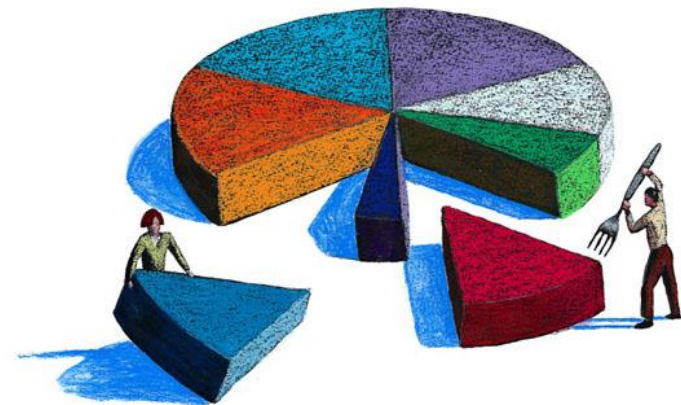


Presented by: Patrick Rozario

Venue: HKICPA, 27/F, Wu Chung House, 213 Queen's Road East, Wanchai

Date: 18 October 2018

Optimizing the value from an IT audit function



Hong Kong Institute of
Certified Public Accountants
香港會計師公會

Disclaimer

- The materials of this seminar / workshop / conference are intended to provide general information and guidance on the subject concerned. Examples and other materials in this seminar / workshop / conference are only for illustrative purposes and should not be relied upon for technical answers. The Hong Kong Institute of Certified Public Accountants (The Institute), the speaker(s) and the firm(s) that the speaker(s) is representing take no responsibility for any errors or omissions in, or for the loss incurred by individuals or companies due to the use of, the materials of this seminar / workshop / conference.
- No claims, action or legal proceedings in connection with this seminar/workshop/conference brought by any individuals or companies having reference to the materials on this seminar / workshop / conference will be entertained by the Institute, the speaker(s) and the firm(s) that the speaker(s) is representing.
- All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form of by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the Institute.



About the speaker

Patrick Rozario, Managing Director, Moore Stephens Advisory Services

Patrick has over 25 year experiences working for large international accounting firms and in the commercial sector. Patrick has experience working in the area of governance and risk advisory. Patrick managed various internal audit, corporate governance, Sarbanes-Oxley, internal control and information technology risk assurance advisory engagements for clients across different industries including banking, insurance, telecommunication and government in Hong Kong and China.

Patrick also managed large scale system implementation in Asia and North America



Hong Kong Institute of
Certified Public Accountants
香港會計師公會

Contents

Optimising the value from an IT audit function

- Introduction
- Strategically positioned
- Enabled by talent, technology and process
- Agile and innovative culture
- Insightful assurance
- Maturity model: key steps to optimising value in an IT audit function
- IT controls and audit
- Enhancing audit quality with data analytics



Introduction

Challenges

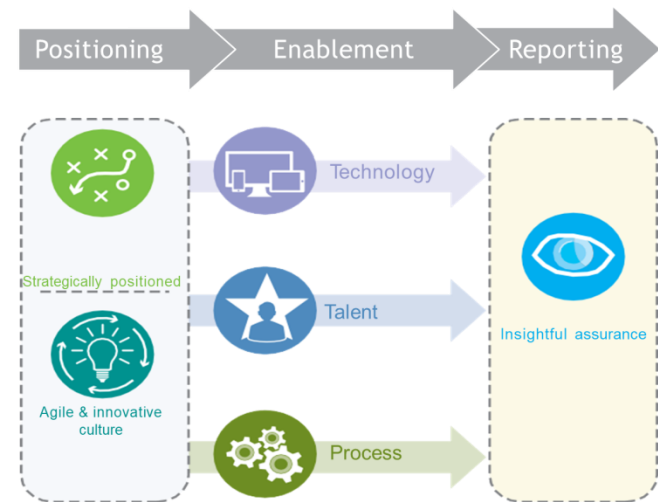
- IT audit / Audit / IA function has never faced a more challenging and dynamic business environment upon which to assure
- Technology continues to disrupt at an unprecedented pace and scale
- Industries continue to face regulatory change and uncertainties
- It is essential that IT audit functions seek optimal ways to provide assurance in these challenging times



Introduction

To be effective, IT audit function will need to be :

- **strategically positioned** within the organisation,
- operate with an **agile and innovative culture**,
- **well-enabled** by talent, technology and process and
- in order to provide **insightful assurance**



Strategically positioned

Strategically positioning the IT audit function can be a particular challenge for several reasons:

- **Positioning and gravitas:** buy in from “functionally expert
- **Maintaining demonstrable independence:** relative lonely, lack of peers
- **Breadth and depth of assurance:** technical challenge, budgetary constraints
- **Detail testing vs continuous monitoring**



Agile and innovative culture

IT audit needs to have adaptability to evolving business needs. Some of the practical issues for embedding a more agile and innovative culture are:

- **Tradition, formality and process:** IT audit may not well-aligned to the key risks as perceived by the regulators and other stakeholders
- **Small and nimble:** often change is easier. But when IT audit function is embedded into a large IA team, more communication and co-ordinated support changes are needed



Enabled by talent, technology and process

Challenges are often presented:

- **Talent management:** difficult to attract and retain
- **Subject matter credibility:** lack of depth of subject matter
- **Use of technology:** the capability of cloud-based technology and the growth of IT audit software and automated tools.
- **Data analytics:** benefits of whole-population testing and continuous-assurance capability. Challenges include scoping, appropriate tools and technology, skilled staff to data model, mine and programme software
- **Formality of methodology, process and documentation:** usually less structure
- **Quality assurance:** independent quality assurance may not be practical



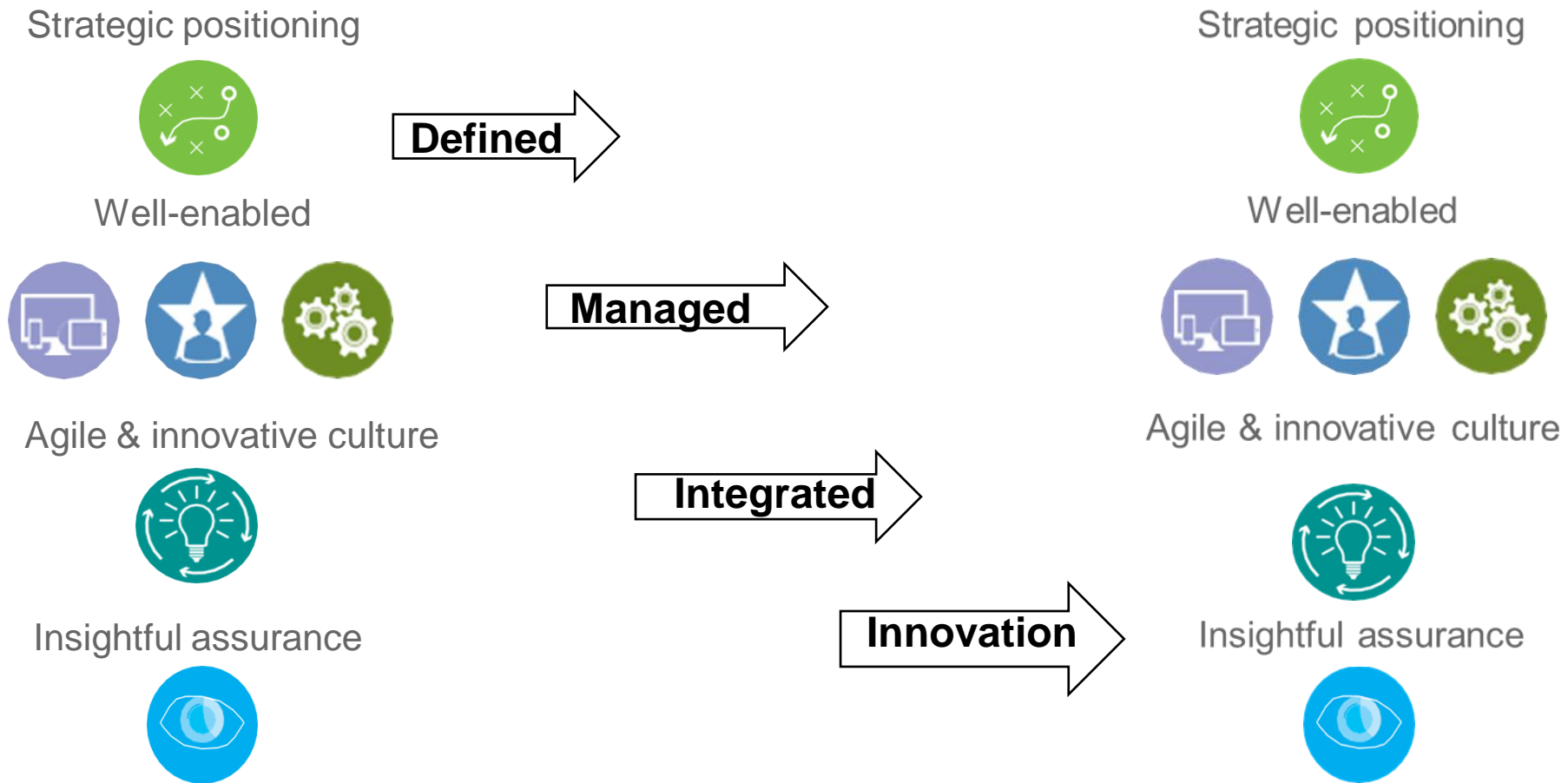
Insightful assurance

Robust auditing does not necessarily result in effective and insightful reporting. Typical characteristics of audit reporting:

- **Consistency of reporting:** Stakeholders, especially at AC level, appreciate such consistency as it maintains the focus on what really matters.
- **A trend to more imaginative reporting formats:** heat-maps, dashboard reports
- **Wider insight and foresight is valuable:** reports often present gaps but less-frequently provide insight and / or foresight, such as (i) maturity profiling, (ii) control sustainability, (iii) emerging risks, and (iv) root cause analysis and thematic trends
- **Compound reporting:** allow awareness of wider issues or control failures
- **Reporting on culture:** Embracing approaches to assuring on culture

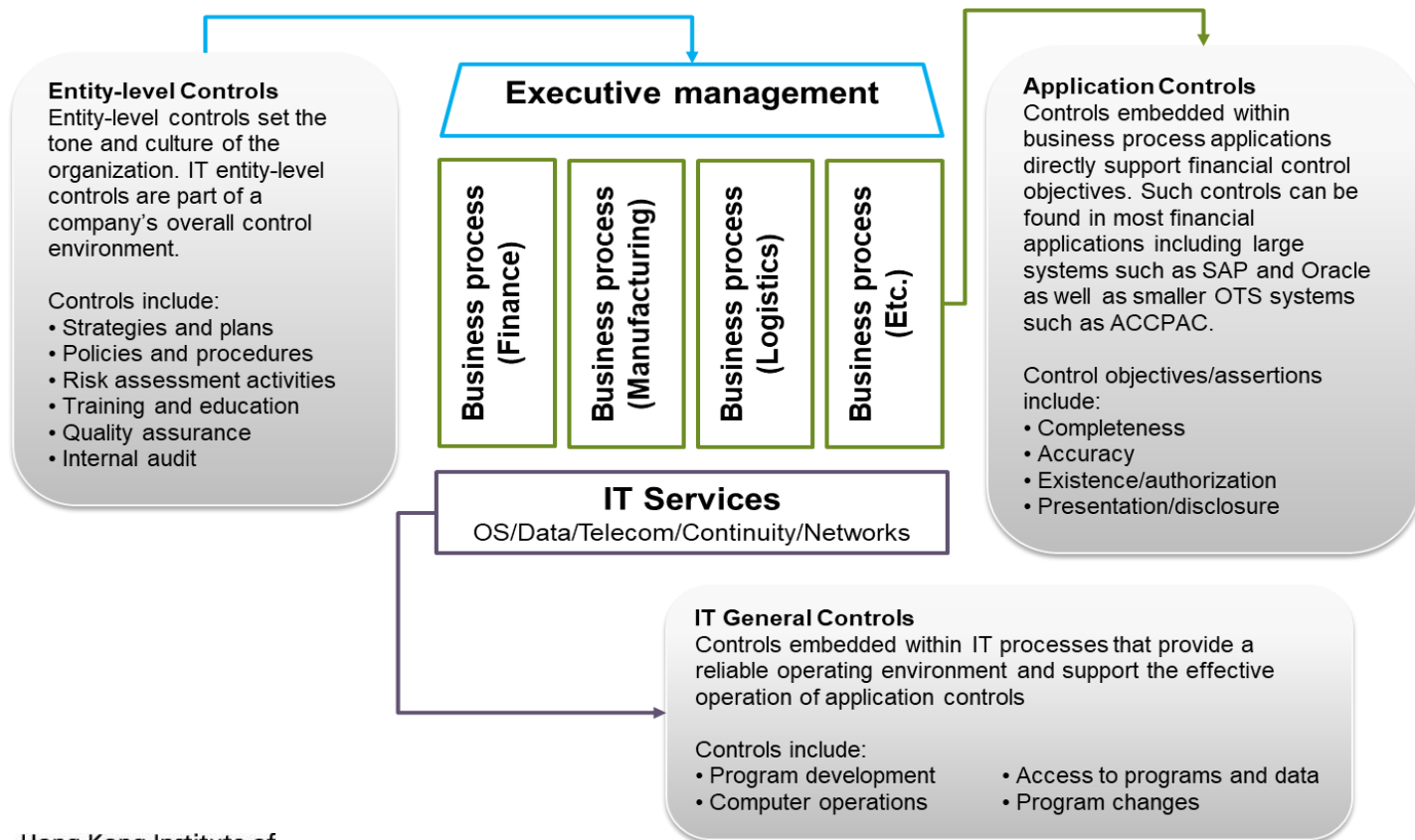


Maturity model: key steps to optimising value in an IT audit function



IT controls and audit

Common IT control elements



IT controls and audit

IT audit objectives

- IT audit provide reasonable assurance that **application** systems have effective controls: accuracy, completeness, authorization and presentation.
- IT audit provide reasonable assurance that an organizational has effective entity level **IT governance**
- IT audit provide reasonable assurance that IT services have effective **general IT controls**: computer operations, change management, access (proper segregation), system development
- IT audit provide reasonable assurance that IT services have effective controls: **Cyber vulnerabilities and threat**
- Enhance **audit efficiency** through data testing: cost effective to analyse large volume of data and also allow continuous auditing



IT controls and audit

Relationship between Application Controls and IT General Controls

- The relationship between application controls and IT general controls is such that IT general controls are needed to support the reliability of application controls. For example, ensuring database security is often considered a requirement for reliable financial reporting. Without security at the database level, companies would be exposed to unauthorized changes to financial data.



IT controls and audit

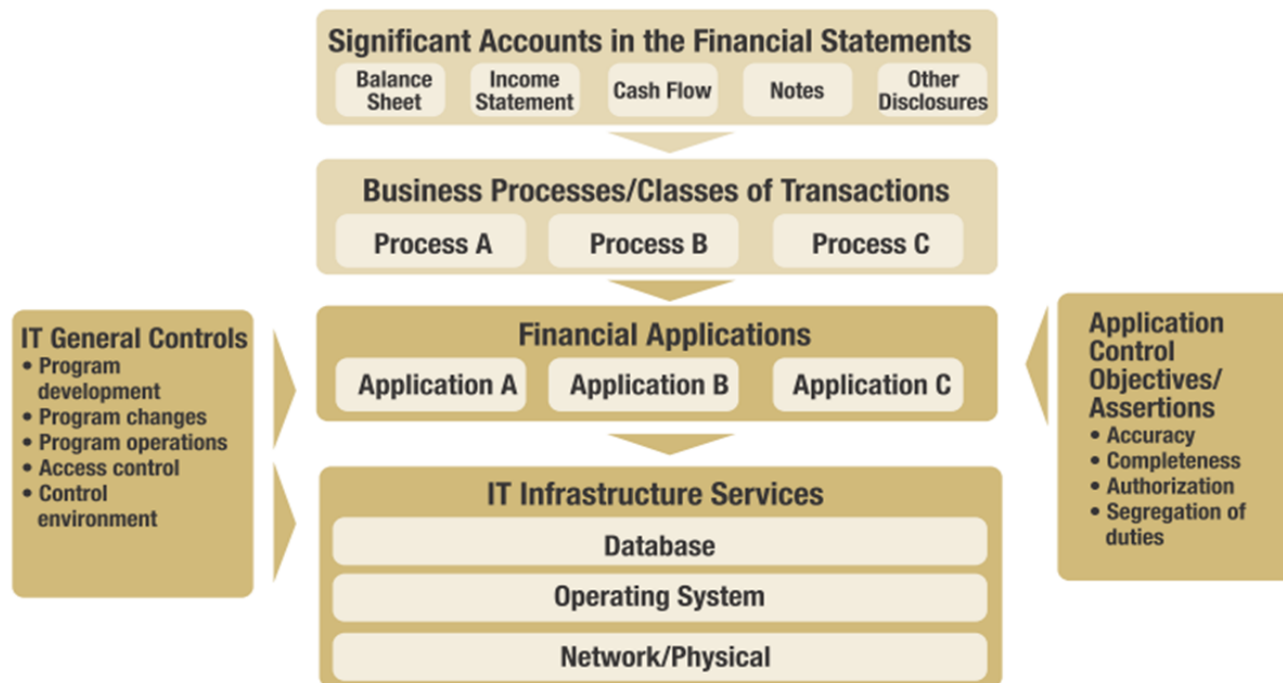
Relationship between Application Controls and IT General Controls

- The challenge with IT general controls is that they rarely impact the financial statements directly. IT general controls as having a “pervasive” effect over all internal controls. That is, if a relevant IT general control fails (e.g., a control restricting access to programs and data), it has a pervasive impact on all systems that rely on it, including financial applications. As a result, without being assured that only authorized users have access to financial applications, companies are unable to conclude that only authorized users initiated and approved transactions.



IT controls and audit

Relationship between Application Controls and IT General Controls



IT controls and audit

Application controls

- IT Application controls relate to specific tasks performed by IT, such as editorial checks of input data and checks performed by individuals, including the manual follow-up of reconciliations and exception reports.
- Completeness checks – controls ensure records processing from initiation to completion
- Validity checks – controls ensure only valid data is input or processed
- Identification – controls ensure unique, irrefutable identification of all users



IT controls and audit

Application controls

- Authentication – controls provide an application system authentication mechanism
- Authorization – controls ensure access to the application system by approved business users only
- Input controls – controls ensure data integrity feeds into the application system from upstream sources
- Forensic controls – controls ensure scientifically and mathematically correct data, based on inputs and outputs



IT controls and audit

IT entity level and general controls commonly include:

- controls over the IT environment (entity-level)
- program development and program changes
- access to programs and data
- computer operations



IT controls and audit

Entity level controls

- IT control environment includes the IT governance process, monitoring and reporting.
- The IT governance process includes the information systems strategic plan, the IT risk management process, compliance and regulatory management, and IT policies, procedures and standards.
- Monitoring and reporting are required to align IT with business requirements.
- The IT governance structure should be designed so that IT adds value to the business and IT risks are mitigated. This also includes an IT organization structure that supports adequate segregation of duties and promotes the achievement of the organization's objectives.



IT controls and audit

IT general controls: Program Development and Program Change

- Application software development and maintenance have two principal components: the acquisition and implementation of new applications and the maintenance of existing applications.
- Application maintenance addresses ongoing change management and the implementation of new releases of software. Appropriate controls over changes to the system should exist so that all changes are made properly.
- For the new release of a system, controls may involve required authorization of change requests, review of the changes, approvals, documentation, testing and assessment of changes on other IT components, and implementation protocols.
- The change management process also needs to be integrated with other IT processes, including incident management, problem management, availability management and infrastructure change control.



IT controls and audit

IT general controls: Access to programs and data

- Access controls over programs and data assume greater importance as internal and external connectivity to entity networks grows.
- Effective access security controls can provide a reasonable level of assurance against inappropriate access and unauthorized use of systems. If designed well, they can intercept unethical hackers, malicious software and other intrusion attempts.
- Adequate access control activities, such as secure passwords, Internet firewalls, data encryption and cryptographic keys, can be effective methods of preventing unauthorized access.
- User accounts and related access privilege controls restrict the applications or application functions only to authorized users that need them to do their jobs, supporting an appropriate division of duties.



IT controls and audit

IT general controls: Access to programs and data

- There should be frequent and timely review of the user profiles that permit or restrict access. Former or disgruntled employees can be a threat to a system; therefore, terminated employee passwords and user IDs should be revoked immediately. By preventing unauthorized use of, and changes to, the system, an entity protects its data and program integrity.



IT controls and audit

IT general controls: computer operations

- These include controls over the definition, acquisition, installation, configuration, integration and maintenance of the IT infrastructure. Ongoing controls over operations address the day-to-day delivery of information services, including:
 - service-level management
 - management of third-party services
 - system availability
 - customer relationship management
 - configuration and systems management
 - problem and incident management
 - operations management scheduling, and facilities management.



IT controls and audit

IT general controls: computer operations

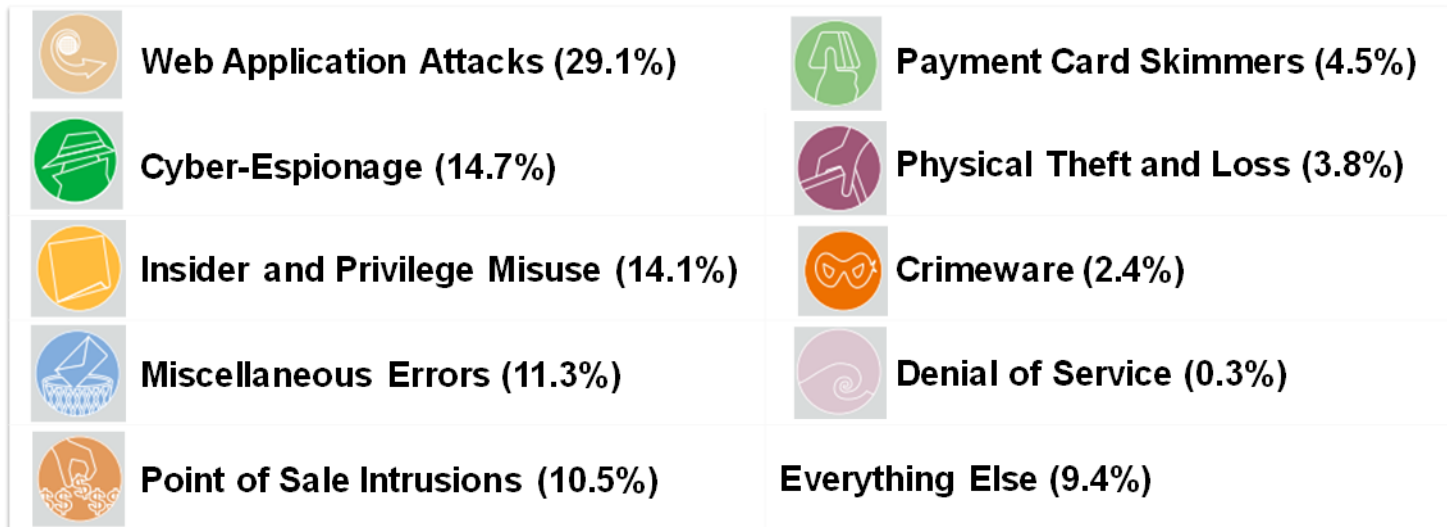
- The system software component of operations includes controls over the effective acquisition, implementation, configuration and maintenance of operating system software, database management systems, middleware software, communications software, security software, and utilities that run the system and allow applications to function.
- System software also provides the incident tracking, system logging and monitoring functions. System software can report on uses of utilities, so if someone accesses these powerful data-altering functions, at least that individual's use is recorded and reported for review.



IT controls and audit

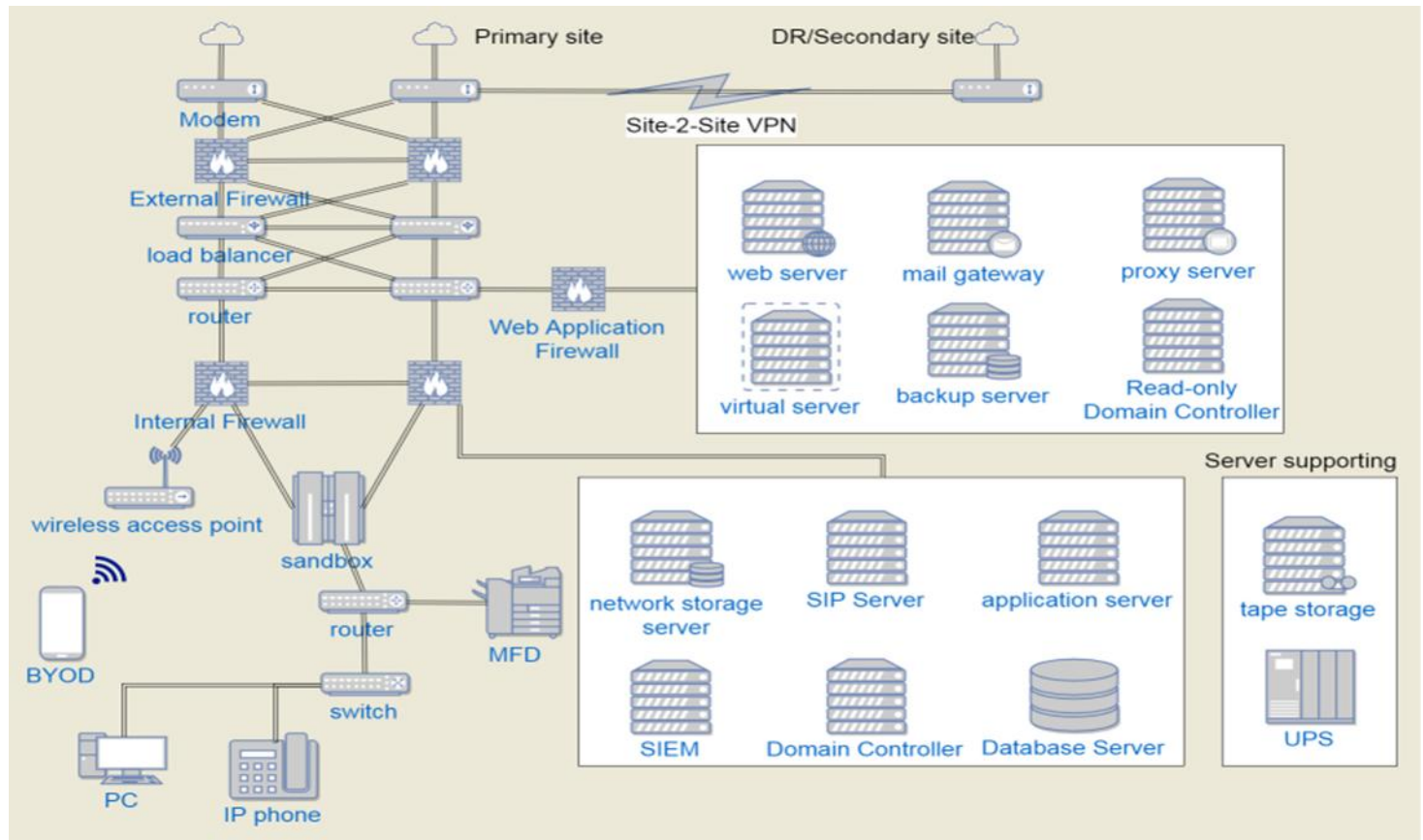
Cyber threats

- 90.6% of breaches, and 97.9% of incidents, are covered by just nine patterns



IT controls and audit

Typical good IT infrastructure



Enhancing audit quality with data analytics

What is Data Analytics?

- The process of inspecting, cleansing, transforming and modeling data with the objective of highlighting meaningful information, suggesting conclusions, and supporting decision-making.
- It has multiple facets and approaches, encompassing diverse techniques under a variety of names, while being used in different business, science, and social science domains.



Enhancing audit quality with data analytics

Data Analytics: The Future of Audit

- Technological advances and new software solutions enable auditors to engage in audit data analytics in a variety of new ways, such as exploration of large sets of audit relevant data from internal and external sources that may produce audit evidence used in risk assessment, analytical procedures, substantive procedures and control testing.
- Benefits:
 - Enhanced audit quality
 - Increased audit effectiveness
 - Improved client service



Enhancing audit quality with data analytics

Features of Data Analytic Tools

- Handle large data sets efficiently
- Integrate well with big-data
- Include wide array of analytical and statistical functions and procedures
- Be relatively easy to program
- Log the procedures performed on data



Enhancing audit quality with data analytics

Types of tools

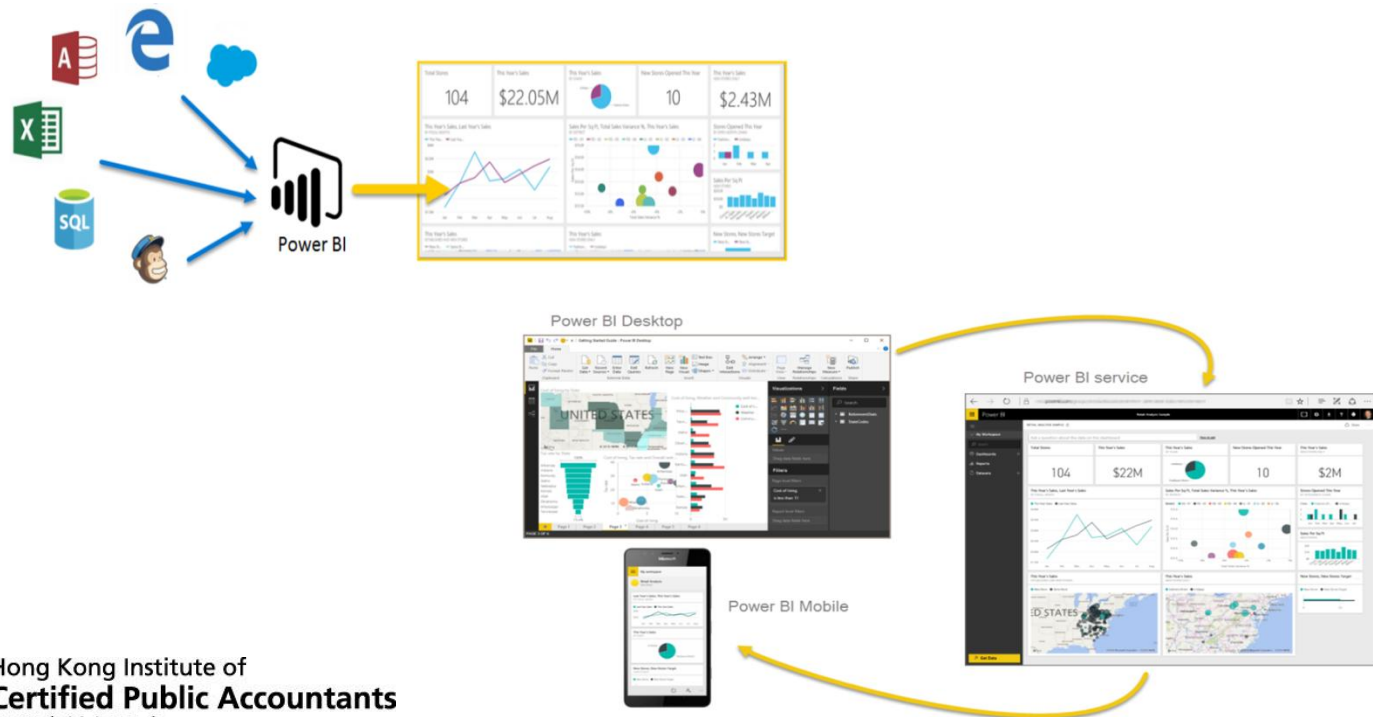
- **Spreadsheet:** Microsoft Excel
- **Integrated query tools:** Microsoft Access, MySQL, SAP, JDE
- **Generalized auditing software:** IDEA, ACL, Arbutus
- **Specialized DA visualization software:** Qlikview, Tableau, Microsoft Power BI



Enhancing audit quality with data analytics

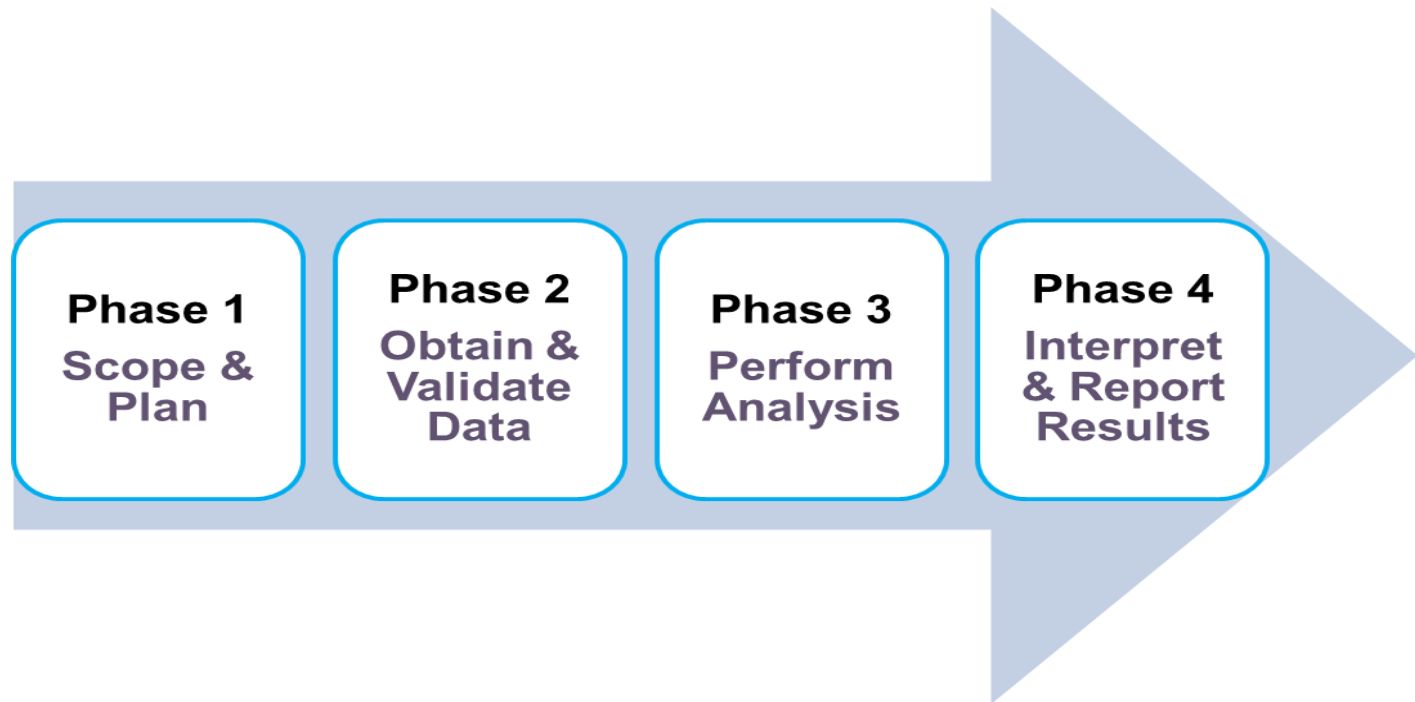
Microsoft Power BI

- A collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights



Enhancing audit quality with data analytics

Data Analytic Approach



Enhancing audit quality with data analytics

Scope and plan: Define the objective(s) or business questions and plan to conduct the analytic

- Identify the audit objective(s) of the analytic
- Determine the approach to achieve the audit objective of the analytic
- Identify the data elements required to execute the approach
- Discuss the approach with data owners, IT Department and key stakeholders
- Identify Systems, Data Storage, Data Owners, Data Format (specs) and File Requirements
- Plan, prioritize and document the tests
- Deliverables: analytic requirements document, list of data sources and expected outputs, resource plan, timelines and estimated effort



Enhancing audit quality with data analytics

Obtain and validate data: Define the data necessary to achieve the analytic objectives

- Develop request for required data
 - Determine method(s) and facilitate delivery and storage of data
 - Verify completeness and accuracy of data (validate)
 - Identify any gaps in required data (cleanse if needed)
-
- Deliverables: formalized data request, verification of receipt and functionality of required data sets, established data and script repositories, list of identified gaps in data



Enhancing audit quality with data analytics

Perform Analysis: Using standard tools, perform analysis consistent with analytic objectives

- Finalize Analysis Approach
 - Develop Test Scripts and Queries
 - Execute Test Scripts
 - Interpret & Analyze Results
-
- Deliverables: Documented Test Scripts and logs, Detailed analysis of data sets and outputs



Enhancing audit quality with data analytics

Interpret and Report Results: Report results of data analysis

- Evaluate and summarize the analysis results
 - Assess the results against the analytic objectives
 - Document all scripts and queries
 - Move scripts and queries into established repositories
-
- Deliverables: Final Report on Results, Presentation to Management, Documented scripts and queries



Enhancing audit quality with data analytics

Data Analytic case A

- A company would like to review requested a review on the risk exposure across sales transactions by better understanding the its processes and controls.
- Analyse sales transactions and determine if they have followed sales policy, any transactions processed manually, circumventing the standard approval processes and controls?
- Assess any discrepancies in pricing and quantity of sales transactions against the rules set by the policy.



Enhancing audit quality with data analytics

Data Analytic case B

- A company required insights on their segregation of duties policy to ensure that individuals were not authorized to perform incompatible duties in their ERP system.
- Analyse 100% of the company's processed transactions related to critical business processes, e.g. sales and purchases.
- Identify scenarios where individuals are assigned incompatible duties, or instances where they have actually exercised those duties, including associated transaction amounts and the aggregate financial impact.
- Determine whether the impact of incompatible duty assignments will result in a material misstatement in the financial statements



Enhancing audit quality with data analytics

Data Analytic

- **Improper disbursements:** Duplicate payments, unapproved purchases, payments for items not received, payments in excess of approval levels, missed discounts or credits
- **Kickback or Conflict-of-Interest:** Look for vendor prices greater than standard, identify price increases greater than acceptable percentages, check for continued purchases in spite of high rates of returns, rejects, or credits, look for high volume purchases from one vendor, look for frequent change orders, identify payments to vendors with same names, addresses, phone numbers, etc., as employees.



Enhancing audit quality with data analytics

Data Analytic

- **Bidding and Contracting Schemes:** look for patterns of rotation among vendors, look for bids that are exceptionally lower than those of other vendors, look for low winning bids followed by numerous change orders, look for excessive use of one contractor in a competitive field, look for patterns in awards to vendors, look for identical bids, look for multilateral drops in bid prices (accompanied by the entry of new competitor), look for competitors with the same addresses, same principals, same sales agents, same phone numbers, etc. Look for vendors with same names, addresses, phone numbers, etc., as employees.
- **Capital Assets Schemes:** Extract large additions or disposals for review.



Enhancing audit quality with data analytics

Data Analytic

- **Dormant Account Schemes:** check that all applicable accounts have been flagged as dormant, identify dormant accounts with activity, check for transfers from dormant accounts to employee accounts, check changes of addresses on dormant accounts, cross check new addresses to employee addresses.
- **Accounts Receivable:** Valid sales order, accurate product pricing, authorised shipments, proper invoicing, valid cash receipts, timely collections & write offs, sales contract compliance, other adjustments
- **Payroll:** Accurate & authorized payments, timely and accurate hires & terms, reasonable overtime & commissions, proper timekeeping and attendance, search for non-existent employees and other payroll schemes, comparison of periods for unusual trends
- **Travel and entertainment**



Questions or Comments?



Hong Kong Institute of
Certified Public Accountants
香港會計師公會