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ISACA

CGEIT training (Certified in the Governance of Enterprise IT)

Courseware

Courseware version 5.0

Kit Code: K-314-01

CGEIT®

Certified in the Governance of Enterprise IT®




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Certified in the Governance of Enterprise IT

Introduction Outline

- ✿ Meet and Greet/Housekeeping
- ✿ Training Objectives
- ✿ Course Approach
- ✿ Who is ISACA
- ✿ What is the CGEIT Certification
- ✿ Examination Introduction
- ✿ Certification Process
- ✿ Schedule for the Week
- ✿ End of Section Review



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Activity

Meet and Greet

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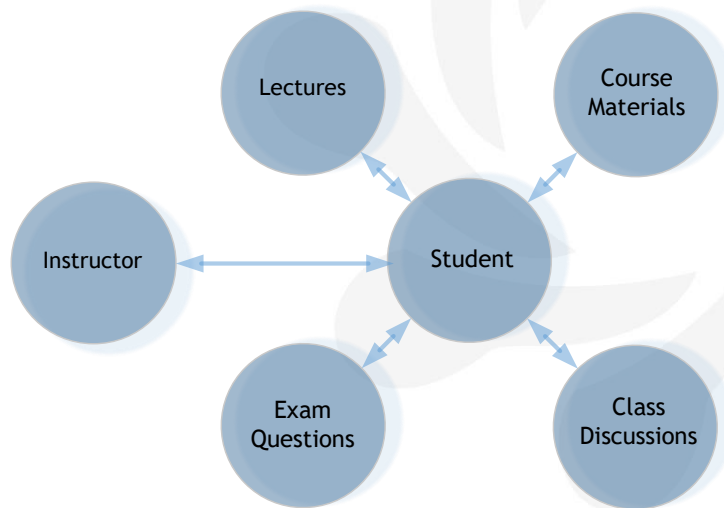
Housekeeping

-  Mobile phones
-  Smoking
-  Fire Alarms and Exits
-  Washrooms
-  Absences
-  Class Timetable

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Course Approach



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Who is ISACA

- ✿ Founded in 1967 - Focussed on Manufacturing and Finance
- ✿ CGEIT created to address a need for a centralised source of information and guidance in the Governance of IT
- ✿ Became Information Systems Audit and Control Association in 1994 and since 2008 it is the acronym only - ISACA

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Who is ISACA

- ✿ ISACA - Worldwide Certification Organisation
- ✿ CGEIT - Globally Accepted
- ✿ Over 200 ISACA Chapters around the world
- ✿ Certification - Portable across Industry Sectors
- ✿ CGEIT - First Offered 2007
- ✿ Over 7000 Registered CGEIT's

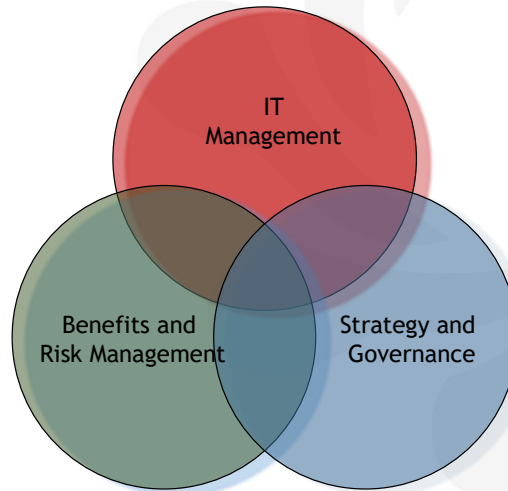


The CGEIT Certification


- ✿ Current value in the IT Field - Respected Certification
- ✿ Allows you to find jobs in tough times - more mobile in the good times
- ✿ Portable - Industries and Internationally
- ✿ Provides an Assurance of Quality to Your Clients
- ✿ Increases Your Market Value
- ✿ Greater Opportunity for Advancement
- ✿ Considered a Professional Achievement
- ✿ Employer Benefits from Certified Staff



Knowledge Needed for the CGEIT Exam



Exam Dates

-  The exam is offered three times during the year
 - Exam Window 1 - May 1st to June 30th
 - Register by June 23
 - Exam Window 2 - Aug 1st to Sept 30th
 - Register by September 22nd
 - Exam Window 3 - Nov 1st to Dec 31st
 - Register by December 20th
 - Register at www.isaca.org/examreg



CGEIT Exam Introduction

- ✿ 150 multiple choice questions administered over a four-hour period
- ✿ Questions are designed to test practical knowledge and experience
- ✿ There is only one correct answer
- ✿ Question Construction
 - Stem - Options - Key - Distractors
- ✿ Scoring is from 200 to 800 points - 450 is a pass
- ✿ No deductions for wrong answers



CGEIT Certification Requirements

- ✿ Earn a passing score on the CGEIT exam
- ✿ Five years of experience of IT Governance
- ✿ One year of experience in developing or maintaining an IT Governance Framework
- ✿ Submit the CGEIT application with two references
- ✿ Adhere to the ISACA Code of Professional Ethics
- ✿ Comply with the CGEIT Continuing Professional Education Policy



Continuing Education Requirements

- ✿ The CGEIT certification is maintained by:
 - 20 hours minimum of continuing professional education reported annually
 - 120 hours of continuing education for the three-year certification period
 - Pay the Certification Annual fee
 - Comply with the ISACA Code of Professional Ethics
 - Respond and submit required documentation of continuing education activities if selected for an annual audit



Candidate Guide to the CGEIT Exam

- ✿ Downloaded from www.isaca.org
 - Included in your student handout
- ✿ Contains all high level task and knowledge statements that are testable on the exam
- ✿ Many topics are repeated in several domains (content areas) - may only be addressed once in the course



Course Schedule

- ✿ Framework for the Governance of Enterprise IT
- ✿ Strategic Management
- ✿ Benefits Realisation
- ✿ Risk Optimisation
- ✿ Resource Optimisation



2016 CGEIT® Review Course

Chapter 1 Framework for the Governance of Enterprise IT



Agenda

- ✿ Task and Knowledge Statements
- ✿ IT Governance
- ✿ Governance Frameworks
- ✿ Enterprise Architecture
- ✿ Controls
- ✿ Communications
- ✿ Managing Change



Exam Relevance

- ✿ Ensure that the CGEIT candidate...
 - Understands the definition, establishment, and management of a framework for the performance of enterprise IT in alignment with the mission, vision and values of the enterprise
 - The content area in this chapter will represent approximately 25% of the CGEIT examination



Chapter 1 Task Statements

- ✿ Establish a framework for the governance of enterprise IT
- ✿ Identify requirements and objectives
- ✿ Ensure strategic planning of enterprise IT
- ✿ Be repeatable
- ✿ Establish roles and responsibilities
- ✿ Communicate to reinforce value of governance



Knowledge Statements

- ✿ There are 14 general knowledge statements pertaining to IT Governance
 - Knowledge of:
 - components of a framework
 - Industry standards
 - Business drivers
 - Legal and regulatory requirements
 - Techniques - SWOT
 - Principles of Enterprise Architecture
 - Change management
 - Monitoring and reporting



IT GOVERNANCE



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Definition

 ISACA defined IT governance as:

A governance view that ensures that information and related technology support and enable the enterprise strategy and the achievement of enterprise objectives; this also includes the functional governance of IT, i.e., ensuring that IT capabilities are provided efficiently and effectively.

COBIT 5



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Key Requirements

- ✿ Three key requirements that must be fulfilled for IT governance to work:
 1. It must be positioned as an integral part of the enterprise governance framework
 2. There must be clear definitions of roles and responsibilities; and
 3. There must be an ongoing implementation and continuity plan



Benefits of IT Governance

- ✿ Better customer support
- ✿ Transformation of business to leverage technology
- ✿ Process Improvement
- ✿ Better oversight of IT investment by management
- ✿ Enterprise-wide consistency in IT technology, processes and procurement



Components of Enterprise Governance Framework

- ✿ In an effective internal control system, the following five components work to support the achievement of an enterprise's mission, strategies and related business objectives:
 - Control environment
 - Risk assessment
 - Control activities
 - Information and communication
 - Monitoring



IT Governance

- ✿ The overall objective of IT governance:
 - Is to understand the issues and the strategic importance of IT so that the enterprise can **sustain** its operations and implement the strategies required to **extend** its activities into the future. IT governance aims at ensuring that expectations for IT are met and IT risks are mitigated.



IT Governance

✿ Five focus areas:

1. **Strategic alignment**—Focuses on aligning with the business and collaborative solutions
2. **Value delivery**—Concentrates on optimising expenses and proving the value of IT
3. **Risk management**—Addresses the safeguarding of IT assets, disaster recovery and continuity of operations
4. **Resource management**—Optimises knowledge and IT infrastructure
5. **Performance measurement**—Tracks project delivery and monitoring of IT services



Roles in IT Governance

✿ Executive management must:

- Be informed
- Assign responsibilities
- Define scope and constraints
- Manage risk
- Obtain assurance



Roles in IT Governance

- ✿ Executive management should:
 - Specify accountability
 - Set the tone at the top
 - Encourage the desired control culture
 - Allocate clear responsibilities for improving the IT governance program
 - IT Strategy Committee?



Foundation for IT Governance

- ✿ Three critical foundations for effective IT governance:
 - Leadership
 - Structure or mechanisms
 - Processes
- ✿ The presence of all three elements is required. IT governance would be ineffective or compromised if any one were missing



Setting the Direction for IT Governance Across the Enterprise

- ✿ The board/management need to assess their capacity to:
 - Take advantage of IT's capacity to support new business models and changing business practices
 - Balance IT's increasing costs and information's increasing value to obtain an appropriate return from IT investments
 - Manage the risks of doing business in an interconnected digital world



Setting the Direction for IT Governance Across the Enterprise

- ✿ The purpose of IT governance is to direct IT endeavors, to ensure that IT's performance meets the following objectives:
 - Alignment of IT with the enterprise and realisation of the promised benefits
 - Use of IT to enable the enterprise by exploiting opportunities and maximising benefits
 - Responsible use of IT resources
 - Appropriate management of IT-related risks



Role of IT in Business Enablement

- ✿ Business and IT objectives are primarily the responsibility of the board
- ✿ Performance measures indicate successful achievement of objectives
- ✿ The IT function needs to focus on realising benefits *by increasing automation* and making the enterprise more effective, and by *decreasing costs* and making the entire enterprise more efficient; and on *managing risks* (security, reliability and compliance)

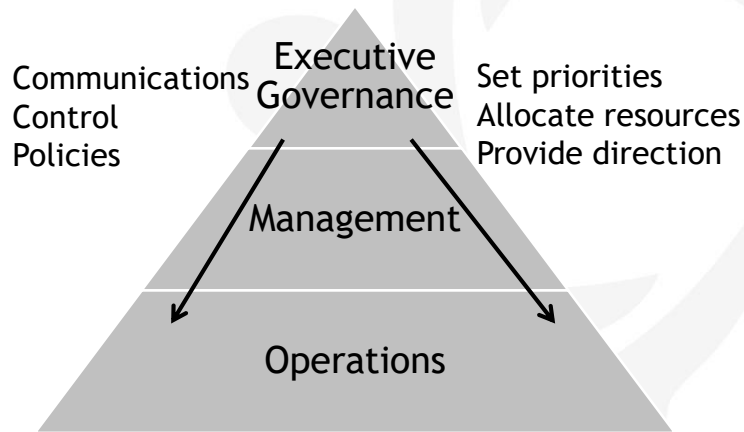


Business Drivers that Affect IT Strategy

- ✿ Keeping business running
- ✿ Provide business value
- ✿ Control rising costs of IT
- ✿ Aligning IT with the business
- ✿ Increased regulatory compliance
- ✿ Avoid negative impacts of IT security on the business



Top Level Responsibilities



Setting and Achieving Objectives

- ✿ The scope of IT governance involves:
 - Setting objectives
 - Providing direction
 - Evaluating the evaluation of performance
 - Translating the strategic direction into action
 - Measuring and reporting on performance.



Enterprise Governance and Accountability

- ✿ Emphasising that everyone has a part to play in enabling successful IT outcomes
- ✿ Accountability underpins governance - the establishment of accountability is central to making governance effective and operational.
- ✿ Without accountability, there can be no effective and efficient governance



Governance Attributes

- ✿ Core attributes of an effective governance program include:
 - Effectiveness, efficiency, confidentiality, integrity, availability, compliance and reliability



Steps to Implement IT Governance

- ✿ IT Governance Initial Objectives
 - Define the meaning of governance in the organisation
 - Identify constraints and enablers
 - Agree, publish and gain acceptance of IT governance framework, tools, processes
 - Identify and commit resources
 - Identify and sign off on KPIs and critical success factors (CSFs)
 - Align with the business objectives



IT Governance Program Success Criteria

- ✿ IT Governance Success Criteria
 - Identify, engage and involve key stakeholders
 - Identify quick wins to obtain initial support
 - Adopt an IT Governance framework
 - Map current IT projects to governance framework
 - Allow flexibility and change



Stakeholders

- ✿ Who needs to be involved?
 - Investors/Owners
 - Business management, business partners, IT management
 - Focus on return on investment and strategic alignment
 - Controllers
 - Internal and external audit, risk and compliance officers, finance, HR, industry regulators
 - Monitor risk & compliance, obtain evidence of governance & risk management

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Stakeholders (continued)

- ✿ Who needs to be involved?
 - Delivers/Providers
 - IT service and product suppliers, (in-house or external), contractors, developers, IT support staff

A key of successful programs is an enterprise-wide approach with clear roles & responsibilities and involvement of all stakeholders

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Nine Rules for Better Governance

1. Define business goals and IT goals
2. Define IT Governance processes correctly
3. Set up clear IT organisational & decision structure
4. Involve executives and board of directors
5. Manage roles & responsibilities



Nine Rules for Better Governance (continued)

6. Have working IT steering and IT strategy committees
7. Manage & align the IT investment portfolio
8. Use performance measurement tools
9. Set up support communication and awareness mechanisms



Establishing Enterprise IT Governance

- ✿ The key is to understand the context of the enterprise's needs and then to match it to the appropriate standard(s) or framework(s)
- ✿ Before selecting any framework there must be a thorough analysis of mission, purpose, costs and benefits, in relation to both short and long terms goals



GOVERNANCE FRAMEWORKS



Common IT Governance Frameworks

- ✿ Enterprise Architecture frameworks
 - COBIT®
 - Zachman Framework™
 - TOGAF®
 - ISO/IEC 20000; ISO 38500
- ✿ IT Security
 - ISO 27000 series, CERT, CRAMM, SABSA



Keys to Establishing a Framework

- ✿ Three key things will assist in ensuring adoption of an IT standard or framework
 - **Take a programme approach** – Instead of approaching the framework as a single project or on a piece by piece basis, take an approach that the establishment of the frameworks is a series of many inter-related projects
 - **Champion or sponsor and funding** – Have a clearly identified project champion or and secure sufficient short and sustainable funding.
 - **Communication and buy-in** – Adoption of an IT best practice, standard or framework must be communicated to stakeholders.



ISO/IEC 20000-1:2011

Includes:

- The design
- Transition
- Delivery
- Improvement of services that fulfill service requirements and provide value for both the customer and the service provider

ISO/IEC 20000-1:2011

- Requires an integrated process approach where the service provider plans, establishes, implements, operates, monitors, reviews, maintains and improves a service management system (SMS)
- ISO/IEC 20000-1:2011 is supported by several other parts that provide guidance and specific details for implementation

ISO/IEC 38500

- ✿ Provides a framework for effective governance of IT to assist those at the highest level of organisations to understand and fulfill their legal, regulatory, and ethical obligations in respect of their organisations' use of IT



Continuous Process Improvement

- ✿ Aim for continuous improvement of processes
- ✿ Process improvement is facilitated by the availability of process information
- ✿ Revising and refining business processes (flexibility) is central to sustainable success
- ✿ Business process reengineering (BPR) and incremental process improvement methodologies (e.g., Six Sigma, TQM) are tools that enterprises can use to implement process improvement



Using Six Sigma

- ✿ Six Sigma is a data-driven approach that supports continuous improvement
- ✿ Focuses on dramatically reducing process variation and errors
- ✿ The objective is the implementation of a measurement oriented strategy focused on process improvement and defects reduction



TQM - Total Quality Management

- ✿ TQM is a management strategy aimed at embedding quality in all organisational processes.
- ✿ In a TQM effort, all members of an enterprise participate in improving processes, products, services and the culture in which they work



Capability Maturity Model Integration

- ✿ CMMI is a process improvement approach that can be used to guide process improvement and maturity
- ✿ CMMI uses a hierarchy of five maturity levels, each with a progressively greater level of quality, process maturity and consistency



CMMI Maturity Levels

- ✿ Level 1 - *Initial (Chaotic)* - Processes at this level are (typically) undocumented and in a state of dynamic change, tending to be driven in an *ad hoc*, uncontrolled and reactive manner by users or events.
- ✿ Level 2 - *Repeatable* - Processes at this level are repeatable, possibly with consistent results. Process discipline is unlikely to be rigorous, but where it exists it may help
- ✿ Level 3 - *Defined* - Processes at this level are sets of defined and documented standard processes established and subject to some degree of improvement over time. These standard processes are in place and used
- ✿ Level 4 - *Managed* - Processes that, using process metrics, management can effectively control the AS-IS process (e.g., for software development).
- ✿ Level 5 - *Optimised* - Process focus is on continually improving process performance through both incremental and innovative technological changes/improvements



Development of a Complete Framework

- ✿ Policy (endorsed by management) is the core element of a framework
- ✿ Practices and procedures implement policy through established rules (steps) of operation
- ✿ Standards set a certain benchmark of performance of operation against which the organisation can be measured
- ✿ Frameworks are structured sets of practices in some organised manner



Unique Implementation

- ✿ There is no universal approach to apply IT practices, standards and frameworks to individual organisations
- ✿ Implementation varies according to size, industry (type, growth status, practices and competitive landscape) and the enterprise's organisational culture



DETERMINING BUSINESS STRATEGY



Strategy and IT Governance

- ✿ The IT strategy should be aligned with the strategy of the enterprise.
- ✿ This ensures that IT priorities align with business priorities
- ✿ There are several models that can assist with this:
 - Balanced scorecard
 - BCG Matrix

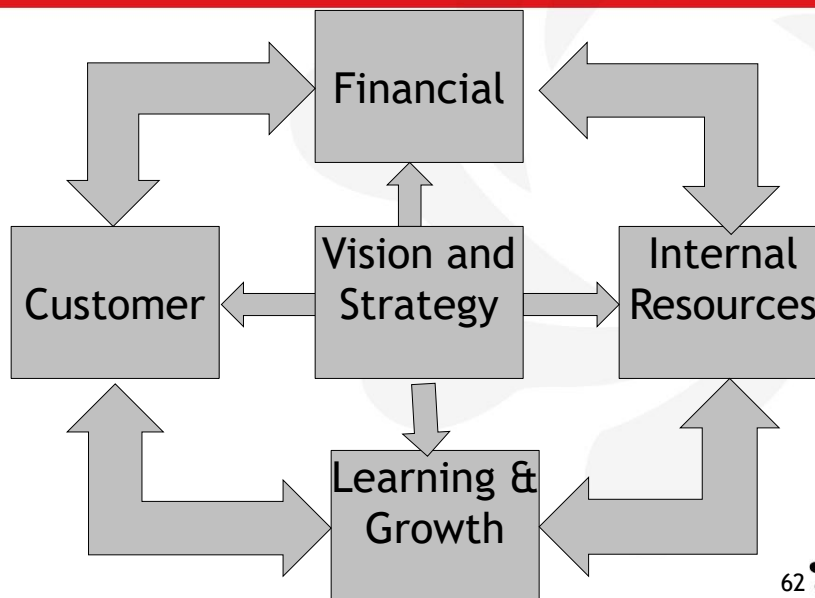


Balanced Scorecard

- ✿ A balanced scorecard is a set of metrics that together reflect overall business performance.
- ✿ Leaders who use this methodology gain a better understanding of how operational performance impacts financial results, and this in turn increases their effectiveness



Balanced Scorecard



Balanced Scorecard Measurement Areas

- ✿ The original balanced scorecard addresses four key areas of performance:
- ✿ "Financial metrics" provide information about financial performance both revenue and expenses.
- ✿ "Customer metrics" assess the extent to which the company is meeting customer needs and expectations.
- ✿ "Business process measures" provide insight into the efficiency of internal processes and allow leaders to identify and correct problems
- ✿ "Measures of learning and growth" give managers information about employee satisfaction and development.



Purpose of a Balanced Scorecard

- ✿ When businesses use a balanced scorecard, managers are required to focus on customer and employee perspectives in addition to the bottom line. This improves customer and employee retention and creates more sustainable success.

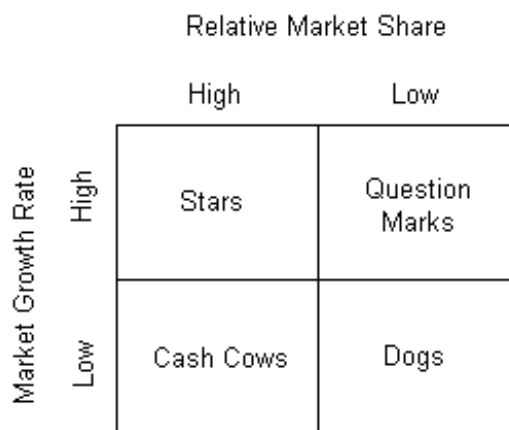


Boston Consulting Group (BCG) Matrix

- ✿ The BCG matrix examines the products or services of a company in relation to market share, and growth potential
- ✿ This allows management to divert resources from areas with poor performance or potential (the dogs) to areas with greater potential (Questionable), good profitability but low growth (stagnant - cash cows) or stars (areas with excellent growth potential and profit)



Boston Consulting Group (BCG) Matrix



ELEMENTS OF ENTERPRISE ARCHITECTURE



Enterprise Architecture

- ✿ An enterprise can be made up of:
 - Many divisions
 - Many departments
 - Many regions
 - Many lines of business
 - Many cultures
- ✿ Enterprise architecture attempts to align all of these diverse areas to realise economies of scale, consistent risk management, etc.



Purpose of Enterprise Architecture

- ✿ Consistency between all the elements of the organisation
 - Policy
 - Standards
 - Procurement
- ✿ Better top level oversight, monitoring and direction

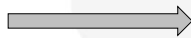


IMPLEMENTING IT CONTROLS



Where to Apply IT Controls

Manual and automated controls
Apply to specific business activities



Business Process Level

Support for business operations
General IT controls - may support more than one business process



IT Level



Location of IT Controls

- ❁ Controls should be embedded in IT processes and services, for example systems development, change management, security, and computer operations.
- ❁ Application controls are those embedded in business process applications and examples include: completeness, accuracy, validity, authorisation and segregation of duties



Performance / Assurance Criteria

- ✿ Provide reasonable assurance that the deployed IT governance practices and processes are aligned with the cultural and operational nuances of the company.



Assurance

- ✿ Assurance initiatives measure or evaluate a specific control
- ✿ The controls to be measured should be:
 - Relevant to the business
 - Consistent indicators of performance
 - Quantitative not qualitative
 - Reliable
 - Based on value to the business



Methods of Assessing Controls

- ✿ Testing methods include combinations of:
 - Interviews - users and managers
 - Inspect / Observe (via walk-through, search, compare and review)
 - Re-perform a task or process (recalculate and analyse a process flow)
 - Collect and analyse samples or extracts
 - Test - using manual or automated tools



COMMUNICATION



Assessment and Assurance

- ✿ Assessment of risk, control effectiveness, IT management and efficiency needs to be conducted on an ongoing basis
- ✿ Periodic reviews
 - Scheduled
 - Unscheduled
- ✿ Consistent reporting and review of reports
- ✿ Feedback for improvement



Importance of Regular Communication

- ✿ Communicate with all stakeholders
 - Owners and investors
 - Managers
 - Employees
 - Customers
 - Business partners
 - Regulatory bodies



Importance of Regular Communication

- ✿ Communicate
 - The enterprise's ethics & culture
 - The enterprise's mission, vision, goals and values
 - Ruling laws, regulations and policies, both internal and external
 - Industry practices
 - The enterprise's governance policies and practices
 - The business plan and strategic intentions



Importance of Regular Communication

- ✿ Communicate
 - Risk and controls
 - Align controls with risk
 - Reporting on effectiveness and efficiency
 - Encourage feedback
 - Outline future improvements, plans and programs



Benefits of Communication

- ✿ Provides direction
- ✿ Reduces rumors or suspicion
- ✿ Aligns all stakeholders with the mission
- ✿ Encourages consistency
- ✿ Mandates accountability



**ENABLING CHANGE
LEVERAGING IT GOVERNANCE**



Impact of Change on the Enterprise

- ✿ Three issues that managers who are leading change need to address:
 - Major change requires a shift in the underlying culture of the organisation and, therefore, the attitudes and behaviors of the employees
 - If change implementation efforts are to be successful, they need to be designed to fit the organisational context
 - Change is about changing people, not organisations



Types of Changes

- ✿ There are four typical approaches to effecting change in an enterprise
 - **Evolution**—This is when transformational change is implemented gradually
 - **Revolution**—Transformational change that occurs simultaneously on many fronts
 - **Adaptation**—Realign the way in which the organisation operates, using a series of steps
 - **Reconstruction** - Rebuilding entire business processes and models simultaneously



Enabling Change in an Organisation

- ✿ Change enablement in the context of an IT governance program can be defined as:
 - *A systematic process of ensuring that all stakeholders are prepared and committed to the changes involved in moving from a current IT governance state to a desired future state.*
- ✿ Stakeholders can include individuals, teams, departments, business units, regions, suppliers, partners or entire enterprises. Internal and external stakeholders should be considered



Enabling Change

- ✿ Change enablement requires:
 - Assessing the impact of the change
 - Vision / Purpose
 - Communication
 - Empowerment
 - Planning
 - Teamwork
 - Gap analysis



Summary

- ✿ The CGEIT candidate should understand the structure and purpose of Enterprise IT governance
- ✿ How IT governance can benefit the business
- ✿ Models and frameworks used for governance
- ✿ The challenges of effecting change and handling communications



Sample Question

1. The most effective way to implement IT governance in an enterprise is through the use of a:
 - a) Business case
 - b) IT balanced scorecard
 - c) Phased lifecycle
 - d) Set of IT performance metrics



Sample Question

1. The most effective way to implement IT governance in an enterprise is through the use of a:
 - a) Business case
 - b) IT balanced scorecard
 - c) Phased lifecycle
 - d) Set of IT performance metrics

Note that the key word in the question is “implement” not justify or measure.



Sample Question

- 2) In addition to corporate governance which of the following is a key component of an enterprise governance framework?
 - a) Value governance
 - b) Key asset governance
 - c) Business governance
 - d) Financial governance



Sample Question

2) In addition to corporate governance which of the following is a key component of an enterprise governance framework?

- a) Value governance
- b) Key asset governance
- c) **Business governance**
- d) Financial governance

Business governance relates to the performance of the business as a part of corporate governance



Sample Question

3) The PRIMARY benefit of using a generic maturity model within an IT governance framework is that it:

- a) Provide a means to benchmark the status of IT governance
- b) Ensures enterprise certification of IT governance
- c) Provides a defined set of measures for IT governance
- d) Specifies the enterprise goals for IT governance



Sample Question

3) The PRIMARY benefit of using a generic maturity model within an IT governance framework is that it:

- a) **Provide a means to benchmark the status of IT governance**
- b) Ensures enterprise certification of IT governance
- c) Provides a defined set of measures for IT governance
- d) Specifies the enterprise goals for IT governance



END OF DOMAIN ONE



Chapter 2

Strategic Management



Agenda

- ✿ Introduction
- ✿ Strategic Management
- ✿ Enterprise Architecture
- ✿ Evaluation of IT Investment
- ✿ Project Management
- ✿ Sample Questions



Exam Relevance

- ✿ Strategic Management...
 - Ensure that IT enables and supports the achievement of enterprise objectives through the integration and alignment of IT strategic plans with enterprise strategic plans
 - The content area in this chapter will represent 20% of the CGEIT exam

3



Strategic Planning Definition (ISACA)

- ✿ The process of deciding on the enterprise's objectives, on changes in these objectives, and the policies to govern their acquisition and use.

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Definition

- ✿ ISACA defines the state of IT strategic alignment as that in which:
- ✿ *...an enterprise's investment in IT is in harmony with its strategic objectives (intent, current strategy and enterprise goals) and thus builds the capabilities necessary to deliver business value.*

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Chapter 2 Task Statements

- ✿ Evaluate, direct and monitor IT strategic planning to align with enterprise goals
- ✿ Document and communicate the strategic plan
- ✿ Integrate enterprise architecture into IT strategic planning
- ✿ Prioritise IT initiatives
- ✿ Ensure IT objectives cascade into clear roles and responsibilities

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Knowledge Statements

- ✿ Knowledge of strategic planning
- ✿ Impact of change on strategic plans
- ✿ Barriers to achieving strategic alignment
- ✿ Communicating strategic plans
- ✿ Current and future technologies
- ✿ Scope and objectives of IT investment

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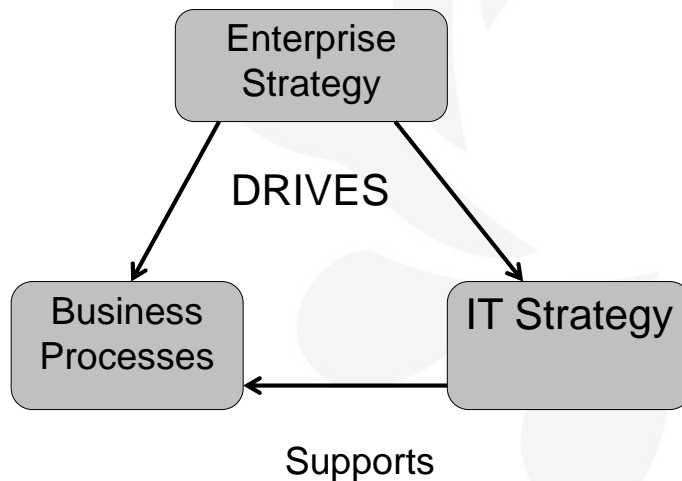


STRATEGIC MANAGEMENT

8



Strategic Hierarchy



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Vision, Goals, and Strategy

Vision

- A statement of the enterprise's purpose, why it exists and what it aspires to. The business vision of an enterprise is articulated by a set of goals that define what the business will strive for and where the business will invest its resources

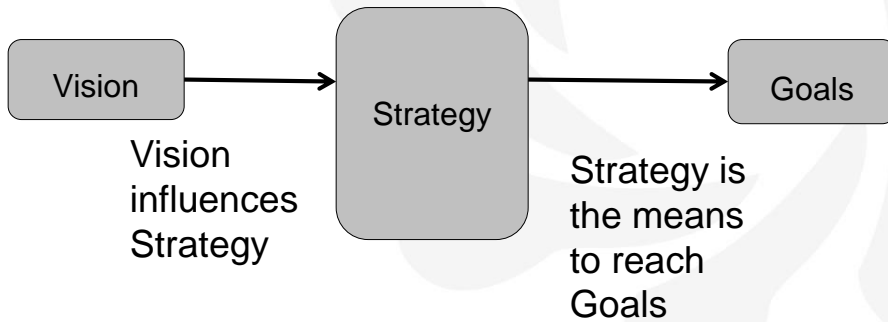
Goal (Mission)

- *Qualitative* statements that describe a state of affairs or an accomplishment necessary for the business to become what it wants to become (the business vision)

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Importance of Vision in Strategy



Strategy and Objectives

Strategy

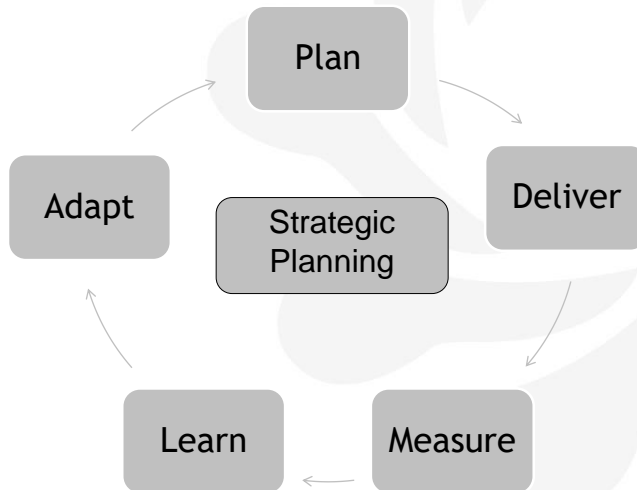
- The deliberate application of *means* to achieve business vision and goal-related *ends*. The purpose of strategy is to maximise possibilities for success by effective use of the means available to an enterprise

Objectives (milestones)

- An objective must be *quantitative*—a specific, measurable achievement or milestone that must be reached to accomplish a goal or mission determined by appropriate metrics



Managing Changes to Strategic Planning



Support for Strategic Plans

- ✿ It is important that the IT strategy implementation plan be endorsed by all relevant parties (stakeholders)
- ✿ The board should ensure that the strategy is reviewed regularly in light of technological and operational change. Either the board, or a dedicated IT strategy committee of the board, should drive business alignment



Strategic Alignment and Roles

- ✿ Alignment requires planned and purposeful management processes, such as:
 - Creating and sustaining awareness of the strategic role of IT at a top management level
 - Clarifying the role that IT should play—utility vs. enabler
 - Creating IT guiding principles based on business culture
 - The culture of IT should reflect the same culture as the business IT supports



Maintaining Alignment

- ✿ Maintaining enterprise and IT strategic alignment requires planned and purposeful management processes, such as:
 - Monitoring the business impact of the IT infrastructure and applications portfolio
 - Evaluating, post implementation, benefits delivered by IT projects
 - Regular monitoring and reporting of IT programs
 - Clear objectives, oversight and accountability

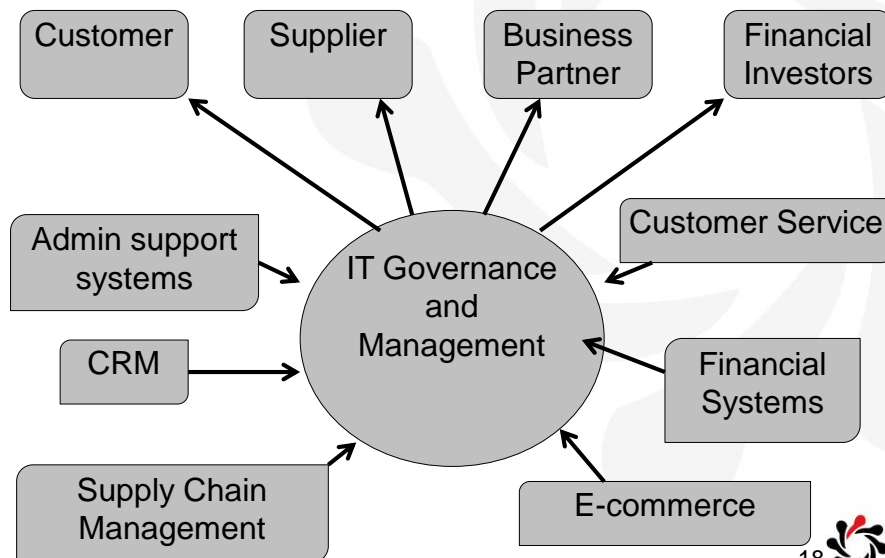


Formulating IT Strategy

- ✿ When formulating the IT strategy, the enterprise must consider:
 - Business objectives and the competitive environment
 - Current and future technologies and the costs, risks and benefits they can bring to the business
 - The capability to deliver current and future levels of service to the business
 - IT-related costs and whether this provides sufficient value to the business



IT Governance Supports Business Operations



Updating the Strategy

- ✿ As enterprise strategy evolves over time, there must be a constant assessment of the strategic business changes and their impact on the IT organisation.
- ✿ Questions to be asked include: Does the existing infrastructure support the new business strategies? Have priorities changed? What new capabilities are needed? How can existing systems best be leveraged? What new systems are needed?



Reviewing and Revising IT Strategies

- ✿ Typically, enterprises may go through formal strategic planning cycles every three or four years, but every year in between and every quarter of each year CIOs should update and adjust their IT strategies to best respond to the way their environment evolves and changes



ENTERPRISE ARCHITECTURE



Enterprise Architecture

- ✿ Architecture can be defined as a representation of a conceptual framework of components and their relationships at a point in time
- ✿ EA takes a broader view of the entire enterprise and seeks to align individual architectures into a consistent model
 - Repeatable blueprint
 - Standardised



Components of an Enterprise Architecture

- ✿ Business architecture
 - Enterprise level
- ✿ Information architecture
 - Business unit level
- ✿ Information systems architecture
 - Systems level
- ✿ Data architecture
 - Data element level
- ✿ Delivery systems architecture
 - Hardware, software, networks

This is a model used in Zachman, SABSA, NIST etc.



Practical Architectural Layers

- ✿ Applications
- ✿ Databases
- ✿ Networks
- ✿ Operating systems / utilities
- ✿ Hardware



Challenges to Implementation of EA

- ✿ After establishing an appropriate EA framework for the enterprise, there are still many challenges related to:
 - Change management
 - Legacy systems integration
 - IT staff planning
 - EA compliance, waivers and certification



Key Success Factors for Enterprise Architecture

- ✿ EA should be approached in a top-down, enterprise-wide fashion
- ✿ EA is the link between strategy, technology, processes and organisation and is one of the key IT contributions to the enterprise effort to implement strategy
- ✿ For the optimal approach to doing EA in the organisation, there are a number of factors to be kept in mind—size, culture, EA skill levels, stakeholder views, resources, financial strength



Architecture Review Boards

- ✿ To ensure adequate governance of EA, an architecture review board may be established
 - The board's primary purpose is to ensure that IT-related initiatives and road maps are planned and implemented according to the EA
 - The board is responsible for leading the creation and governance processes for architecture and vetting project proposals for compliance to, and advancement of, the EA



Realistic Goals and Strategy

- ✿ Strategies calling for operating capabilities and performance levels that cannot be attained are doomed to fail
- ✿ Strategies that are not aligned with senior management vision are doomed to fail
 - All enterprises have a culture either explicitly stated in a formal business plan or implicitly stated in the procedures and conversations within the senior management team that must be addressed in the IT strategy



IT Strategic Questions

- ✿ Questions to ask relevant to IT strategy are:
 - What can IT do to enable the enterprise to accomplish its goals?
 - What business initiatives are planned over the next time period?
 - What capabilities does the enterprise need to successfully carry out these initiatives?
 - Will the conceptual design of the IT systems infrastructure enable the enterprise to develop the operating capabilities it needs?



Role of Benchmarking

- ✿ Benchmarking is a performance measurement tool
 - It measures performance of comparable enterprises and identifies the best practices
- ✿ Allows management to measure their operations against other similar organisations
 - Base decisions on objective, quantifiable measures
 - Keep in line with competitors



Benchmarking

General 12 step approach to benchmarking:

1. Develop senior management commitment
2. Develop a mission statement
3. Plan
4. Identify customers
5. Perform research
6. Identify partners



Benchmarking (continued)

General 12 step approach to benchmarking:

7. Develop measures
8. Develop and administer questionnaires
9. Scrub and analyse data
10. Isolate best practices
11. Conduct site visits and interviews
12. Present findings and monitor results



EVALUATING IT INVESTMENT



Evaluating IT Investment Programs

- ✿ Evaluate investments in IT and application systems from the perspective of portfolio management
- ✿ First define several important characteristics of IT investments such as:
 - What are the life spans of these investments?
 - What are the risks associated with each investment?
 - What are the potential returns?



Return on Investment

- ✿ The ROI of an IT-driven initiative answers the question, Is this project worth doing? Is this process worth continuing?
- ✿ The process of calculating ROI requires the input from both business and technical people
 - The IT people who will build the system are responsible for estimating the costs
 - The business people who will use the system are responsible for estimating the benefits

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Development of a Business Case and ROI

- ✿ When a new IT project or group of projects (i.e., program) is proposed, it is first necessary to assess the impact on the existing portfolio of systems investments.
- ✿ Questions to ask include:
 - What are the business benefits
 - Are there regulatory requirements
 - What impact will this have on existing operations, systems, staff

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Benefits of IT Investment Programs

- ✿ 4 types of benefits of new IT initiative
- ✿ Direct benefits
 - Productivity increases and cost savings due to the capacity increases brought about by a new system
- ✿ Incremental benefits
 - Monetary benefits that may not be solely the result of the new system involved, but are measurable and due to the increased capabilities of the new system



Benefits of IT Investment Programs (continued)

- ✿ Cost avoidance benefits
 - Savings related to the lower maintenance costs or increased capacity provided by the new system
- ✿ Intangible benefits
 - Challenging to quantify. Includes things like maintenance of a competitive advantage by better intelligence and adaptability, superior service levels that solidify customer relationships



Return on Investment

- ✿ To be complete, ROI analysis should be performed twice
 - The first analysis should show the net present value (NPV) of the initiative using the low end of the range of benefits estimated and the second should use the high end of the estimated benefits



Use of Milestones in “Go / No Go” Decisions

- ✿ Having review milestones during the project evaluation can ensure that only viable projects continue to receive funding/support
- ✿ This helps ensure deliberate and carefully reasoned decisions based on ROI determinations
 - One milestone is during the definition phase, where the conceptual design and the ROI are presented to the IT governance or steering committee



Use of Milestones in “Go / No Go” Decisions

- ✿ During the Define phase of the project, evaluate the benefits from the perspective of the business sponsor, customers; and a high level process map
 - If there is no agreement on the ROI, then there is no point in continuing with the initiative



Consensus on ROI

- ✿ If there is consensus and the ROI shows that the initiative produces a low NPV, then there is no point in continuing with the initiative
- ✿ Only initiatives that have a consensus on costs and benefits and show a high NPV get to continue on into the “design” phase
- ✿ NPV - net present value - the impact on revenue compared to the produced benefits



Calculating Return on IT Investment

- ✿ To determine the return on IT investments, various techniques can be helpful such as:
 - Preparation of formalised, consistent business cases
 - Use of hurdle rates - minimum acceptable rate of return
 - Attention to portfolio management; and
 - Application of metrics such as internal rate of return (IRR) (value of today's dollar compared to the value of future income), and payback period



PROJECT MANAGEMENT



Project Management

- ✿ Project Management can keep a project on track and ensure desired outcomes. Examples include:
 - Decomposing activities into a work breakdown structure (WBS).
 - PERT charts
 - SOW - statement of work
 - GANTT charts



Project Management - Critical Path Methodology

- ✿ Critical Path Analysis is done in conjunction with the Program Evaluation and Review Technique (PERT).
- ✿ In this technique, a software tool usually is used to map out, in sequence, activities which have interdependencies and linkages



Communicating and Obtaining Support for Projects

- ✿ Six activities used when selling the value proposition of the IT strategy to key stakeholders
 - Illustrating and quantifying the IT strategy
 - Communicating constantly
 - Focus on explaining and training
 - Using a participatory style of decision-making process
 - Documenting operational procedures
 - Benchmarking other organisations



Keeping Momentum

- ✿ Good IT strategies deliver tangible benefits in phases with reasonable time frames
- ✿ Employ a combination of “quick wins” and mid and long term strategy
- ✿ Demonstrate flexibility, progress, responsiveness to issues
- ✿ Strategy execution should also be matched to the tempo of the business



Summary

- ✿ IT Strategy is a subset of Business Strategy
- ✿ IT strategy should direct an enterprise architecture
- ✿ Strategy is implemented through policy, procedures, standards and operational processes
- ✿ Strategy must adapt to changing business requirements



SAMPLE QUESTIONS



Sample Question

- 1) The BEST approach for ensuring the success of IT's contribution to the enterprise is to:
 - a) Have IT operations report directly to the Chief Executive Officer (CEO)
 - b) Define the IT strategy based on the enterprise strategy
 - c) Make IT responsible and accountable for enterprise performance
 - d) Ensure that there is external oversight of IT performance



Sample Question

- 1) The BEST approach for ensuring the success of IT's contribution to the enterprise is to:
 - a) Have IT operations report directly to the Chief Executive Officer (CEO)
 - b) Define the IT strategy based on the enterprise strategy**
 - c) Make IT responsible and accountable for enterprise performance
 - d) Ensure that there is external oversight of IT performance



Sample Questions

2) In an enterprise architecture which of the following domains should drive the others?

- a) Application
- b) Data
- c) Technology
- d) Business



Sample Questions

2) In an enterprise architecture which of the following domains should drive the others?

- a) Application
- b) Data
- c) Technology
- d) **Business**



Sample Questions

3) Which of the following would be considered a PRIMARY portfolio management activity?

- a) Implementing project management governance
- b) Categorising investment types
- c) Defining strategic governance
- d) Building a comprehensive program business case



Sample Questions

3) Which of the following would be considered a PRIMARY portfolio management activity?

- a) Implementing project management governance
- b) Categorising investment types**
- c) Defining strategic governance
- d) Building a comprehensive program business case

This is usually the first step in portfolio management



Chapter 3

Benefits Realisation



Agenda

-  Introduction
-  Value Governance
-  Investment Management
-  Portfolio Management
-  The Business Case
-  Sample Questions



Exam Relevance

The CGEIT candidate...

- ✿ Ensures that IT-enabled investments are managed to deliver optimised business benefits and that benefit realisation outcome and performance measures are established, evaluated and progress is reported to key stakeholders
- ✿ The content area in this chapter will represent 16 percent of the CGEIT exam

3



Chapter 3 Objectives

- ✿ To ensure that IT and the business fulfill their value management responsibilities
 - That IT-enabled business investments achieve the benefits as promised and deliver measurable business value, both individually and collectively
 - That required capabilities (solutions and services) are delivered on time and within budget, and that IT services and other IT assets continue to contribute to business value

4



Task Statements

- ✿ Manage IT investments through the economic lifecycle
- ✿ Establish business ownership and accountability for IT investments
- ✿ Establish outcome and performance measures to assess and report on progress
- ✿ Prioritise improvement initiatives

5



Knowledge Statements

- ✿ Know benefit calculation techniques
- ✿ Know project and deployment planning
- ✿ Know measurement techniques (KPIs)
- ✿ Know models and methods for valuation determination

6



Lack of Benefits Realisation

- ✿ A Gartner survey found that 20 percent of all expenditures on IT is wasted—a finding that represents, on a global basis, an annual destruction of value totaling about US \$600 billion.



Lack of Benefits Realisation

- ✿ An IBM survey of Fortune 1000 CIOs found that, on average, CIOs believe that 40 percent of all IT spending brought no return to their organisations.



Lack of Benefits Realisation

- ✿ A study conducted by The Standish Group found that only 35 percent of all IT projects succeeded while the remainder (65 percent) were either challenged or failed.

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Definition

- ✿ Value delivery in the context of governance of IT concentrates on optimising expenses and proving the value of IT.

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Definition of Value (ISACA)

- ✿ The relative worth or importance of an investment for an enterprise, as perceived by its key stakeholders, expressed as total life cycle benefits net of related costs, adjusted for risk and (in the case of financial value) the time value of money.



Definition of Value Creation (COBIT 5)

- ✿ The main governance objective of an enterprise, achieved when the three underlying objectives (benefits realisation, risk optimisation and resource optimisation) are all balanced



Definition - Benefits Realisation (COBIT 5)

- ✿ One of the objectives of governance. The bringing about of new benefits for the enterprise, the maintenance and extension of existing forms of benefits, and the elimination of those initiatives and assets that are not creating sufficient value



VALUE GOVERNANCE



Value Governance Practices

- ✿ The goal of value governance is to ensure that value management practices are embedded in the enterprise, enabling it to *secure optimal value* from its IT-enabled investments throughout their full economic life cycle
- ✿ Requires executive commitment to:
 - Establish a governance framework
 - Provide strategic direction for investment decisions
 - Improve value management



Enterprise Governance of IT Focus 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.



Enterprise Governance of IT Focus Areas

- ✿ **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.



Enterprise Governance of IT Focus Areas

- ✿ **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.



Enterprise Governance of IT Focus Areas

- ✿ **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.



VAL IT (ISACA)

- ✿ VAL IT sets out good practices for the goals and objectives of IT investment, by providing enterprises with the structure they require to measure, monitor and optimise the realisation of business value from investment in IT.



Value Governance Practices

- ✿ The VAL IT Framework principles help ensure that IT-enabled investments will:
 - Be managed as a portfolio of investments
 - Include the full scope of activities required to achieve business value
 - Be managed through their full economic life cycle
- ✿ Are applied through three domains:
 - Value governance
 - Portfolio Management
 - Investment Management



Six Key Value Governance Practices

- ✿ **VG1 Establish informed and committed leadership:**
 - Develop an understanding of the significance of IT and role of governance
 - Establish effective reporting lines
 - Establish a leadership forum
 - Define value for the enterprise
 - Ensure alignment and integration of business and IT strategies with key business goals



Six Key Value Governance Practices

- ✿ **VG2 Define and implement processes:**
 - Define the value governance framework
 - Assess the quality and coverage of current processes
 - Identify and prioritise process requirements
 - Define and document the processes
 - Establish, implement and communicate roles, responsibilities and accountabilities
 - Establish organisational structures



Six Key Value Governance Practices

- ✿ **VG3 Define portfolio characteristics:**
 - Define portfolio types
 - Define categories (within portfolios)
 - Develop and communicate evaluation criteria (for each category)
 - Assign weightings to criteria
 - Define requirements for stage-gates and other reviews (for each category)



Six Key Value Governance Practices

VG4 Align and integrate value management with enterprise financial planning:

- Review current enterprise budgeting practices
- Determine value management financial planning practice requirements
- Identify changes required
- Implement optimal financial planning practices for value management



Six Key Value Governance Practices

VG5 Establish effective governance monitoring:

- Identify key metrics
- Define information capture processes / approaches
- Define reporting methods and techniques
- Identify / monitor performance improvement

VG6 Continuously improve value management practices:

- Implement lessons learned



Value Governance Practices

- ✿ Typical characteristics of initiatives that meet success in delivering value
 - Programs are selected based not just on their desirability, but also on the enterprise's ability to deliver them
 - Having methodologies in place is less important than whether business managers and specialists use them
 - Robust and realistic business cases are used and, if possible, include benefits for all stakeholders



Value Governance Practices

- ✿ Typical characteristics of initiatives that meet success in delivering value (continued)
 - Benefits are managed over the entire investment life cycle through consistently applied practices and processes
 - Integrated planning addresses benefit delivery as well as organisational, process and technology changes
 - Business ownership and accountability are assigned for all benefits and changes targeted



Value Governance Practices

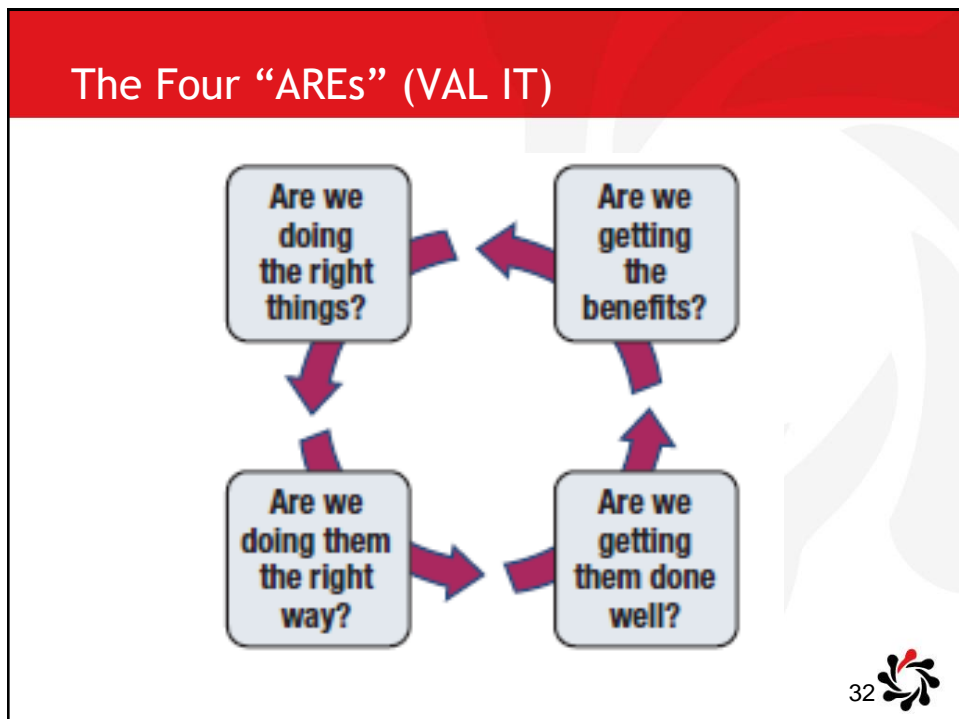
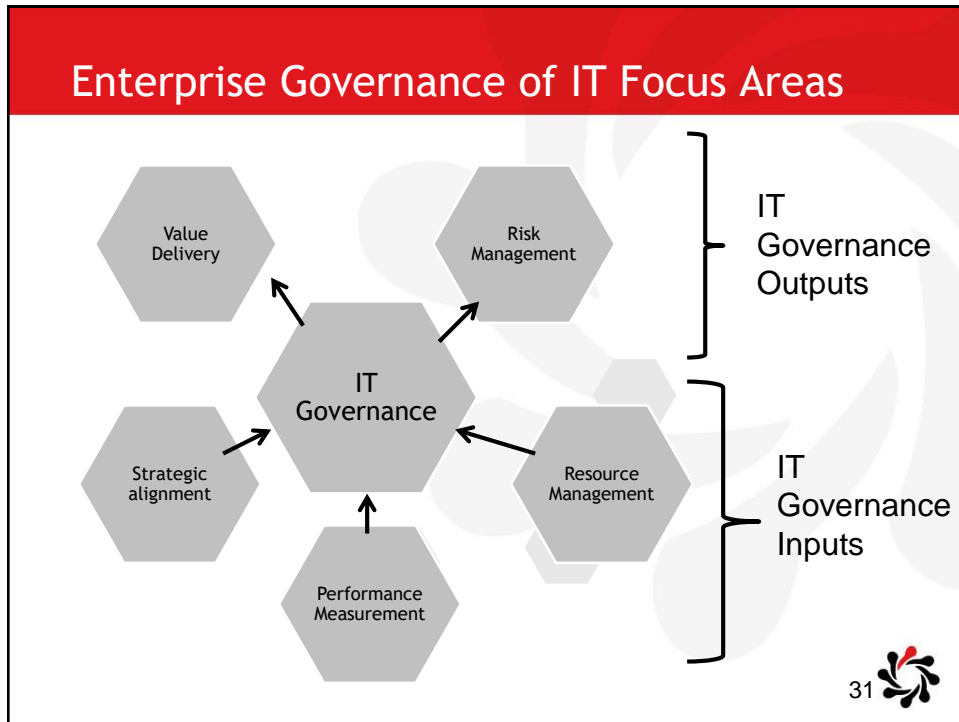
- ✿ Typical characteristics of initiatives that meet success in delivering value (continued)
 - Investments and their results—in terms of whether benefits are realised—are systematically monitored and reviewed.
 - Lessons learned are consistently gleaned from both successful and unsuccessful programs, and used to improve the planning and management of new ones



IT Governance and IT Benefits

- ✿ ***Effective IT governance is the single most important predictor of the value an organisation generates from IT.***
- ✿ *PETER WEILL AND JEANNE W. ROSS, IT GOVERNANCE, HOW TOP PERFORMERS MANAGE IT DECISIONS FOR SUPERIOR RESULTS.*





INVESTMENT MANAGEMENT



Investment Management

- ✿ The goal of investment management is to ensure that the enterprise's individual IT-enabled investments contribute to optimal value. Commitment to investment management improves the ability of management to:
- ✿ Identify business requirements
- ✿ Develop a clear understanding of candidate investment programs



Investment Categories

- ✿ There are different categories of investment with differing levels of complexity and degrees of freedom in allocating funds.
 - Examples of such categories could include:
 - Innovation
 - Venture
 - Growth
 - Operational improvement
 - Operational maintenance
 - Mandatory investments.



IT Investment Objectives

- ✿ MIT classifies the four management objectives for investing in IT as follows:
 - **Transactional** - To cut costs or increase throughput for the same cost - faster transaction processing
 - **Informational** - To provide better information support for business purposes - including to manage, control, report compliance, communicate, collaborate or analyse (e.g., a sales analysis or reporting system)



IT Investment Objectives (continued)

- ✿ MIT four management objectives:
 - **Strategic**
 - To gain competitive advantage or position in the marketplace (e.g. offering a service not offered by competitors)
 - **Infrastructure**
 - The base foundation of shared IT services used by multiple applications (e.g. servers, networks, laptops, customer databases)



Flexibility in IT Investments

- ✿ A key challenge for enterprises during periods of boom or bust is aligning to the corporate strategic intent and developing a framework for measuring, balancing, prioritising, selecting and flexibly changing the composition of IT investments and assets



Managing and Reporting the Status of IT Investments

- ✿ The communication and collaboration between IT and business are the most critical aspects of IT portfolio management to be effectively operational
- ✿ IT investment portfolio must be measurable, manageable, traceable and constantly being monitored and improved



Managing IT Investments

- ✿ An IT investment management process is an integrated approach to managing IT investments that provides for the continuous identification, selection, control, life cycle management, and evaluation of IT investments
 - To be most successful, the IT investment management process should have elements of three essential phases—select, control and evaluate



Managing IT Investments

- ✿ Select
 - Determine priorities
 - Cost, benefits etc.
- ✿ Control
 - Continue to meet milestones
 - Cancel or continue
- ✿ Evaluate
 - Post implementation reviews



Investment Management Goals (continued)

- ✿ Analyse alternative approaches to implementing the program
- ✿ Maintain a business case for each program through the full economic lifecycle
- ✿ Assign clear accountability and ownership including those for benefits realisation
- ✿ Monitor and report on program performance



Three Key Components of Investment Management

- ✿ Three Key Components:
 - Business Case - essential to selecting the right investment programs and to manage them during their execution
 - Program Management - governs all processes that support execution of the programs.
 - Benefits realisation - the set of tasks required to actively manage the realisation of program benefits.



IT Investment Management Practices and Processes

- ✿ VAL IT prescribes the following processes:
 1. Develop and evaluate the initial program concept business case
 2. Understand the candidate program and implementation options
 3. Develop the program plan
 4. Develop full life-cycle costs and benefits
 5. Develop the detailed candidate program business case



IT Investment Management Practices and Processes

- ✿ VAL IT prescribes the following processes:
 6. Launch and manage the program
 7. Update operational IT portfolios
 8. Update the business case
 9. Monitor and report on the program
 10. Retire the program



Two Types of Benefits Realisation

- ✿ Business benefits - contribute directly to value (an outcome that is expected to, or does directly increase value)
- ✿ Intermediate benefits - benefits that are not business benefits but might lead to business benefits including leveraging assets, improving customer service, improving morale, or better management of information



NPV - Net Present Value

- ✿ NPV is a method for representing a series of cash inflows and cash outflows over a period of time by a single number, taking into account interest rates and risks.



PORTFOLIO MANAGEMENT



Portfolio

- ✿ **Portfolio**—Groupings of ‘objects of interest’ (investment programmes, IT services, IT projects, other IT assets or resources) managed and monitored to optimise business value.



Portfolio Management

- ✿ The goal of portfolio management (in relation to VAL IT) is to ensure that an enterprise secures optimal value across its portfolio of IT-enabled investments.



Benefits of Portfolio Management

- ✿ IT portfolio management supports disciplined improvement and thrives on consistency, repeatability and accountability.



Portfolio Management Practices

- ✿ Portfolio Management processes & practices
 - PM1 Establish strategic direction and target investment mix
 - PM2 Determine funds availability and sources
 - PM3 Manage the availability of human resources
 - PM4 Evaluate and select programs to fund
 - PM5 Monitor and report on investment portfolio performance
 - PM6 Optimise investment portfolio performance



Portfolio Management

- ✿ Categorise the portfolio using a three or five tier schema
- ✿ Three tier
 - Run the business
 - Grow the business
 - Transform the business
- ✿ Five-tier schema:
 - Venture, growth, discretionary enhancements
 - Nondiscretionary, core



Management of Portfolios

- ✿ IT portfolio management provides the day-to-day management and operations of IT investments:
 - Ensuring that IT investments are performing according to plan
 - Scope creep, redundancies and risks are identified early
 - Limited resources are providing maximum benefit
 - Changes to the IT portfolio as a result of business redirection are efficiently and effectively executed



Commitment to Portfolio Management

- ✿ Executive level commitment to portfolio management helps enterprises:
 - Establish and manage resource profiles
 - Define investment thresholds
 - Evaluate, prioritise, and select, defer, or reject new investments
 - Manage and optimise the overall investment portfolio
 - Monitor and report on portfolio performance

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Portfolio Management Practices

- ✿ An IT enabled investment business case investment considers the following causal relationships:
 - Resources are needed to develop
 - A technology/IT service that will support
 - An operational capability that will enable
 - A business capability that will create
 - Stakeholder value, which may be represented by a risk-adjusted financial return or total shareholders' return

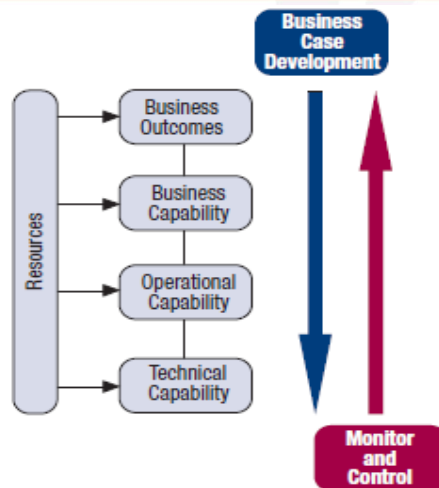
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THE BUSINESS CASE



Development of the Business Case



ISACA Enterprise Value: Governance of IT Investments, The Val IT Framework, 2.0 USA, 2008CGEIT® Review Manual 2015, Exhibit 2.23: The Business Case page 63



Top Down Direction - Bottom Up Reporting

- ✿ The business case should be developed from a top-down strategic perspective, starting with a clear understanding of the desired business outcomes and progressing to a detailed description of critical tasks and milestones as well as key roles and responsibilities
- ✿ Once an investment is approved, the delivery of the required capabilities and the desired outcomes must be diligently monitored and controlled through the full economic life cycle of the investment



Business Case Development

- ✿ At a minimum, the business case should include the following:
 - The business benefits targeted, their alignment with business strategy and who in the business functions will be responsible for securing them
 - Business changes needed to create additional value
 - The investments needed to make the business changes
 - The investments required to change or add new IT services and infrastructure



Business Case Development

- ✿ At a minimum, the business case should include the following: (continued)
 - The ongoing IT and business costs of operating in the changed way
 - The risks inherent in the above, including any constraints or dependencies
 - Who will be accountable for the successful creation of optimal value
 - How the investment and value creation will be *monitored throughout the economic life cycle*, and the metrics to be used

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Development of a Business Case

1. Building a fact sheet with all the relevant data, followed by analysis of the data in steps 2-5
2. Alignment analysis
3. Financial benefits analysis
4. Nonfinancial benefits analysis
5. Risk analysis resulting in step 6
6. Appraisal and optimisation of the risk/return of the IT-enabled investment represented by step 7
7. Structured recording of the results of the previous steps and documentation of the business case and, maintained by step 8
8. Review of the business case during the program execution, including the entire life cycle of the program results

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Business Case Development

✿ Eight steps in the business case



Priorities

✿ The critical importance of alignment to corporate strategy and planning, and the sequencing of priorities to migrate from the current as-is state to the future to-be state, is driven primarily by business needs and supported by IT



Tracking Benefit Realisation

- ✿ IT benefits management
 - The clarity and precision of anticipated benefits as defined in the business case are key to the actual and demonstrable achievement of value
- ✿ The tracking of benefits needs to be ongoing from the date of implementation of the project



Best Practices for Systems Development

- ✿ Seven best-practice guidelines:
 - Closely align systems projects with business goals
 - Use systems to change the competitive landscape
 - Leverage the strengths of existing systems
 - Use the simplest combination of technology and business procedures to achieve as many different objectives as possible
 - Structure the design so as to provide flexibility in the development sequence used to create the system
 - Ensure that systems are not built with levels of complexities which exceed the organisation's capabilities
 - Ensure that projects are not renewed using the same organisational approach or using the same systems design after it has once failed



Summary

- ✿ Benefits realisation is based on sound investment, project management principles and project oversight
- ✿ A business case is a living document that must be adjusted to changing circumstances
- ✿ It is necessary to establish accountability for project success



SAMPLE QUESTIONS



Sample Questions

1) The PRIMARY benefit of managing IT-enabled investments using investment management practices is to:

- a) Enable decision making about discretionary and nondiscretionary investments
- b) Optimise the value of these investments
- c) Avoid getting into risky investments
- d) Realise investment benefits



Sample Questions

1) The PRIMARY benefit of managing IT-enabled investments using investment management practices is to:

- a) Enable decision making about discretionary and nondiscretionary investments
- b) Optimise the value of these investments**
- c) Avoid getting into risky investments
- d) Realise investment benefits

D would be more applicable to the use of project management



Sample Questions

2) The BEST use of a business case for IT-related investments is as a:

- a) Static document supporting the initial justification of the investment
- b) Measure of the financial performance of the investment
- c) Strategic document used over the life of the investment
- d) Checklist to monitor the business outcomes of the investment



Sample Questions

2) The BEST use of a business case for IT-related investments is as a:

- a) Static document supporting the initial justification of the investment
- b) Measure of the financial performance of the investment
- c) **Strategic document used over the life of the investment**
- d) Checklist to monitor the business outcomes of the investment



Sample Questions

3) After conducting a project performance evaluation, early project cancellation is a BEST practice because it:

- a) Mitigates against project failure (preventing failing projects from continuing towards their eventual outcome)
- b) Recovers the budgeted investment funds
- c) Encourages only the most profitable projects to survive
- d) Implies strict levels of business case development and decision making



Sample Questions

3) After conducting a project performance evaluation, early project cancellation is a BEST practice because it:

- a) Mitigates against project failure (preventing failing projects from continuing towards their eventual outcome)**
- b) Recovers the budgeted investment funds
- c) Encourages only the most profitable projects to survive
- d) Implies strict levels of business case development and decision making



Chapter 4

Risk Optimisation



1

Exam Relevance

Risk Optimisation:

- Ensure that an IT risk management framework exists to identify, analyse, mitigate, manage, monitor, and communicate IT-related business risk, and that the framework for IT risk management is in alignment with the enterprise risk management (ERM) framework
- The content area in this chapter will represent 24% of the CGEIT exam



2

Definition ISO27000

Risk

- The combination of the probability of an event and its consequence

Risk Management

- coordinated activities to direct and control an organisation with regard to risk

3



Definition ISO27000

Risk management process

- Systematic application of management policies, procedures, and practices to the activities of communicating, consulting, establishing the context and identifying, analysing, evaluating, treating, monitoring and reviewing risk

4



Chapter 4 Objectives

- ✿ The purpose of this domain is to ensure that appropriate risk management frameworks exist
- ✿ That the risk frameworks are aligned with relevant standards to identify, assess, mitigate, manage, communicate and monitor IT-related business risks as an integral part of an enterprise's governance environment
- ✿ That organisations demonstrate good governance by employing appropriate risk management activities

5



Task Statements

- ✿ Establish comprehensive IT risk management processes
- ✿ Ensure risk management addresses laws and regulations
- ✿ Ensure IT risk is aligned with the enterprise risk management (ERM) framework
- ✿ Identify Key Risk Indicators (KRIs)
- ✿ Communicate and report risk to management

6



Knowledge Statements

- ✿ Risk management at all levels from strategic to operations
- ✿ Risk management frameworks
- ✿ Threats, vulnerabilities and opportunities related to IT
- ✿ Types of risk - quantitative and qualitative
- ✿ Risk mitigation
- ✿ Monitoring effectiveness



OVERVIEW OF RISK MANAGEMENT



Influences on Risk

- ✿ Business risks are affected by the business environment (management style or culture; risk appetite; and by industry sector factors, such as competition, reputation and national and international regulations) and, therefore, specific IT risks can be similarly affected

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Benefits of Risk Management

- ✿ IT risk management generates business benefits by:
 - Improving the quality of information for decision making
 - Mapping the threats to business practices
 - Forcing a continuous review of developments in technology to improve reliability and dependability
 - Managing the risks to investment in new technology and promoting a proactive approach to managing technology projects

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Protection of Resources

- ✿ Risk management plays a critical role in protecting an enterprise's IT resources and, therefore, its mission from IT related risk
- ✿ The IT function relies on certain key resources for the delivery of its services, specifically:
 - Applications
 - Information
 - IT infrastructure
 - People



Risk and Governance

- ✿ For IT governance to be effective, senior management should review and approve the risk action plan, agree to priorities and commit the necessary resources to execute the plan effectively
- ✿ An IT executive committee with representation of all stakeholders should review and approve the plan collectively, on behalf of the board



Enterprise Risk Management

- ✿ Create enterprise wide IT risk definitions, in business terms, to ensure a common understanding
- ✿ NIST states:
 - “the principal goal of an enterprise’s risk management process should be to protect the enterprise and its ability to perform its mission, not just its IT assets”.



Board Level Responsibility for Risk

- ✿ The board should manage enterprise risk by:
 - Ascertaining that there is transparency about the significant risks to the enterprise
 - Being aware that the final responsibility for risk management rests with the board
 - Being conscious that risk mitigation can generate cost efficiencies
 - Considering that a proactive risk management approach can create competitive advantage



Board Level Responsibility for Risk (continued)

- ✿ Insisting that risk management be embedded in the operation of the enterprise
- ✿ Ensure that management has put processes, technology and assurance in place for information security to ensure that:
 - IT services are usable, can appropriately resist attacks and recover from failures
 - Critical information is protected from those who should not have access to it
 - Business transactions can be trusted



Ownership of Risk

- ✿ Ultimately, it is the business—the user of IT services—that must own business-related risks, including those related to use of IT
- ✿ The business should set the mandate for risk management, provide the resources and funding to support a risk management plan designed to protect business interests, and monitor whether risks are being managed



Risk Management Policy

- ✿ Risk Management Policy should be communicated appropriately and should specify the following:
 - Links between the risk management policy and the organisation's objectives and other policies
 - The organisation's rationale for managing risk
 - Consistent risk assessment across the enterprise



Risk Management Policy (continued)

- ✿ Risk Management Policy should be communicated appropriately and should specify the following:
 - Accountabilities and responsibilities for managing risk
 - The way in which conflicting interests are dealt with
 - The organisation's risk appetite or risk aversion
 - Processes, methods and tools to be used for managing risk



Types of Business Risk

- ✿ There are 4 types of risk:
 - Strategic
 - Risks to IT achieving its objectives, i.e., commercial, financial, political, environmental, etc.,
 - Program
 - Risks involving procurement or acquisition, funding, organisational, projects, security, safety and BCP



Types of Business Risk (continued)

- Project
 - Risks concerning people, technical aspects, cost, schedule, resources, operational support, security etc.,
- Operational
 - Risks regarding people, technical aspects, cost, schedule, resources, operational support, etc.,



Enterprise Risk Management Philosophy

- ✿ ERM helps with value by:
 - Aligning risk appetite and strategy
 - Enhancing risk response decisions
 - Reducing operational surprises and losses
 - Identifying and managing cross-enterprise risks
 - Providing integrated responses to multiple risks
 - Seizing opportunities
 - Improving deployment of capital



Enterprise Risk Management

- ✿ ERM assesses risk from an enterprise-wide perspective - not just per system, per department, per region.
- ✿ ERM risk is based on business risk - but considers all elements of risk throughout the organisation.
- ✿ The goal is a consistent risk management approach across the enterprise - and consistent risk acceptance criteria



ERM

- ✿ Needs strong management support to:
 - Articulate and endorse the risk management policy
 - Determine risk management performance indicators that align with organisational performance indicators
 - Ensure alignment of risk management objectives with the objectives and strategies of the organisation



ERM Deployment

- ✿ Deployment of an Enterprise wide Risk Management methodology requires:
 - Assigning management accountability and responsibility
 - Ensuring that the necessary resources and authority are allocated to risk management
 - Communicating the benefits of risk management to all stakeholders
 - Ensuring legal and regulatory compliance



Risk and Legal Compliance

- ✿ Legal requirements and regulations mandate that organisations must ensure controls to mitigate risk
 - Personally identifiable information
 - Financial reporting (Shareholders)
 - Health information
- ✿ Failure to comply may mean financial penalties or loss of license to operate



RISK MANAGEMENT FRAMEWORKS AND STANDARDS



Risk Management Frameworks and Standards

- ✿ A number of risk management frameworks and standards that have been published
- ✿ Once a risk management framework is in place, a common approach can be used across the business, bringing together disparate risk disciplines and functions into a cohesive and consistent approach



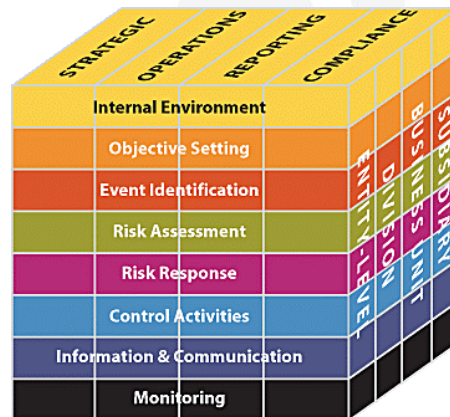
Risk Management Frameworks and Standards

- ✿ Committee of Sponsoring Organisations of the Treadway Commission (COSO) ERM
 - Enterprise risk management encompasses:
 - Aligning risk appetite
 - Enhancing risk response
 - Reducing operational surprises
 - Identifying and managing multiple and cross-enterprise risks
 - Seizing opportunities
 - Improving deployment of capital



Risk Management Frameworks and Standards



COSO Framework



Committee of Sponsoring Organizations of the Treadway Commission (COSO). Enterprise Risk Management- Integrated Framework, Executive Summary USA, 2004, www.coso.org, 2008CGEIT® Review Manual 2015, Exhibit 4.8: COSO ERM page 117



Risk Management Frameworks and Standards

- 
 Software Engineering Institute (SEI) of Carnegie Mellon's OCTAVE
 - (operationally critical threat, asset, and vulnerability evaluation)
- 
 Defines a set of self-directed activities for enterprises to identify and manage their information security risks



Risk Management Frameworks and Standards

- ✿ OCTAVE contains the following phases:
 - Phase 1
 - Build enterprise wide security requirements
 - Phase 2
 - Identify infrastructure vulnerabilities
 - Phase 3
 - Determine security risk management strategy



Risk Management Frameworks and Standards

- ✿ ISO 31000 standard is a guide for principles and implementation of risk management
- ✿ The ISO 31000 process includes five activities:
 - Communication and consultation
 - Establishing the context
 - Risk assessment
 - Risk treatment
 - Monitoring and review



Risk Management Frameworks and Standards

- ✿ ISO31000 prescribes a number of principles to be adhered to for the effectiveness of an organisation's risk management
 - *Risk management creates value*
 - *Risk management is an integral part of organisational processes*
 - *Risk management is part of decision making*
 - *Risk management explicitly addresses uncertainty*
 - *Risk management is systematic, structured and timely*



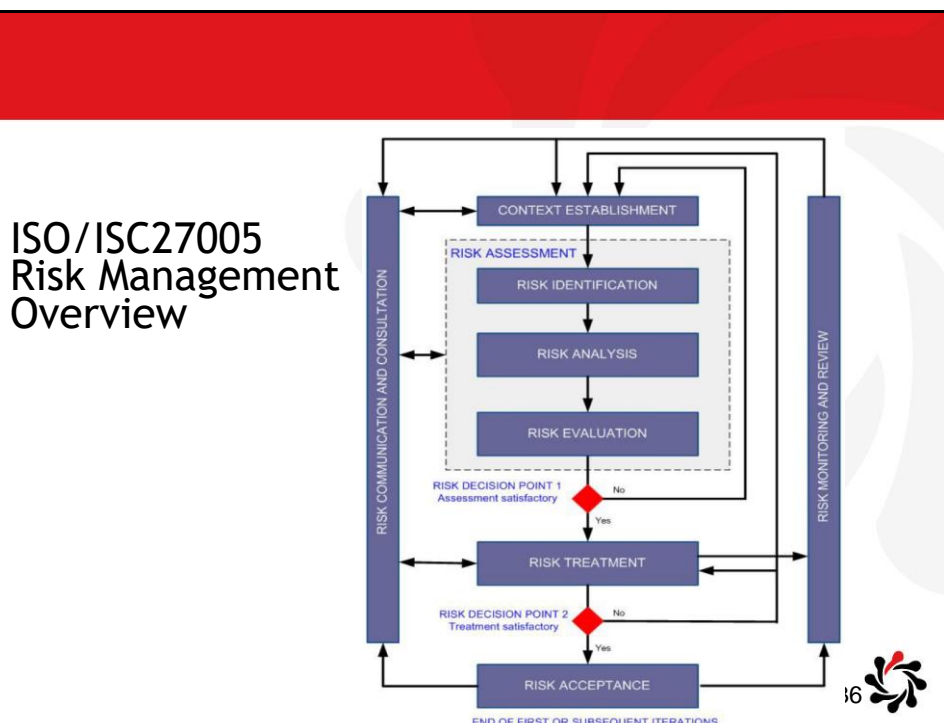
Risk Management Frameworks and Standards

- ✿ ISO31000 principles (continued)
 - *Is based on the best available information*
 - *Facilitates continual improvement and enhancement of the organisation*
 - *Takes human and cultural factors into account*
 - *Is transparent and inclusive*
 - *Is dynamic, iterative and responsive to change*
 - *Risk management is tailored*



Risk Management Frameworks and Standards

- ✿ ISO/IEC 27005:2008 - Information technology
 - Security techniques - Information security risk management
- Assist in the satisfactory implementation of information security based on a risk management approach
- information security risk assessment should be a continuous process



RISK ASSESSMENT



Risk Assessment

- ✿ Risks are typically not easily measured, reported and monitored
- ✿ Clarity in defining the business impact (both positive and negative) of risks related to IT is, therefore, critical for understanding where there are threats and vulnerabilities on the one hand, and opportunities on the other



Understanding the Organisation

- ✿ Knowing organisation's context and culture is important for risk management
 - External context
 - The cultural, political, legal, regulatory, financial, technological, economic, natural and competitive environment
 - Key drivers and trends having impact on the objectives of the organisation i.e., reputation, brand



Understanding the Organisation

- ✿ Internal context
 - The capabilities - resources, knowledge, skills, personnel, technology, financial strength
 - Information systems, information flows and decision making processes
 - Internal stakeholders
 - Policies, objectives and strategies to achieve them
 - Perceptions, values, ethics, and culture



Alignment of Risk with Business Objectives

- ✿ The enterprise's business objectives can be viewed as belonging to four categories:
 - Strategic
 - Mission or vision
 - Operations
 - Effectiveness and efficiency of operations
 - Reporting
 - internal and external reporting
 - Compliance
 - Applicable laws and regulations



The Enterprise's External Business Environment

- ✿ The external context is the external environment in which the enterprise seeks to achieve its objectives
 - The cultural, political, legal, regulatory, financial, technological, economic, natural and competitive environment, whether international, national, regional or local
 - Perceptions and values of external stakeholders
 - Key drivers and trends having impact on the objectives of the enterprise



The Enterprise's Internal Environment

- ✿ The internal environment of the enterprise is comprised of many elements, including:
 - The enterprise's ethical values, competence and development of personnel
 - Management's philosophy for managing risk and how it assigns authority and responsibility
- ✿ The impact of an ineffective internal control environment can be far-reaching, possibly resulting in financial loss, a tarnished public image or a business failure



The Enterprise's Internal Environment

- ✿ When the risk management philosophy is well developed, understood and embraced by its personnel, the enterprise is positioned to effectively recognise and manage risk
- ✿ The enterprise's risk management philosophy is reflected in virtually everything management does in running the enterprise
- ✿ It is captured in policy statements, oral and written communications, and decision making.



Infrastructure Risk

- ✿ There are five areas to consider when evaluating the risk of infrastructure failure
 - Facilities
 - Hardware
 - Software
 - Networks and Communications
 - Personnel



External Risk

- ✿ Virtually every enterprise now relies on various third parties for IT services
- ✿ As a result of that reliance, globalisation and the Internet, there are increasing international and national regulations and laws affecting the use of IT
- ✿ Some form of risk management framework should be in use to form a common approach



External Risk

- ✿ Many of the risks faced by enterprises lie outside their control because they arise outside the enterprise's realm of operations
 - Government regulations fall into this category
 - The actions of competitors
 - Demographic trends
 - Risk is inherent in the way global events shift in the economy, including changing interest rates, international developments and the fluctuating movement of capital



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Risk Impact

- ✿ The adverse impact of a risk event is described in terms of loss / degradation of, (or a combination of):
 - integrity, availability and confidentiality



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Types of Risk Associated with Controls and Audit

- ✿ In assessing IT risks, consider:
 - Inherent risk
 - Risk associated with the absence of controls
 - Control risk
 - Failure of the internal controls to prevent failure
 - Detection risk
 - Risk that the controls or monitoring will not detect an error
 - Residual risk
 - Risk that remains even after the implementation of controls



Risk Associated with IT Strategy and Operations

- ✿ Operational / Project risk
 - Failure to meet timelines, quality standards or functionality
- ✿ Strategic risks
 - Risk associated with lost opportunity from failure to adjust strategy to new technologies or business models
- ✿ Composite risks
 - Loss of in-house knowledge or skill



Quantitative and Qualitative Risk

- ✿ There are several popular risk methodology frameworks which are used to measure and determine risk:
 - Quantitative
 - Qualitative
 - Hybrid of Qualitative & Quantitative



Quantitative and Qualitative Methods to Assess IT Risks

- ✿ Qualitative analysis
 - is used to examine the impacts of risk events primarily through the application of a logical reasoning process
- ✿ Quantitative analysis
 - is used to measure consequences numerically



Quantitative Calculations

- ✿ Asset Value
- ✿ Threats
- ✿ Vulnerabilities
- ✿ Control Effectiveness
- ✿ Likelihood / probability
- ✿ Impact / Consequence



Risk Prioritisation

- ✿ In order to prepare a risk treatment plan, risk should be prioritised according assessed risk levels



Service Level Management

- ✿ Service level management (SLM)
 - SLM is used to ensure that service providers deliver their services at the levels required by in their SLAs. (Service Level Agreements)
 - Must have measureable way to evaluate performance
 - Reduce risk of non-compliance
 - Must have reporting



Quantitative and Qualitative Methods to Assess IT Risks

- ✿ Typical qualitative methods in R/A are:
 - Risk control self-assessment (RCSA)
 - Used by enterprises (especially banks) for the identification and evaluation of operational risk exposure
 - Scorecards
 - Generic questionnaires containing weighted risk-based questions with multiple-choice responses



Quantitative and Qualitative Methods to Assess IT Risks (continued)

- ✿ Typical qualitative methods in R/A are:
 - Scenarios
 - A forward-looking process that can reflect risks for a given point in time



Quantitative and Qualitative Methods to Assess IT Risks (continued)

- ✿ Typical qualitative methods in R/A are:
 - Key risk indicators (KRIs)
 - Used to alert the organisation to critical changes in risk
 - Likelihood-impact matrix
 - Analyses the two key components of risk—likelihood and impact
 - Attribute analysis
 - A creative problem-solving technique
 - Delphi forecasting
 - Developed as a forecasting tool



Risk and Ethics

- ✿ Managers of well-run enterprises increasingly have accepted the view that ethics pays and that ethical behavior is good business
- ✿ As the dominant personality in an enterprise, the CEO often sets the ethical tone
- ✿ Formal codes of corporate conduct are important to, and the foundation of, an effective ethics program



User Risk

- ✿ Users develop their own shortcuts and workarounds to get things done.
- ✿ Sensitive data may be stored on personal devices - in unprotected areas, in ad-hoc systems and spreadsheets
- ✿ Users do not understand that a breach anywhere, even on a non-critical system, could lead to a breach on a more sensitive system



RISK TREATMENT



The Enterprise's Risk Appetite

- ✿ Risk appetite is the amount of risk an enterprise is willing to accept in pursuit of its mission (or vision)
- ✿ It reflects the enterprise's risk management philosophy and, in turn, influences the enterprise's culture and operating style
- ✿ Enterprise's must balance risk with reward and ensure that the cost of risk mitigation does not exceed the cost of a potential loss



The Enterprise's Risk Appetite

- ✿ When considering the risk appetite levels for the enterprise, two major factors are important:
 - The enterprise's objective capacity to absorb loss (financial loss or reputational damage)
 - The (management) culture or approach toward risk taking
 - Cautious or aggressive. What is the amount of loss that the enterprise wants to accept to pursue a return?



Risk Treatment Strategies

- ✿ Risk treatment strategies will be influenced by:
 - Resources
 - Laws
 - Cost
 - Time
 - Skilled personnel
 - Risk tolerance
 - Technology



The Risk Owner

- ✿ Each risk should have a principal risk owner. This is the person who is responsible for delivering the objectives affected by the risk in question
- ✿ The risk owner must report to senior executives regarding the state of controls that guard against risk and report whether the net risk is acceptable.
- ✿ The level of risk the risk owner accepts must be in line with the enterprise risk management level



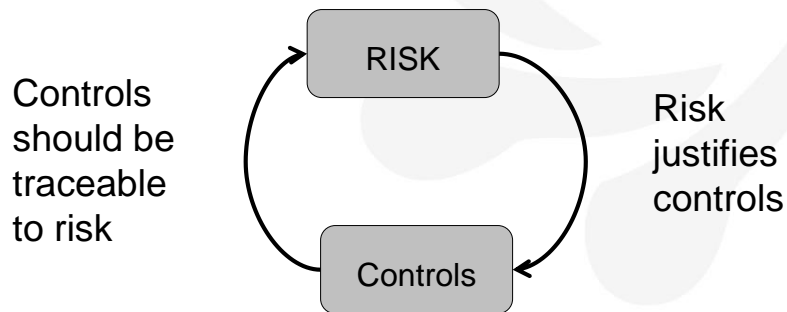
Risk Mitigation Options

- ✿ Depending on the type of risk and its significance to the business, management and the board may choose to:
 - Mitigate risk
 - Implement controls
 - Transfer risk
 - Share risk with partners or transfer risk to insurance
 - Accept risk
 - Formally acknowledge that risk exists and monitor it



Use of Controls to Mitigate Risk

- ✿ The key approach to manage and mitigate IT risks is the use of controls—technical, management and operational security controls, or a combination of such controls

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Risk Acceptance Levels

- ✿ Risk acceptance is based on the appetite for risk in the organisation
 - High-risk tolerance
 - Medium risk tolerance
 - Low-risk tolerance
- ✿ Risk appetite is unique to each organisation and often to each department and may change with a change in senior management

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ASSESSMENT AND EVALUATION OF THE RISK MANAGEMENT PROGRAM



Assessing a Risk Management Program

- ✿ When assessing the effectiveness of a risk management program review:
 - Process maps
 - Risk Assessment
 - Benchmarking
 - Roles & Responsibilities
 - Tasks & Activities
 - Process controls and data process restrictions



Risk Monitoring and Evaluation

- ✿ For risk monitoring to be effective:
 - The monitoring effort must be focused on the right sources of information
 - The information must be timely
 - The people reviewing the information must be able to act upon it



Evaluation of Risk

- ✿ To ensure that risk is being managed effectively the enterprise should:
 - Establish performance measures
 - Periodically measure progress against, and deviation from, the risk management plan
 - Review whether the risk management framework, policy and plan are still appropriate
 - Report on changes to risk factors to senior management



Good Practices in Risk Management

- ✿ Some processes used to minimise and properly assign risk include:
 - Setting the IT risk appetite for the business
 - Maintaining a risk register
 - Assigning clear risk accountability
 - Conducting lessons-learned workshops on completed IT projects
 - Avoiding an overdependence on a single vendor
 - Ensuring comprehensive two-way communication



Sample Question

- 1) Which of the following would be implemented at the highest level of the enterprise?
- a) A risk register
 - b) Risk mitigation strategy
 - c) Risk owner
 - d) Risk management board



Sample Question

1) Which of the following would be implemented at the highest level of the enterprise?

- a) A risk register
- b) Risk mitigation strategy
- c) Risk owner
- d) Risk management board**



Sample Question

2) An enterprise uses a risk map to document specific risks within predefined boundaries. Which of the following situation BEST defines this mapping?

- a) Situations where the reduction of controls may enhance system performance
- b) Situation where risk may be outsourced to a third party
- c) Situations where risk is accepted as being within risk acceptance limits
- d) Situations where the enterprise is not compliant with regulations but is unwilling to comply**



Sample Question

2) An enterprise uses a risk map to document specific risks that are within predefined limits. Which of the following situation BEST defines this mapping?

- a) Situations where the reduction of controls may enhance system performance
- b) Situation where risk may be outsourced to a third party
- c) **Situations where risk is accepted as being within risk acceptance limits**
- d) Situations where the enterprise is not compliant with regulations but is unwilling to comply



Sample Question

3) The MOST direct approach to correcting vulnerabilities and mitigating IT risk is through:

- a) Reduction
- b) Retention
- c) Sharing
- d) avoidance



Sample Question

3) The MOST direct approach to correcting vulnerabilities and mitigating IT risk is through:

- a) **Reduction**
- b) Retention
- c) Sharing
- d) avoidance



Sample Question

4) Risk assessment that depends heavily on interviews, the delphi technique and scenarios is most likely:

- a) Quantitative
- b) Service Management Practice
- c) Hybrid / Composite
- d) Qualitative



Sample Question

4) Risk assessment that depends heavily on interviews, the delphi technique and scenarios is most likely:

- a) Quantitative
- b) Service Management Practice
- c) Hybrid / Composite
- d) Qualitative**



Chapter 5

Resource Optimisation



Exam Relevance

- ✿ Ensure the optimisation of IT resources including information, services, infrastructure and applications, and people, to support the achievement of enterprise objectives
- ✿ The content area in this chapter will represent 15% of the CGEIT exam



Agenda

- ✿ Resource optimisation
- ✿ Resource management
- ✿ IT strategy
- ✿ Leveraging technology
- ✿ Human Resource management
- ✿ Performance measurement
- ✿ Sample questions

3



Definition COBIT 5

- ✿ Resource optimisation is defined as:
One of the governance objectives. Involves effective, efficient and responsible use of all resources—human, financial, equipment, facilities, etc.

4



Chapter 5 Objectives

- ✿ The objective of this domain is to ensure that IT has sufficient, competent and capable resources to execute current and future strategic objectives and keep up with business demands by optimising the investment, use and allocation of IT assets.

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Tasks

- ✿ Ensure processes are in place to identify, acquire and maintain IT resources and capabilities
- ✿ Ensure integration of resource management in strategic and tactical planning
- ✿ Ensure that policies and procedures are in place for the assessment, training and development of staff to address enterprise requirements

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Knowledge Statements

- Knowledge of:
 - IT resource planning methods
 - Human resources procurement, assessment, training and development
 - Monitoring and recording IT utilisation and availability
 - Evaluate resource performance
 - Economies of scale
 - Data management and governance

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RESOURCE MANAGEMENT

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Critical T Resources

- ✿ Four critical IT resources
- ✿ Applications
 - An application system adds value through its support for business processes and interaction with people and other systems
- ✿ Infrastructure
 - IT infrastructure includes hardware (memory, CPU, storage), software, networks and controls that facilitate business activities

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Critical IT Resources

- ✿ Information
 - Information resources (more commonly referred to as assets) are often among the most valuable assets owned by the organisation. Their confidentiality, integrity

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Critical IT Resources

People

- People make up the most critical and aspect of business operations. The enterprise requires personnel with the right skills to operate systems and support business



IT Provisioning

Organisations must determine the best way to provision IT services.

- Internal
- External
- Outsourcing

Regardless of the resourcing method selected, the organisation must monitor and manage the service provisioning approach



Internal Resourcing

Advantages

- In-house skills
- Flexible
- Responsive to and understands the business

Disadvantages

- Extended timelines
- Lack of skilled resources



External Resourcing

Advantages

- Availability of skilled resources
- Lower training and development cost
- Shorter timeframes for delivery

Disadvantages

- Inflexible
- Expensive
- Loss of direct control over systems



Services that are Eligible for Outsourcing

- ✿ Enterprise resource planning [ERP]
- ✿ Customer relationship management [CRM]
- ✿ Knowledge management and collaboration
- ✿ End-user and distributed computing
- ✿ Corporate platforms and data
- ✿ Data networks and service
- ✿ Voice networks and services
- ✿ Storage



Accountability When Outsourcing

- ✿ In Outsourcing, while service delivery is transferred, *accountability* remains firmly with the client organisation, which must ensure that the risks are managed and there is continued delivery of value from the service provider
- ✿ Includes legal liability in most cases
- ✿ Transparency and ownership of the decision-making process must reside with the client



Outsourcing Agreements

- ✿ Outsourcing is seen to diminish/contain costs
- ✿ Increasing costs arise, to a substantial extent, from the difficulty in retaining internal technical expertise in a 24x7x365 market
- ✿ The only way to ensure a consistency of service provision is to implement an approach that regulates and assists the interface between client and supplier.
- ✿ This is the function of the outsource governance



Multiple Outsourcing Suppliers

- ✿ Using several outsourcers
- ✿ Advantages
 - Reduce reliance on one firm
 - Competitive contracts
 - Variety of solutions
- ✿ Disadvantages
 - Incompatibility between systems/equipment
 - Blame the other company for everything



IT STRATEGY



Challenges to the Development of an IT Strategy

- ✿ Challenges to the development and implementation of an IT strategy include:
 - Lack of support from business and senior managers
 - Lack of budget
 - Lack of access
 - Inadequate training and skilled staff
 - Challenges with new technology
 - Lack of planning and architecture



Strategy and Reality

- ✿ An effective strategy is only as good as its implementation:
 - It satisfies needs of business and managers
 - Founded on detailed analysis and study, not just on wishful thinking
 - Can be turned into actions not just words
 - Proactive to address issues and problems
 - It is coherent, consistent, integrated with other corporate plans and mission



Enhancing Strategic Success





- ✿ Enhancing the success of strategy is accomplished through:
 - Taking a collaborative and cooperative approach to strategy development
 - Prioritising efforts
 - Monitoring progress
 - Addressing issues promptly



HUMAN RESOURCE MANAGEMENT



Human Resources Development

-  Need skilled staff to design, implement and operate systems
-  Challenges with retention if staff not trained, motivated, challenged
-  Inefficient use of resources when projects are poorly planned
-  Challenges with communication and feedback



Value of Human Resources

- ✿ Human capital can be regarded as the prime asset of an organisation, and businesses need to invest in people to ensure business survival and growth
- ✿ Aims to ensure that the enterprise obtains and retains the skilled, committed and well-motivated workforce it needs
- ✿ It means engaging in talent management—the process of acquiring and nurturing talent



Reducing Staff Turnover

- ✿ Seven key factors to increase productivity and help reduce IT staff turnover
 - Provide strong leadership especially during times of change
 - Provide staff with development plans & a clearly defined career path
 - Allow people to learn new technologies
 - Ask staff what they want
 - Give staff resources/support to do their job
 - Be competitive in salary/benefits
 - Ensure staff perceive job as meaningful



Outsourcing Specialist Roles

- ✿ Specialist jobs are likely to continue to migrate from current employers toward companies that provide outsourcing services
 - Outsourcing used to not only drive down costs, but also to increase the speed, flexibility and level of innovation



LEVERAGING TECHNOLOGY



Business Intelligence Systems

- ✿ Business intelligence is the use of data and systems to gain greater levels of understanding about customer, business trends, incidents and process efficiencies.
- ✿ This permits leveraging technology and data to enhance customer service and profitability
- ✿ Organisations should seek to leverage their systems and data



Capacity Management

- ✿ Capacity management
 - Ensures that capacity and performance of the IT services and systems match the evolving agreed-on demands of the business in the most cost-effective and timely manner
 - It includes business, service and component capacity management across the IT service life cycle



Capacity Management Information System

- ✿ The CMIS system stores:
 - Business data
 - Should include business transactions or measurements, such as the number of accounts, the number of invoices generated, the number of product lines
 - Service data
 - Transaction response times, transaction rates, work load volumes
 - Financial data
 - Costs of upgrades, components



Cost-benefit Analysis Techniques

- ✿ Cost Benefit Analysis (CBA)
 - Compares the costs with the benefits of the IT enabled investment that can be directly and indirectly attributed to the investment
 - Cost-benefit techniques include:
 - Payback period
 - Net present value analysis (NPV)/Internal rate of return (IRR)
 - Return on investment (ROI)
 - Breakeven analysis



Cost-benefit Analysis Techniques

- ✿ Nonfinancial Cost Benefit Analysis (CBA)
 - Involves a comparative examination of the costs and benefits of a project by using some surrogate measure for intangible costs or benefits, that can be expressed in monetary terms
 - As an example, *increase customer satisfaction*, the benefit may be expressed in terms of reducing the cost of returned products and reducing the number of customer complaints



MEASURING PERFORMANCE



Monitoring Performance

- ✿ It is the responsibility of the board and executive management to define and monitor performance measures that assess the business value of IT
- ✿ It is also their responsibility to ensure that the IT project risks are in balance and the IT budget is realistic
 - The CIO is responsible for managing the IT budget and the IT investments



Measuring Performance

- ✿ Performance requirements of IT capabilities indicate what qualities a delivered product or service should have.
- ✿ Performance requirements are usually expressed in the following dimensions:
 - Effectiveness
 - Efficiency
 - Practicability
 - Reliability
 - Maintainability
 - Portability



Data Collection Techniques

- ✿ Manual collection methods include:
 - Interviews
 - Interviews are effective because they evaluate a person's attitude and perspective
 - Focus groups
 - A gathering of people to talk and give their thoughts
 - Observation
 - Watching and studying the actions, behavior and relevant facts
 - Questionnaires



ITIL Resource Management

- ✿ Methods for resource availability and utilisation are found in three processes of the IT Infrastructure Library (ITIL)
 - Demand management, capacity management and availability management
- ✿ Capacity management and availability management also feature in the ISO 20000 standard for service management, under the service delivery processes group



Availability Management

- ✿ Availability management
 - Provides a point of focus and management for all availability-related issues, relating to services, components and resources, ensuring that availability targets in all areas are measured and achieved, and that they match or exceed the current and future needs of the business in a cost effective manner
 - Implemented through SLAs



Measuring Availability

- ✿ Availability management
 - *Reactive activities*
 - Monitoring, measuring, analysis and management of events, incidents and problems involving service unavailability
 - *Proactive activities*
 - Proactive planning, design, recommendation and improvement of availability



Monitoring Resource Performance

- ✿ By regular monitoring and comparison with a baseline, exception conditions in the utilisation of individual components or service thresholds can be defined, and breaches or near misses in the SLAs can be reported and actioned.



Emerging Trends and Patterns

- ✿ The data collected from the monitoring should be analysed to identify trends from which the normal utilisation and service levels, or baselines, can be established
- ✿ Trends should be examined from a short, mid and long term position



KPIs

- ✿ Include sufficient performance drivers (key performance indicators) so it is possible to visualise how the IT strategy will be achieved
- ✿ Clarify the cause-and-effect relationships between outcome measures and performance drivers
- ✿ Define targets that are realistic and devise strategic initiatives to achieve the targets



Performance Measurement

- ✿ An enterprise-wide survey may ask for ratings on:
 - Availability of IT personnel
 - Responsiveness of IT personnel
 - Effectiveness of IT in project management communication
 - Reliability of IT in meeting commitments
 - IT cycle time for completing projects
 - Rate of improvement during the past year



Selection of Performance Measures

- ✿ Performance measures are the “vital signs” of an enterprise
- ✿ Linkages between information and technology and program results in terms of performance measurement
 - Measures in terms of what customers and stakeholders want
 - Measures of the process of delivering reliable, cost-effective, high-quality IT products and services



Selection of Performance Measures

- ✿ IT goals and measures should ideally flow directly from strategic goals
- ✿ IT managers and staff should develop performance management systems that optimise operational customer results by considering enterprise-wide perspectives not IT perspectives
 - IT goals and measures track in a seamless fashion back to enterprise strategic directions or goals



Types of Performance Measures

- ✿ Qualitative and quantitative measures are categorised into four main types
 - Input and output measures assess work load for an enterprise or specific program and how much demand there is for its products and services
 - Combination measures assess efficiency and effectiveness
 - Outcome measures assess results compared to expectations



SMAART Metrics for Performance

- ✿ SMAART Metrics
 - (specific, measurable, achievable or attainable, action-oriented, results-oriented, timely)
- ✿ Commonly used as a basis for goal setting; however, this also applies to the preferred design and selection characteristics of measures and metrics
- ✿ Usually interpreted for a business expectation of IT, IT process or IT activity



Metrics

- ✿ Measures or metrics should follow the keep-it-simple principle
 - High insight-to-effort ratio - easy to capture data
 - Comparable internally - easy to compare results between different reporting periods
 - Objective and based on consistent standards
 - Few good metrics rather than many poor metrics



Outcomes of Performance Measurement

- ✿ An effective performance management system produces information that:
 - Provides an early warning indicator of problems and the effectiveness of corrective action
 - Provides input to resource allocation and planning



Outcomes of Performance Measurement

- ✿ An effective performance management system produces information that:
 - Is linked to strategic management processes
 - Provides periodic feedback to employees, customers and stakeholders about the quality, quantity, cost and timeliness of products and services



Examples of Performance Measures

- ✿ IT performance drivers provide indicators on how IT governance is being achieved
- ✿ Examples of IT performance drivers are:
 - The extent and frequency of risk and control reporting to the board
 - Improved cost efficiency of IT processes (cost vs. deliverables)
 - System downtime
 - Throughput and response times



Linking IT Performance to Strategy

- ✿ The IT results chain shows the links from organisational goals and objectives to IT performance measures
- ✿ IT goals, objectives and measures:
 - Directly map information technology and management goals and measures to strategic goals
 - Build consensus among program managers, IT managers, customers, stakeholders and staff to establish joint ownership for performance management



Benchmarking

- ✿ Enterprises focused on performance measurement typically spend considerable time and effort on baselining and benchmarking
 - These organisations assess what performance information they have for the measures they have selected (*baselining*) and how that information might compare to that of other organisations or similar processes within their organisation if there were discrete IT units (*benchmarking*)



CONTINUOUS IMPROVEMENT



Continuous Improvement

- ✿ The sole purpose of reporting is to improve the quality and availability of IT service (especially for Critical Business Functions) that is provided to the business and users. All measures, reports and activities should reflect this purpose



Continuous Improvement Methodologies

- ✿ The origins of continuous improvement are to be found in process quality management and are exemplified by the Deming/Shewart or PDCA cycle of Plan-Do-Check-Act
- ✿ When a pass through these four steps does not result in the need to improve, it will require the refinement of scope to which PDCA is applied until there is a plan that involves improvement



Continuous Improvement Methodologies

- ✿ **Plan** - Establish the objectives and processes necessary to deliver results in accordance with the expected output
- ✿ **Do** - Implement the new processes
- ✿ **Check** - Measure the new processes and compare the results against the expected results to ascertain any differences
- ✿ **Act** - Analyse the differences to determine their cause



Continuous Improvement Methodologies

Six Sixma use of PDCA

Image available at -

http://www.villanovau.com/media/2160955/dmaic_process_flow.png



Continuous Improvement Methodologies

- ### IT services need to:
- Understand business operations and advise about the short- and long-term opportunities (and limitations)
 - Be designed for agility and nimbleness to allow for unpredictability in business needs
 - Accommodate technological change, in a reduced time, to match business cycle



Continuous Improvement Methodologies

- ✿ IT services need to:
 - Maintain or improve existing quality of services while adding or removing technology components
 - Ensure that quality of delivery and support matches the business use of new technology
 - Bring escalating costs under control



Quality Improvement

- ✿ A key objective for monitoring for performance measurement is the improvement of quality
- ✿ The emphasis is on identifying where improvements can be made to the existing level of service, or IT performance
- ✿ Data gathered in support of monitoring would typically be in the form of metrics:
 - Technology, process and service metrics



Sample Questions

- 1) Human resources strategy is BEST aligned with which of the following objectives?
- a) Having a focus on employee performance
 - b) Satisfaction of business needs
 - c) Talent retention
 - d) Rewarding employees fairly



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Sample Questions

- 2) Which of the following is the PRIMARY objective of business process outsourcing
- a) Optimising business processes
 - b) Faster deployment of new technology
 - c) Realigning business process with business strategy
 - d) Allowing the business to focus on core competencies



Sample Questions

- 2) Which of the following is the PRIMARY objective of business process outsourcing
- a) Optimising business processes
 - b) Faster deployment of new technology
 - c) Realigning business process with business strategy
 - d) Allowing the business to focus on core competencies**



Sample Questions

- 3) Which of the following IT balanced scorecard perspectives maps to the financial perspective of the enterprise balanced scorecard
- a) Corporate contribution
 - b) Stakeholders
 - c) Operational excellence
 - d) Future orientation



Sample Questions

- 3) Which of the following IT balanced scorecard perspectives maps to the financial perspective of the enterprise balanced scorecard
- a) **Corporate contribution**
 - b) Stakeholders
 - c) Operational excellence
 - d) Future orientation

Stakeholders relates to customers,
operational excellence to processes



Sample Questions

- 4) At the enterprise level, outcome measures for IT are metrics which indicate:
- a) What the IT process must deliver to support IT's objectives
 - b) What goals re expected from IT and how to measure them
 - c) What needs to happen inside the process to achieve the required performance
 - d) What is the desired maturity characteristics of the IT process



Sample Questions

- 4) At the enterprise level, outcome measures for IT are metrics which indicate:
- a) What the IT process must deliver to support IT's objectives
 - b) What goals re expected from IT and how to measure them**
 - c) What needs to happen inside the process to achieve the required performance
 - d) What is the desired maturity characteristics of the IT process

