IT Service Delivery and Support - Week Two Frameworks, Standards and Regulations

IT Auditing and Cyber Security

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Frameworks and Standards

- Committee of Sponsoring Organization of the Treadway Commisson (COSO)
- Control Objectives for Information and Related Technology (COBIT)
- IT Infrastructure Library (ITIL)
- ISO 27001
- National Security Agency INFOSEC Assessment Methodology
- Frameworks and Standard Trends

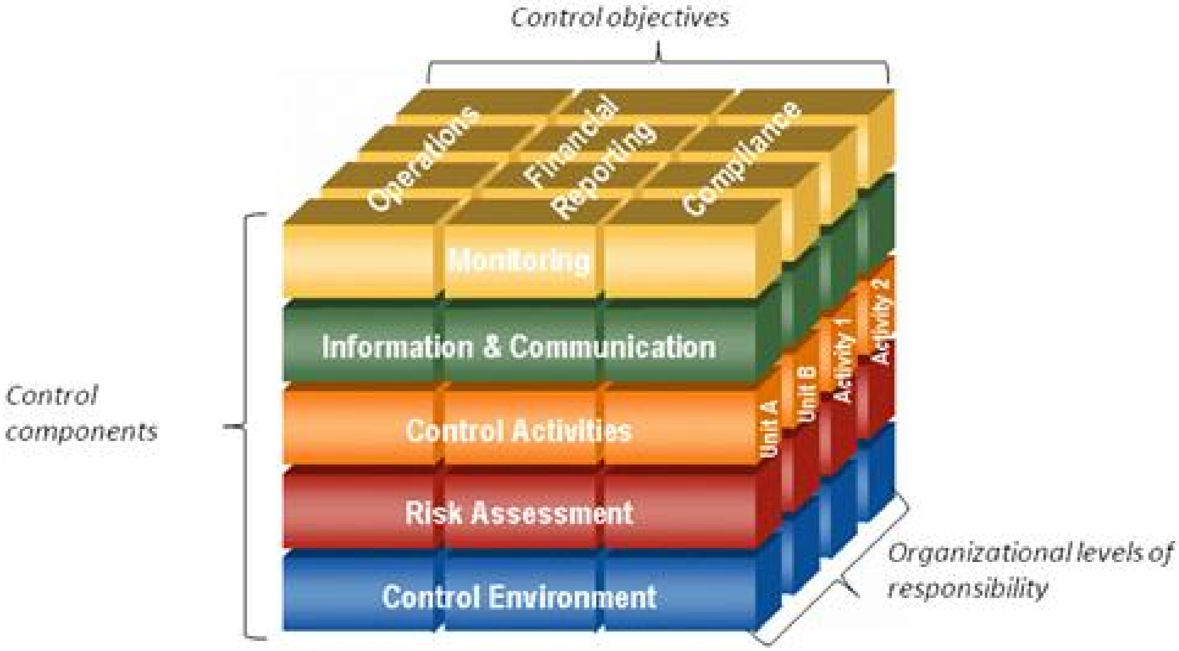
COSO

- Initiated in 1985
- Internal control and framework formed in 1992
- Key Categories:
  - Effectiveness and efficiency of operations
  - Reliability of financial reporting
  - Compliance with applicable laws and regulations
- The only framework for Internal Controls used by SEC, PCAOB

Internal Control Key Concepts

- Internal control is a process
- Internal control is affected by people
- Internal control can only provide “reasonable assurance”
- Internal control is geared to the achievement of objectives in one or more separate by overlapping categories

COSO Cube


Control objectives
Operations
Financial Reporting
Compliance
Control components
Monitoring
Information & Communication
Control Activities
Risk Assessment
Control Environment
Unit A
Unit B
Activity 1
Activity 2
Organizational levels of responsibility

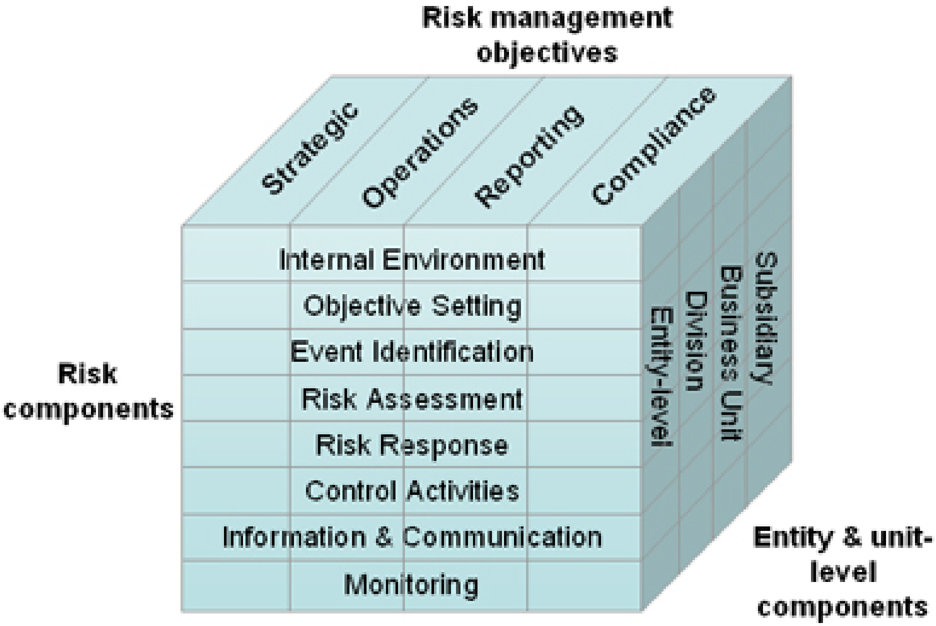
COSO Cube

- Control Environment – Tone from the top
- Risk Assessment – Identification and Analysis Risks
- Control Activities – Policies and procedures
- Information and Communication – Enable managers and staff to carry out responsibilities
- Monitoring – Assess the quality of the performance
- Each components are NOT isolated

Enterprise Risk Management

- Internal Environment
- Objective Setting
- Event Identification
- Risk Assessment
- Risk Response
- Control Activities
- Information and Communication
- Monitoring

ERM



The COSO Enterprise Risk Management Framework

COSO's Effect on IT Controls

- General Computer Controls
  - IT Governance and Management
  - IT Infrastructure
  - Security Management
  - HW and SW Acquisition and Development
  - Services Delivery and Support, etc.
- Application Controls
  - SDLC
  - SOD
  - Access Control, etc.

COBIT* Framework

- First published in April 1996
- Control Objective Domains
  - Plan and organize
  - Acquisition and implementation
  - Delivery and support
  - Monitor and evaluation

  - *Control Objectives for Information and Related Technology*

COBIT Framework (continue)

- Seven Qualities of Information
  - Effectiveness
  - Efficiency
  - Confidentiality
  - Integrity
  - Availability
  - Compliance
  - Reliability
- Control Objectives and Control Activities

COBIT Framework (continue)

- Standards for good practice of IT controls
- Technology platform independent
- Management and process owner-oriented
- A de facto standard for IT governance

IT Governance

- Complexity of IT environment
- Fragmented or poorly performing IT infrastructure
- Enterprise vs. ad hoc solution
- IT cost
- Reactive vs. proactive IT management
- Communication gaps between IT and Business management
- IT's role in business strategies

IT Governance (continue)

- Compliance with laws and regulations
- Scarcity of skilled staff
- Application ownership
- Competing IT resources/priorities among business units
- Flexibility and nimbleness
- Risk exposure
- External environment change

ITIL*

- Developed by the U.K government in mid 80s
- Provides best practices describing **how** to plan, design and implement effective service management capabilities

- *Information Technology Infrastructure Library*

ISO 27001

- International Organization for Standards (ISO)
- ISO 27001, 17799, BS 7799 – Information Security Practice
- 1333 security controls in 11 areas
  - Security policy
  - Information security organization
  - Asset management
  - Human resource security
  - Physical and environment security
  - Communication and operations management
  - Access control
  - Information system acquisition, development and maintenance
  - Security incident management
  - BCP
  - Compliance

Regulations

- The Sarbanes-Oxley Act of 2002
- The Gramm-Leach-Bliley Act (GLBA)
- State level privacy regulations, e.g. California SB 1386
- The Health Insurance Portability and Accountability Act of 1996 (HIPAA)
- EU Commission and Basel II
- Payment Card Industry Data Security Standard (PCI)

Regulations

- Regulatory Impact on IT Audit
- IIA and ISACA Guidelines for establishing IT control and audit processes

SOX

- Response from the corporate scandals:
  - Enron/Arthur Anderson
  - Tyco, Adephia, Worldcom, HealthSouth…
- Focus on Internal Control Over Financial Reporting
- Impact on Public Corporations
  - Executives to attest to the adequacy and effectiveness of ICOFR
  - Controls must be audited externally
  - CEOs & CFOs are held accountable for (reports generated by systems and applications)

SOX (continue)

- Section 101
  - Establishing of PCAOB as the governance agency to regulate accounting firms such as Big 4
- Section 302
  - CEOs & CFOs are responsible for all internal controls
- Section 404
  - Attestation that IC are in place, documented and effective
- Section 409
  - Disclosure for significant changes

SOX (continue)

- IT specific controls required for SOX compliance
  - Access control
    - Authentication and authorization
    - Physical and Logical access
    - Re-certification, etc.
  - Change control
    - Request/review/approval
    - Back-out plan/schedule
  - Data management
    - Data transfer
    - Database structure
    - Data element consistency
    - Physical control of data
    - Data backup
  - IT operations
  - Network operations
  - Asset management

GLBA

- Financial Institutions
- How FIs' customer information may be shared
- Customer privacy provisions
- Section 501B
  - Ensuring the confidentiality of customer information
  - Protecting against anticipate threats to customer records
  - Protecting against unauthorized access to customer information that could result in substantial impact to the customer

GLBA (continue)

- Interagency Guidance
  - Office of Currency Comptroller (OCC)
  - Federal Reserve (FRB)
  - Federal Deposit Insurance Corporation (FDIC)
- Control Requirements

GLBA (continue)

- Written Information Security Program
- Risk Assessment and Management
- Access Control for Customer Information Systems
- Physical Access Control for areas containing customer information
- Encryption (data at rest, data in transition, data in use)
- Change control
- Dual control/SOD/employee back ground check
- Security Monitoring
- Incident response and notification
- Disposal customer information

HIPAA

- Passed in 1996 by Congress
- Protect patient information
- IT relevant – prescribe a standard methodology for security; standardize the format for health-related information
- HIPAA Privacy and Security Rules
  - HIPAA Privacy Rules
  - HIPAA Security Rules

HIPAA (continue)

- HIPAA Privacy Rules
  - Administration controls designed to protect patient information
  - Effective April 2003
- HIPAA Security Rules
  - Technical controls: network perimeter protection, encryption, and workstation security
  - Ref. to page 432, Table 17-1 HIPAA Rule Requirements

PCI Data Security Standard

- Payment Card Industry Data Security Standard
- Not a law
- Mandatory compliance for participants in the card payment-processing industry
- Not only adopt, but also validate the compliance of the standard
- PCI compliance doesn’t mean your firm is secure – Target example

PCI Data Security Standard

- Level 1/High Risk Merchant
  - Quarterly internal and external scan
  - Independent validation of compliance by a QSA
  - ROC
- Others
  - Self-evaluation (SAQ)
- Common Adopted data security standards and practices
- Not a panacea – Recent Target Data Breach

Other Privacy Regulations

- California SB 1386 – the most visible state laws dealing with breaches of security that cause private information to be breached: disclosure
- EU Directive on the Protection of Personal Data
- Canada PIPEDA