Quest
Masterclass

Internal Audit
Big Data & Agile Audit

Malaysia | July 2019

Emerging Digital Risks in Internal Audit

The pace of business change is unrelenting, new risks emerge on a regular basis as the commercial imperative requires companies to embrace new technologies and different systems, while remaining competitive. In the face of such change, Internal Audit needs to be at the cutting edge both in terms of the way in which it conducts its work as well as the way it interacts with senior management, shareholders and regulators. Also, with the growing use of technology for audit purposes, such as Big Data, and with the introduction of Agile Audit, things are not the same. This eBook will focus on the effect of Big Data on an organization; Malware, Ransomware and other threats for non-IT specialists, and will shed light on Agile Audit.

3 Key Pain Points of Internal Audit
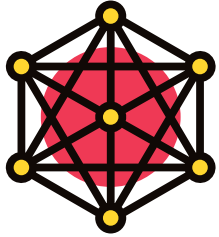
The Effect of Big Data on The Organisation

Malware, Ransomware & Other Threats for Non-IT Specialists
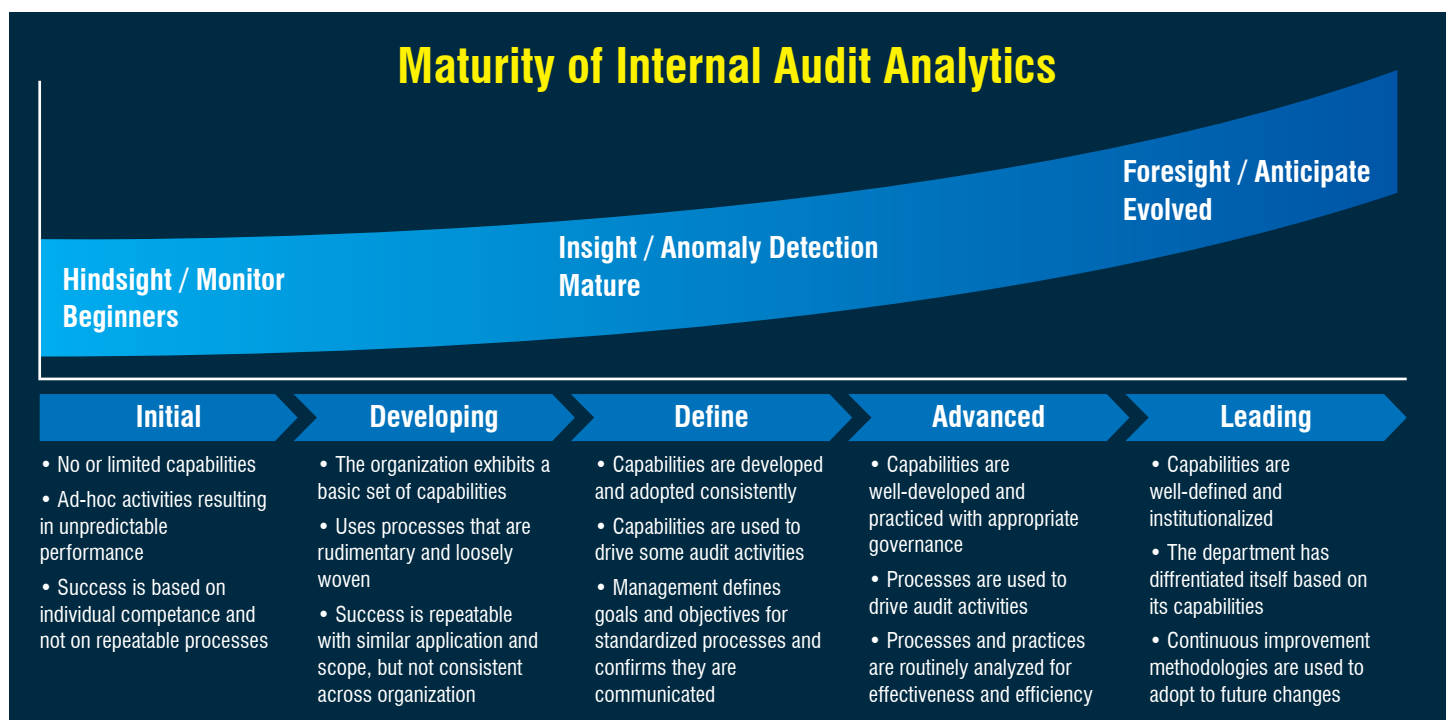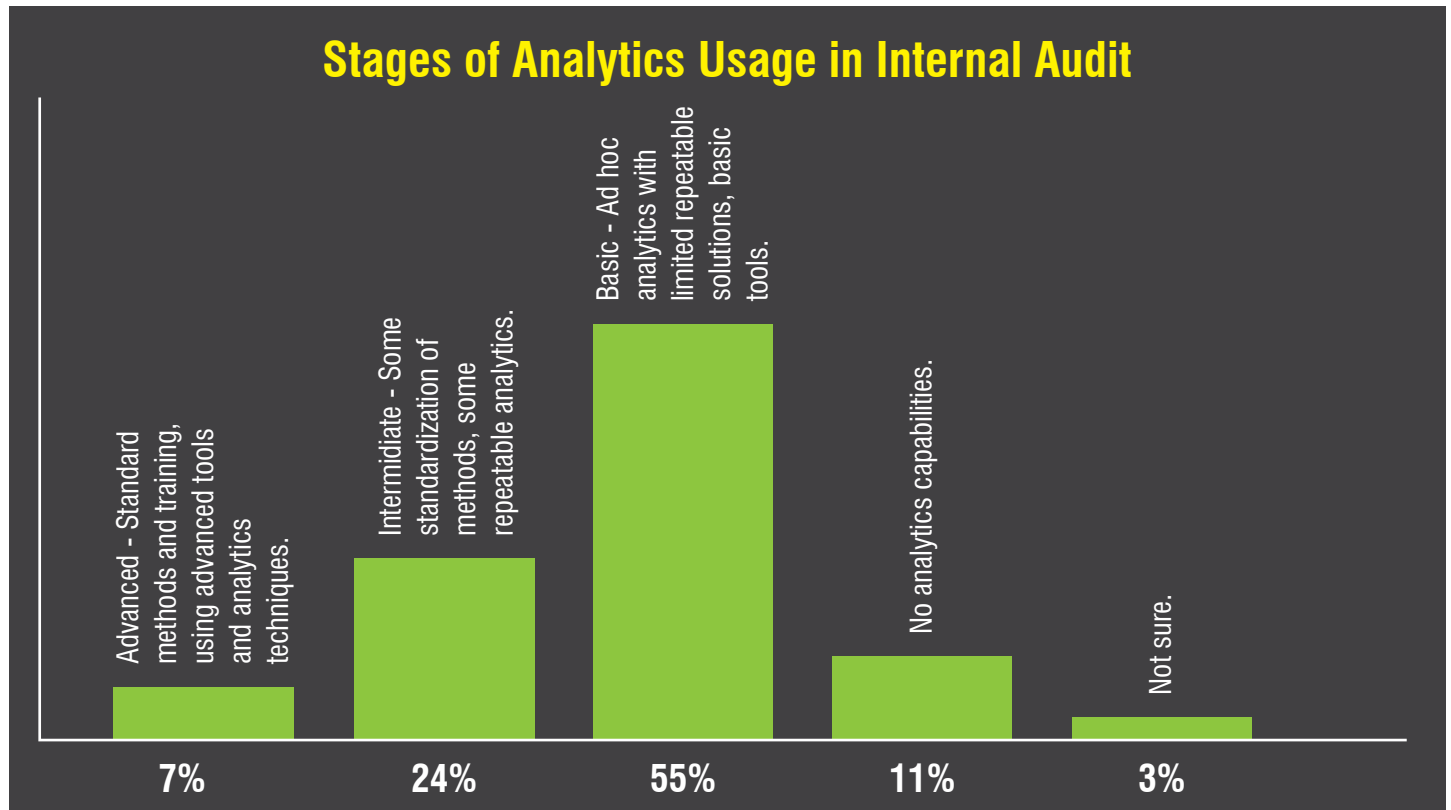
The Future is Agile Audit

1. The Effect of Big Data on The Organization

Integrating data analytics into internal audit can yield considerable improvements in both speed and accuracy, but it requires a sweeping change in mindset and approach. Despite growing awareness of the power of big data and analytics, the internal audit function still has plenty of work to do to more effectively to make use of these capabilities. With the exponential growth in data and the availability of inexpensive new technologies to generate business insights and value, this is an opportune time for internal auditors to deliver more value to their organizations.

The survey also reveals that internal audit faces barriers to greater use of analytics, including talent gaps and access to quality data. Internal audit's skills remain heavily weighted toward auditing technology and business processes; analytical and data science skills need to be upgraded.
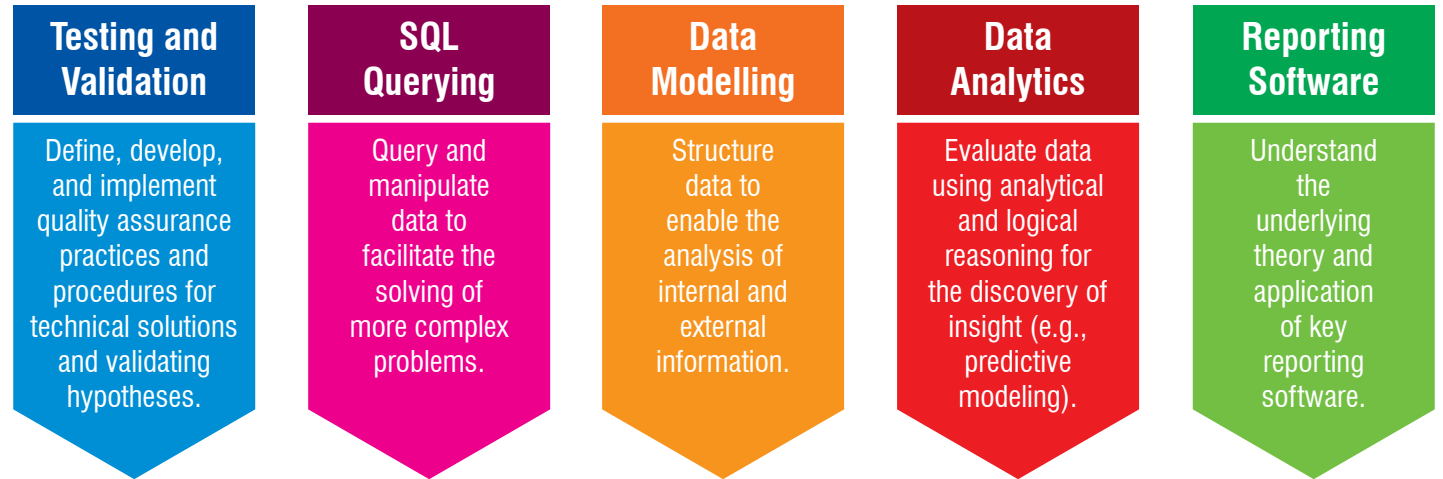
A data analytics maturity model, given below, can help organizations begin the process by assessing where they are today and where they want to go. For many organizations, the gap can be significant.

Stages of Analytics Usage in Internal Audit

Advanced - Standard methods and training, using advanced tools and analytics techniques.	Intermidiate - Some standardization of methods, some repeatable analytics.	Basic - Ad hoc analytics with limited repeatable solutions, basic tools.	No analytics capabilities.	Not sure.
7%	24%	55%	11%	3%

Maturity of Internal Audit Analytics

Foresight / Anticipate
Evolved

Insight / Anomaly Detection
Mature

Hindsight / Monitor
Beginners

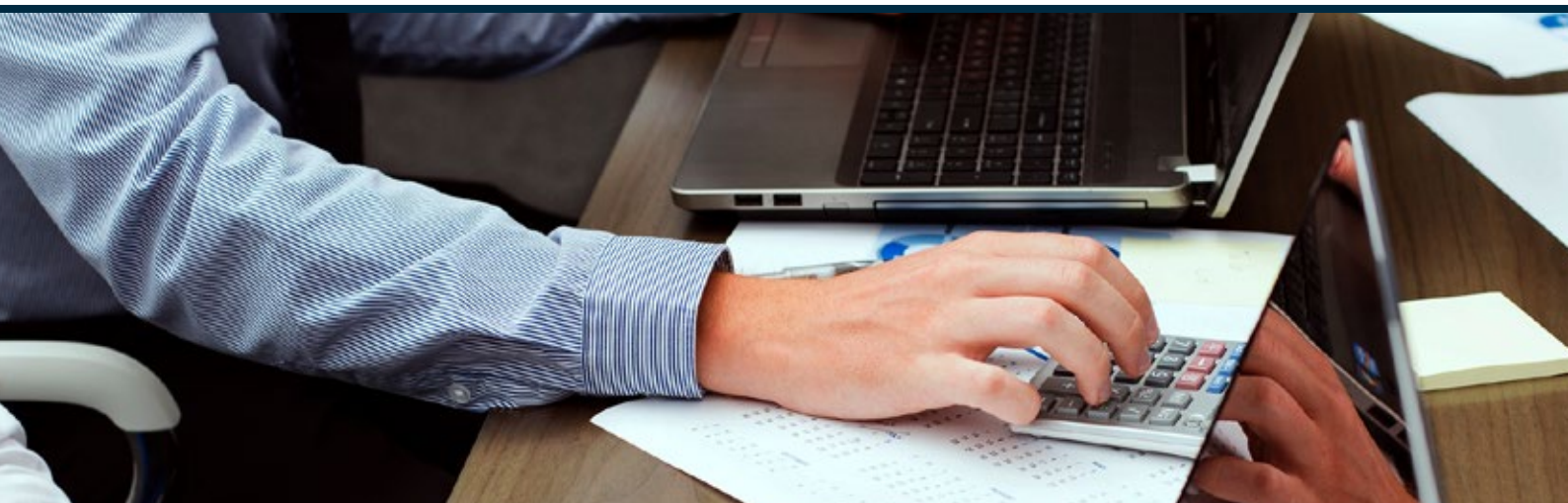| Initial	Developing	Define	Advanced	Leading
• No or limited capabilities	• The organization exhibits a basic set of capabilities	• Capabilities are developed and adopted consistently	• Capabilities are well-developed and practiced with appropriate governance	• Capabilities are well-defined and institutionalized
• Ad-hoc activities resulting in unpredictable performance	• Uses processes that are rudimentary and loosely woven	• Capabilities are used to drive some audit activities	• Processes are used to drive audit activities	• The department has diffrentiated itself based on its capabilities
• Success is based on individual competance and not on repeatable processes	• Success is repeatable with similar application and scope, but not consistent across organization	• Management defines goals and objectives for standardized processes and confirms they are communicated	• Processes and practices are routinely analyzed for effectiveness and efficiency	• Continuous improvement methodologies are used to adopt to future changes

To progress beyond initial and intermediate analytics efforts and unlock the true value of an analytics-driven approach, many organizations first need to bolster data management and data aggregation skills. The ability to pull disparate data sources together, perform simple and complex analysis, join and append data sets, and draw on larger enterprise and external data sets is vital. Because internal audit may lack the resources to directly access data, the function should consider reaching out across the enterprise to technology and business partners who are already using big data to leverage their knowledge.

As internal audit begins to implement an analytics program, several important considerations emerge. First, executive support and tone from the top are essential to the program's effectiveness. Second, training and appropriate incentives to modify behaviors and encourage innovation will be necessary to raise the skill set and knowledge of the entire audit team. Third, analytics can't simply be a bolt-on to the audit. Leading organizations are developing analytics-enabled audit methodologies, incorporating analytics into all phases of audit work.

An analytics team is multidimensional, with its collective skills and expertise falling primarily into two buckets: technical/analytical and business/communications. The technical skills required include:
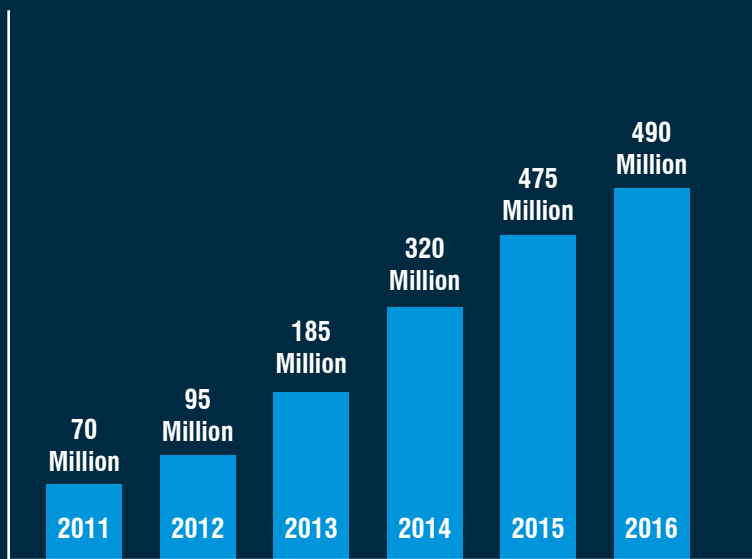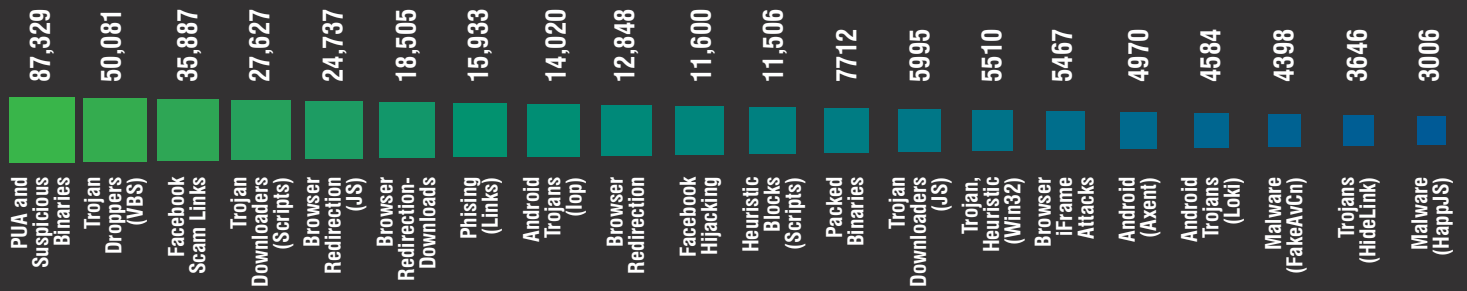
Testing and Validation	SQL Querying	Data Modelling	Data Analytics	Reporting Software
Define, develop, and implement quality assurance practices and procedures for technical solutions and validating hypotheses.	Query and manipulate data to facilitate the solving of more complex problems.	Structure data to enable the analysis of internal and external information.	Evaluate data using analytical and logical reasoning for the discovery of insight (e.g., predictive modeling).	Understand the underlying theory and application of key reporting software.

The business and communications skills required span general business acumen and storytelling, and include:

Technology Alignment	Macro Perspective	Business Knowledge	Business Commentary	Soft Skills
Understand how technology can be leveraged to solve business problems.	Understand the company's business strategy, current business issues and priorities, and current industry trends.	Know how to measure key performance indicators and understand business frameworks.	Articulate insights on current and forecasted trends, including their impact on and opportunities for the business.	Possess the communications and interpersonal skills needed to convey the insights gained from analysis.

2. Malware, Ransomware and Other Threats for Non-IT Specialists

The picture below shows the most commonly observed malwares:

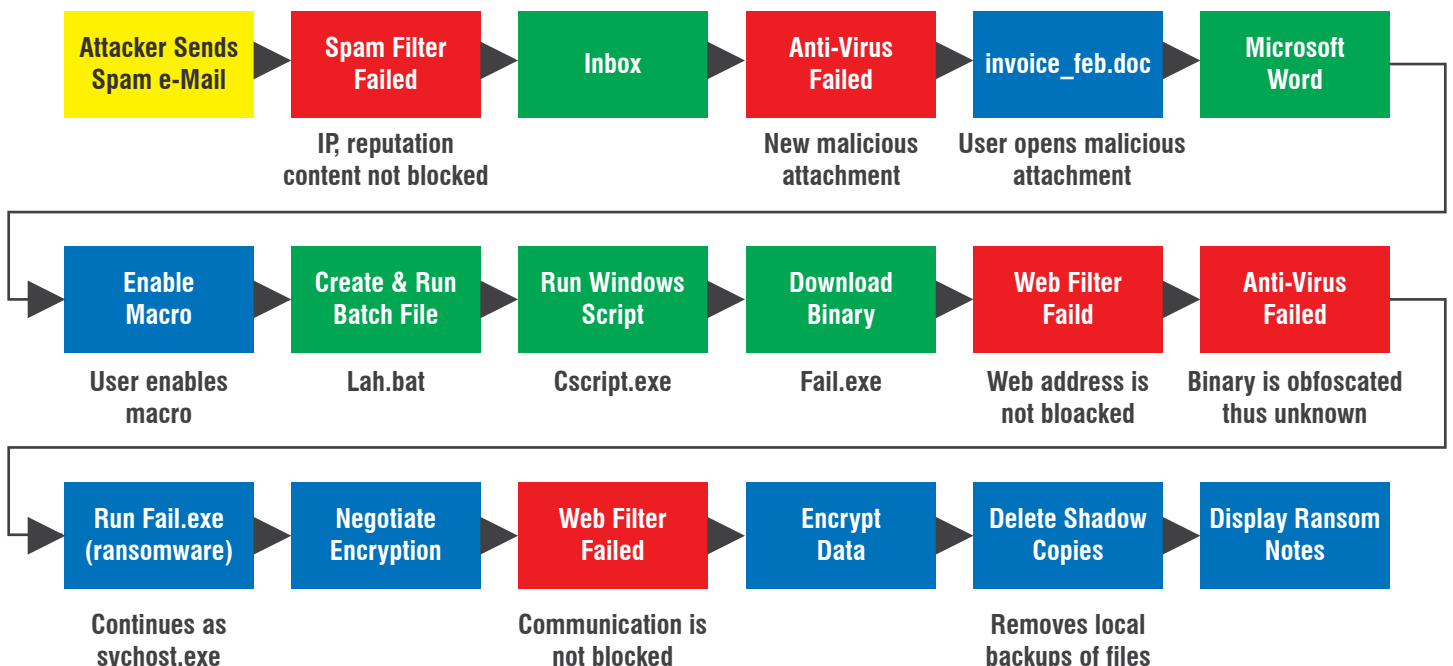| Count	Type
87,329	PUA and Suspicious Binaries
50,081	Trojan Droppers (VBS)
35,887	Facebook Scam Links
27,627	Trojan Downloaders (Scripts)
24,737	Browser Redirection (JS)
18,505	Browser Redirection-Downloads
15,933	Phising (Links)
14,020	Android Trojans (Iop)
12,848	Browser Redirection
11,600	Facebook Hijacking
11,506	Heuristic Blocks (Scripts)
7712	Packed Binaries
5995	Trojan Downloaders (JS)
5510	Trojan, Heuristic (Win32)
5467	Browser iFrame Attacks
4970	Android (Axent)
4584	Android Trojans (Loki)
4398	Malware (FakeAvCn)
3646	Trojans (HideLink)
3006	Malware (HappJS)

390,000 New Malicious Programs Every Day

The total number of malicious programs found in the wild will surpass the half-billion milestone this year.

-According to AV-Test

Year	Malicious Programs
2011	70 Million
2012	95 Million
2013	185 Million
2014	320 Million
2015	475 Million
2016	490 Million

When anti-virus, spam filtering and web filtering all fail, one becomes a victim of a ransomware because the malicious application that performs the encryption routine on sensitive and important data can run without user knowledge. This happens when all the AV solutions are out-of-date with the current virus patterns. The picture below is an illustration of a ransomware attack flow:

Attacker Sends Spam e-Mail → **Spam Filter Failed**
IP, reputation content not blocked
→ **Inbox** → **Anti-Virus Failed**
New malicious attachment
→ **invoice_feb.doc**
User opens malicious attachment
→ **Microsoft Word**

Enable Macro
User enables macro
→ **Create & Run Batch File**
Lah.bat
→ **Run Windows Script**
Cscript.exe
→ **Download Binary**
Fail.exe
→ **Web Filter Faild**
Web address is not bloacked
→ **Anti-Virus Failed**
Binary is obfoscated thus unknown

Run Fail.exe (ransomware)
Continues as svchost.exe
→ **Negotiate Encryption** → **Web Filter Failed**
Communication is not blocked
→ **Encrypt Data** → **Delete Shadow Copies**
Removes local backups of files
→ **Display Ransom Notes**

Downtime from Ransomware Costs Small Businesses $75 billion each year Which is 10 Times More Than The Cost to Buy The World A Coke
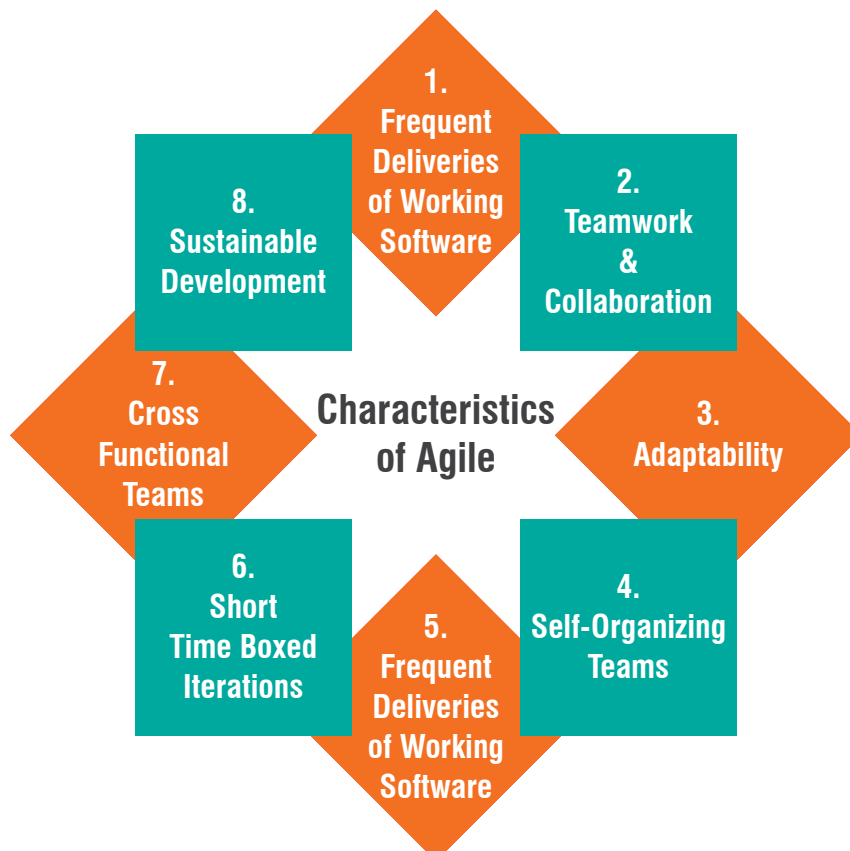
3. The Future is Agile Audit

13% of CAEs have Formally Implemented An Agile IA Approach

43% Are Considering Implementing it **& 26%** Are Not Certain What Agile IA is

Agile is a group of methods based on iterative development, where requirements and solutions evolve through collaboration between self-organizing, cross functional teams.

While there is value in the items on the right, we value the items on the left more.

	O	
Individuals and Interactions	V	Process and Procedures
Working Software	E	Comprehensive Documentation
Customer Collaboration	R	Contract Negotiation
Responding to Change		Following A Plan

Characteristics of Agile

1. Frequent Deliveries of Working Software
2. Teamwork & Collaboration
3. Adaptability
4. Self-Organizing Teams
5. Frequent Deliveries of Working Software
6. Short Time Boxed Iterations
7. Cross Functional Teams
8. Sustainable Development

How can Agile help Internal Auditors?

1. Allows IA to Respond Quickly to Changing Business Needs

2. Reduces The Time between Requirement and Delivery

3. Builds The Risk Specific Insights The Customer Needs

4. Avoids Delivering Insights Without Quality Problems

5. Meets Business Commitments by Reprioritizing Scope

Difference between Agile & Non-Agile Audits

Audit Aspect	Agile	Non-Agile
Audit Duration	Fast	Slow
Audit Quality	Generally better, as more time can be devoted to material issues.	More challenging, espacially for complex audits.
Audit Complexity	Generally needs more highly qualified auditors.	Can be executed by less qualified auditiors who get a list of detailed steps.
Audit Flexibility	Easier to adapt to changes in risk evaluation.	Needs a formal audit program revision.
Leadership	Generally more important, at least during the initial stages.	More democratic, as all team members participate more or less equally (in principle) to planning.
Interference with auditees' time	In principle, may involve more short meetings with auditees.	In principle, fewer but longer meetngs assuming all goes well

Today, there exist myriad programmes on Internal Audit but unfortunately, most of them are devoid of tools, which can train auditors on how to deliver competitive advantage to a company, and how they can develop an Audit strategy that is perfectly aligned to the business strategy. In our 3 day workshop, Chris Hollands, will teach you how to sail your way through the nitty-gritties of Internal Audit, by covering topical areas like forensic auditing, impact of bribery and corruption, effects of financial statement fraud, cybersecurity and the effect an attack may have on your organization. We urge you not to miss this opportunity, and take-home expert Internal Auditing skills and increase the productivity to higher level.

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