



Leveraging technology within Internal Audit Functions

Technology-enabled Internal Audit

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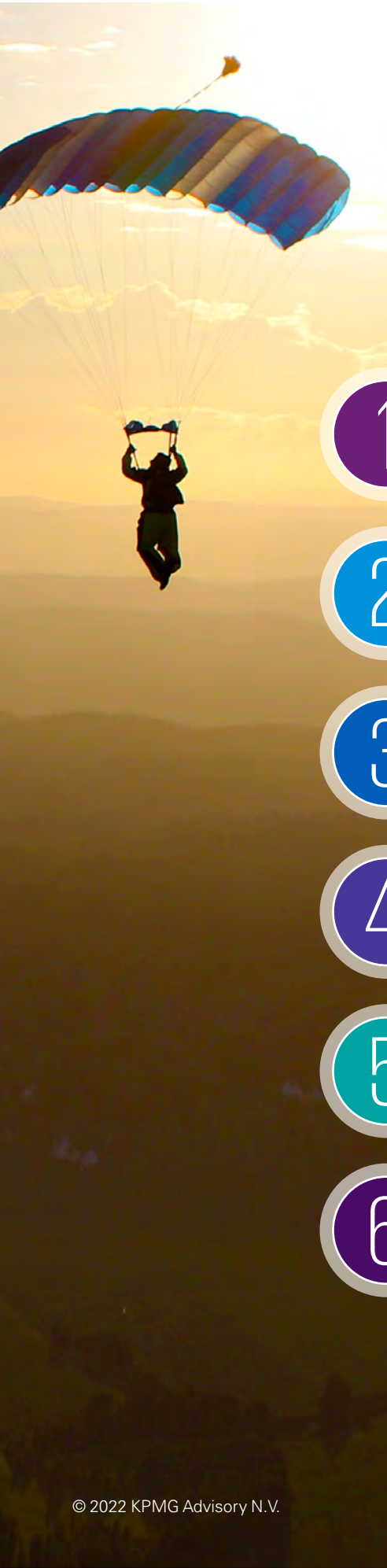


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Introduction

Keeping pace with business...

.... that is what is required of Internal Audit Functions ("IAFs") today. As organizations continue to evolve and adopt more advanced technology into their operations, the internal auditors' mandate remains unchanged. To continue adding value to their organization, IAFs are encouraged to embrace the benefits of technology and data analytics.

In this whitepaper we outline KPMG's vision on the future of Internal Audit and technology.

We provide background on the actual and relevant topics to help IAFs understand, identify and leverage the technology, data analytics and their organization's digital landscape, also providing a roadmap for the IAFs' Technology-enabled Internal Audit journey to get ready for the future.

Technology-enabled Internal Audit ("TeIA") is more than digital tools, data analytics, software and web-based applications; it is about delivering best-in-class internal audit services and delivering added value by leveraging technology in all phases of the internal audit cycle.

TeIA will create higher efficiencies, improve effectiveness, identify deeper insights, strengthen data governance and security, and enable IAFs to identify and focus on high priority value adding activities. TeIA will empower and enable IAFs to generate more reliable and repeatable audit outcomes and ensure that audit teams can focus on more strategic and complex business issues. Last but not least, a TeIA can inspire the trust of stakeholders, creating a platform for responsible growth, bold innovation and sustainable advances in performance and efficiency of an organization as well as improve the attractiveness of IAFs for students and other new hires.

KPMG supports IAFs on their journey to a Technology-enabled Internal Audit Function with a variety of solutions, whether on strategic, tactical or operational level considering different elements from Positioning, People and Processes (including tooling and techniques).

Is your IAF ready to face the new reality?

Enjoy the read!

Huck Chuah
Partner Internal Audit
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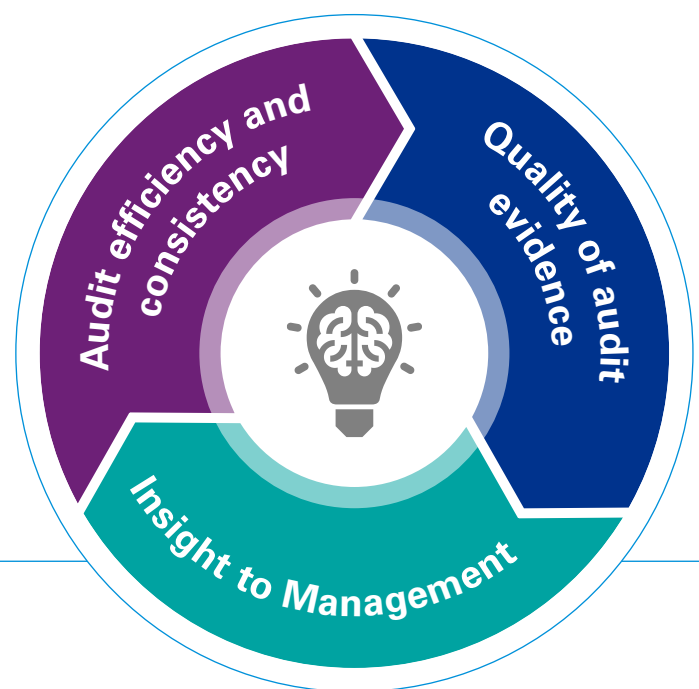


Figure 1: Advantages of data analytics for IAF

Traditional versus Tech-enabled Internal Audit

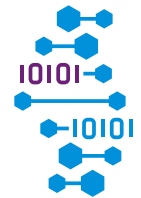
A comparison of traditional vs. technology-enabled internal audit methods is described below.



Traditional
Established annual plan and planning for a long time horizon (year or multi-year plan) which is not or hardly being updated based on emerging risks and developments that may arise.
Level of assurance of internal audit is dependent on the judgmental or statistical sampling work of the audit team and most of the audit findings are based on partial observations.
IAF deliverables consist of observations and conclusions that cover processes or topics, with a main focus on providing assurance or compliance with described procedures.
Fixed written reporting format, with hardly any visuals.
Documents are stored on network drives without wider access or version control.
Use of basic Computer-Assisted Audit Techniques (CAATs) to perform audit procedures for some confined areas.
Requesting and receiving reports from users with access to business systems for data analysis and fieldwork.

Tech-enabled
Robust and dynamic planning with data-driven feedback loops between the IAF and the Executive Board or Audit Committee (a more agile approach). The risk analysis is carried out with input from data analytics, resulting in a comprehensive and risk-based audit plan.
The audit process is facilitated by data analytics , which enhances assurance and insights based on testing of the entire population and/or operating effectiveness of controls. Auditors are freed up to focus on the quality and more strategic parts of the audit.
The audits, including scoping and fieldwork, are focused on specific business areas and this ensures that the objectives are achieved earlier. The added value from data empowers the auditor to be a sparring partner and provide granular business insights .
Dynamic and relevant reporting in visualization platforms, which enables improved dialogue between auditors and relevant stakeholders. Reporting can be updated in real-time and form the basis of continuous monitoring .
Documents are appropriately managed with an integrated workflow system which can allocate activities to the relevant party. As an example, the PBC is a live document , which ensures that follow-up is kept up to date between the auditor and auditee.
CAATs are integrated in the audit, and are executed automatically and continuously. Scalability , as data analytics can be rapidly deployed to address specific issues.
IAF integrated with business systems and technology as well as the technology which supports the 1st and 2nd Lines of Defense (LoD) functions. This enables the IAF to leverage continuous monitoring techniques to improve planning by greater understanding prior to commencement of fieldwork.

Key concepts relevant for internal audit



Many organizations are investing in advanced technologies, such as algorithms and artificial intelligence, predictive analytics, robotic process automation, cognitive systems, sensor integration, drones and machine learning to automate, labor-intensive knowledge work. Leveraging these technologies is not a matter of keeping up with trends for IAFs. Rather, it is a means to continue adding value to organizations and to meet the expectations of an ever-transforming business environment. IAFs should mirror the evolution of the advanced technologies that organizations implement.

The expanding landscape of intelligent automation technologies is large and multifaceted, but can be broken down into **four primary categories** that lie on a spectrum from simplest to most complex.

(1) **Data analytics** is the science and practice concerned with collecting, processing, interpreting and visualizing data to gain insight and draw conclusions. IAFs can use both structured and unstructured data, from both internal and external sources. Data analytics can be historical, real-time, predictive, risk-focused or performance-focused (e.g., increased sales, decreased costs, improved profitability). Data analytics frequently provide the “how?” and “why?” answers to the initial “what?” questions often found in the information initially extracted from the data.

IAFs have traditionally focused on transactional analytics, applying selected business rules-based filters in key risk areas, such as direct G/L postings, revenue or procurement, thereby identifying exceptions in the population data. Leading IAFs are realizing the added value of leveraging business intelligence-based tools and techniques to perform ‘macro-level’ analytics to identify broader patterns and trends of risk and, if necessary, apply more traditional ‘micro-level’ analytics to evaluate the magnitude of items identified through the ‘macro-level’ analytics.



Data Analytics in Internal Audit involves evaluating and re-evaluating and, where necessary, modifying the internal audit methodology, to create a strategic approach to implement, sustain, and expand data analytics-enabled auditing techniques and other related initiatives such as **continuous auditing**, **continuous monitoring** and even **continuous assurance**. See Figure 2: Journey towards Continuous auditing on the next page.



Continuous auditing is a method used to perform control and risk assessments automatically on a more frequent basis. Technology is key to enabling such an approach. Continuous auditing changes the audit paradigm from periodic reviews of a sample of transactions to ongoing audit testing of up to 100 percent of transactions. Continuous auditing enables internal audit to continually gather from processes data that supports auditing activities.

What is Continuous monitoring?

Continuous monitoring enables management to continually review business processes for adherence to and deviations from their intended levels of performance and effectiveness.

The journey from limited IT assurance to continuous auditing – for an IAF involved in financial audits – is visualized below. The IAF will be able to shift its focus from routine transactions to non-routine and more judgmental transactions. At the same time, more of the work performed is being automated.

In this journey, the IAF mirrors the developments of the organization itself to optimize the usage of technologies being implemented.

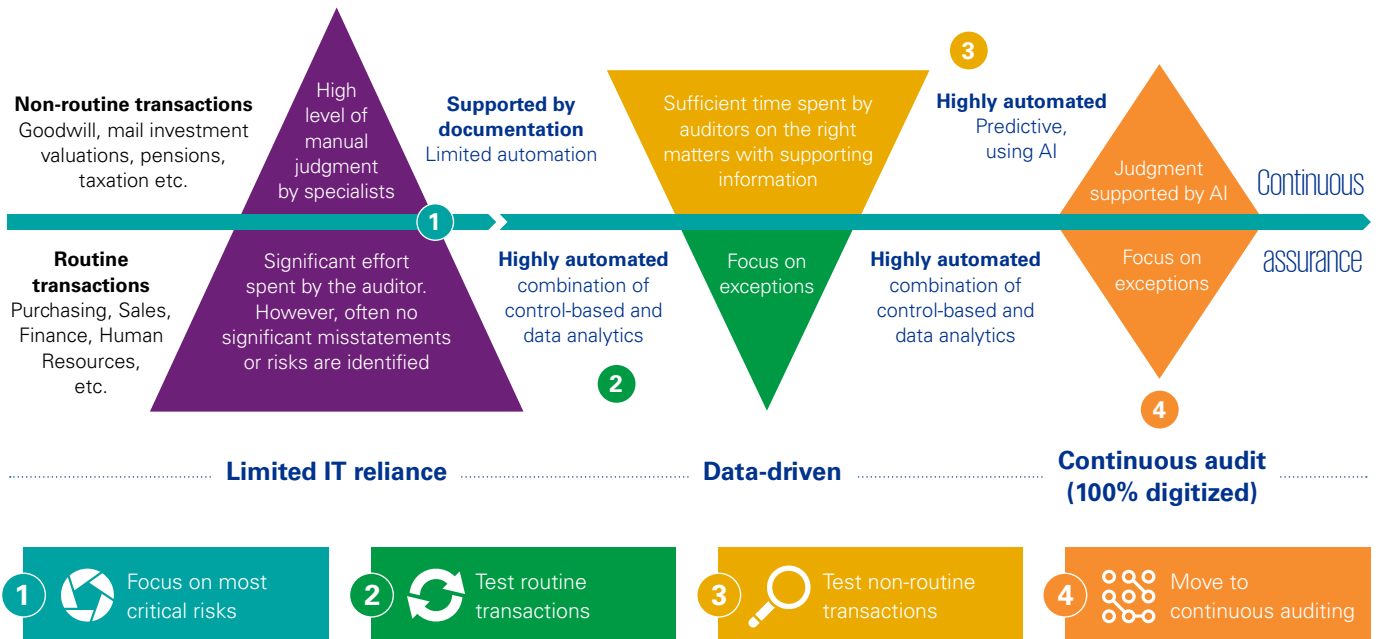


Figure 2: Journey towards Continuous auditing

Descriptive, diagnostic, predictive and prescriptive

The known data analytics development cycle is described in stages: from descriptive (what happened), to diagnostic (why did it happen), to predictive (what is likely to happen), and, finally, to prescriptive analytics (what action is the best to take). In general, organizations and leading IAFs currently find themselves in the descriptive and diagnostic stages.

A fast-growing, and value-adding tool is **Process Mining** software. **What is Process Mining?** Process mining provides new ways to utilize the abundance of information about events that occur in processes. These events such as ‘create order’ or ‘approve loan’ can be collected from the underlying information systems supporting a business process or sensors of a machine that performs an operation or a combination of both. We refer to this as ‘event data’. Event data enables new forms of analysis, facilitating process improvement and process compliance. Process mining provides a novel set of tools to discover the real process execution, to detect deviations from the designated process, and to analyze bottlenecks and waste.

It can be applied for various processes and internal audits such as purchase-to-pay, order-to-cash, hire-to-retire, and IT management processes. The use of process mining tools to analyze business processes provides greater insight into the effectiveness of the controls, while significantly reducing audit costs, resources, and time.

(2) **Robotic Process Automation (RPA)**. RPA is a productivity tool that automates manual and routine activities that follow clear-cut rules by configuring scripts and 'bots' to activate specific key strokes and interface interactions in an automated manner. The result is that the bots can be used to automate selected tasks and transaction steps within a process, such as comparing records and processing transactions. These may include manipulating data, passing data to and from unlinked applications, triggering responses, or executing transactions.

KPMG has published a detailed series on RPA for Internal Audit in the articles

1. [Intelligent automation and internal audit Part I](#)
2. [Intelligent automation and internal audit Part II](#)

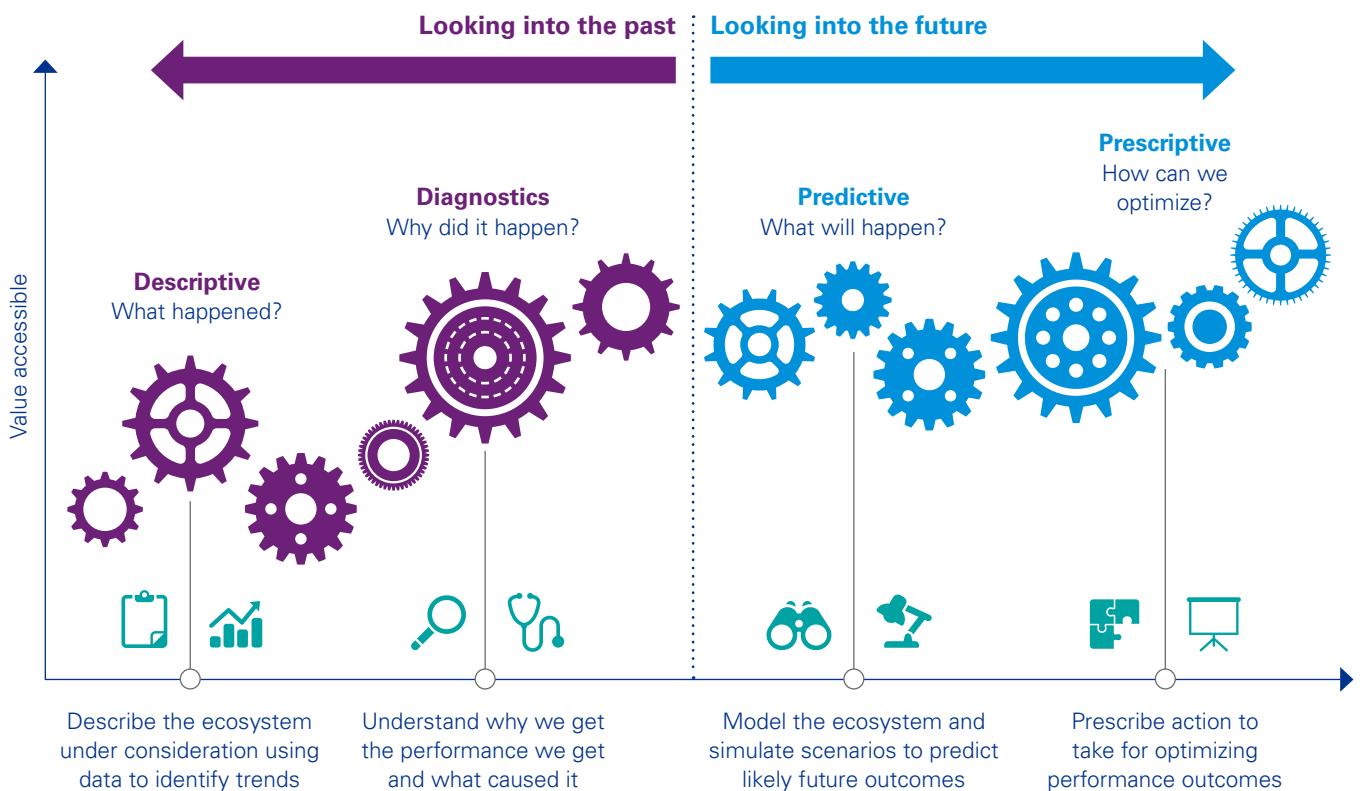


Figure 3: Descriptive, diagnostic, predictive and prescriptive analytics

(3) **Cognitive technologies** refers to a class of technology that can absorb information, reason and think in ways similar to humans. For years, this has been on the uptrend across all industry areas. Organizations are already embarking on implementing cognitive technologies in their key business processes to improve process execution – and with this new reliance on technology, new risks arise on which IAFs must perform audits.

Algorithms / Artificial Intelligence (AI)

A broad and comprehensive algorithms and AI-related risk assessment process is essential for data-driven organizations that want to be in control. The question for IAFs is how to organize this risk assessment process. One auditable topic to consider is the organizing accountability for uses of data between data management teams, application development teams, and business users. Another auditable topic is the formation of network arrangements with third parties. An element that is needed for an IAF, is a long list of known AI-related risk factors. And another list of associated controls that can be used to audit those risks from a variety of perspectives within an organization. The first step for an IAF is to take a strategic decision to examine its algorithms and AI-related risks, and where they originate from.

Machine Learning is a way to teach a computer model what to do by giving it lots of labeled examples (input data) and letting the computer learn from experience, instead of programming the human way of thinking into an explicit step-by-step recipe.

Deep Learning is a subfield of Machine Learning, where the algorithms are inspired by the human brain (a biological neural network). We therefore call these algorithms artificial neural networks.

Today's intelligent automation innovations have the transformational potential to increase the speed, operational efficiency, cost effectiveness, of the IAFs' internal processes, and to empower internal audit professionals to generate more impactful insights, enabling smarter decisions more quickly. Whether or not an IAF chooses to leverage intelligent automation technologies themselves, they are likely part of an organization which requires them to partake in it, giving rise to need for the **Technology-enabled Internal Audit Function**.

Proper use of available data and an adequate understanding of intelligent automation are pre-requisite skills for performing audits and using cognitive technologies. As IAFs further mature in their use of automation tools, they will become better positioned to harness value for their organization.



(4) **Emerging technologies** refers to numerous technologies relevant for IAF, either as an audit object, as a means to improve the audit processes itself. We have identified a few topics which are relevant and emerging for IAFs.

Cloud computing: an architecture that provides easy on-demand access to a pool of shared and configurable computing resources. These resources can be quickly made available and released with minimal management effort or provider interaction.

Internet of Things (IoT): "the network of devices, vehicles, and home appliances that contain electronics, software, actuators, and connectivity which allows these things to connect, interact and exchange data."

Drones: in technological terms, are an unmanned aircraft. Essentially, a drone is a flying robot that can be remotely controlled or fly autonomously through software-controlled flight plans in their embedded systems, working in conjunction with onboard sensors and GPS. Or simply, IoT connects physical objects to the digital world and drones enhance the physical observation methodology remotely.

Internal audit conducts independent reviews, exposes (possible) vulnerabilities and risks and points the way to solutions. In this way, IAFs offer organizations assurance on and insights into these emerging technologies.

Based on a global KPMG survey, we observed that only a few leading IAFs had the expertise and capabilities to perform audits on all these topics. A reference framework or a work programme is often lacking. For these fast-emerging topics the question is not if but rather when an audit is necessary.

In the following sections, we provide an overview of **advantages and opportunities** for IAFs to leverage using these technologies. We also provide **case studies** and a **roadmap** to the Technology-enabled Internal Audit.

Advantages



Data analytics & Business intelligence

- A more focused audit by analysing the actual data and data flows to work out where controls are complied with or were bypassed;
- Providing better coverage, up to 100% of the population, rather than random samples;
- Identifying large or unusual transactions and items more accurately for further investigation;
- Risk assessments and dynamic, integrated audit plans underpinned by actual data to focus assurance effort there where it matters most;
- Create efficiencies – and global consistencies through automation (less manual testing).

Proces-mining

- Reduce compliance costs: uncover hidden inefficiencies and bottlenecks to reduce compliance costs ('cost of control'), as well as the cost for auditing itself;
- Increase organizational agility: gain access to real-time surveillance of business transactions and fast results due to proactive insights and fast root cause analysis;
- Boost efficiency: make use of pre-defined analyses for an easy and professional reporting mechanism;
- Achieve higher quality: provide high precision and full transparency of all running processes to ensure every non-compliant process is caught.

RPA & Intelligent automation

- Improve quality and consistency of internal audit processes;
- Create more time for critical thinking activities by improving efficiency of repetitive activities in planning, testing, and reporting;
- Increase coverage and frequency of testing across the audit universe;
- Expand the audit scope for individual audits;
- Move from limited sample testing to full population testing – manage labor capacity and geolocation constraints;
- Autonomous agents that continuously audit and monitor defined controls and flag issues for follow-up by the IAF.

Cognitive technology

- Monitor emerging risk clusters in the risk universe;
- Built-in bias detection in data, provenance and explainability of model decisions to ensure insights can be trusted;
- Intelligent audit that can ingest a variety of structure and unstructured data and other insights.

A maturity model on the use of data analytics in the audit methodology

Rooted in an internal audit methodology, the maturity model serves as a guide along the journey from traditional internal audit models towards more mature levels for continuous auditing, and through to the continuous assurance of enterprise risk management. A key first step within the maturity model is the successful integration of data analytics.

To assist IAFs in understanding the current state, KPMG has created a maturity model, based on our deep experience in this area. Pinpointing where you are in the model is the first step to developing a strategic road map that bridges the gap between your current state and desired future state. How data-driven is your IAF?

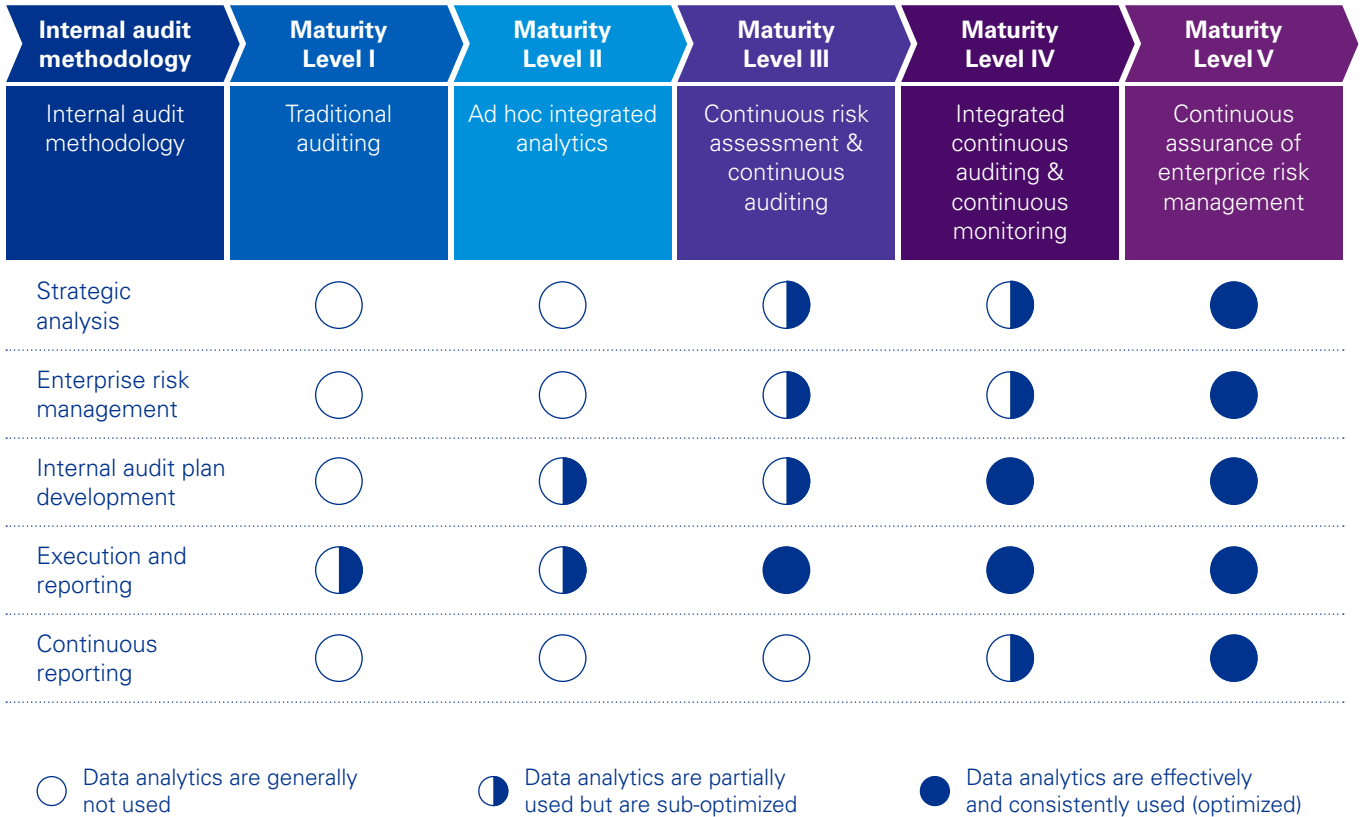


Figure 4: Data analytics maturity model

The highway metaphor

Our 'highway' diagram below explains how data analytics, process mining and/or continuous auditing/monitoring can be used to enhance the added value of the IAF for the organisation:

- Identify and quantify the different processing paths within an end-to-end process;
- Automate substantive internal audit testing;
- Identify where and when controls have been bypassed;
- Highlight high risk processes, sub-process and activities for data drive internal audit scoping;
- Identify and test Application Controls and General IT controls;
- Trace exceptions back to root causes and propose management actions.

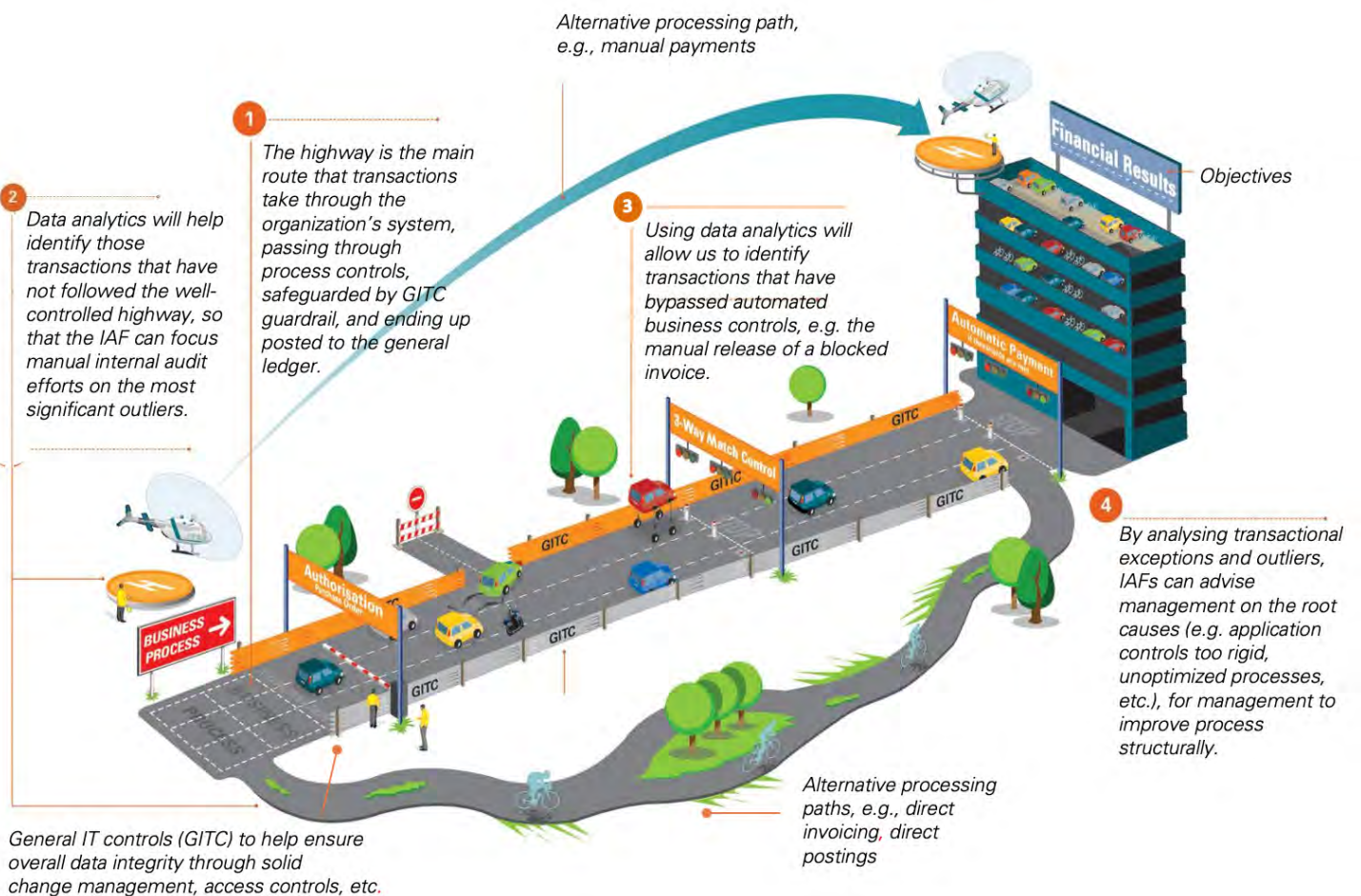


Figure 5: Highway metaphor to increase the added value of internal audit

A roadmap towards Technology-enabled Internal Audit



The practices of leading IAFs have been forced to evolve rapidly to keep pace with their organization's evolution. How internal audit is conducted is imperative to keep pace with the organization. Leveraging technologies lies at the core of how to manage current and emerging organization risks.

The question is 'How can our IAF embed technology in its audit approach and methodology and support their organization to effectively respond to emerging risks and opportunities for accelerating its digital revolution?' Specifically, leading IAFs have adopted frameworks that address the three elements for the successful Technology-enabled IAF.

The **Positioning** aspect touches on the positioning of the IAF within the organisation, its governance, mandate, independence, relationships, and importantly, access to structured and unstructured data.

The **People** aspect looks at the competencies and the skills of those individuals within the internal audit team, or those individuals at the disposal of the internal audit team.

Lastly, but most importantly, the **Process** aspect considers the various tools, options and solutions that allows the IAF to effectively and successfully utilise data as part of its risk-based internal approach and the audit methodology.

To remain relevant in current times, the end goal for IAFs should be to effectively implement the use of technology in its risk-based approach to auditing.

Each IAF has a different end goal for digitalisation; however, considerations of positioning, people and process should be the starting point. With further consideration for short term, medium term and long term plans and of course the all-important funding/budget.

IAF should not be discouraged by financial considerations, as various existing systems and tools can fortunately be utilised to move towards a more data-driven IAF. But also more and more auditors with experience in data analytics are part of internal audit and IAFs increasingly recruit data scientists.

In this section, we provide considerations on the IAF's journey to become Technology-enabled.

Each IAF has a different end goal for digitalisation; however, considerations of positioning, people and process should be the starting point



Today?


Maintains independence & objectivity


Visibility & stakeholder management


Culture


Budget

Year + 1 - 2


IAF strategy


Governance, risk & compliance framework


Competencies & Capabilities


Staffing strategy and talent attraction


Subject matter expertise


Risk-based planning


Understanding of business strategy


Internal Audit methodology

Positioning



People



Methodology, tools and templates



Insightful & value creation audit execution



Forward-looking risk assessments



Internal Audit methodology

Objective

Technology-enabled IAF

Quality | Insights | Value Adding



Process



Harness technology



Continuous monitoring



Effective communication plan



Strong QA procedures



KPIs to monitor performance



Effectiveness review



Internal Audit plan



Stakeholder feedback

Roadmap to Technology-enabled Internal Audit

Case study







Drafting a roadmap towards TeIA at a large Dutch Pension Fund Administrator

Client need

The client is a non-profit cooperative pension administration organization, offering pension management, asset management and board consultancy services. They manage the pensions of various pension funds, their affiliated employers and their employees. Looking to modernize their IAF they requested KPMG to help them in developing a roadmap towards becoming a technology-enabled IAF.

KPMG added value by

- Hosting a workshop to share the outlook, bring an outside in view and share experiences from other clients;
- Getting input from the Internal Auditors through a survey on different themes identified for Positioning, People and Process;
- Hosting a workshop to discuss the survey output and determine which elements are important in the long term, medium term and short term;
- Developing the TeIA roadmap with key focus areas;
- Supporting the IAF in the next steps on the roadmap.

	Positioning 	People 	Process 
Short term 	<ul style="list-style-type: none"> ● Broaden data analytics vision of IAF and client ● Putting together a project plan and team with clear responsibilities (incl. success criteria) ● Perform stakeholder mapping data analytics ● Determine pilot audits in which scoping is clearly delineated ● Refine the roadmap and present it to MT 	<ul style="list-style-type: none"> ● Inventory data analytics expertise and compare it with the required competency matrix ● Set up data analytics training program ● Hire external data analytics expertise 	<ul style="list-style-type: none"> ● Retrieving data as part of audit preparation ● Include data analytics in the work program as a permanent element in risk analysis, preparation and implementation ● Working group to develop and refine data analytics methodology ● Mapping available tooling (and using it during pilots) ● Presenting data analytics results in reports ● Sharing lessons learned (positive and negative)
Medium term 	<ul style="list-style-type: none"> ● Data analytics integrated in annual IAF plan (budget, hours) ● Data analytics permanent part in preparation of all audits ● Clear agreements with 1st and 2nd LOD about cooperation and division of tasks and responsibilities. 	<ul style="list-style-type: none"> ● IAF employees are part of data analytics project teams within the organization ● Data analytics knowledge building as a permanent element in employee development plan ● Recruitment 	<ul style="list-style-type: none"> ● Standardize data analytics in audit methodology ● Access to data lake for IAF employees + agreements about use ● Project group to map and evaluate available internal and external tooling ● Building data analytics best practices database
Long term 	<ul style="list-style-type: none"> ● Supported vision application of data analytics by IAF with sufficient resources 	<ul style="list-style-type: none"> ● Broad data analytics expertise team 	<ul style="list-style-type: none"> ● Data analytics integral part of IAF work

3

Positioning



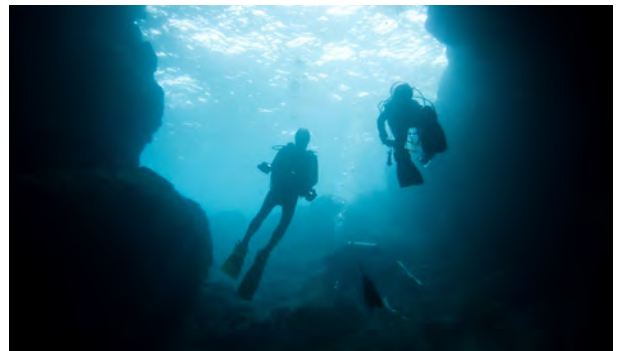
Positioning refers to whether the IAF is sufficiently structured and well placed (reporting lines within the organizational structure) to enable it to contribute to business performance. In this context positioning refers to having suitable mandated access to data and the business and the respect of the other departments across the organization.

This would suffice for a traditional IAF. However, organizations should consider a strategy to implement, sustain and expand the use of technology in their internal audits. More importantly, the added value derived from the use of technologies to derive insights from vast volumes of information, drawn from across the organization and external sources.

Successful IAFs of the future will be positioned to leverage technology in adding value to Management and the Board. This requires transforming the way IAFs Plan, Execute, Report Audits, and Manage Stakeholder relationships.

Positioning a technology-enabled IAF is key within an organization, and not just the use of technology in audits, but also effectively making use of data, existing infrastructure, and the technical capabilities of data analytics software in its processes. Specifically, a technology enabled IAF should:

- be characterized by strong relationships at the highest levels and have a regular presence in major governance and control forums throughout the organization while maintaining its independence and objectivity;
- have a comprehensive understanding of the businesses' **governance, risk and compliance (GRC) framework**, including its strategies, products, risks, processes, systems, regulations, and planned initiatives;
- be recognized by stakeholders as a function that provides quality challenge, drives change within the organization and can connect the dots across lines of business and functions utilizing technology;
- have an integral role in the governance structure as the 3rd line of defense which is clearly aligned with the organization's objectives, articulated, and widely understood throughout the organization;
- have a defined and documented brand that permeates all aspects of the internal audit department, **IAF strategy** and is widely recognized and respected both internally and externally.



Considerations for your Internal Audit Function:

- 1 How are data analytics and advanced technologies perceived in your organization?
.....
- 2 Do you believe data-driven insights and digital enabled operations add value to your organization (i.e., is there a positive return on investment (quantitative and/or qualitative))?
.....
- 3 Does your IAF seek to use data-driven insights to advise on risk and control issues (outside of normal audit activities)?
.....
- 4 Can you sufficiently attract, train and retain auditors with strong data analytics and innovative technological skills?
.....
- 5 Do you have support from functions such as IT to support your use of technology, software applications and available data in the execution of your internal audit plan?

People



Many traditional IAFs are still struggling to concretely implement more data-driven procedures into the internal audit process. Instead of focusing on tools and technology as the entry point for enablement, IAFs should consider what **competencies and capabilities** are needed to utilize these tools and technologies effectively.

Essentially, technology-driven internal auditing requires a significant amount of critical thinking and understanding of data. Faced with new business processes, auditors must not only be able to quickly understand a new business process and its related data, but they must also identify risks that can be quantified and understand how to create analytics-enabled procedures and visualizations of the results which address those risks. For this reason, evaluating and identifying the IAF team's skills and competencies are fundamental to successful Technology-enabled IAF.

Too often have internal auditors attended training on the next best tool in an attempt to quickly keep up-to-date with the speed of changing technologies, without addressing the fundamental purpose of technologies. As a result, we are all too familiar with participating in training courses, and a week later we will have forgotten most of what was learned or failed to identify the use case in daily work life. Digital awareness is crucial for internal auditors to identify opportunities to leverage relevant training.

Leading IAFs have a **staffing strategy and talent attraction plan** based on their organizational structure, goals, and long-term strategy. Some leading IAFs choose to hire new employees such as data scientists, and create a fully-fledged digital internal audit center of excellence. Smaller IAFs usually have one or two data analytics and IT Audit specialists in the team. Other IAFs opt for data analytics tools as these tools fit into the key IT systems of the organization, for example SAP and S/4HANA.

IAFs that are starting their tech-enabled journey may find it difficult to balance their short-term and long-term staffing requirements. Reliance on third parties – including IT resources from another internal department, a tool vendor, audit/consulting firms or temporary contractors – is a common way to address initial, part-time, or sudden incremental needs. These auditors can enable greater flexibility and be a catalyst implementing a more technology-driven approach.

Considerations for your Internal Audit Function:

1

Understand staffing and resourcing strategies:

- Recruitment Strategy: Does the IAF opt to recruit someone with the desired competencies from within the organization (i.e., finance, business analytics, IT, Cyber) or have a preference to seek the capabilities externally?
- Resourcing Strategy: How willing is your IAF to outsource some of the technical aspects of a project to a service provider?

2

Understand the required capabilities:

- Competencies: Are the internal auditors able to identify the opportunities to enhance existing services with tools available?
- Culture: Do the internal auditors possess the right capabilities and characteristics, which are essential to drive change initiatives in the department and organization as a whole?

3

Consider a revised training and career curriculum:

- Skills: Have the internal auditors individually and collectively had enough training on both the preferred tools / applications to provide a valued internal audit service needed today and in the future?
- Career Development: Do you think the career path for your IAF benefits the organization in the short or long term?

Case study

Client need

A large global banking institution tasked us with assisting them in embedding a data analytics professional practice methodology into their traditional audit processes. Before that, applying data analytics in internal audits was not as successful as it could be; one of the barriers was that auditors were uncertain when and how to apply data analytics.

KPMG added value by

We responded to the client request by:

- Developing a Data-Driven Internal Audit (DD IA) Playbook to supplement their internal audit manual;
- Conducting data analytics presentations and workshops with audit teams, audit management, data quality teams and data management teams;
- The DD IA Playbook focused on providing professional practice principles, and accounting rules related to data analytics and how it would enhance the audit function with operational, compliance, IT and financial statement audits. We covered topics such as:
 - Reliability of data
 - Optimizing audit planning for data analytics
 - Risk-based data analytics auditing
 - Outliers / exceptions – Explorative in nature
 - Identifying and executing data analytics routines
 - Outliers / exceptions – Assessment in nature
 - Review and Reporting guidelines
 - Archiving and audit evidence.



Effective communication plan

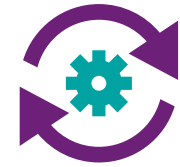


Methodology, tools & templates

The client valued the combination of our expert knowledge on data analytics and leading internal audit services. The inclusion of this market experience and expertise translated well into the DD IA Playbook. The client greatly valued our alignment of professional practice guidelines into data analytics methodology, which helped answer specific questions from an internal auditing perspective. For every audit, and for the larger community of non-IT auditors, the DD IA playbook is an important part of the IA methodology and it increased the adaptability of using data analytics in the operational, compliance, IT and financial statement audits. Key words are pragmatic, concrete and insightful.

5

Process



A leading internal audit team has a technology-enabled methodology to embed data analytics, IA management applications and GRC solutions into every part of the internal audit methodology.

Such a team cooperates with other parts of the organization to be able to understand the systems, data or scripts which support business areas.

Partnerships with risk and compliance teams are leveraged to build joint business cases to improve business processes with data in the business.

Moreover, a leading internal audit team works closely with IT and understands the information that needs to be provided to receive the correct data.

Each stage of the IAF’s audit methodology can use data and prioritizing a “data first” approach will provide the required paradigm shift.

To guide IAFs on how to enhance the overall internal audit cycle, we focus on 3 key stages:

1. Planning and Scoping
2. Fieldwork
3. Reporting, Monitoring and Follow Up

In this section, we discuss how leading IAFs use technology to enable their internal audits.

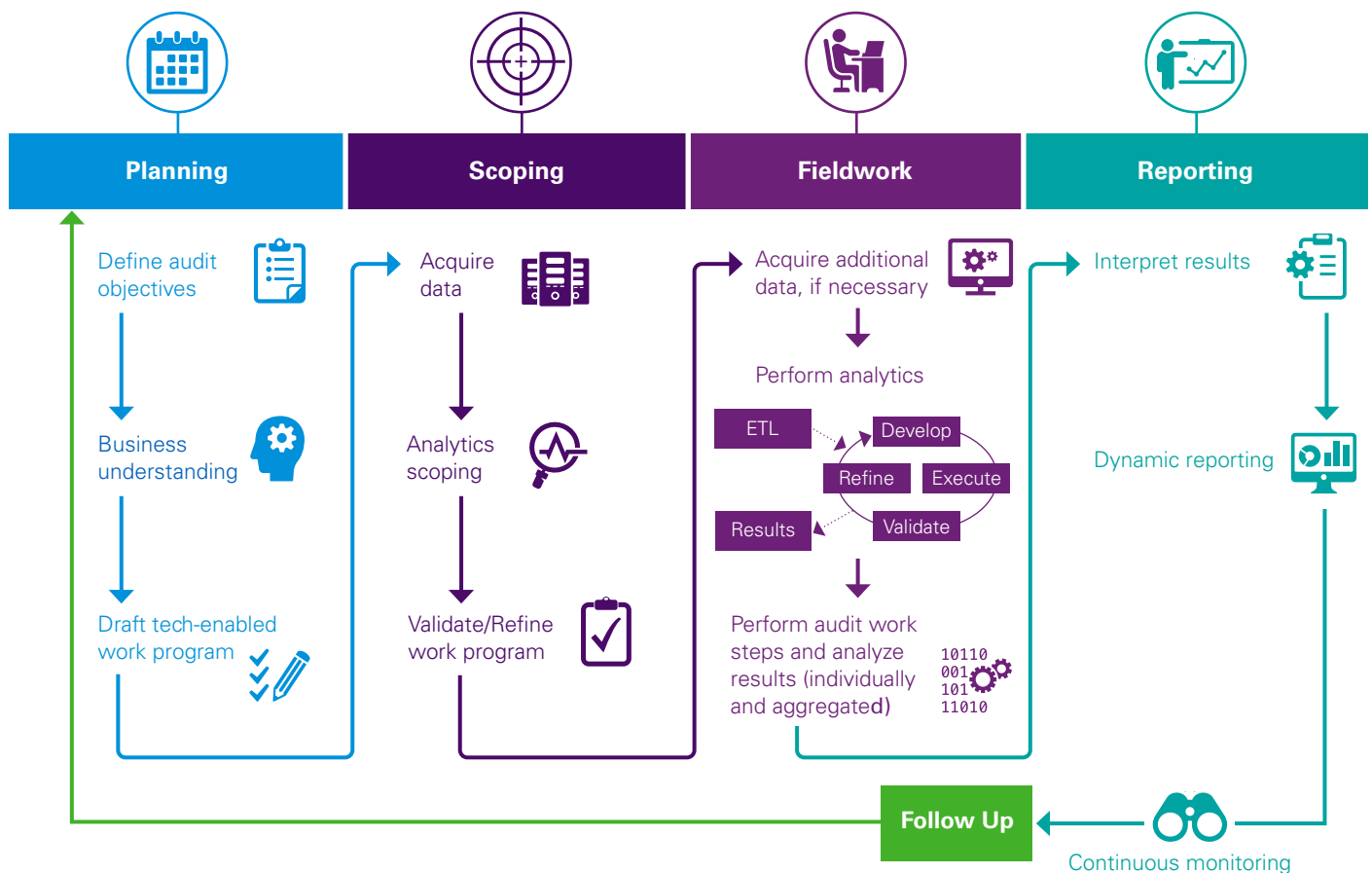


Figure 6: Internal Audit stages

Planning and scoping

In order to succeed in embedding data analytics throughout the audit process, the focus on data analytics is introduced in a **risk-based planning** phase. To identify points of focus during planning and derive meaningful insights throughout the audit process, a leading IAF should leverage business data, technology, analytics and external sector relevant factors to:

- Gain data-driven insights prior to fieldwork;
- Enhance audit objectives with **digitization of risk assessments**;
- Identify risks based on **automated KPI calculations** and data used for prior reporting; and
- Take an integrated approach including all governance functions to determine a single risk source of truth.

Fieldwork

The technology-enabled internal audit is not devoid of detailed manual testing. The IAF is aware of this and can identify what technology is best applied when testing controls and mitigating factors frequently with CAATs. The business area, system, and process are the input factors to determine and approach. An experienced tech-enabled auditor assesses this continuously based on availability of data and required assurance. Leading IAFs should:

- Identify procedural weaknesses or critical transactions using Process Mining, Data Analytics, or ERP Analytics. These create **meaningful and insightful observations in the audit execution**. Tools frequently used are for example: Celonis, IDEA, Disco and KPMG’s Sofy;
- **Harness existing technology** to automate audit procedures with prebuilt bots and routines for well-known business processes. Tools and platforms frequently used are: KPMG Intelligent Platform for Automation (IPA) and IDEA SmartAnalyzer; and
- Usage of internal audit management software to create and facilitate methodology and templates. An example of tools frequently used are: MetricStream, TeamMate, Workiva and KPMG Risk Hub.

Reporting, monitoring and follow-up

Internal Audit reports to various stakeholders on a regular basis. This includes reporting of engagement results to auditees as well as reporting on other topics as guided by the IIA Standards. Written reporting is complemented by data-driven dashboards or connected web-based reports for continuous and real-time reporting. Technology empowers the IAF to monitor and follow-up by simply “refreshing” the input data. Leading IAFs should:

- Have an **effective communication plan** which could make use of web-based reporting platforms such as KPMG Dialogue to deliver reports which are integrated and seamlessly clarify observations with links to follow up action plans and embedded data driven results; and
- Consider integrated and **continuous monitoring** reports by visualizing the results of data analysis instead of text-based reporting using for example PowerBI, QlikView or Tableau.



Considerations for your Internal Audit Function:

Planning & Scoping

- Do we consider available data and technology when considering the internal audit plan?
- Do we make use of data to refine individual scope of focus areas?
- What data have you used / could you have used to support this?

Fieldwork

- What are the systems that support key business processes?
- What data is available from the key systems?
- Is there a reporting function which reports on metrics from the key systems?
- Can the IAF leverage existing knowledge or architecture that the organization has already invested in?

Reporting

- Who is my audience?
- What information does the audience require?
- In what format does the audience expect the reporting to be done?
- Is this a static or dynamic report?

Case study

A fast-faced international retailer’s use of technology in scoping, execution and reporting

Client need

The client is a Franchisor with franchise-based fast food retail stores. The franchise business model meant that the Franchisee was responsible for paying royalties to the Franchisor based on sales values. During the annual Financial Statement Audit, the external auditor identified two key findings:

1. VAT calculations required many manual corrections every month, and
2. Finance was unable to reconcile actual sales per the sales system to:
 - bank statements, and
 - general ledger.

How KPMG used technology in this process


- The findings of the external financial auditor led to the Internal Audit team including a Record-to-Report review in the annual internal audit plan. As part of the Record-to-Report review, KPMG’s Internal Audit service was requested to support the Internal Audit in identifying the root cause of the external audit findings.
- The IA team developed a detailed testing approach together with finance and the IT team to test for accuracy of revenue using data from the Point of Sales as a starting point.
- The IA team was assembled to include a data analytics expert with transactional data systems, and used a combination of Windows PowerShell and SQL to test the reconciliations performed by the finance team.
- PowerBI was used by the IA team to summarize and present the reported sales. The PowerBI dashboard allowed the IA team to drill into further levels of sales details, up to the level of per-line-item detail for each individual sales transaction.
- The IA team was able to identify specific products that were configured incorrectly in the IT systems which created incorrect rollup of VAT.
- The PowerBI dashboard was used to identify specific stores for future detailed analysis by identifying outliers in data trends noted where bank reconciliations were performed with reconciling items identifying a behavioral issue early in the process which caused ineffective reconciliation control.

KPMG expertise

KPMG’s internal audit team included various skill sets, with the main skills being:

- Understanding system APIs (Application Programming Interface)
- Basic dashboard assembling skills (PowerBI)
- SQL programming language effective utilization of IDEA for data manipulation
- Scripting languages (PowerShell) for collection and processing of unstructured data
- Understanding of the Financial Statement audit procedures and processes.

Results

 Insightful & value creation audit execution

 Continuous monitoring

The auditor used technology for insightful and value-creating audit execution by being able to identify detailed root causes for audit observations, and addressed external audit findings. The team now uses the PowerBI dashboard to continuously monitor risks and controls in this record-to-report process.

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Key Take-aways



KPMG has a group of expert professionals in analysis and interpretation of data focused on Internal Audit, connected to the global network of KPMG’s best practices (Data & Analytics Global, External Audit Data & Analytics, Centers of Excellence).


We have transformed our Internal Audit practices to integrate Technology-enabled Internal Audit concepts. We have a library of best practices associated with staff training, templates, routines, frameworks of analysis and applications, among other things with which our professionals are constantly kept up-to-date on recent developments.

A Technology-enabled IAF can contribute to the fundamental shift in perspective and understanding that a dynamic risk environment presents threats and challenges not just to the organization itself, but to all the stakeholders who have an


interest in the organization. KPMG collaborates with you to meet and overcome the disruptive challenges and dynamic risks of a volatile world.

Following the TeIA roadmap, KPMG works with internal audit directors and audit committees in developing a TeIA function that delivers strategic business assurance, identifies business opportunities, and enhances organizational value.




Positioning 

- Provide ‘TeIA Awareness’ training and conduct a stakeholder survey to assess buy-in
- Create a roadmap for a Technology-enabled IAF
- Establish a TeIA Centre of Excellence within the in-house IAF Provide input on the annual audit plan to increase the use of TeIA concepts
- Align 3 LOD to leverage business investments

People 

- Provide ‘Introduction to TeIA’ training
- Provide ‘Advanced TeIA’ training
- Facilitate pilot reviews for leveraging TeIA
- Determine staffing strategy and talent attraction

Process 

- Develop DA integrated Internal Audit Methodology and standardized working paper templates for TeIA reviews
- Identify in-scope processes, relevant controls for TeIA and associated data sources
- Implement an ‘Enablement Tracker’ to keep track of reviews planned to use TeIA
- Define ‘Request, Transform & Load protocols’ (incl. automation if desired) and develop standardized data requests
- Compare Analytical Tools and Dashboards
- Develop ‘Script Base’
- Develop ‘Automated Programme Guides (APGs)’
- Provide an ‘On-line Helpdesk’ to address fieldwork queries
- Customize scripts for controls to be automated (Continuous Auditing & Continuous Monitoring)

Technology-enabled Internal Audit helps IAFs harness industry knowledge and functional expertise to get better insights and improve risk mitigation

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