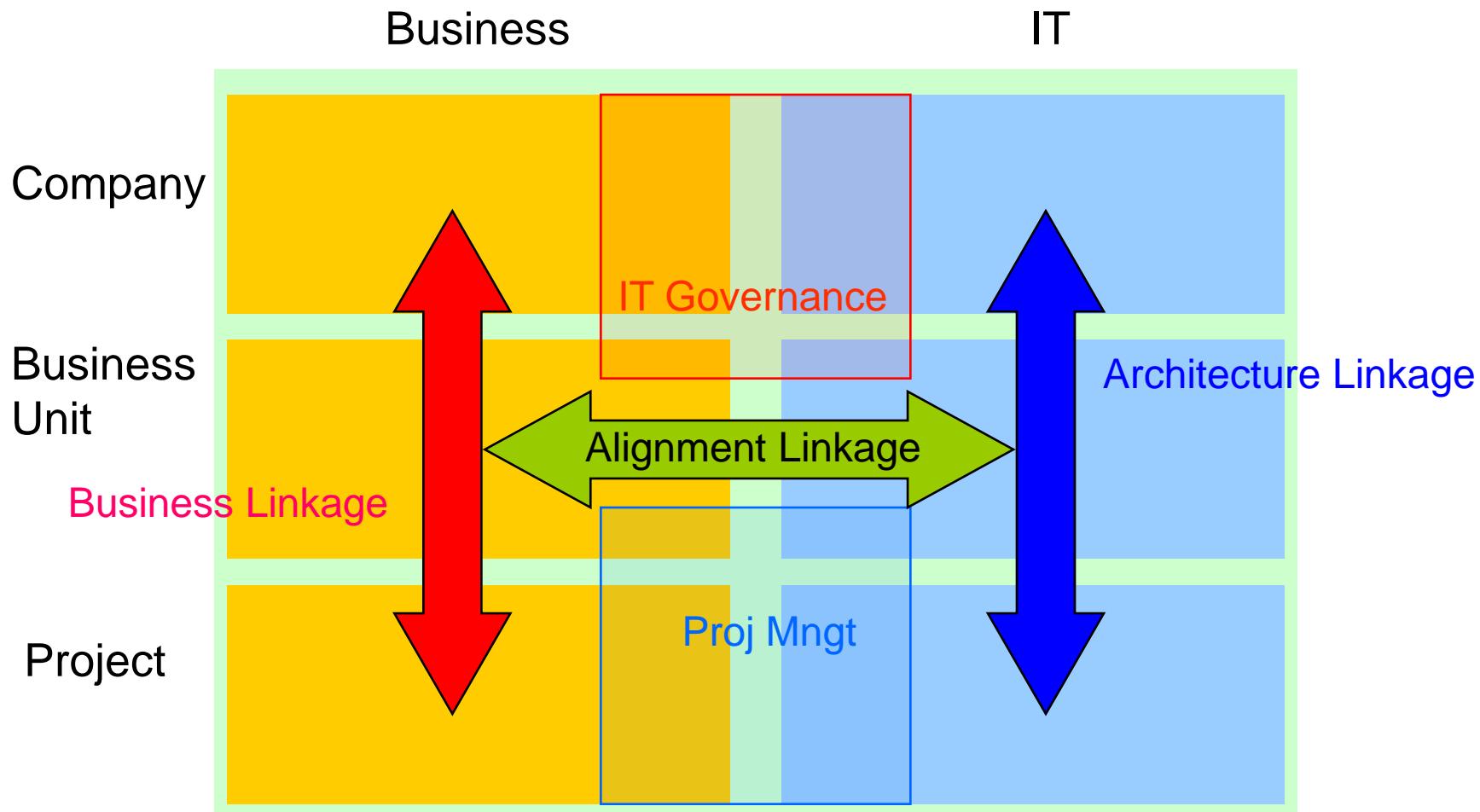


Engagement Model (6 stakeholders)





Linking Mechanisms





IT Governance

Definition: “Decision rights and accountability framework for encouraging desirable behaviors in IT use.”

- Managed by a cross organisational board.
- Shares mechanisms with corporate governance
 - links to business
- Key decision areas:
 - IT Principles;
 - Enterprise Architecture ;
 - Centrally coordinated shared services;
 - IT Infrastructure;
 - Business Needs - Requirements and Process;
 - Prioritisation and Investment.



Business Linkage

Ensure business goals are translated into project goals and projects coordinated and connected to larger transformation efforts:

- Process owners (Business Process Analyst on projects)
- Program prioritisation;
- Projects have business sponsors;
- Project reviews at company level, ongoing reviews and post-implementation;
- Involve people representing company early on;
- Bonuses and incentives tied to company goals;
- Incentive programs to motivate behaviour.



Alignment Linkage

Ensure ongoing communication and negotiation between Business and IT:

- Business-IT relationship managers;
- Business Unit CIOs;
- Project Management Office (PMO);
- Project manager training;
- Project methodology aligned with SDLC;
- Metrics to assess projects.



Architecture Linkage

Ensure projects are reviewed (early on and at all stages) for compliance, and exceptions are tracked and approved:

- Establish and update standards;
- Establish principles that are linked to business goals;
- Business Unit CIOs
- Project teams include architect
- Architecture review board;
- Architecture training programs;
- Compliance metrics;
- Project funding and continuation depends on compliance.



Importance of IT Principles

IT Principles clarify desirable behaviours.

- Must match or have traceability to management's business principles.
- Detailed principles should clarify 3 expectations for IT:
 - 1) What is the enterprise's desired operating model ?
 - 2) How will IT support the desired operating model ?
 - 3) How will It be funded ?



Importance of IT Principles

State how IT is used in the business. For Example:

- Enable the business;
- Ensure Information and architectural integrity;
- Create a common customer view;
- Promote consistent architecture;
- Utilise industry standards;
- Reuse before buy; buy before build;
- Manage IT as an investment;
- Rapid deployment of new applications.

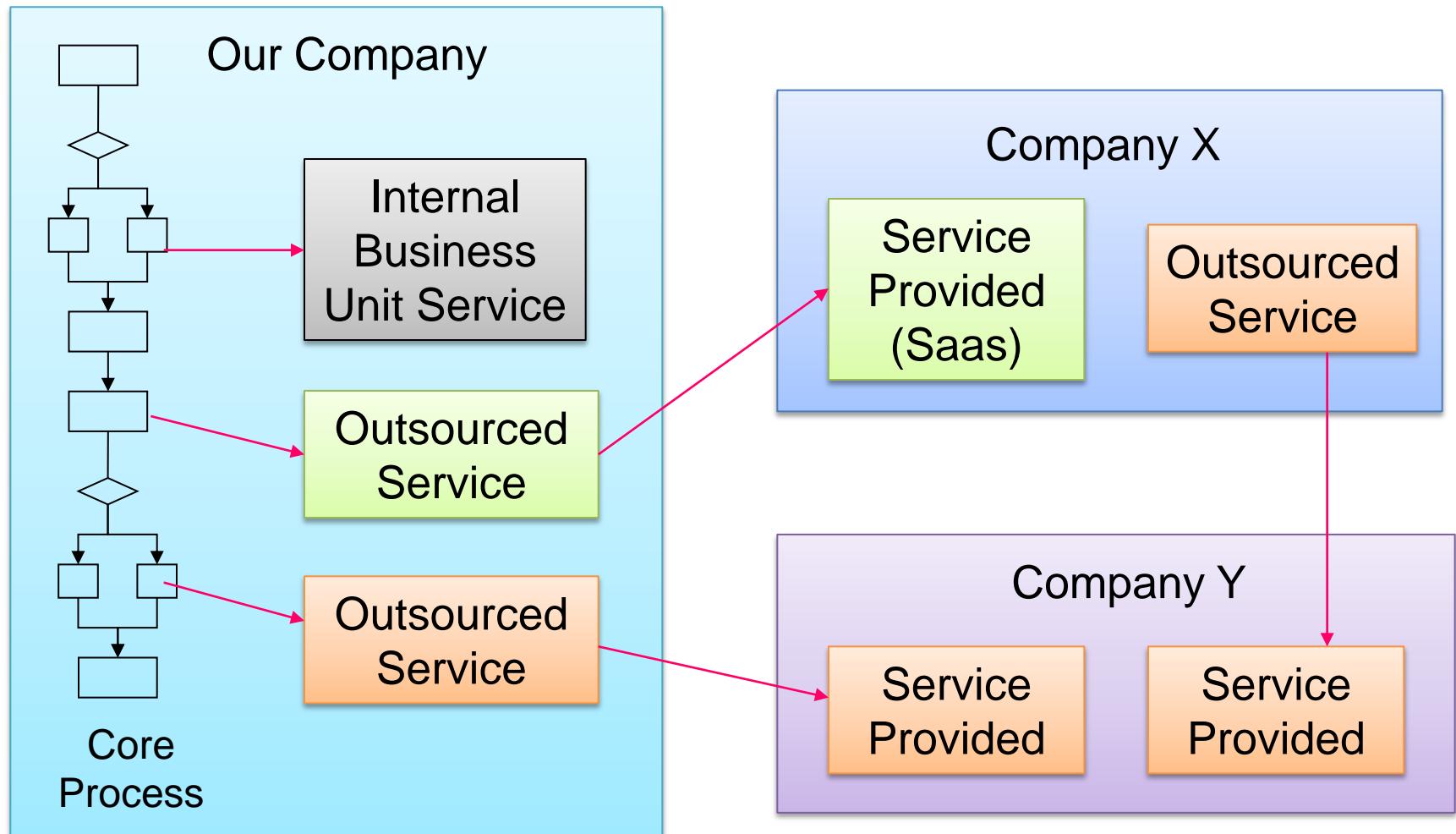


4 Stages of EA Maturity

1. **Business Silos:** Applications built by local business units that are independent of other applications in the business.
2. **Standardised Technology:** Employ a standard set of infrastructure across business units and applications. Decrease the number of platforms managed.
3. **Optimised Core:** Move from a local view of data and applications to an enterprise view. Embrace the principle that standardisation enables innovation.
4. **Business Modularity:** Business Services that can be swapped in or out, re-used, and provisioned internally or externally. Enables strategic agility.



Business Modularity and Services





Business Services (Modules)

- Full-fill a business capability;
- Characterised by a combination of:
 - People
 - Process
 - Technology
- Have Consumers and Providers:
 - Contract
 - Qualities (Service Level Agreement)
- Allow the organisation to consider, in a more flexible way:
 - Sourcing (internal or outsourced)
 - Procurement
 - Federation / Centralisation
 - Channel exposure



Technologies Enabling Business Modularity

- SOA: Service Oriented Architecture.
- BPM: Business Process Management.
- Cloud: Virtualised Technology.
 - SaaS: Software as a Service.
 - PaaS: Platform as a Service.
 - IaaS: Infrastructure as a Service.
- etc

Requires an EA To Manage



The Service Oriented Architecture

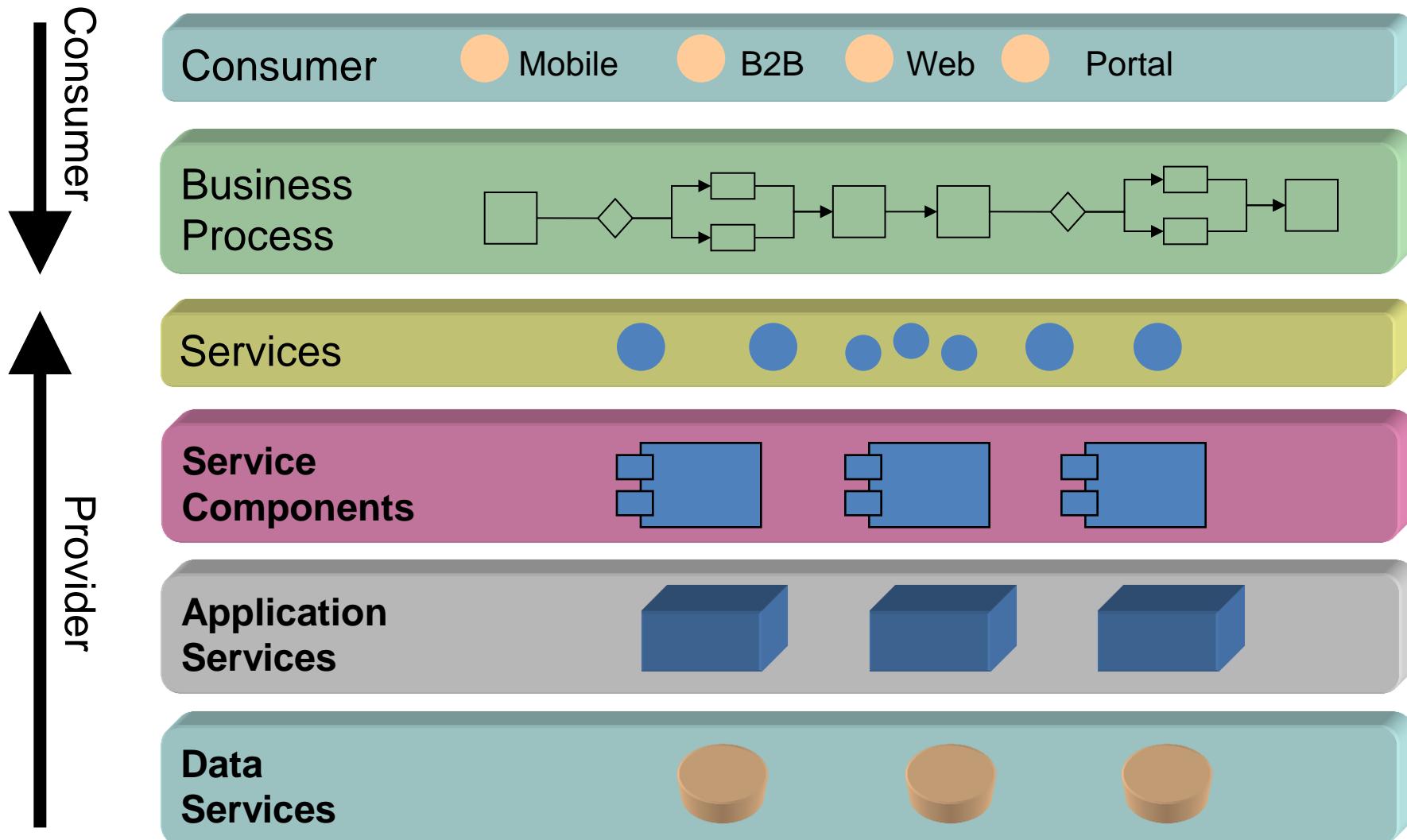
A Service Oriented Architecture (SOA) is a component model that decomposes a system into loosely coupled services that expose their functions through well-defined interfaces. The services are system and location independent and can be assembled and reassembled to create new services. Ideally services should provide predictable Quality of Service levels and be controllable and manageable across the network.

Kim Horn

- SOA can be applied across the Enterprise, at all levels, both Technical and Business;
- Unites the business processes with business services, applications, infrastructure and data services;

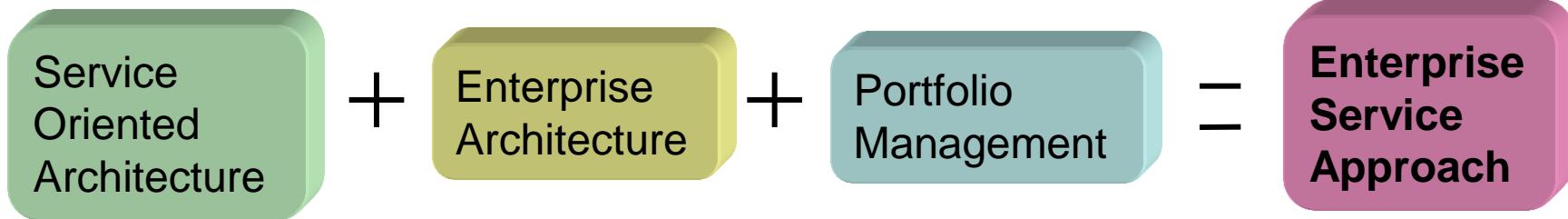


SOA Enterprise Architecture





Enterprise Service Approach *



'Today's strategic planner must recognise that the traditional paradigm of custom products, a monolithic system, one-off solutions to problems, and an ever expanding complex manner of working and co-joining systems is quickly becoming a relic of the past...The new paradigm capitalises on modular elements, coupled resources and an evolving environment with a focus on service delivery rather than throughput.' *

* Kelley, R.T. in Laplante, P. and Costello, T. (2006). CIO Wisdom II: More Best Practices, Pearson Education, Inc., Prentice Hall, NJ, p. 257.



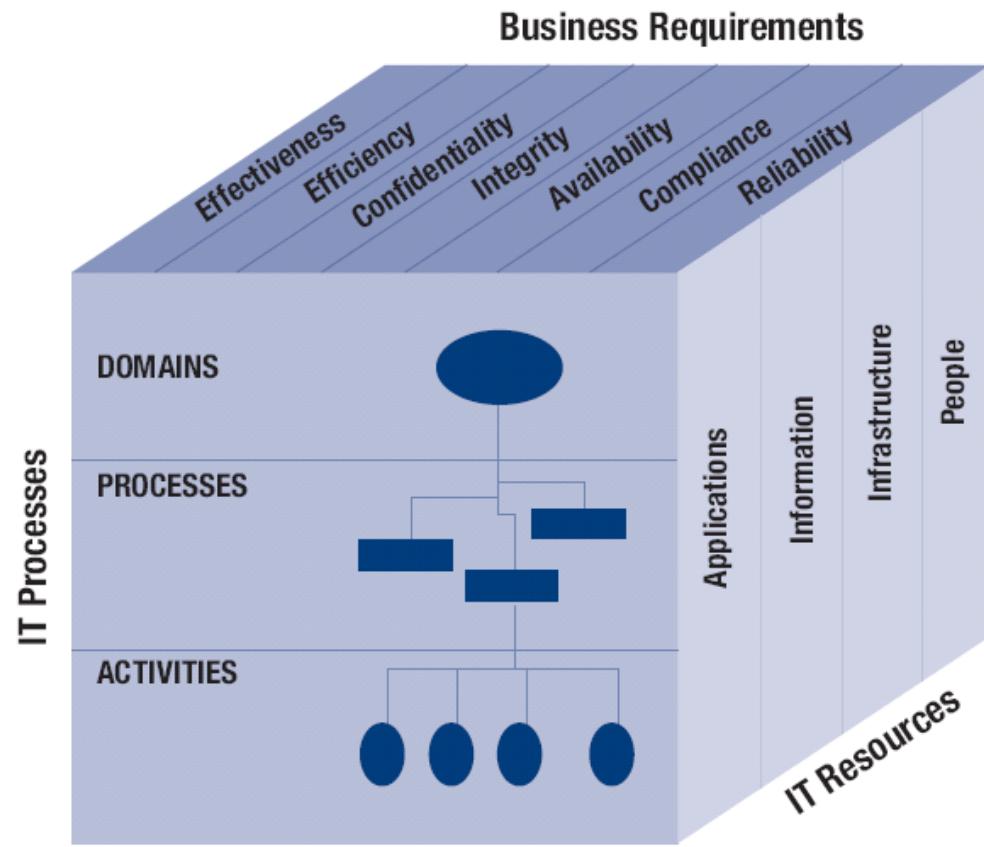
SOA Requires an EA Approach

- Cross organisational, EA level, support and prioritisation is key as:
 - Services deliver ROI in later projects;
 - Projects may require services that do not yet exist therefore need to be planned;
- However, projects should return sufficient value on their own to justify the development of Services;
 - Use projects to work toward the goal;
- Sustained investment in services provides the bigger benefit of Enterprise Agility.
- Governance required for Design, Utilisation and Operation of services;



COBIT and EA

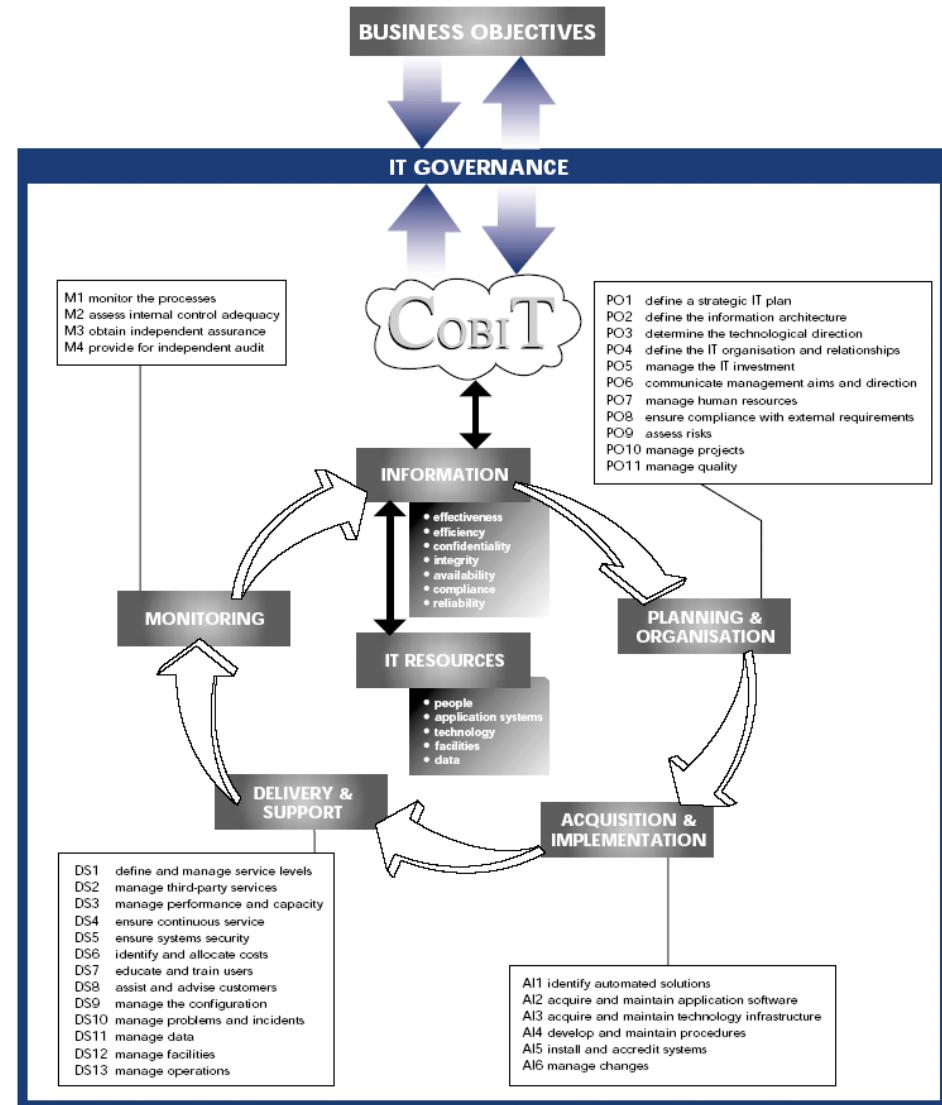
Control Objectives for Information and related Technology (COBIT) is an increasingly accepted set of guidance materials for IT governance.





COBIT

- **IT Resources** are modeled in the Enterprise Architecture repository.
- The Enterprise Architecture becomes the central repository for IT resources accessed by the COBIT IT Management processes around it.
- **COBIT Processes:**
 - PO - Plan and Organise
 - AI - Acquire and Implement
 - DS - Deliver and Support
 - ME - Monitor and Evaluate



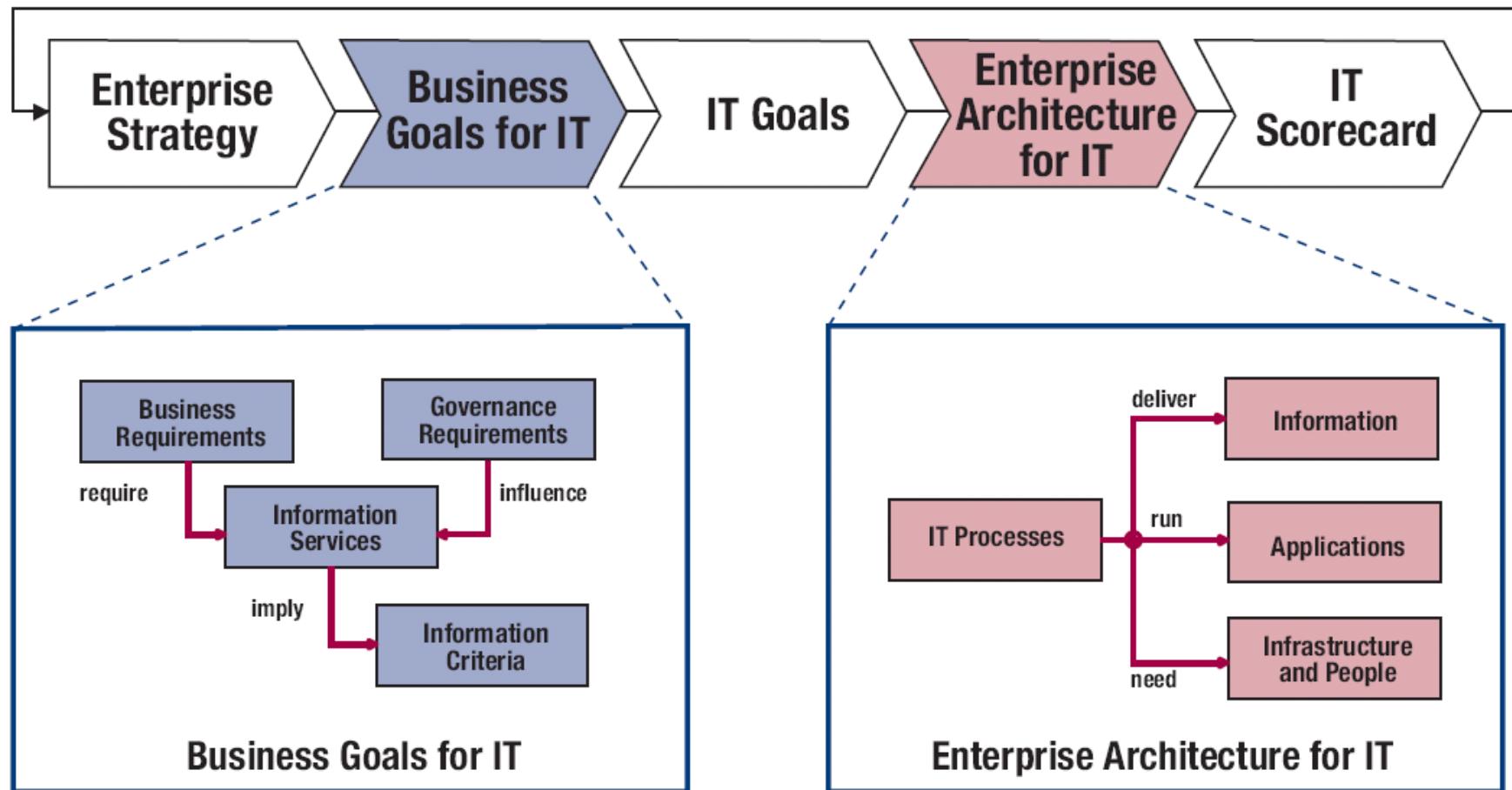


COBIT IT Governance Areas

- **Strategic alignment** focuses on ensuring the linkage of business and IT plans; defining, maintaining and validating the IT value proposition; and aligning IT operations with enterprise operations.
- **Value delivery** is about executing the value proposition throughout the delivery cycle, ensuring that IT delivers the promised benefits against the strategy, concentrating on optimising costs and proving the intrinsic value of IT.
- **Resource management** is about the optimal investment in, and the proper management of, critical IT resources: applications, information, infrastructure and people. Key issues relate to the optimisation of knowledge and infrastructure.
- **Risk management** requires risk awareness by senior corporate officers, a clear understanding of the enterprise's appetite for risk, understanding of compliance requirements, transparency about the significant risks to the enterprise and embedding of risk management responsibilities into the organisation.
- **Performance measurement** tracks and monitors strategy implementation, project completion, resource usage, process performance and service delivery, using, for example, balanced scorecards that translate strategy into action to achieve goals measurable beyond conventional accounting.



COBIT Goals and Strategy





COBIT Benefits

IT management requires a control system and framework.
COBIT contributes to this need by:

- Making a link to business requirements
- Providing a set of Business Processes for IT Management
- Identifying the major IT resources to be leveraged - modeled in an Enterprise Architecture repository.
- Defining the management control objectives to be considered for each process



EA Framework Models

The Applications, Technology and Information portfolio are not the only assets in the enterprise. There are many others including: models, SDLC artifacts, views, documents, system architectures, industry architectures, patterns, standards, deliverables, plans, building blocks, etc.

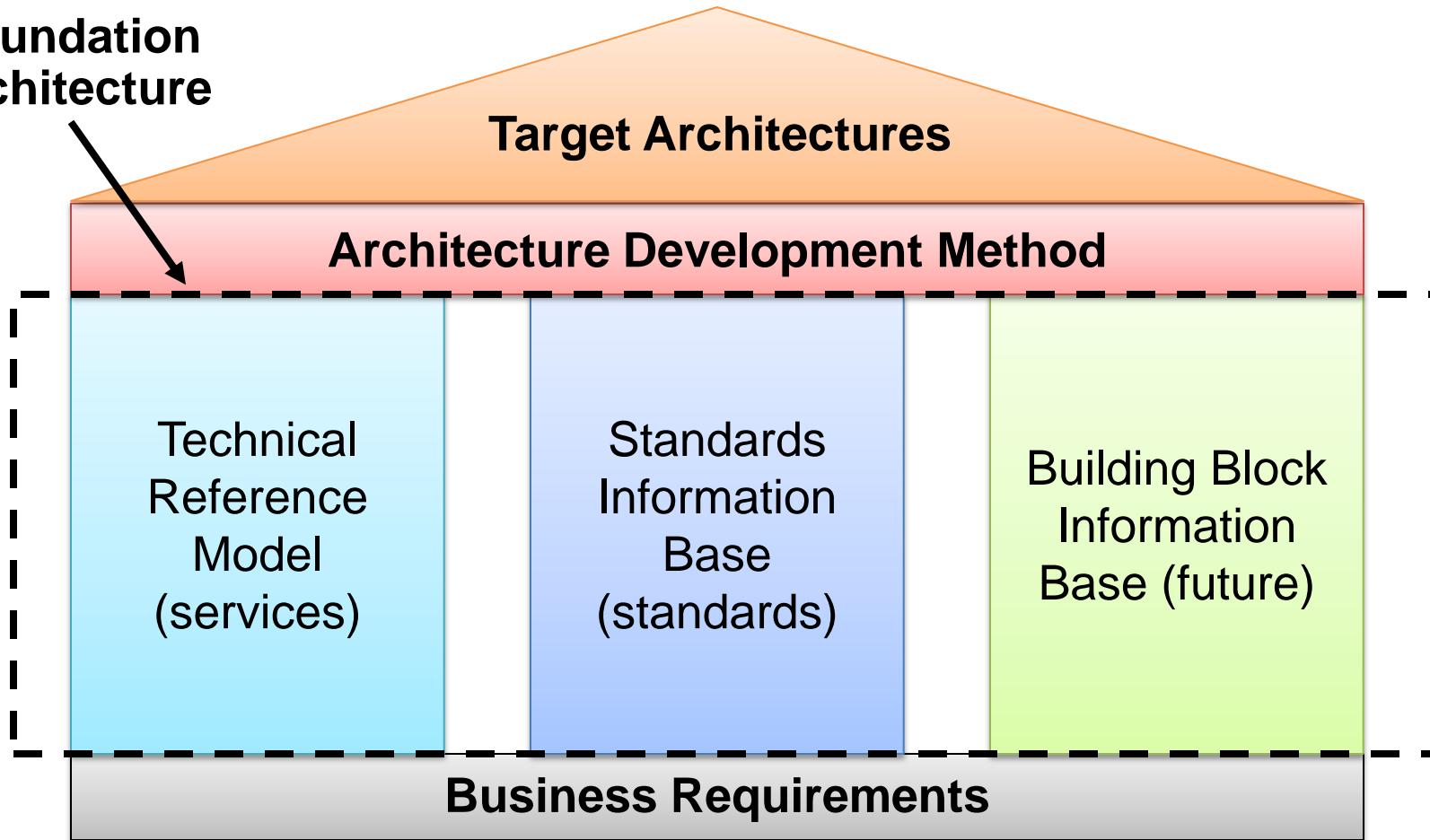
All these assets need to be catalogued, maintained and managed. Frameworks provide the foundations to do this, e.g.:

- **Togaf** – An Architecture Framework and Architecture Development Methodology (ADM)
- **Zachman** – an Integration Framework to position various domains and artefacts.
- **Bernard** – similar to above.
- **DODAF** and many others...



TOGAF Components

Foundation Architecture

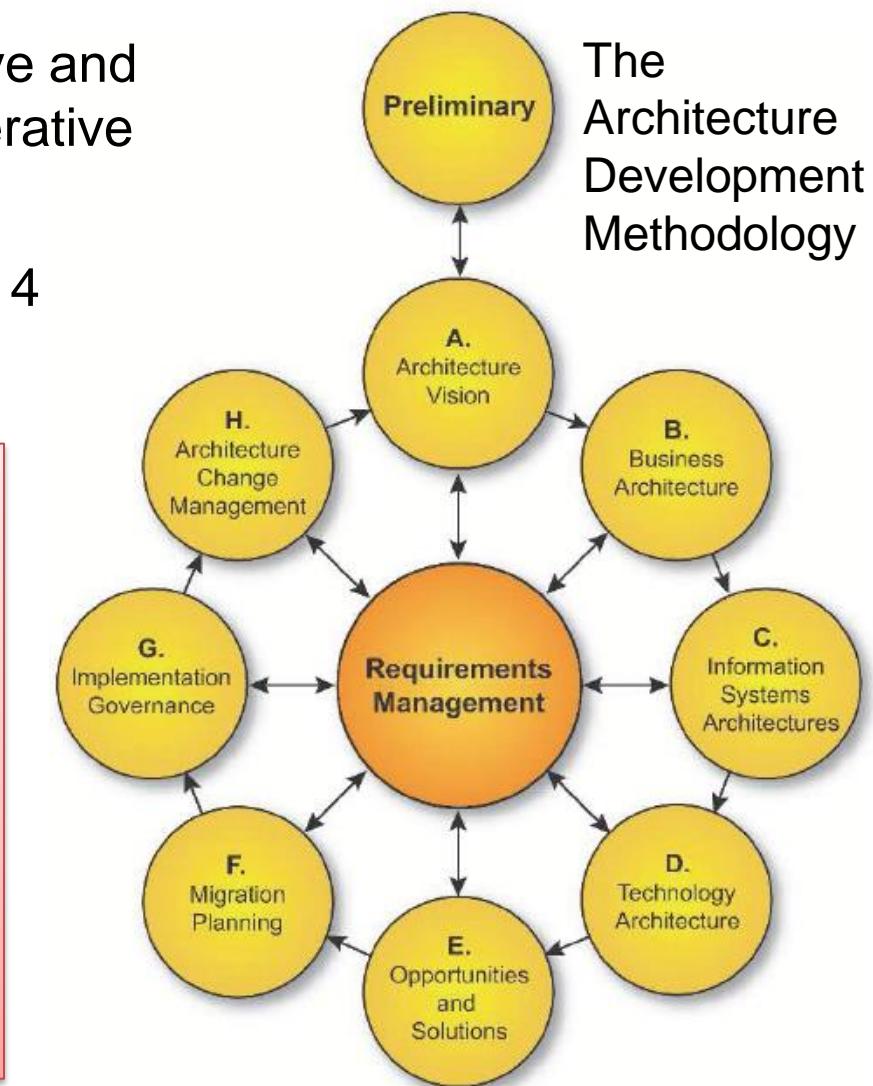
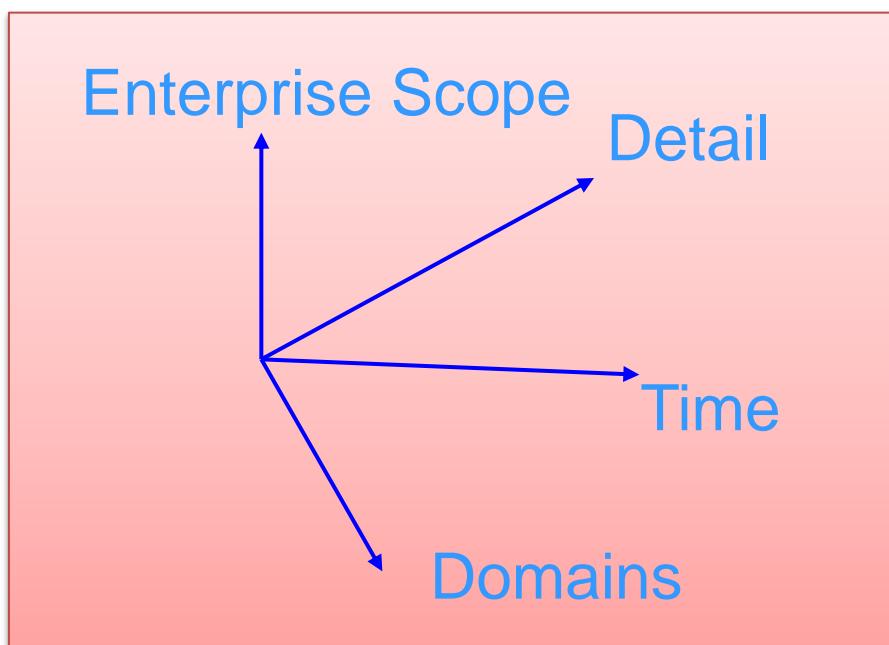




EA Built Iteratively / Lean

A “complete” EA is difficult to achieve and is best approached in a lean and iterative manner.

Each iteration can have tradeoffs in 4 dimensions:



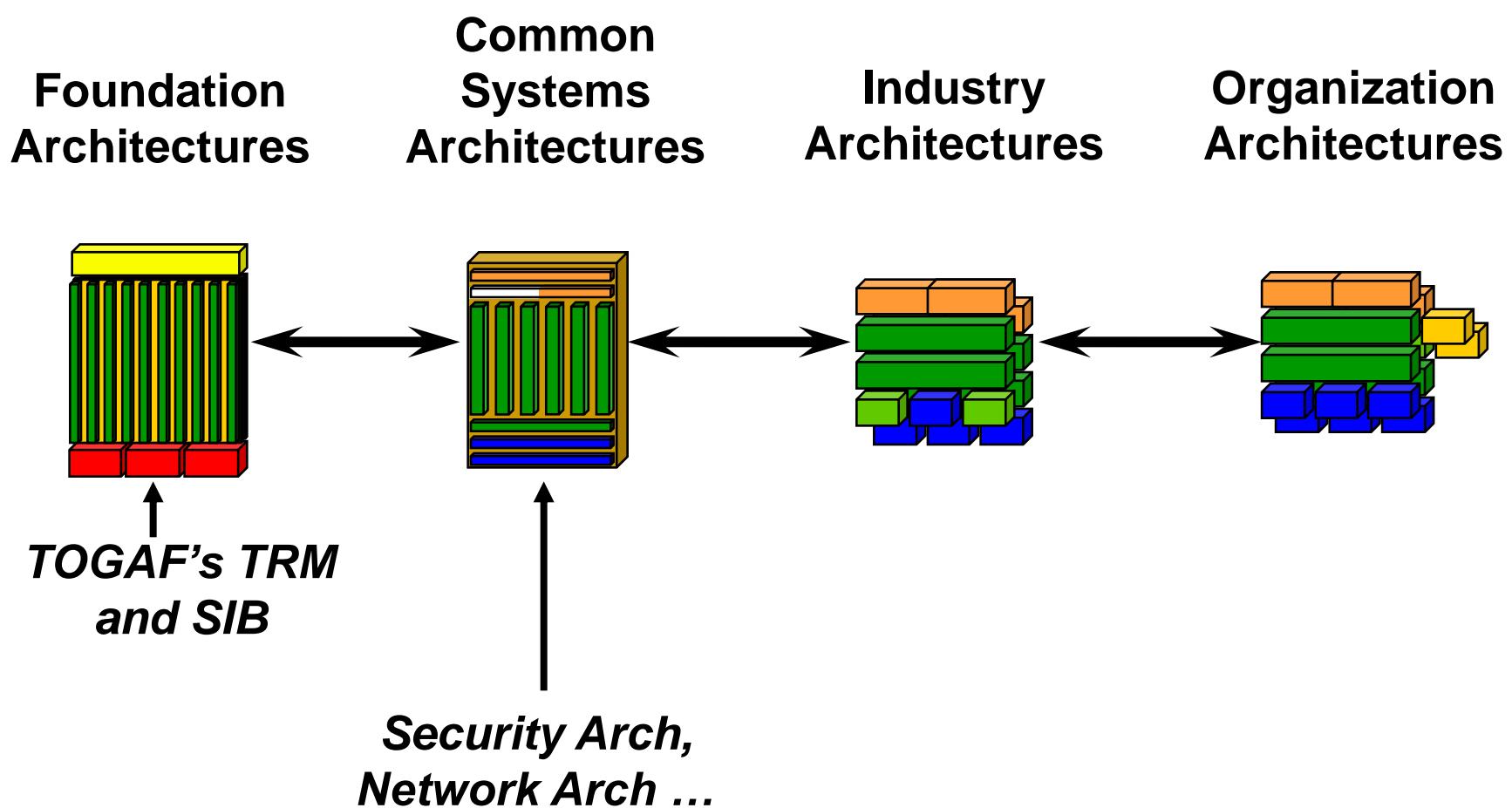


The Architecture Continuum

- There is a continuum of Architectures:
 - Logical to physical
 - Horizontal (IT technology focused) to vertical (business focused)
 - Generalization to specialization
 - Strategic to Segment to Capability
- Need a way to categorize, reference and store these:
 - Taxonomy of services to one of reference products
 - Taxonomy to complete and specific architecture specifications (artifacts)



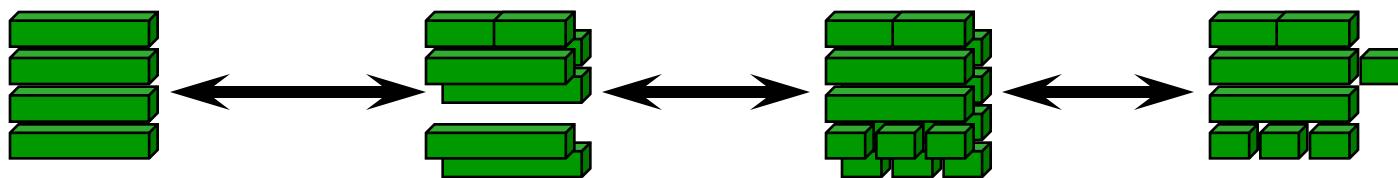
There is a Continuum of Architectures





There is a Continuum of Solutions

- Represents the implementation of the architectures
- Architectures are populated with components
- Practical realization of the conceptual architecture



***Products and
Services***

***Systems
Solutions***

***Industry
Solutions***

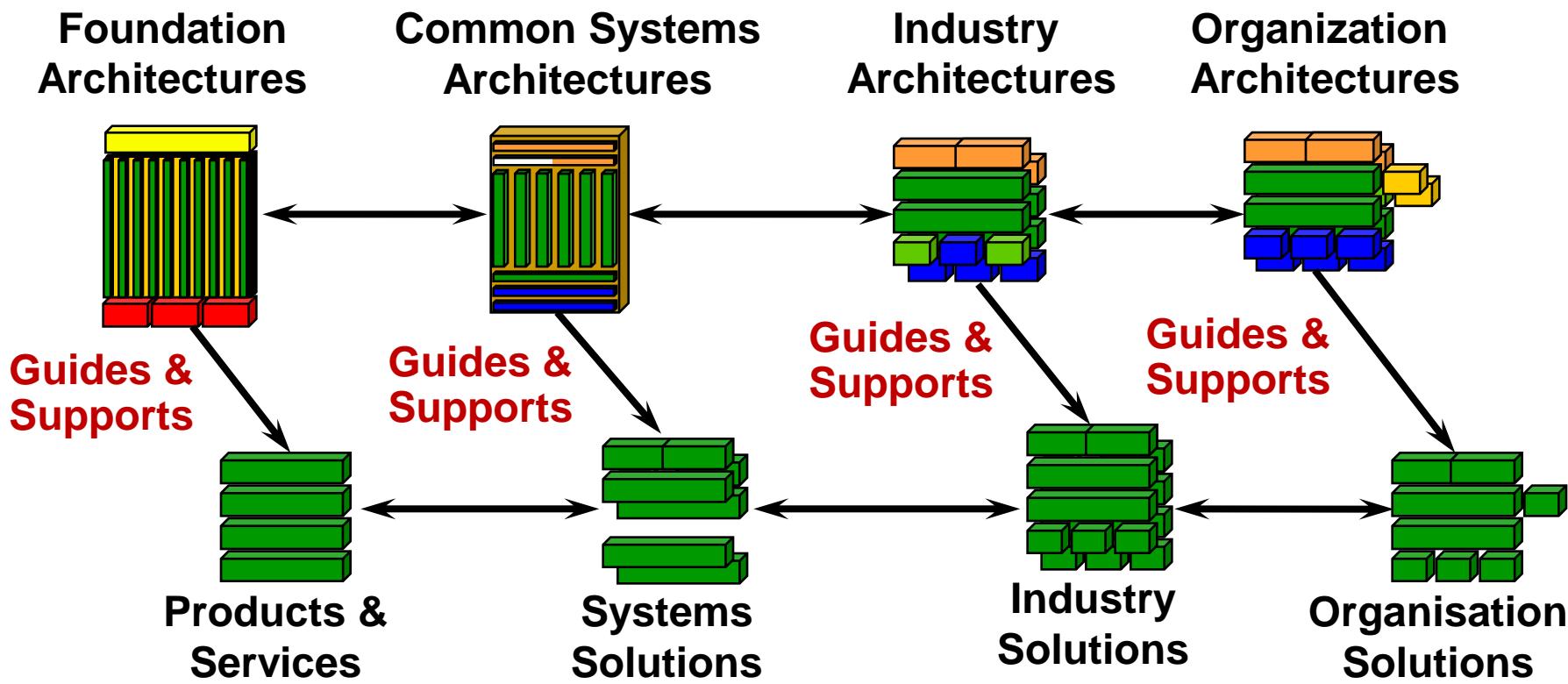
***Organization
Solutions***



These Continuums Interact

To provide an Enterprise Continuum – a “virtual” repository of all the architecture assets.

Architecture Continuum



Solutions Continuum

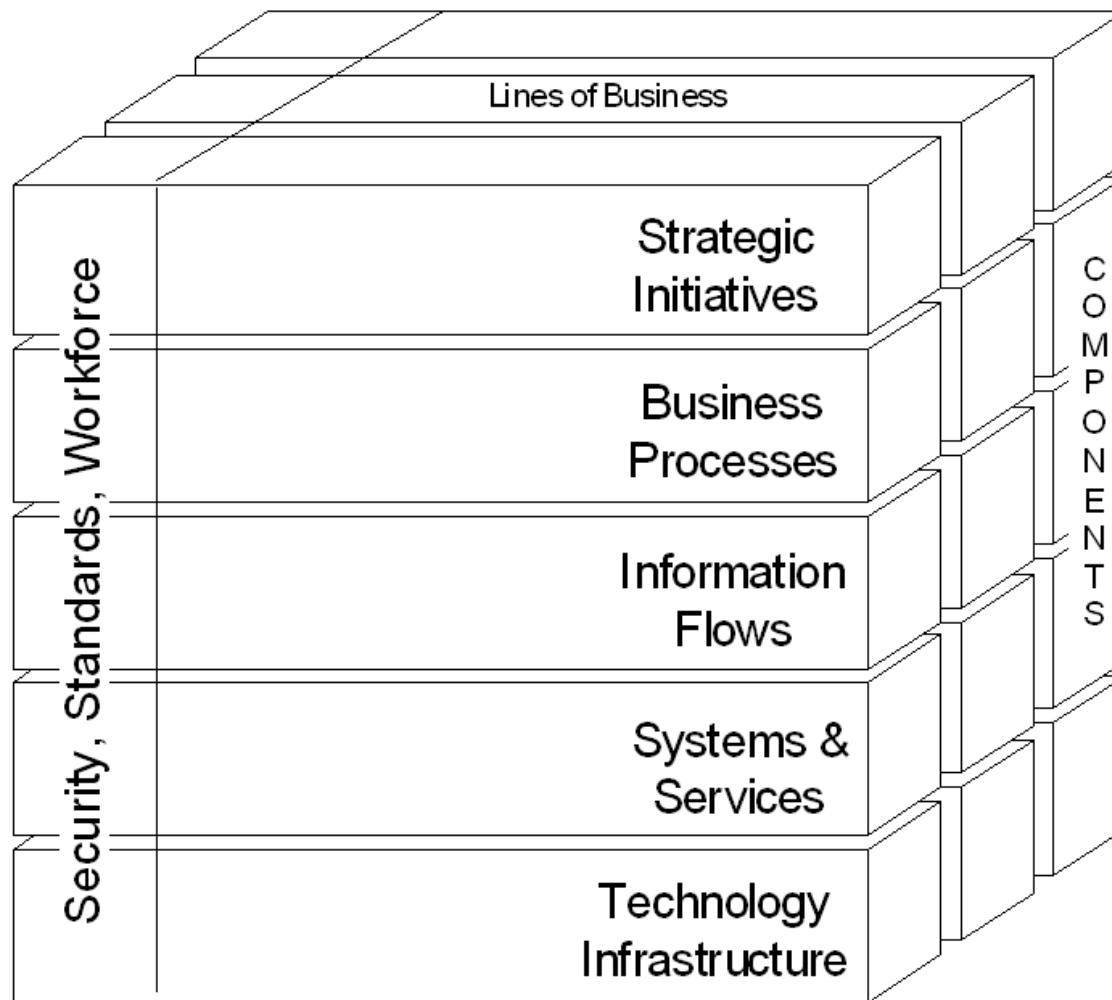


Zachman

	Data (What)	Function (How)	Network (Where)	People (Who)	Time (When)	Motivation (Why)
Scope (Planner)						
Enterprise Model (Owner)						
System Model (Designer)						
Technology Model (Builder)						
Components (Sub-Contractor)						
Functioning System (User)						



Bernard's EA 3 Cube





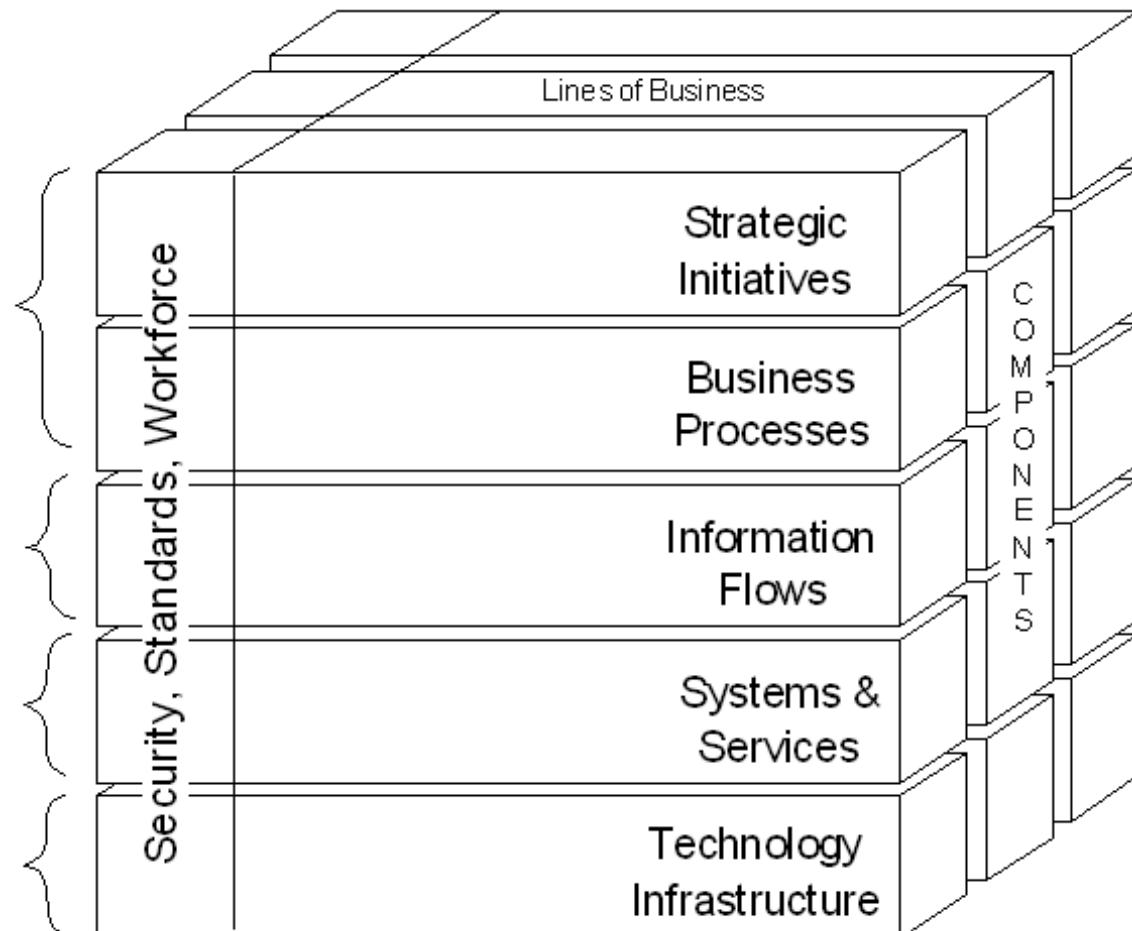
Bernard's EA 3 Cube

Business Architecture

Information Architecture

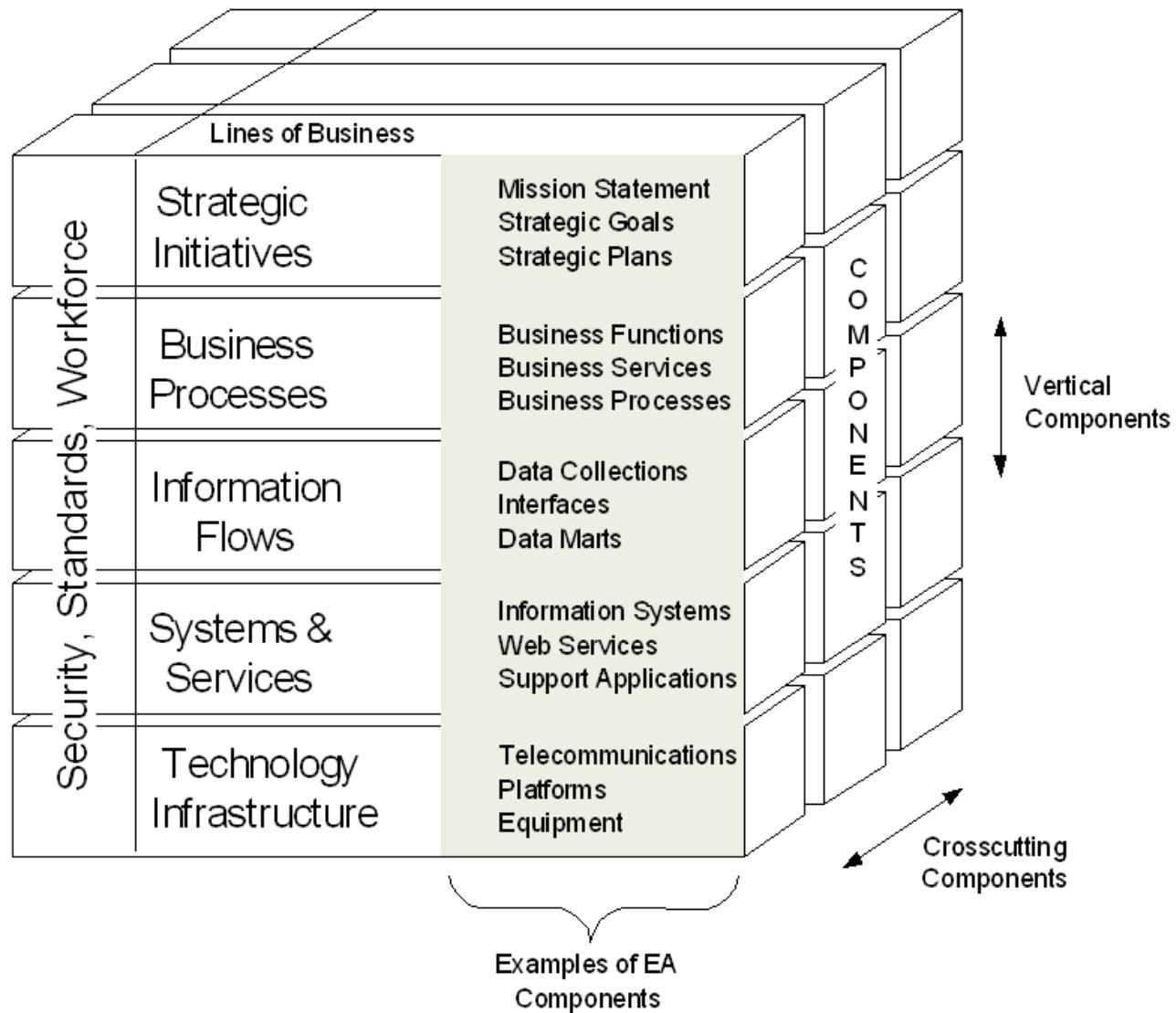
Application Architecture

Technology Architecture





Bernard's EA 3 Cube





Conclusion

- Changing a firms Technology, requires an understanding of the Strategy and Goals of the Enterprise:
 - The Technology is required to execute the Applications that implement the Business Processes;
 - The Applications store and massage the Information required for those processes;
 - The Technology and Applications automate Business processes that provide the Enterprise's Foundation for Execution.
 - Without IT Policy no one knows what IT is for;
 - Without a well understood and communicated Strategy an EA and the Operating Model have no context;
 - Without a clearly defined Operating Model the EA and the Foundation for Execution have no requirements;
 - Do not re-invent the wheel; EA frameworks are there to be used. They can be tailored to suite a Particular Enterprises' needs;
 - EA can be Lean; it provides agility so should not hinder this goal.
-