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Enterprise Architecture and COBIT

The Open Group

October 22, 2003

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reducing risk, adding value,
driving change

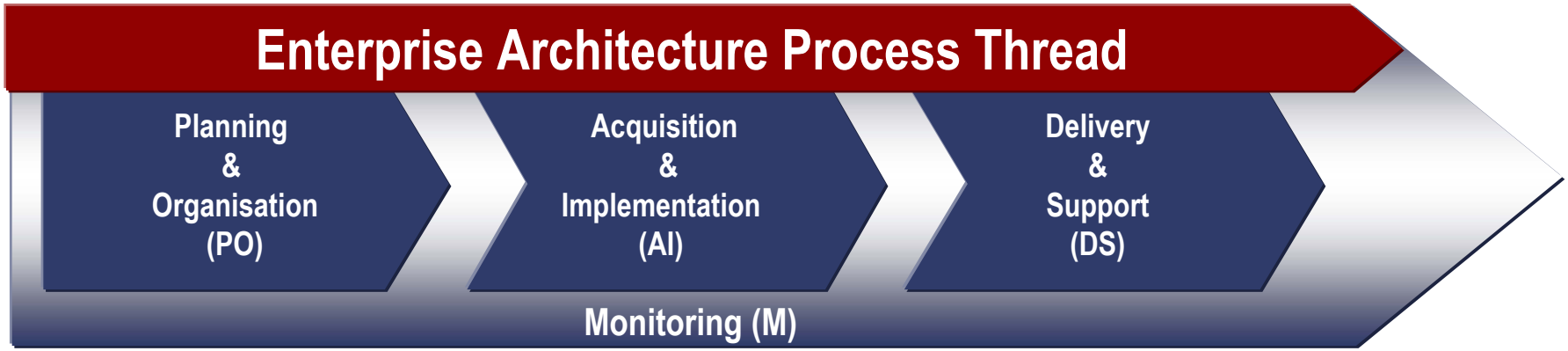
Agenda

Introduction

- Case Study
- Enterprise Architecture and IT Governance
- Conclusion

Business Orientation

In order to provide the information that the organization needs to achieve its objectives, IT resources need to be managed by a set of naturally grouped processes.



PO

- Strategy and tactics for IT contribution
- Meeting Business objectives
- Appropriately planned, communicated and managed
- Proper organisation and technology infrastructure
- An Enterprise Architecture is defined
- Quality is managed

AI

- Realisation of IT strategy
- Solutions identified, developed, or acquired and implemented
- Solutions integrated into business process
- Change and maintenance of systems

DS

- Actual delivery of required services
- Actual operations through security, including training
- Establishment of support processes
- Actual processing of data by applications

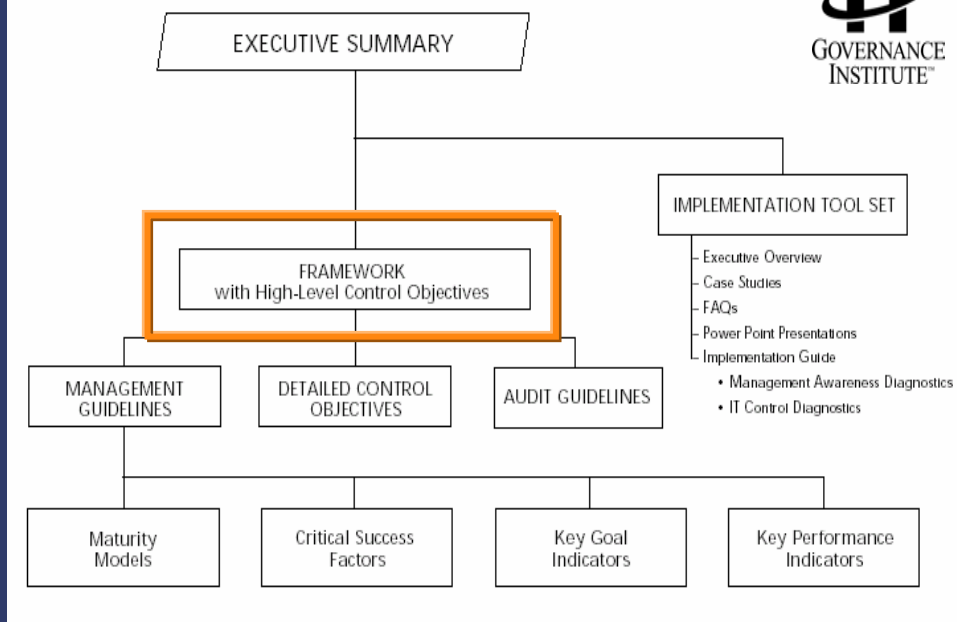
M

- Regular assessment of all IT processes
- Compliance with and quality of controls

DOMAIN		PROCESS	Information Criteria: effectiveness	efficiency	confidentiality	integrity	availability	compliance	reliability	IT Resources: people	applications	technology	facilities	data
Planning & Organisation	PO1	Define a strategic IT plan	P	S						✔	✔	✔	✔	✔
	PO2	Define the information architecture	P	S	S	S					✔			✔
	PO3	Determine technological direction	P	S								✔	✔	
	PO4	Define the IT organisation and relationships	P	S						✔				
	PO5	Manage the IT investment	P	P					S	✔	✔	✔	✔	
	PO6	Communicate management aims and direction	P					S		✔				
	PO7	Manage human resources	P	P										
	PO8	Ensure compliance with external requirements	P											
	PO9	Assess risks	P	S										
	PO10	Manage projects	P	P										
	PO11	Manage quality	P	P										
Acquisition & Implementation	AI1	Identify automated solutions	P	S										
	AI2	Acquire and maintain application software	P	P										
	AI3	Acquire and maintain technology infrastructure	P	P										
	AI4	Develop and maintain procedures	P	P										
	AI5	Install and accredit systems	P											
	AI6	Manage changes	P	P										
Delivery & Support	DS1	Define and manage service levels	P	P										
	DS2	Manage third-party services	P	P										
	DS3	Manage performance and capacity	P	P										
	DS4	Ensure continuous service	P	S										
	DS5	Ensure systems security												
	DS6	Identify and allocate costs		P										
	DS7	Educate and train users	P	S										
	DS8	Assist and advise customers	P	P										

www.isaca.org

CobiT Family of Products



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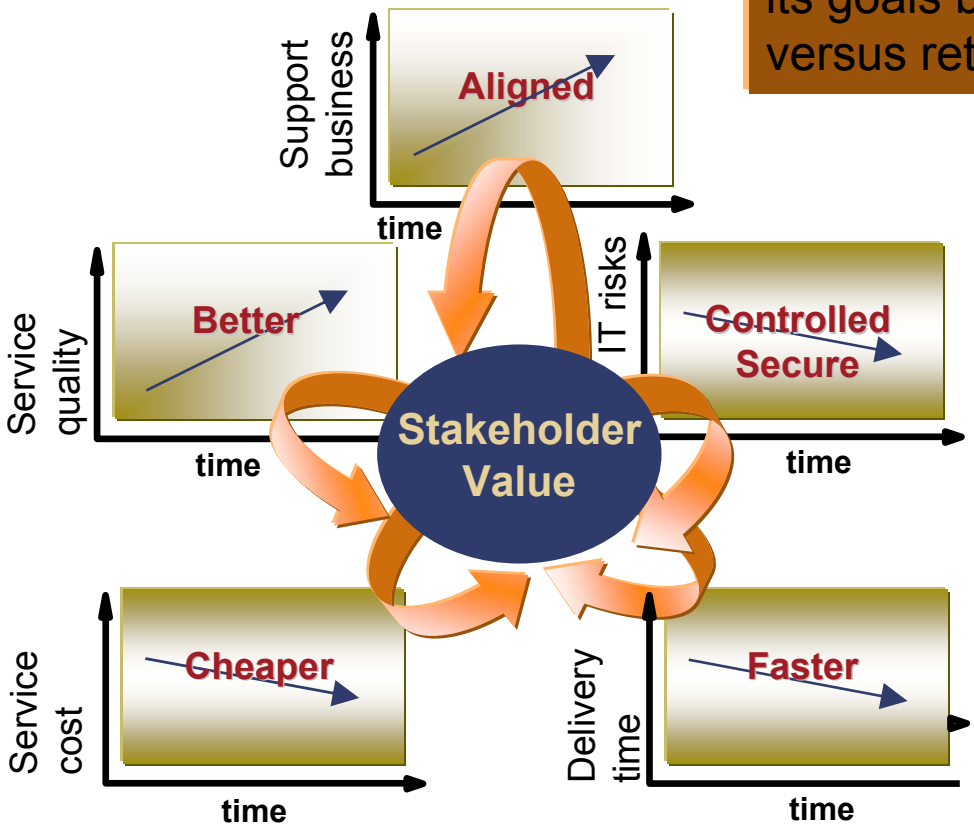
South African Breweries Ltd (Case Study April 1999)

- South African Breweries plc case study: http://www.isaca.org/ctcase8.htm
- COBIT Framework used in the development of an IT Strategy (April – June1999)
  - For each of the 34 COBIT processes documented:
    - SAB Ltd Target Environment
    - Business Objectives
    - IT portfolio services or deliverables from the IT process,
    - The current situation, and
    - Strategy and action items needed to move from the current state to the desired state.
  - Research material from Gartner, META Group, PwC, Forrester etc.
    - Linked to COBIT IT processes
    - Impact and Timing
- Key Themes = IT Governance Objectives

IT Governance Objectives

IT Governance is defined as a system to direct and control the organisation in order to achieve its goals by adding value while balancing risk versus return over IT and its processes.



IT Governance Objectives

- IT is aligned with the Business, enables the Business and maximises benefits
- IT resources are used responsibly
- IT related risks are managed appropriately

IT Governance Institute

SAB plc Case Study (June – October 2000)

- SAB Global IT Strategy (June – October 2000) Used COBIT Extensively:
  - Assess IT process capability maturity (actual and desired) for South Africa, Africa and Europe IT departments
  - Identify the steps or actions required to improve IT process capability maturity
  - Identify and understand areas of knowledge sharing across the group
  - Facilitate IT organisational design
  - Defining IT services from CobiT IT process
  - Identify the “key headlines” or what we need to focus on in order to support the business achieve desired capabilities

PO3 Planning & Organisation
Determine Technological Direction

COBIT

Control over the IT process **Determine Technological Direction** with the business goal of *taking advantage of available and emerging technology to drive and make possible the business strategy*

ensures delivery of information to the business that addresses the required Information Criteria and is measured by Key Goal Indicators

is enabled by *creation and maintenance of a technological infrastructure plan that sets and manages clear and realistic expectations of what technology can offer in terms of products, services and delivery mechanisms*

considers Critical Success Factors that leverage specific IT Resources and is measured by Key Performance Indicators

Information Criteria	
P	effectiveness
S	efficiency
	confidentiality
	integrity
	availability
	compliance
	reliability

(P) primary (S) secondary

IT Resources	
	people
	applications
✓	technology
✓	facilities
	data

(✓) applicable to

Critical Success Factors

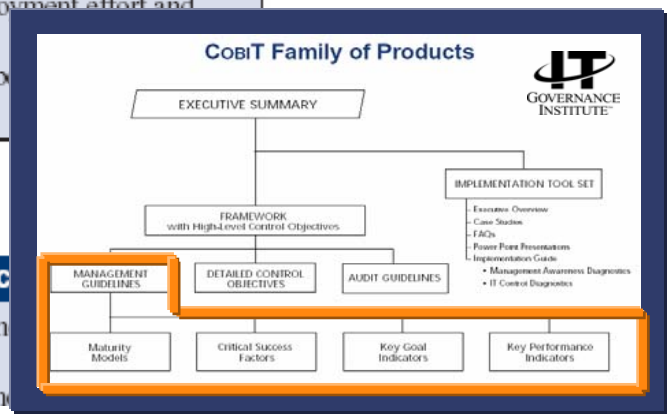
- Business technology reports are disseminated to business units
- Technology changes are pro-actively monitored for threats and opportunities, with clearly assigned responsibilities and with a defined process that uses proven and reliable resources
- Monitoring results are evaluated at senior management levels and actions are agreed upon and integrated into the IT infrastructure plan, while maintaining alignment with the IT strategic plan
- A research, prototyping and testing facility is set up focusing on demonstrating business value and on identifying constraints and opportunities, rather than technological proficiency

Key Goal Indicators

- Number of technology solutions that are not aligned with the business strategy
- Percent of non-compliant technology projects planned
- Number of non-compatible technologies and platforms
- Decreased number of technology platforms to maintain
- Reduced applications deploy[illegible] effort and time-to-market
- Increased interoperability b[illegible] applications

Key Performance Indic

- Percent of IT budget assign[illegible] infrastructure and research
- Number of months since th[illegible]



Determine Technological Direction (PO3)

Business Objective

To take advantage of available and emerging technology to drive and make possible the business strategy.

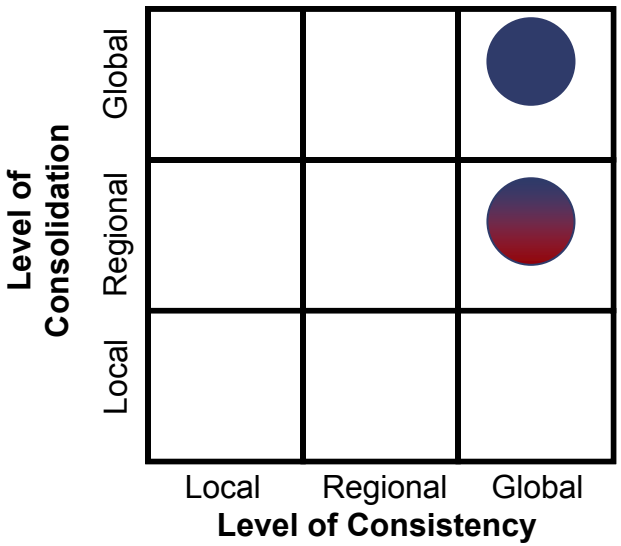
Target Environment

Create and maintain a technological infrastructure plan that sets and manages clear and realistic expectations of what technology can offer in terms of products, services and delivery mechanisms.

IT Service Component

- Technology roadmap
- Technology standards
- IT Infrastructure planning
- R&D Services

Process Commonality



Opportunities for sharing

- Existing IT Standards
- IT laboratory
- Technology Blueprint
- IT Research

PO3 Maturity Model

Control over the IT process **Determine Technological Direction** with the business goal of *taking advantage of available and emerging technology to drive and enable business strategy*

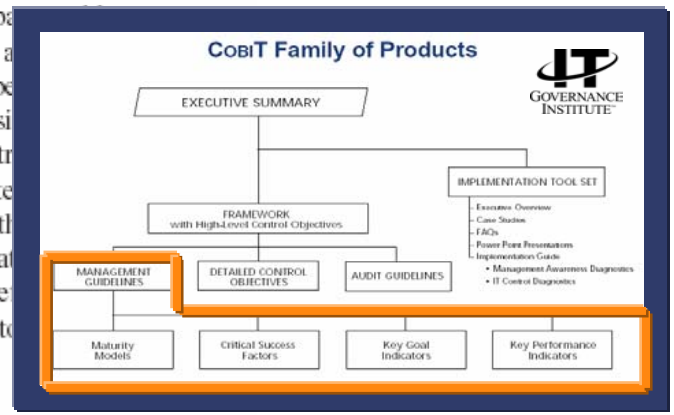
0 Non-existent There is no awareness of the importance of technology infrastructure planning for the entity. The knowledge and expertise necessary to develop such a technology infrastructure plan does not exist. There is a lack of understanding that planning for technological change is critical to effectively allocate resources.

1 Initial/Ad Hoc Management recognises the need for technology infrastructure planning, but has not formalised either a process or plan. Technology component developments and emerging technology implementations are ad-hoc and isolated. There is a reactive and operationally focused approach to planning. Technology directions are driven by the often-contradictory product evolution plans of hardware, systems software and applications software vendors. Communication of the potential impact of changes in technology is inconsistent.

2 Repeatable but Intuitive There is implicit understanding of the need for and importance of technology planning. This need and importance is communicated. Planning is, however, tactical and focused on generating technical solutions to technical problems, rather than on the use of technology to meet business needs. Evaluation of technological changes is left to different individuals who follow intuitive, but similar processes. There is no formal training and communication of roles and responsibilities. Common

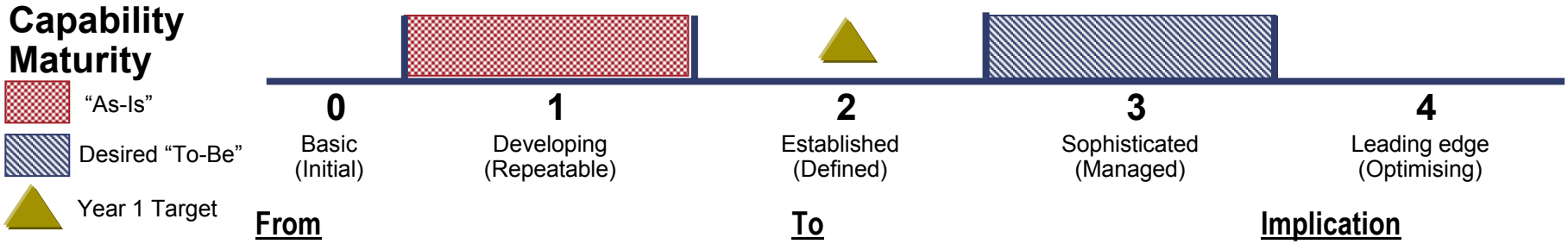
applied. The technology infrastructure direction includes an understanding on where the organisation wants to lead or lag in the use of technology, based on risks and alignment with the organisation strategy. Key vendors are selected based on the understanding of their long-term technology and product development plans, consistent with the organisation direction.

4 Managed and Measurable IT staff have the expertise and skills necessary to develop a technology infrastructure plan. There is formal and specialised training for technology research. The potential impact of changing and emerging technologies is taken into account and validated. Management can identify deviations from the plan and anticipa
Responsibility for the development a
technology infrastructure plan has be
process is sophisticated and responsi
Internal best practices have been intr
process. The human resources strate
the technology direction, to ensure th
manage technology changes. Migrat
introducing new technologies are de
and partnering are being leveraged t
expertise and skills.



5 Optimised A research function exists to review emerging and evolving technologies and benchmark the organisation against industry norms. The direction is guided by industry and international standards and developments, rather than driven by technology vendors. The potential business impact of technological change is reviewed at senior management levels and the decisions to act reflect the contribution of human and technological influences on information solutions. There is formal

Determine Technological Direction (PO3)



From

- Reactive and operationally focused approach to planning.
- Future decisions are based on current investment and not on strategic direction
- Individual technology bias and mindset
- Technology directions are driven by the often-contradictory product evolution plans of hardware, systems software and applications software vendors.

To

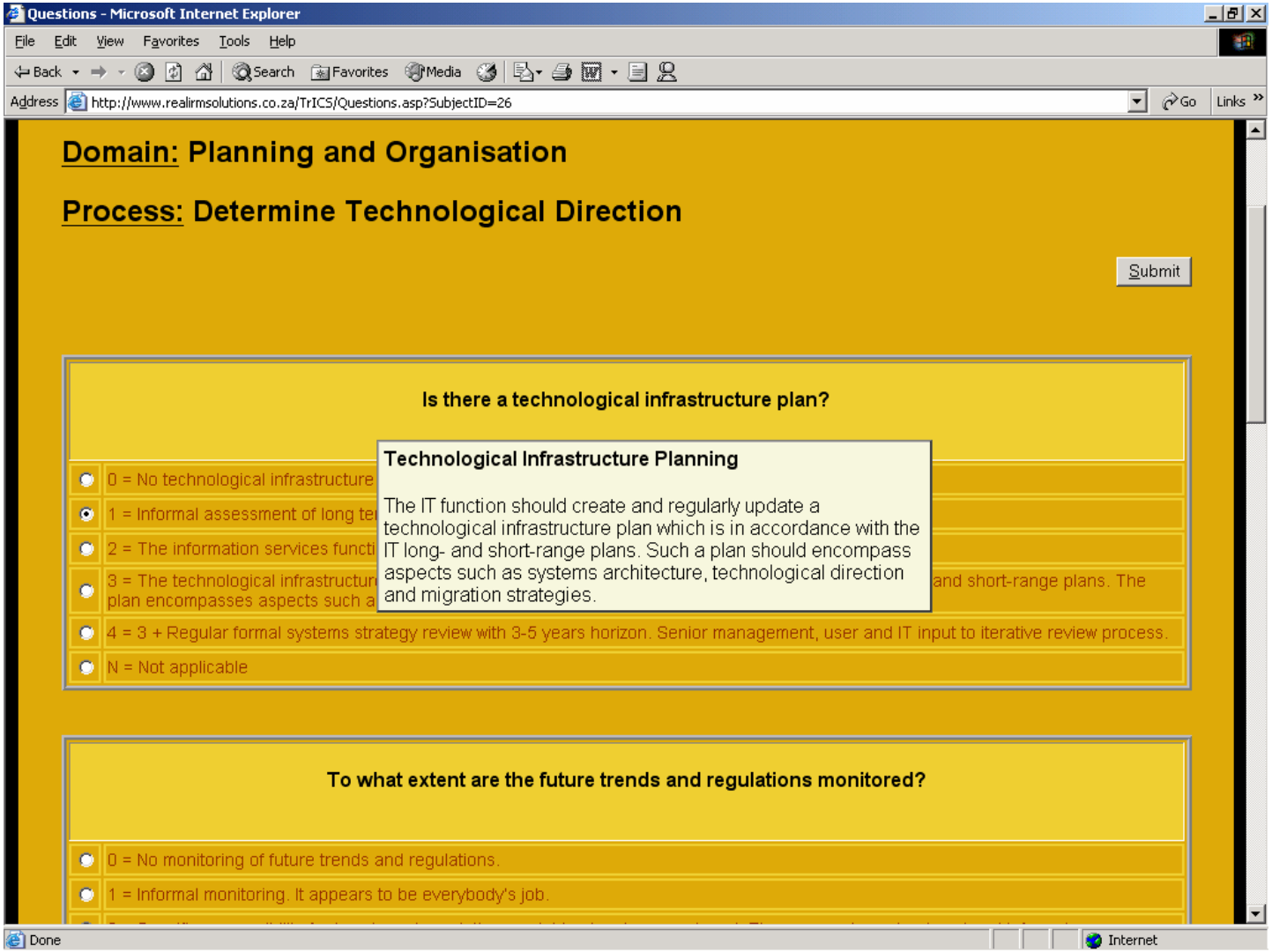
- Roadmaps and migration strategies exist to take XYZ from the current state to the future state of IT infrastructure.
- Technology Forum and Steering Committee approval of new and changed technological directions.
- A research function reviews emerging and evolving technologies and benchmarks XYZ against industry norms. They demonstrate business value and focus on identifying constraints and opportunities.
- Governance mechanisms review to ensure adherence to approved architectures

Implication

- Develop an Enterprise Architecture Capability that integrates the Business, Information (Data), Application and Technology architectures, and reviews adherence to approved architectures
- Implement an IT research, prototyping and testing facility.
- Partner with key vendors based on the understanding of their long-term technology and product development plans, consistent with XYZ direction.

Illustrative

IT Risk and Maturity Assessment



SAB plc Case Study (June – October 2000)

- SAB Group Led Globally: Strategy, Planning, Governance and IT Performance Measurement
- CobiT 3rd edition provides a global performance improvement framework
  - Identifying and focusing on key determinants of IT performance;
  - Establishing common key performance indicators across the group to enable internal and external benchmarking comparisons;
  - Providing template business processes supported by systems to enable rapid transfer of good practice, and
  - Supporting less people-intensive and more consistent ways of sharing knowledge, by encapsulating the best thinking into the process models and supporting documentation.
- Enterprise Architecture is a strategic imperative

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Enterprise Architecture and IT Governance

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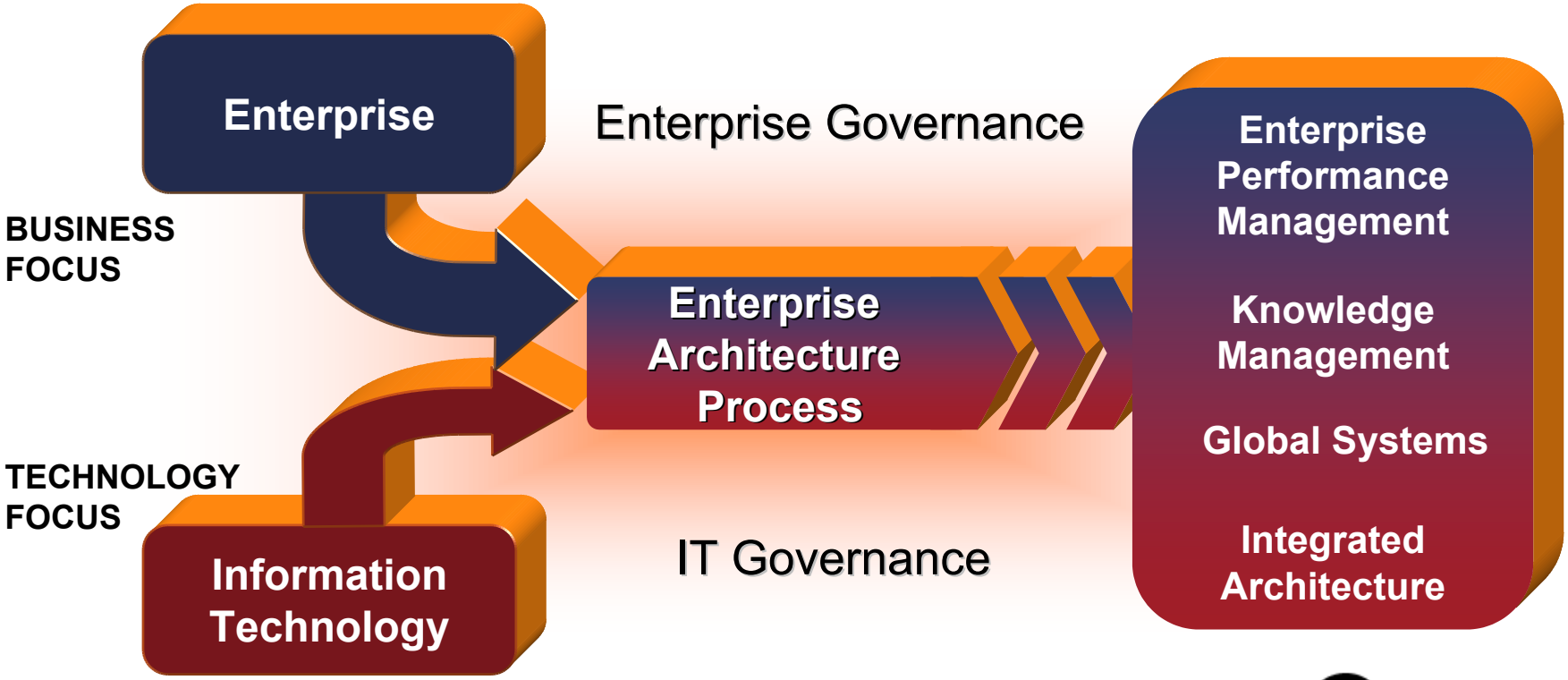
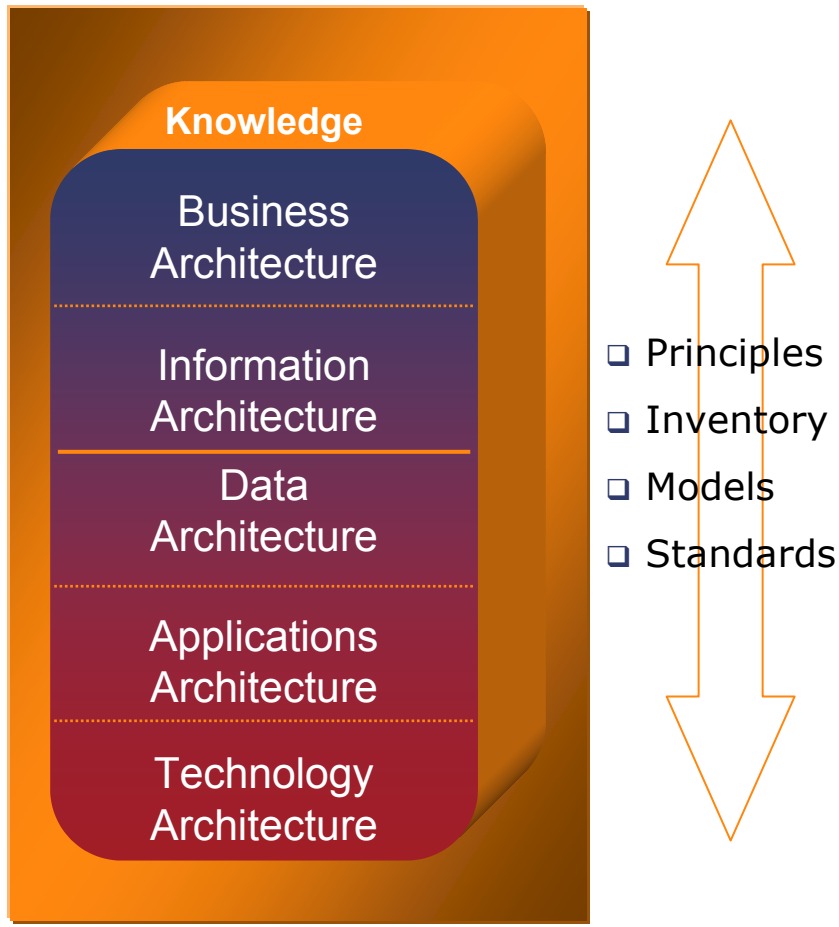
Enterprise Architecture is a Strategic Imperative

Enterprise Architecture is required to transform a legacy of fragmented applications, organizational structures and processes (both manual and automated) into an integrated environment with optimised processes that are responsive to change and the delivery of the business strategy.

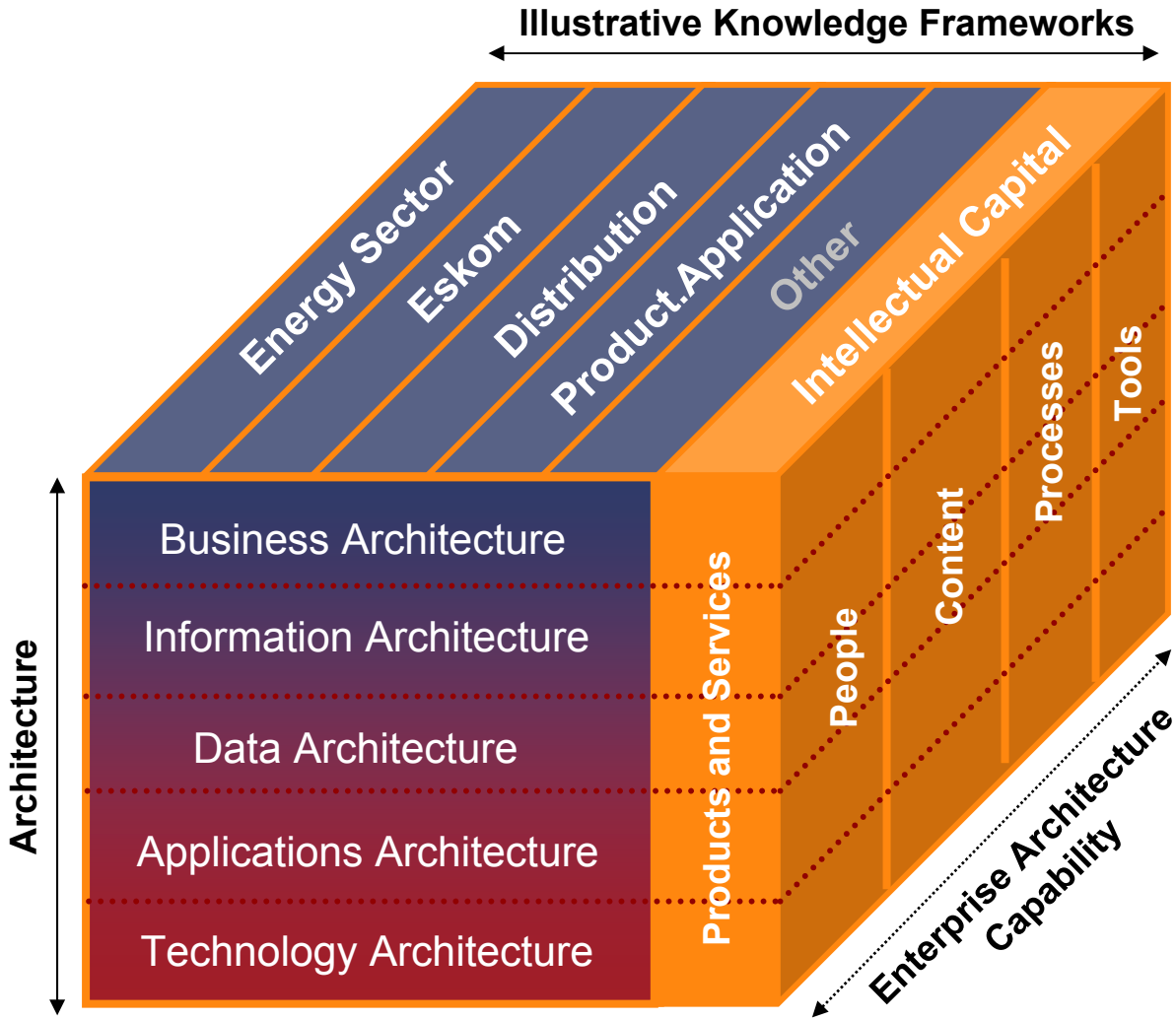


Enterprise Architecture

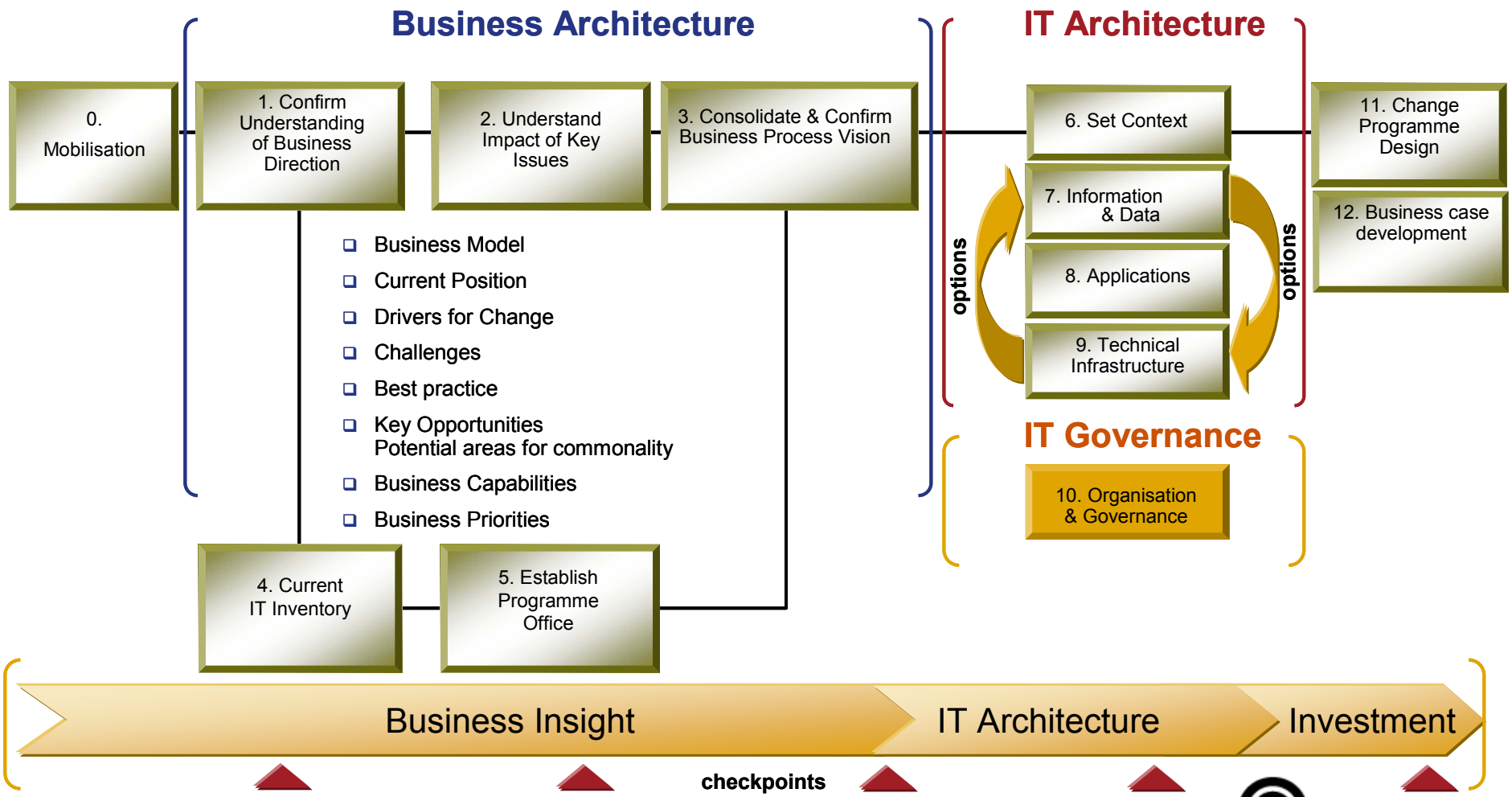
- Consists of current and future state models
- Is implemented through the Enterprise:
  - Business architecture,
  - Information architecture,
  - Data Architecture,
  - Applications portfolio, and
  - Enterprise-wide technical architecture
- Provides organizations with the ability to conduct impact assessments, analyze alternative scenarios and implement appropriate strategies
- (Re-)Defines the business design for sustainable competitive advantage



Enterprise Architecture Capability

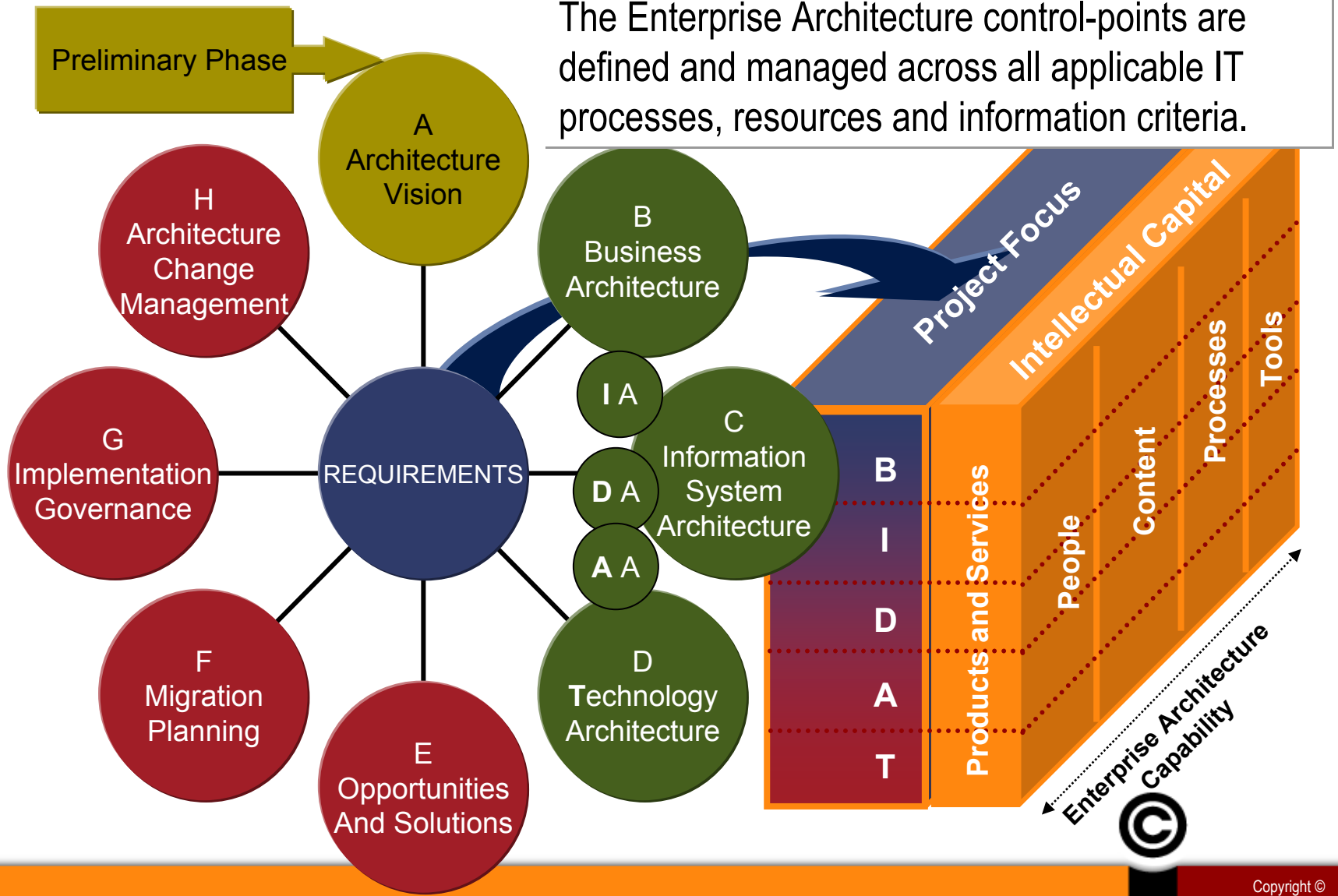


Strategy, Enterprise Architecture and Governance



EA Capability and Control Points

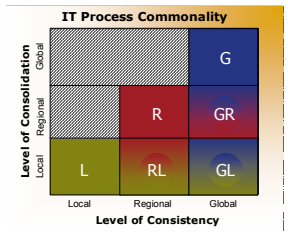
The Enterprise Architecture control-points are defined and managed across all applicable IT processes, resources and information criteria.



IT Services Summarized by Domain and Commonality

	Planning & Organization (PO)	Acquisition & Implementation (AI)	Delivery & Support (DS)	Monitoring (M)
Strategic Planning	PO1 PO1 PO1 PO4 PO4			
Enterprise Architecture Management	PO2	AI1 AI1 AI1 AI6	DS9 DS9 DS11	
Other …				
Financial Management	PO6 PO6 PO6		DS6 DS6	
Other …				
Application Delivery		AI1 AI1 AI2 AI4 - 6		
Operations Management		AI3 AI3	DS3 DS3 DS3 DS3 DS3 DS4 DS4 DS4 DS7 DS7 DS7 DS8 DS8 DS8 DS9 DS9 DS9 DS10 DS10 DS13 DS13 DS13 DS13	

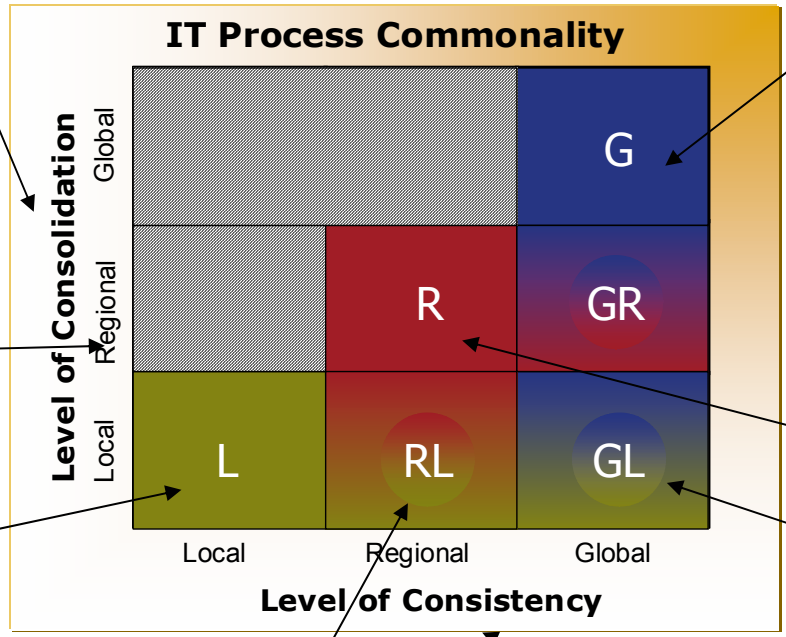
Illustrative



Process Commonality

The framework provides a matrix approach to allocating responsibility for the IT services, supports global collaboration and facilitates local innovation.

The level of consolidation defines the number of physical or logical locations that an IT process is executed



A consolidated global process (e.g. Custodian of group IT standards and procedures)

E.g. A group of countries I.e. Americas

Shared Services such as a Data Center

IT Process is owned and executed by the Business Unit (Local), no adherence to Regional or Global principles, guidelines, or standards & procedures. *"Do your own thing"*

A globally consistent process executed at the local Business Unit *"Business in a box"*

IT Process is owned and executed by the Business Unit (Local), adherence to Regional principles, guidelines, and standards & procedures. *"Middle ground"*

The *level of consistency* defines the extent of adherence to common principles, guidelines, and standards & procedures.

Enterprise Architecture Control Point Focus

Primary Focus

PO2 Define the information architecture

PO3 Determine the technological direction

AI1 Identify solutions

Other …

- Data Standards and Common Data Definitions PO2
- Enterprise Data Modeling PO2
- Enterprise Process Modeling PO2
- Applications Architecture PO2
- Identify and Evaluate Emerging Technologies PO3
- Develop and Manage Technical Architectures PO3
- Identify Technical Standards PO3
- Define Application Portfolio Direction AI1

Secondary Focus

AI6 Manage changes

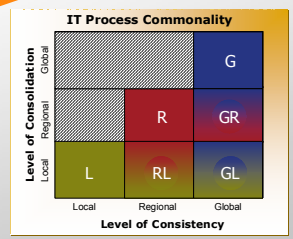
DS9 Manage the configuration

DS11 Manage data

Other …

- Systems Selection AI1
- Feasibility Studies AI1
- Systems Selection AI1
- Define Application Portfolio Direction AI1
- Change Management Procedures AI6
- Change Assessment AI6
- Configuration Management DS9
- Middleware and Integration DS9
- Data / Content Management DS11

Illustrative



Enterprise Architecture Management

Purpose

Transform a legacy of fragmented applications, organizational structures and processes (both manual and automated) into an integrated environment with optimized processes that are responsive to change and the delivery of the business strategy.

Primary Focus

- Optimize the organization of information systems.
- Take advantage of available and emerging technology to drive and make possible the business strategy.
- Other…

Goal and Performance Indicators

- Faster application development.
- Reduction of data redundancy.
- Increased operability between systems and applications.
- Decrease number of non-compatible technologies and platforms.
- Reuse of models.

Critical Success Factors

- A high level, corporate Enterprise Architecture function is established, with sufficient authority to administer the enterprise models, principles, and standards
- An automated repository is used to ensure consistency between the components of the Enterprise Architecture
- Roadmaps and strategies exist to take the organization from the current state to the future state of IT infrastructure and applications portfolio.
- Other…

Enterprise Architecture Management

Corporate Focus: Facilitate the definition of guiding IT principles, guidelines, standards and procedures for the Enterprise Architecture process. Monitor and measure progress against strategies, plans and delivery of business value.

Global Focus: Develop enterprise architectures for Business, Data, Applications and Technology. Produce global roadmaps and strategies to take the organization from the current state to the future state of IT infrastructure and applications portfolio (simplify through standardization). Define the Enterprise Architecture control points within operational work practices for Change Control, Configuration Management and Data Resource Management.

Regional Focus: Definition of Regional application and technology roadmaps in accordance with the Global direction. Implement global enterprise architecture, middleware and integration polices, standards and procedures.

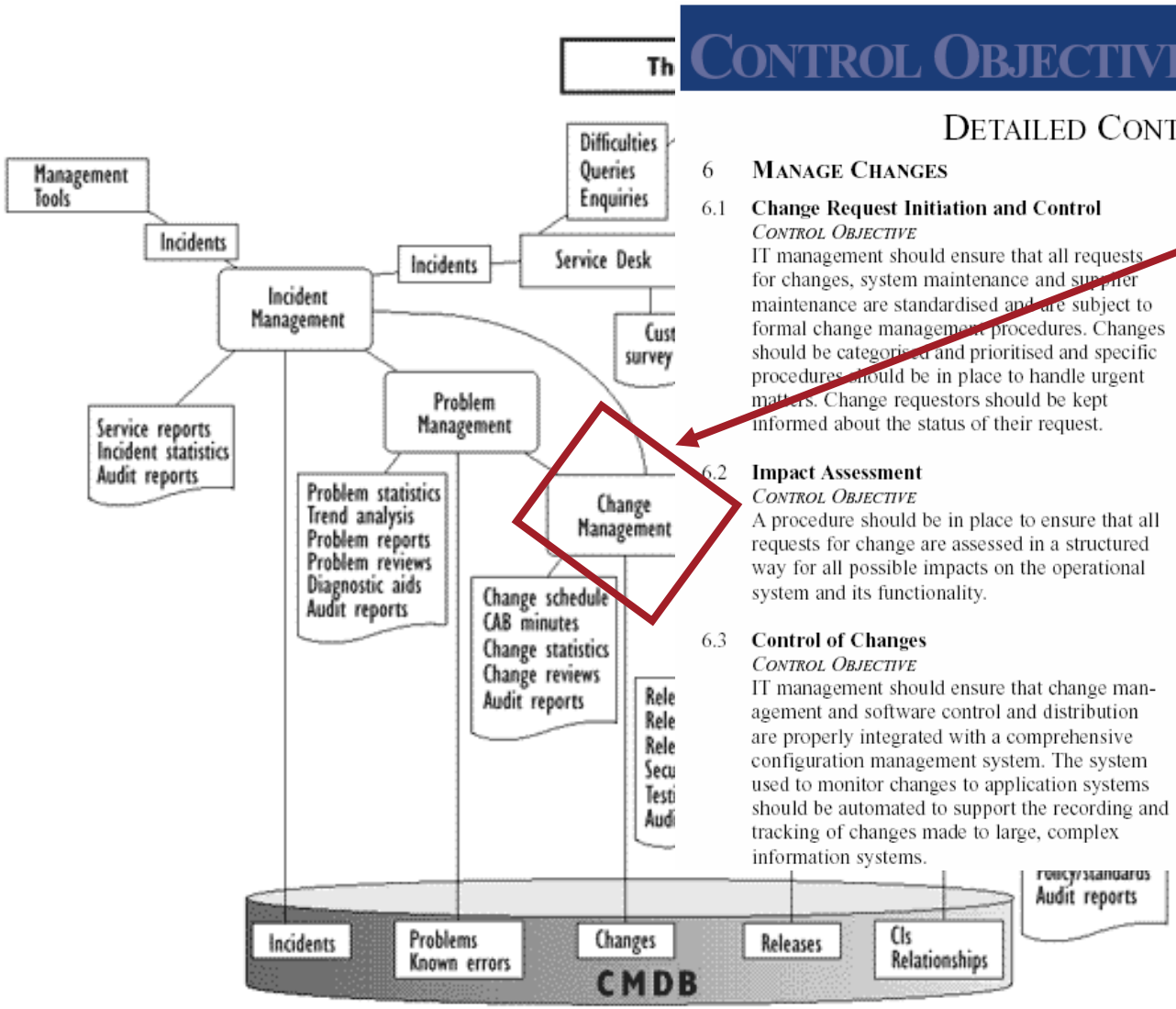
Local Focus: Local business units assist in the assignment subject matter experts who are tasked to produce key enterprise architecture deliverables such as data definitions, business rules and business process models. Ensure that detailed operational work practices for Change Control, Configuration Management and Data Resource Management are followed and satisfy the performance requirements of the Enterprise Architecture Management process.

	Corporate	Global (Workgroup)	Regional	Local	Opportunities for sharing
Principles	A	R	C	C	
Guidelines	-	-	-	-	
Standards and Procedures	-	A	-	-	
Operational	I	C	R	R	
Contribute Resources	A	R	R	R	

Illustrative

R – Responsible
A – Accountable
C – Consult
I – Inform

ITIL – The Service-Support Process Model and COBIT



CONTROL OBJECTIVES AI6

DETAILED CONTROL OBJECTIVES

6 **MANAGE CHANGES**

6.1 **Change Request Initiation and Control**

CONTROL OBJECTIVE

IT management should ensure that all requests for changes, system maintenance and supplier maintenance are standardised and are subject to formal change management procedures. Changes should be categorised and prioritised and specific procedures should be in place to handle urgent matters. Change requestors should be kept informed about the status of their request.

6.2 **Impact Assessment**

CONTROL OBJECTIVE

A procedure should be in place to ensure that all requests for change are assessed in a structured way for all possible impacts on the operational system and its functionality.

6.3 **Control of Changes**

CONTROL OBJECTIVE

IT management should ensure that change management and software control and distribution are properly integrated with a comprehensive configuration management system. The system used to monitor changes to application systems should be automated to support the recording and tracking of changes made to large, complex information systems.

6.5 **Documentation and Procedures**

CONTROL OBJECTIVE

The change process should ensure that whenever system changes are implemented, the associated documentation and procedures are updated accordingly.

6.6 **Authorised Maintenance**

CONTROL OBJECTIVE

IT management should ensure maintenance personnel have specific assignments and that their work is properly monitored. In addition, their system access rights should be controlled to avoid risks of unauthorised access to automated systems.

6.7 **Software Release Policy**

CONTROL OBJECTIVE

IT management should ensure that the release of software is governed by formal procedures ensuring sign-off, packaging, regression testing, handover, etc.

6.8 **Distribution of Software**

CONTROL OBJECTIVE

Specific internal control measures should be established to ensure distribution of the correct software element to the right place, with integrity, and in a timely manner with adequate audit trails.

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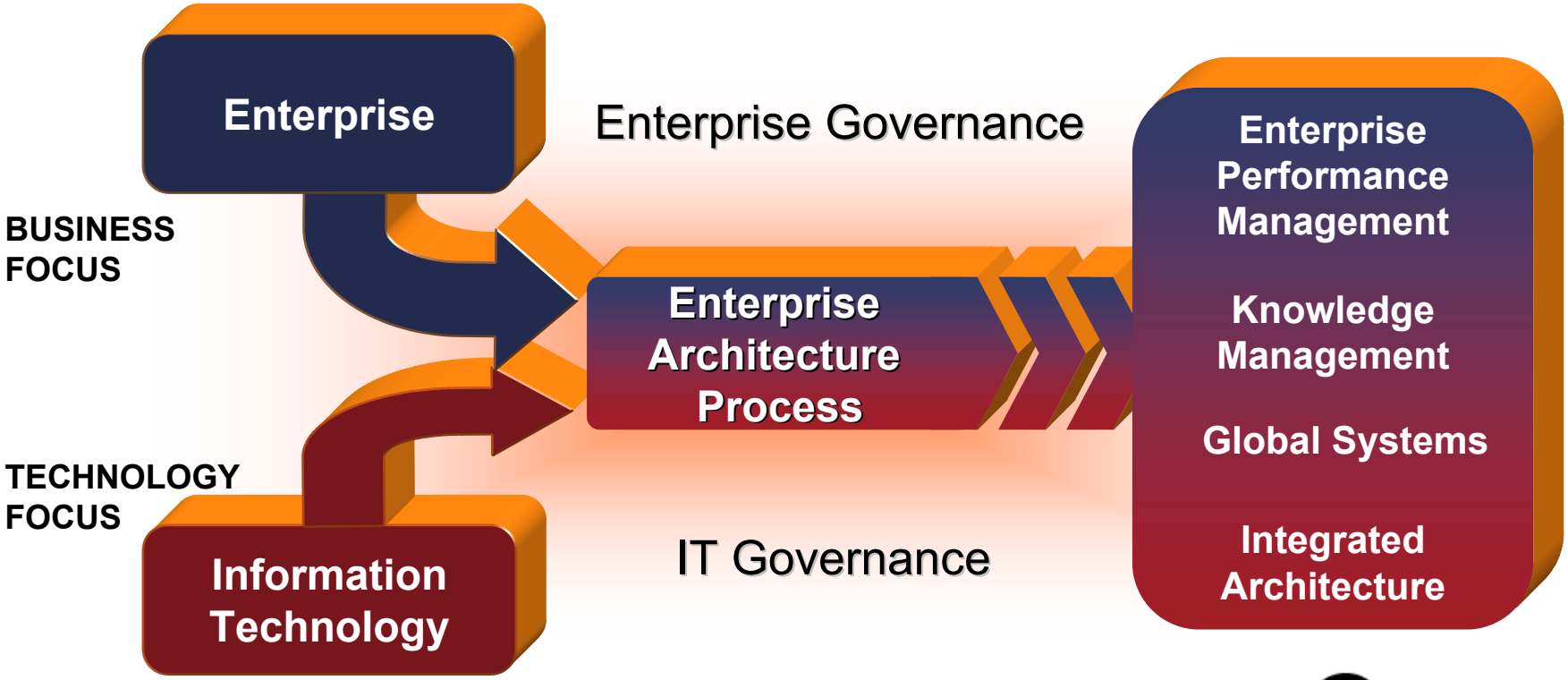

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