Intro to IT Auditing for Non-IT Auditors

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Core Competencies - C11/C12
Learning Objectives

Part 1 (C11): Audit Basics & Automated Controls

– Level-Set Our Understanding Of Key Term’s & Concepts
– Understand The Role Of Automated Controls In Business Processes
– Audit Process & Required Documentation
– Types Of Automated Controls and Automated Control Test Strategy
Learning Objectives

Part 2 (Session C12)

– The Relationship between Financial/Operational Controls and IT General Controls (a.k.a. “Why IT General Controls Are Important”)

– Understanding IT General Control Processes & Related Test Strategies

– Knowing When to Bring in ‘The Experts’ (When Things Get Really Technical)
Learning Objectives

- Explain the Relationship between Financial / Operational Controls and IT General Controls (a.k.a. “Why IT General Controls Are Important”)
- Describe Understanding IT General Control Processes
- How to Test IT General Controls
- Knowing When to Bring in ‘The Experts’ (When Things Get Really Technical)
KS1

This slide seems duplicative of the last slide - are both needed?

KatieSo, 9/4/2012
Housekeeping Items

• Please turn cell phones off
• Please close laptops unless you are using them for this session
• Excessive absence(s) will affect CPEs provided
LEVEL-SET UNDERSTANDING OF KEY TERMS & CONCEPTS
What Is An Audit?

• An evaluation of business processes (including IT processes) to determine their effectiveness

• Processes contain **risks** that the process’s objectives may not be met

• Audits are an evaluation of a process to ensure that certain **objectives** are met

• Audits focus on **controls** in the process, which address the risks
Definitions

• **What Is A Risk?**
  – The potential for loss (financial or operational)

• **What Is An Objective?**
  – The purpose one's efforts or actions are intended to attain or accomplish (to address risks)

• **What Is A Control?**
  – A proactive step taken by “management” to accomplish an objective
    • Management is any employee of the firm
    • The term management is used because they are usually responsible for implementing and maintaining effective controls
Types Of Objectives

• Financial Objectives
  – Completeness
  – Accuracy
  – Validity
  – Authorization
  – Real
  – Rights & Obligations
  – Presentation & Disclosure

• IT & Operational Objectives
  – Security
  – Availability
  – Confidentiality
  – Integrity
  – Scalability
  – Reliability
  – Effectiveness
  – Efficiency

Compliance Audits Could Include Objectives From Both
Types of Controls

• Automated Controls
  – These are programmed financial controls
  – They are very strong: the programmed logic will function the same way every time, as long as the logic is not changed
  – Test of one versus a statistical test of many

• Partially-Automated Controls
  – People-enabled controls
  – People rely on information from IT systems (also referred to as Electronic Evidence) for the control to function

• Manual Controls (no IT-Dependence)
  – People enable the control
  – Controls that are 100% independent of IT systems
Other Ways To Categorize Controls

• Prevent Controls  
  – The locks on your car
• Detect Controls  
  – Your car alarm
• Correct Controls  
  – Your auto insurance
  – A LoJack system (a device that transmits a signal used by law enforcement to locate your stolen car)
More Ways To Categorize Controls

- Environmental Controls
  - (a.k.a. “Governance”)
- Financial Controls
- Operational Controls
- IT General Controls
  - User Administration
  - Change Management
  - IT Operations
  - Physical Environment
Controls: Multidimensional

- Prevent
- Detect
- Correct

- Automated
- Partially-Automated
- Manual

IT General
Environmental
Financial
Operational
Classifying Controls

• To ensure that only authorized payments are made, all checks issued require a signature.
  – Accomplishes the financial objective, authorized.
  – Someone manually signs the check
  – An unsigned check prevents it from being cashed

• All user requests (on MAC forms) must have a supervisor’s signature authorizing the user’s access.
  – Accomplishes the IT General Control objective, authorized.
  – Someone manually signs the MAC form
  – Unsigned MAC forms will not be processed, thereby preventing unauthorized access

(note the different types of ‘transactions’)

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Quiz #1

• Classify the controls in the handout
UNDERSTANDING THE ROLE OF AUTOMATED CONTROLS IN BUSINESS PROCESSES
Polling Question #1:

• True or False?
  – “IT Controls are too technical – I don’t understand what they do”

(Answer will be given at the end of this segment)
Introduce Case Study

- Let's take a look at the mechanics of a Process
  - Objectives
  - Risks
  - Controls

A Made-Up Illustrative Example Only
Purchase To Pay Process

• Financial Objectives
  – Completeness
  – Accuracy
  – Validity
  – Authorization
  – Real
  – Rights & Obligations
  – Presentation & Disclosure

• IT & Operational Objectives
  – Security
  – Availability
  – Confidentiality
  – Integrity
  – Scalability
  – Reliability
  – Effectiveness
  – Efficiency
Purchase To Pay Process

Someone makes a Purchase Request → Buyer opens Purchase Order → Buyer buys items → Receive items → Receive Invoice → Pay for items

• Risks:
  - Employee may order too much
  - Employee may try to misappropriate goods:
    • Fictitious order to collect check
    • Purchase goods for personal use/gain
  - Buyer may not use approved vendor (gaining the benefit of negotiated volume discounts)
  - Duplicate or missing items may be received
  - Invoice information may not be correct
  - Duplicate or missing invoices may be received
  - Incorrect payment amount
  - Payment sent to wrong address
  - Wrong payee on check
  - Check may not be signed
  - Check may not be cashed by payee
Purchase To Pay Process

- Risks:
  - Employee may order too much or not enough
  - Employee may try to misappropriate goods

- Controls:
  1. All Purchase Requests must be approved by a Manager or above
  2. Buyers will only open Purchase Orders upon receipt of an approved Purchase Request
Purchase To Pay Process

- **Risk:**
  - Buyer may not use approved vendor (gaining the benefit of negotiated volume discounts)

- **Control:**
  3. Goods can only be purchased from vendors who have been pre-approved
     
     *(Assumption: process is in place to approve vendors, and is operating effectively)*
Purchase To Pay Process

1. Someone makes a Purchase Request
2. Buyer opens Purchase Order
3. Buyer buys items
4. Receive items

• Risk:
  - Duplicate or missing items may be received

• Control:
  4. Receiving Clerk counts all items received, ties them to shipping slip, and will only receive complete shipments
Purchase To Pay Process

- **Risks:**
  - Invoice information may not be correct
  - Duplicate or missing invoices may be received
  - Incorrect payment amount

- **Controls:**
  5. AP Clerk prepares a voucher package, including:
     - Purchase Order
     - Shipping Slip
     - Invoice
     - Check (Payment)

AP Clerk ties out all information across three documents to ensure completeness & accuracy
Purchase To Pay Process

- **Risks:**
  - Payment sent to wrong address
  - Wrong payee on check
  - Check may not be signed

- **Control:**
  6. VP of Treasury reviews all voucher packages and approves/denies payment (signs checks of approved vouchers)
Purchase To Pay Process

- Risks:
  - Check may not be cashed by payee

- Control:
  - ???

1. Someone makes a Purchase Request
2. Buyer opens Purchase Order
3. Buyer buys items
4. Receive items
5. Receive Invoice
6. Pay for items
## Comparison: Manual vs. Automated

<table>
<thead>
<tr>
<th>Objective</th>
<th>Manual Control</th>
<th>Automated Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Purchase Requests must be approved by a Manager or above</td>
<td>Manager signs purchase request form (hardcopy)</td>
<td>Manager clicks approval in application</td>
</tr>
<tr>
<td>Buyers will only open Purchase Orders upon receipt of an approved Purchase Request</td>
<td>Buyer compares signature to list of approvers</td>
<td>Application only allows authorized approvers to approve</td>
</tr>
<tr>
<td>Goods can only be purchased from vendors who have been pre-approved</td>
<td>Buyer only purchases from list of approved vendors</td>
<td>PO system provides limited options in a drop-down menu, populated from a list of approved vendors.</td>
</tr>
<tr>
<td>Receiving Clerk counts all items received, ties them to shipping slip, and will only receive complete shipments</td>
<td>Receiving Clerk manually performs control</td>
<td>&lt;none&gt;</td>
</tr>
</tbody>
</table>
# Comparison: Manual vs. Automated

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<td></td>
<td></td>
</tr>
<tr>
<td>• Purchase Order</td>
<td>AP Clerk ties out all information across three sources</td>
<td>Application ties out all information across all three sources, and... (see next control)</td>
</tr>
<tr>
<td>• Shipping Slip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Invoice</td>
<td></td>
<td></td>
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<td>completeness &amp; accuracy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VP of Treasury reviews all voucher packages and approves/denies payment</td>
<td>VP of Treasury signs checks</td>
<td>Application automatically prints checks for all matching information, using signature block</td>
</tr>
<tr>
<td>(signs checks of approved vouchers)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quiz #2

• For each of the objectives in the handout, create:
  – A manual or partially-automated control, and
  – An automated control
Revisit Polling Question #1:

• Q: “IT Controls are too technical – I don’t understand what they do”

• A: Automated controls don’t accomplish anything that people weren’t already doing.
AUDIT PROCESS & REQUIRED DOCUMENTATION
Testing

• Four Basic Steps:
  – Understand The Process
  – Perform A Walkthrough
    • To exercise process of requesting and gathering evidence
    • Through review of the evidence, confirm and/or complete your understanding of the process being audited
  – Perform Testing
  – Report Results / Findings
Understand The Process

• ...Through Reviews Of Documentation And Interviews With Related Personnel
• Document Your Understanding Of The Process And Related Controls in **Narratives**
  – Different than policy, procedure, & standard documents (although, those documents can be leveraged)
  – At a minimum, Narratives should include:
    • Background Information
    • Description of Controls
    • Information Necessary For Testing Controls (Who, What, Where, Why, When, How)
  – Document for testing purposes only...that is all you want
Perform Walkthroughs & Testing

• **Perform Walkthroughs:** A “Test of One”
  – Confirms Your Understanding Of Controls
  – Allows you to identify any problems in pulling populations or samples

• **Complete Testing & Document Your Work**
  – Four Basic Sections
    • Objective
    • Procedures
    • Results
    • Conclusion
Evidence

• Four types:
  – Reperformance
  – Examination
  – Observation
  – Inquiry
Report Results / Findings

• **Reporting** communicates the results of testing

• Typically has three sections:
  – Results: The facts, and just the facts
  – Implications / Business Risk: Why should the company care?
  – Recommendation: What should the company do about it?
  – *Optional 4th Section: Management’s Response*
The **Reperformance Standard**

• When documenting your work, you should ensure that a reasonably-skilled auditor would be able to review your workpapers (and related evidence) and:
  – Understand what you did any why, and
  – See the same evidence that you saw, and
  – They should be able to ‘reperform’ your work and reach the same conclusion you did, *based on the information presented in your workpapers and supporting evidence only.*

• They should **not** need to:
  • Ask clarifying questions
  • Request and review additional information that is not included or specifically identified in your testing documentation
AUTOMATED CONTROL TEST STRATEGY
Automated Controls – We LOVE them!

- **Automated Controls**
  - These are programmed financial controls
  - They are very strong: The programmed logic will function the same way every time, as long as the logic is not changed
  - They are easier to test: a test of one versus a test of many
Polling Question #2:

• True or False?
  – “Automated Controls are too technical – I don’t understand all the technical stuff required to test them”
Automated Controls: Test Strategy

• Determine the programmed logic
  – Usually a configuration setting
  – Sometimes setting is “unconfigurable” (programmed into the application, and cannot be changed without changing program code)

• Follow one example of each type of transaction
  – This confirms that there isn’t anything ‘upstream’ or ‘downstream’ that may affect the outcome
Automated Controls: Test Strategy

• Example:
  – All Purchase Requests must be approved by a Manager or above

1. Get a screen-shot of the configuration setup screen showing this control is configured:
Automated Controls: Test Strategy

• Example:
  – All Purchase Requests must be approved by a Manager or above

  1. Get a screen-shot of the configuration setup screen showing this control is configured.
  2. Observe one completed purchase request and validate that the approver was on the authorized approver list.
Automated Controls: Test Strategy

• Example:
  – All Purchase Requests must be approved by a Manager or above

  1. Get a screen-shot of the configuration setup screen showing this control is configured.
  2. Observe one completed purchase request and validate that the approver was on the authorized approver list.
  3. You’re done!
Revisit Polling Question #2:

• **Q:** “Automated Controls are too technical – I don’t understand all the technical stuff required to test them”

• **A:** *You can* test these controls, with a little help from your friends (IT Administrators)
Checkpoint

• Covered so far:
  – Level-Set Our Understanding Of Key Term’s & Concepts
  – Understand The Role Of Automated Controls In Business Processes
  – Audit Process & Required Documentation
  – Types Of Automated Controls and Automated Control Test Strategy

• Coming up (next session)
  – How To Test Common IT General Controls (In A Simple Environment)
  – Knowing When To Call ‘The Experts’
Learning Objectives

• Part 1 (Session C11)
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• Part 2 (Session C12)
  – The Relationship between Financial / Operational Controls and IT General Controls (a.k.a. “Why IT General Controls Are Important”)
  – Understanding IT General Control Processes & Related Test Strategies
  – Knowing When To Bring In ‘The Experts’ (When Things Get Really Technical)
THE RELATIONSHIP BETWEEN FINANCIAL/OPERATIONAL CONTROLS AND IT GENERAL CONTROLS (A.K.A. “WHY IT GENERAL CONTROLS ARE IMPORTANT”)
Automated Controls – We LOVE them!

• Automated Controls
  – These are programmed financial controls
  – They are very strong
  – The programmed logic will function the same way every time, as long as the logic is not changed
  – They are easier to test: a test of one versus a statistical test of many
Expanding Coverage Beyond ‘A Point In Time’

IT General Controls
IT General Controls

- Change Management
- User Administration
  - IT Operations
  - Physical Environment
Effective General Controls

Business Processes

Data/Information used for Partially-Automated Controls

Automated Controls

General Controls
Without Effective General Controls

Potential For Significant Problems Exists

- Business Processes
  - Data/Information Used For Partially-Automated Controls

- General Controls

- Automated Controls
Polling Question #3:

• “IT General Controls is all technical stuff...completely out of my realm. I don’t understand the technology, and therefore am not qualified to test them”
UNDERSTANDING IT GENERAL CONTROL PROCESSES & RELATED TESTING STRATEGIES
IT Change Management

• Processes to manage changes to:
  – Program code
  – Configurations

• Objective:
  – Ensure that automated controls aren’t inappropriately altered
  – Ensure that data integrity isn’t inappropriately affected

Note: Fraud is not the primary concern; It’s ensuring that good people aren’t making honest mistakes.
Typical Change Management Process

1. Someone reports a problem or requests an improvement
2. Requested change is evaluated and approved for development
3. Change is developed in a non-production environment
4. Change is tested in a non-production environment
5. Change is moved into production
6. Completed change is evaluated and approved (by requestor)
7. Post-production testing is performed

It’s a **people-driven** process
Testing Typical Change Management Controls

• Get a system generated list of changes (a.k.a. a “population”)

• Select a sample (usually 20-50 changes or 10-20%, whichever is smaller)

• Obtain and review change request forms for evidence of key controls
User Administration

• Processes to:
  – Add user access
  – Modify user access
  – Remove user access

These two are usually the same process

• Objective:
  – Preventing (or timely detecting of) unauthorized access
Typical User Administration Process

New/Modifications:

1. User access / modification request is made
2. Request is evaluated and approved by the user's manager
3. IT Administrator sets up access
4. User is notified of username and password

Removing:

1. HR provides list of terminated users
2. List is distributed to various IT Administrators
3. IT Administrator removes access

They are **people-driven** processes
Testing Typical User Administration Controls

**New Users / Modifications**
- Get a system-generated list (population) of change requests
- Select a sample (usually 20-50 changes or 10-20%, whichever is smaller)
- Request change forms and review them for evidence of key controls

**Removals**
- Get a list (population) of terminated employees
- Select a sample (usually 20-50 changes or 10-20%, whichever is smaller)
- Observe system and determine if the user accounts are disabled or removed
Exercise #1

• Complete the testing document
• Conclude on the results
Leading Practice

- **User Access Reviews**: Regularly re-validating all users’ access levels on all systems
- This helps prevent:
  - Excessive levels of access
  - Terminated users
  - Potential process problems
- It’s a good catch-all detect control
Authentication

• **Authentication** – How do we know that you are you? We use a combination of the following:
  – Something you know: Passwords
  – Something you have: ID cards, RSA tokens, etc.
  – Something you are: Fingerprints, Retinal Scans, etc.

• Passwords are the most common form

• Desired password controls:
  – Construction (use of alpha, numbers, and special characters)
    • Example: Esil4&3kc3!
  – Length (six can be okay in some situations; eight is strongly recommended)
  – History
Testing Password Controls

• They are automated controls
• Use ‘test of one’ approach outlined in first session
  – Check the configuration:
Testing Password Controls

• Try changing the password:
  – With a weak password (hopefully getting an error message)
  – With a strong password

![User Accounts window]

The password you typed does not meet the password policy requirements. Check the minimum password length, password complexity and password history requirements.

OK
Testing Password Controls

• Try to log onto the system
  – Failed login attempt (hopefully getting an error message)

  ![Warning Pop-up]

  – Successful login
Revisit Polling Question #3:

Q: “IT General Controls is all technical stuff...completely out of my realm. I don’t understand the technology, and therefore am not qualified to test them”

A: These processes are people-driven and non-technical. You can test them.
UNDERSTANDING WHEN TO CALL IN ‘THE EXPERTS’ (WHEN THINGS GET REALLY TECHNICAL)
When To Bring In “The Experts”

• There are many layers of technology that users pass on the “access path” to financial and operational applications and data.
• There are different risks at each level. These risks need to be evaluated at each layer.
• Our scope, depth, and approach are different for each layer.
When To Bring In “The Experts:” IT Operations

• Main Focus Is On **Availability** of Systems and Data:
  – Job Scheduling
  – Monitoring
  – Problem/Incident Management
  – Business Continuity Planning (BCP) / Disaster Recovery Planning (DRP)
    • Including Backups & Recovery
  – Antivirus / Anti-Spyware / etc.
When To Bring In “The Experts:”
Physical Environment

• Also Focused On **Availability** Of Systems:
  – Access Controls (usually Card Keys)
  – Air Conditioning
  – Leak Detection
  – Fire Suppression
  – Power Conditioning
  – Uninterrupted Power Supplies (or “UPS,” a Battery Backup)
  – Backup Generators
Resources

• Information System Audit & Control Association (ISACA):
  – www.isaca.org
  – www.isaca.org/COBIT
  – www.sfisaca.org

• IT Audit Newsgroups:
  – http://groups.google.com/group/it-audit-forum
  – http://finance.groups.yahoo.com/group/ITAuditForum

• Central Indiana Info Systems Audit & Control Newsgroup:
  – https://lists.purdue.edu/mailman/listinfo/cisaca-l

• Audit Programs and Other Useful Audit Resources:
  – www.auditnet.org
  – http://www.auditnet.org/karl.htm
Questions?

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