Deloitte.

The Future of Controls

Modernizing IA Through Analytics and Automation | November 2023

THE FUTURE OF CONTROLS AND INTERNAL AUDIT

Analytics | AI | Automation

> The internal auditor of the future will be **fully data-enabled**. AI and machine learning are being used to detect risks and automate process outcomes testing, strengthening the third line. But computers cannot give a nuanced control design opinion. Internal audit will always require a **human touch**.

Internal Audit Function of Today

"Most activities across the Audit Life Cycle are performed manually or with little data analysis and automation"

TODAY

Audit planning and risk assessments performed **on desktop applications**	Assign audits to audit teams who perform the **work manually with little automation**	Manual drafting of reports, with **multiple rounds of reviews and reworks**

The 'Future' Internal Audit Function

"IA teams are challenged to find the right talent to deploy strategic and integrated use of data analytics and data automation techniques so that we can improve the way we do our audits"

TOMORROW

Audit planning and risk assessments	Audit fieldwork	Drafting of reports
Apply continuous monitoring of KRIs to improve audit planning and scoping, using automated tools for planning	Apply data analytics for full population testing, tools and scripts can be repeatable for continuous auditing	Integrate data into findings, dynamic reporting with powerful narratives shared through visuals to derive insights

Key Audit Concerns in 2023**

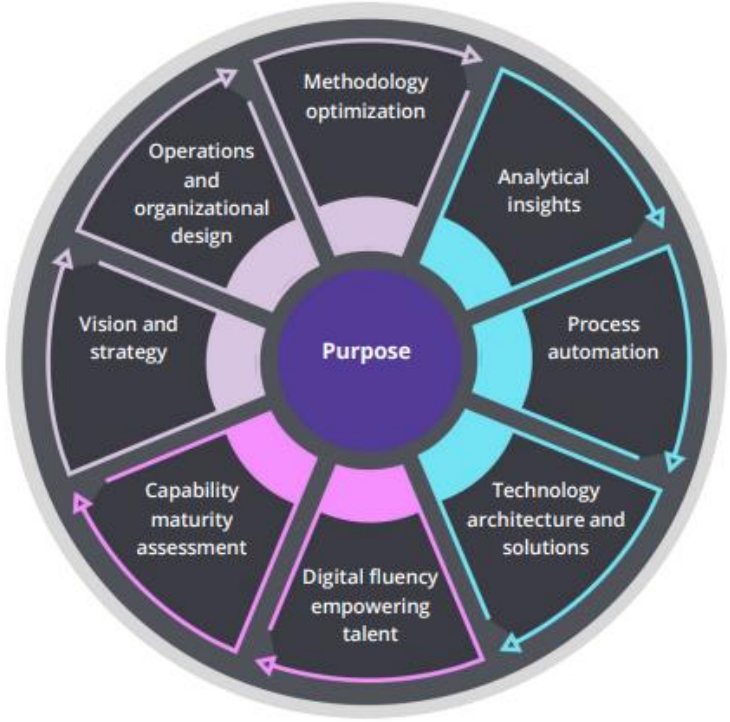
- Cybersecurity
- ESG Risks and Governance
- Diversity, Equity and Inclusion
- Artificial Intelligence

**According to Gartner's "Top Priorities for Audit Leaders" Whitepaper (2023)

THE FUTURE OF CONTROLS AND INTERNAL AUDIT

Analytics | AI | Automation

Options to collect, curate, and analyze data have never been greater, and now is the time for IA teams to lay a strong foundation for the future. Business leaders and IA stakeholders are **increasingly reliant on data to support critical decisions**.



Digital and Innovation for Internal Audit (Deloitte Development LLC 2023)

Key Drivers for IA Modernization

"ENLIGHTENED" BOARD & MANAGEMENT

AC Members and Management are beginning to see the value of digital innovation, even for internal audit.

REGULATORY AND COMPLIANCE DRIVERS

More stringent regulatory requirements drive IA teams to be more comprehensive in their audit coverage

GREATER DEMAND FOR AGILITY

Internal audit teams are expected to become more agile in the way they go about performing audits. This requires a shift in mindset and approach.

Enablers for IA Modernization

AVAILABILITY OF STRUCTURED DATA

With the implementation of ERP systems and the reliance of systems for most key processes within organizations, we are able to extract structured data for analysis and automation

"LOW CODE" AUTOMATION TOOLS

The journey towards analytics and automation may not necessarily be costly. There are accessible desktop/end user tools available to support process automation that we can leverage on.

INCREASED REGIONAL TALENT POOL

Data Analytics, Machine Learning/AI courses are becoming more popular across universities in the region. This means that we have a larger pool of resources that we can tap on to train, develop and grow such skillsets.

Making Use Of Data to Improve Internal Audit Processes

Sometimes it's clear that things are going wrong, but most of the time the issues **lie under the surface**

So we need to **deep-dive into complex volumes of data** to get granular insights

And then **develop a roadmap** to find a solution and capture the cost saving opportunities

The **power of analytics** gives confidence to organisations that their **operations are optimised**

Our vision

Increase our client's capacity to anticipate risk and maximise business opportunities through data driven insights.

Know the worth of data driven risk and business intelligence

Achieving Controls Resilience

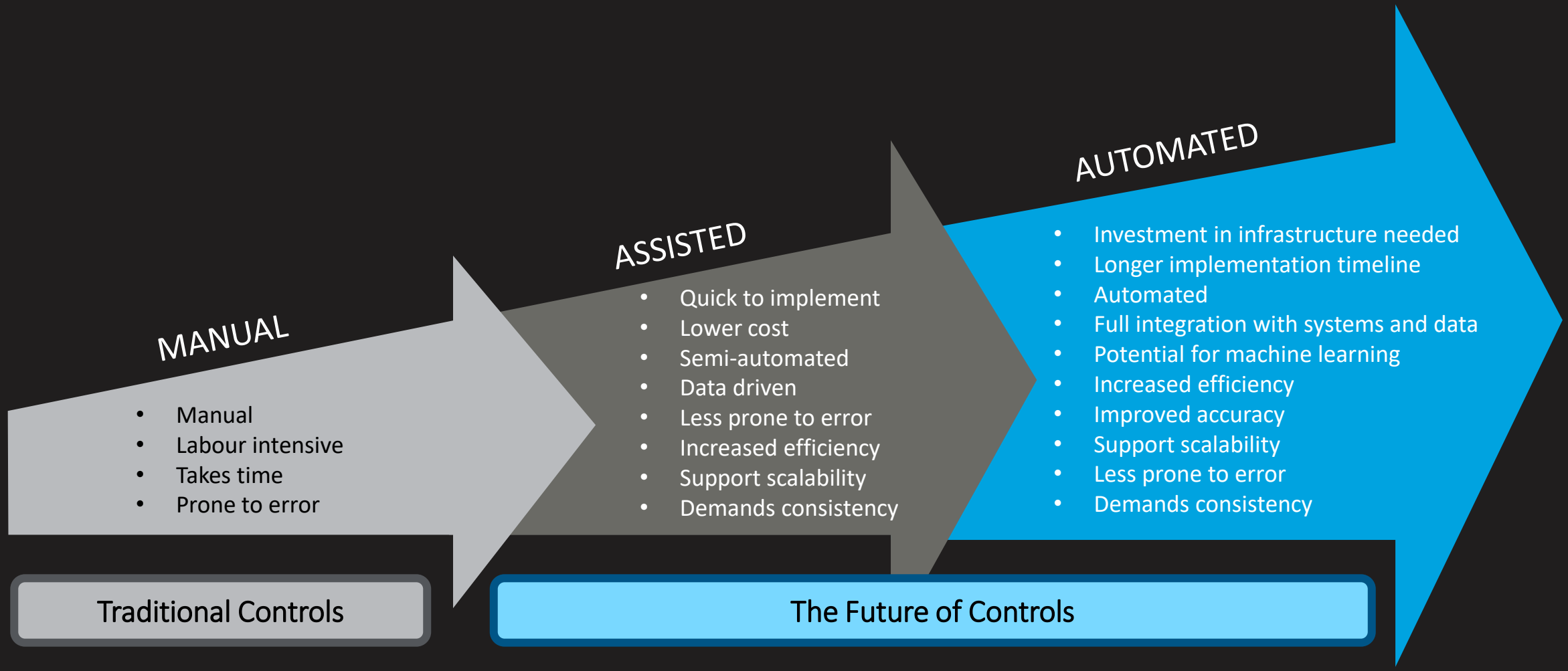
We aim to help our clients transform the way controls operate to effectively move up the controls resilience maturity spectrum by designing and developing solutions to realize greater value by the business and key stakeholders.

Controls Resilience Maturity Spectrum

	RIGID AND REACTIVE	DEVELOPING	RESILIENT
Risk Identification	• Issues identified only **after risk has occurred** • **Localized/one-off** analysis of data	• Issues identified **closer to the occurrence** of the event • Ability to **identify trends and insights** in data	• **Automated tools** provide foresight by anticipating issues • **Connected environment** feeds insights from the entire organization into the evaluation
Risk Analysis	• Analysis confined only to data gathered for **the manual evaluation**	• **Automated tools** allow for collaboration across functions	• Connected environment reveals **clear root causes** and enabling a more effective response
Risk Remediation	• **Manual mitigating** procedures impede progress	• Automated tools **maintain queries for future use**	• Connected systems and lines of defense quickly enable a **unified response** • **AI-enabled systems** get progressively "smarter," supporting continuous improvement
Risk Monitoring	• Lack of a robust risk assessment to **anticipate and detect issues**	• Monitoring performed only in **certain key risk areas**	• Well defined and thorough risk monitoring processes **backed by data and insights**

Moving Up The Controls Automation Maturity Scale

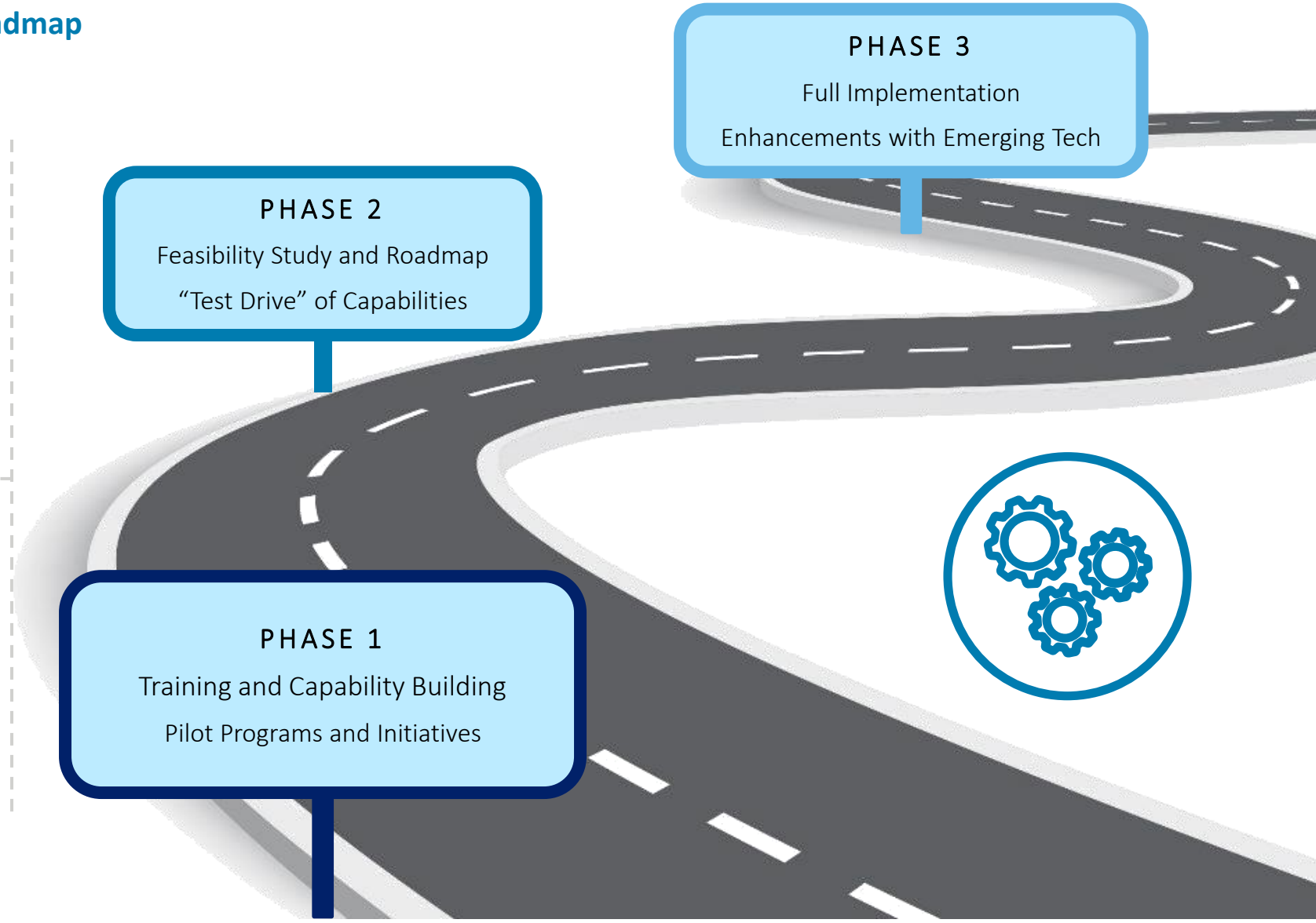
We recognize that moving away from traditional processes will take time and effort. We recommend a phased approach in adopting controls automation over time, across a maturity scale. This will allow organizations to adapt to changes, adopt new approaches and technologies, and accept the future of controls approach.



Our Approach

A Typical IA Transformation Journey and Roadmap

- **Strategic vision and roadmap**
- **Skillsets and mindset**
- **Digital assets**
- **Availability of data**



Our Strategy

3 Implementation Approaches for consideration

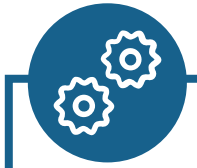
One-time Analytics

Value Proposition:

"Quick-win" approach to demonstrate the value of audit analytics. "Starter Kit" for building future analytics capabilities.

Key Differentiators:

- Integrated with IA or IT Audit engagement
- Separate report/section on Results of Analytics – including insights from data analysis and profiling
- One time effort, low incremental budget based on "top-up" man-day effort to audit engagement



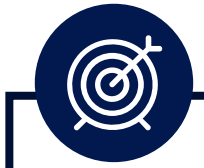
Analytics as a Service

Value Proposition:

Continuous auditing and insights with low maintenance costs. Reduce recurring auditing efforts for run-of-the-mill controls that can be automated.

Key Differentiators:

- For clients who want regular insights but do not have their own data analysts
- Regular report and dashboards for periodic updates to management
- Managed by Deloitte team, no infrastructure costs incurred for clients



Deploy CA Solution

Value Proposition:

Embed Analytics as part of BAU controls monitoring. Streamlining approach across 3 lines to achieve integrated assurance with the use of technology and data

Key Differentiators:

- For more mature clients with basic analytics set up and capacity to build up data infrastructure
- Full fletch implementation project – data integration, scripts, dashboard
- To consider other tools and products as part of the ecosystem (e.g. GRC or RPA)

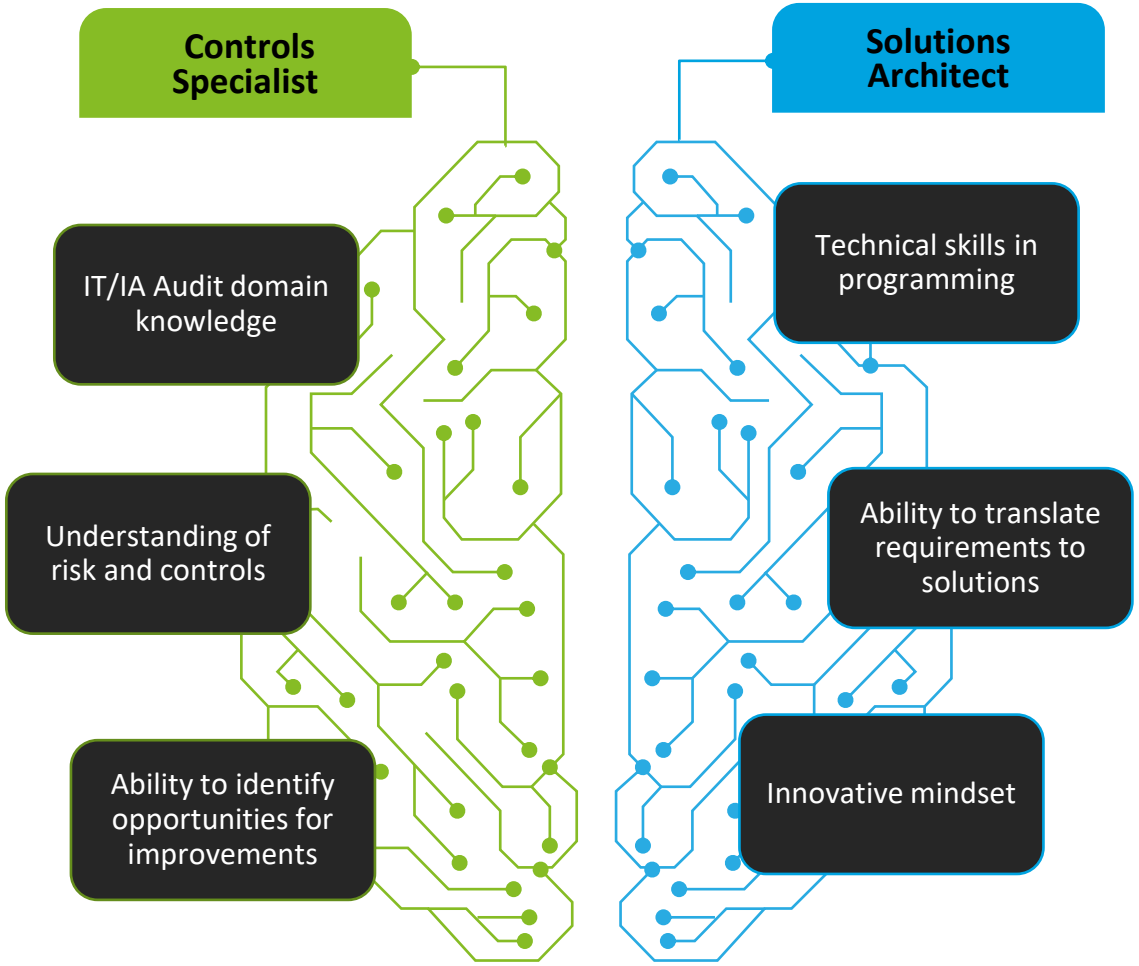
Our Strategy

Getting it right with People, Process, Technology

People

Internal capability building through trainings and certifications to scale up the resource pool of team members who are able to deliver such audits/projects going forward.

Work with HR team to **identify candidates** with the following 2-prong core competencies.



Our Strategy

Getting it right with People, Process, Technology

Process

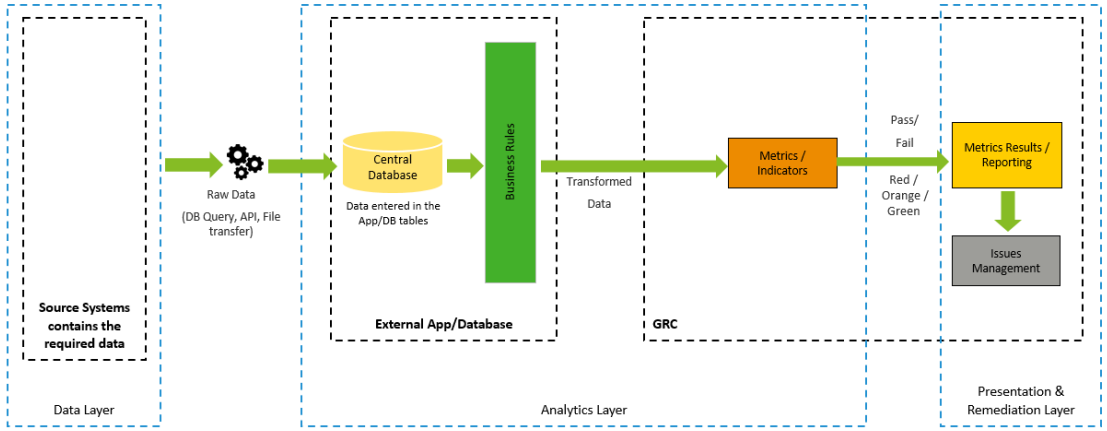
“Created by Internal Auditors for Internal Auditors”

Deloitte SEA Controls Playbook and Library

Designed and curated by Deloitte for SEA clients – consolidating our work across the regions in the area of IA and IT audit analytics.

The Deloitte SEA Controls Playbook is a consolidation of ‘best in class’ scripts and dashboards across the region. This playbook serves as a standardized baseline for us to delivery analytics and automation projects across SEA with the same level of consistency and quality.

Technology



Case Study #1 – IT Controls Continuous Monitoring

We helped a state-owned investment company deploy continuous controls monitoring for their IT controls

Background

Internal controls framework had been developed for organising and categorising expected controls to assist organisation in developing their control procedures to minimize risk.

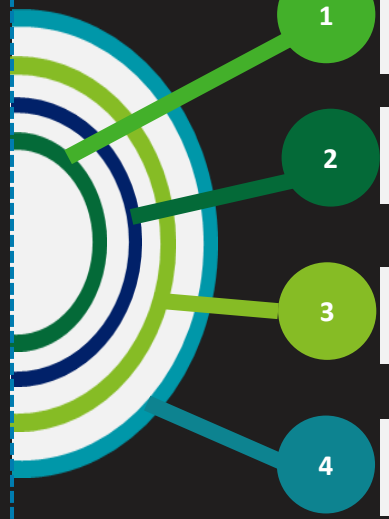
Continuous control monitoring has become an intended goal for our client to **leverage on analytics and automation** in their security compliance monitoring over their internal/IT controls. Deloitte had been engaged by our client to understand their environment, review their internal/IT controls, document the control procedures and identify opportunities to apply analytics and automation for continuous monitoring of controls to achieve greater **efficiency and effectiveness** .

Outcomes of the Assessments

We seek to help our clients derive value through applying analytics and automation for continuous control monitoring, fulfilling the monitoring of control compliance requirements in a more cost effective, time-saving and lesser resource intensive manner.

- Review the developed internal/IT controls and conduct interview sessions with control owners to understand the control procedures.
- Identify key data-sets available in performing the controls and location of the data source.
- Work with the IT team for extraction of data and develop the analytics logic to transform data for loading into the analytics platform for visualisation.

Drivers for the Engagement



1. Continuous monitoring of controls for compliance, reducing the need for manual procedures.
2. To identify control lapses in a more efficient way, allowing quicker reactions for remediation.
3. To offer visualisation through actionable dashboard and interactive control views for reporting.
4. To continuously enhance and adjust the use cases through feedback.

Success Factor

Right Experience
Our team have a strong understanding of internal and IT controls, performing internal/IT audit and control advisory across various industries.

Right Skills
Deloitte has a pool of skilled resources with strong technical experience in reviewing internal and IT controls. Coupled with our specialist to develop scripts for transforming the data for purpose of control monitoring

Right Approach
Through a ‘quick-win’ approach, we implement continuous control monitoring in different phases, allowing management to appreciate the concept and value. This also helps to encourage the organisations to changes.

Robust Delivery
We engage with internal SMEs for ongoing knowledge transfers along with extensive use internal knowledge resources throughout engagement delivery and tap on our global resources.

Case Study #2 – Loan Analytics

We worked with a global FSI company to perform data analytics on their loans process

Financial services company processes thousands of loans and is limited in their ability to detect undesired behaviors in the processing of loans; lending itself to fraudulent activities

Solution Functionality/Approach

Evaluated **100% of loans, for period of 6 months**, answering the following questions:

- Was each loan approved in accordance with the organization's designated authorization limits?
- Were any approval controls circumvented to process new loans?

Loan origination data and transaction history data of active accounts was used for the analysis

Developed AI/ML model, to identify clusters of loans that demonstrate patterns of fraudulent activity and/or assign a probability of being fraudulent.

Success Story/Value Extracted

AI-enabled correlation insights and peer analysis identified the following:

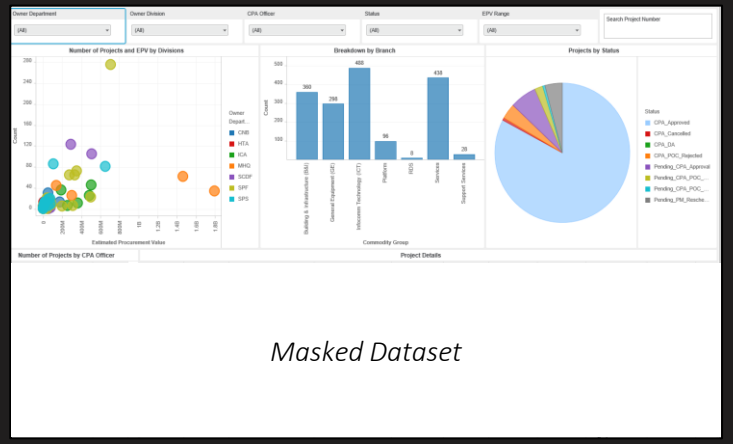
- Identified "**loan approvers**" **approving** large amount of **loans at quarter end** to potentially meet their sales numbers; a large amount of these loans included improver approvals
- Identified a large **number of low and high-risk loans** included improper approvals
- **Identified $26B of loans with exceptions**, across 6 months of data (i.e., $26B in loans were not approved by the right individual or individual with the right authority level).

Case Study #3 – Finance and Internal Audit Analytics

We successfully implemented a Continuous Monitoring solution with for finance and internal audit

We assisted a client in the Government & Public Sector industry to scale up digital controls capabilities across various processes, including Payroll. The dashboards created empowered business users and internal auditors to continuously leverage on Finance and HR data to identify trends, anomalies and opportunities for process improvements.

KPI Monitoring Dashboards



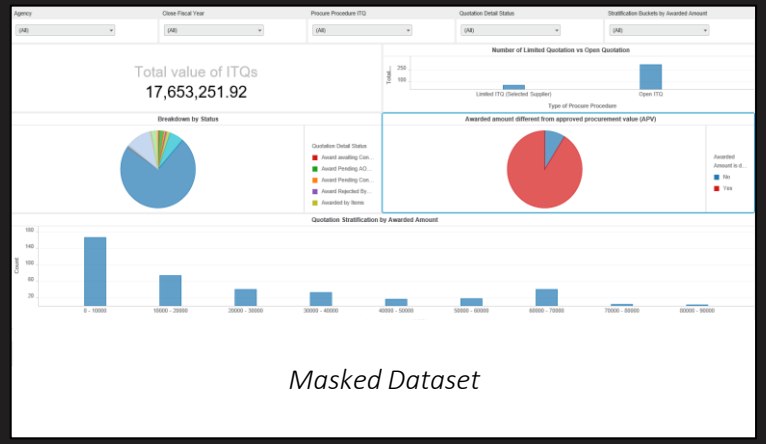
Masked Dataset

The KPI Monitoring Dashboards are designed for Procurement teams to track and monitor the progress of procurement activities across all departments.

This allows users to:

- Drill down to potential 'problem areas' for analysis; and
- Better manage the workload of the procurement officers.

Management Reporting Dashboards

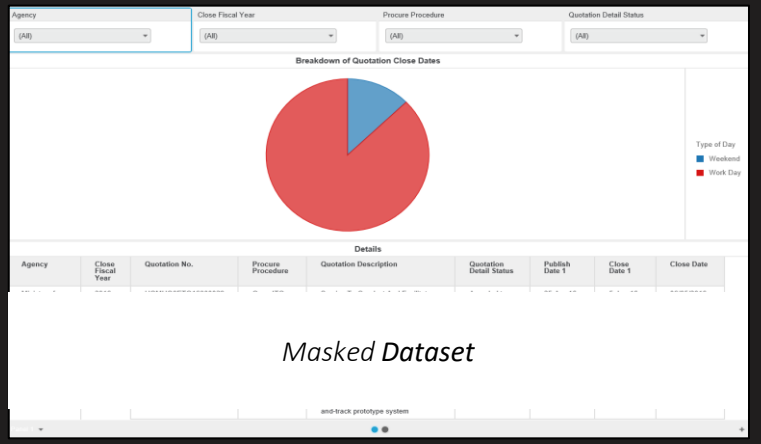


Masked Dataset

Management Reporting Dashboards are designed to provide a snapshot of key procurement indicators.

These series of dashboards will show an overall profiling of ITQs, ITTs and Direct Contracts; and drill down by various parameters.

Anomalies Detection Dashboards



*Masked **Dataset***

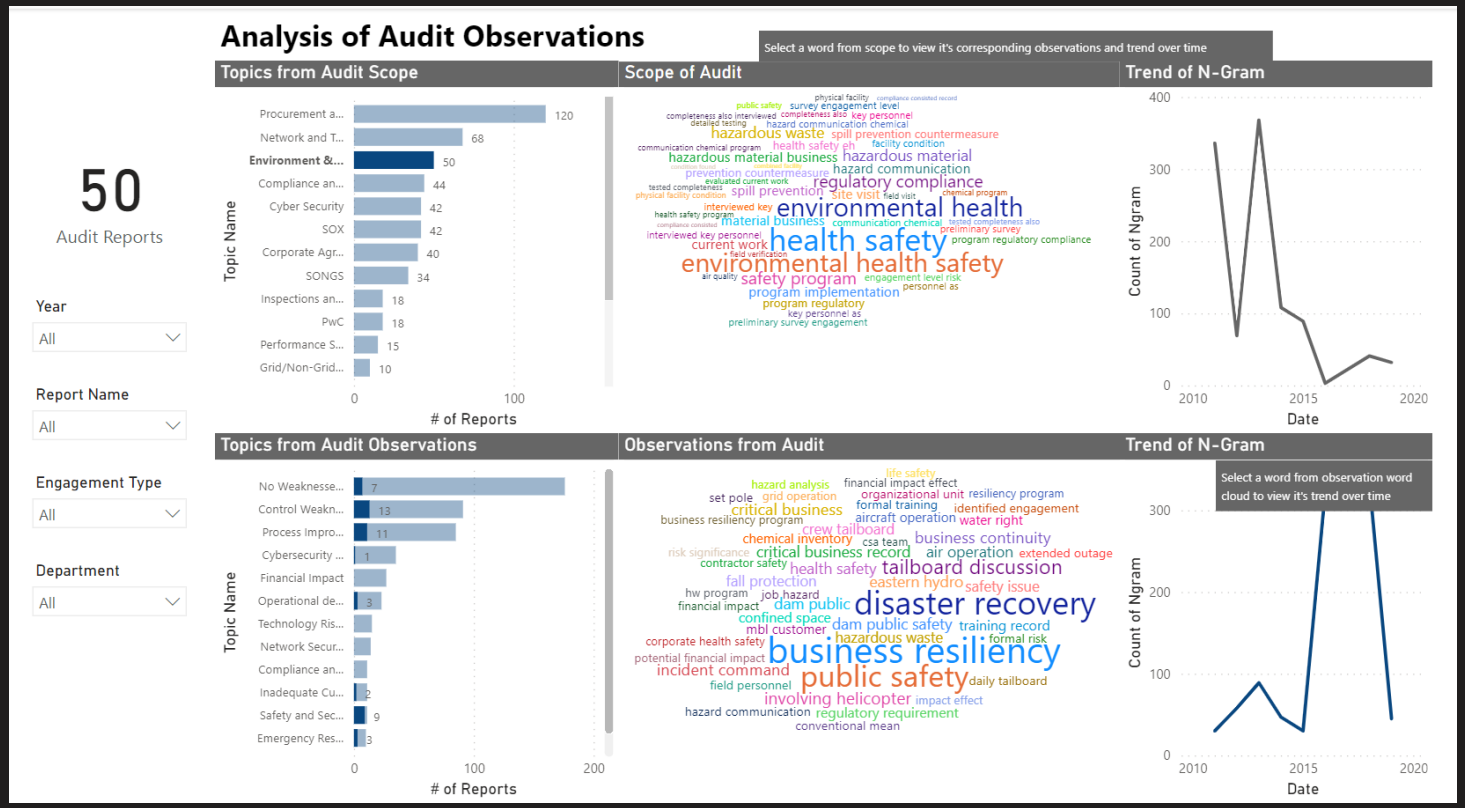
Anomalies Detection Dashboards are designed to highlight red-flag in procurement risk areas (e.g. awards without approvals, tenders closing on a non-work day etc.)

Dashboards allow users (Internal Audit, Procurement Officers, Individual Departments) to identify and rectify potential exceptions on a real time basis.

Case Study #4 – AI Insights from Audit Reports

Leveraging our global capabilities, we have built an AI driven tool to generate insights from Audit Reports

Mining pooled historical audit reports for insights and trends present a huge opportunity to upgrade internal service and awareness



Example Outcomes and Insights

(1) Power Company

- Extracted text and identified relevant sections from all reports.
- Identified major themes and patterns.
- The insights provided useful information as to where the risks resided and if the audits provided sufficient coverage.
- Analyzing trends of the scope of audits and their conclusions over time helped the client assess if the key risk areas were being covered in the audits and if the weaknesses were being dealt with.

(2) Global Mining Company

- Leveraged existing python library to review 600+ reports
- Worked with clients data science to delivered automated AWS pipeline
- Identified reputational risk as common re-occurring theme in issues and linked back to passive recommendations in opportunities for improvement

Case Study #5 – Applying Risk Sensing for Audit Planning and Risk Assessments

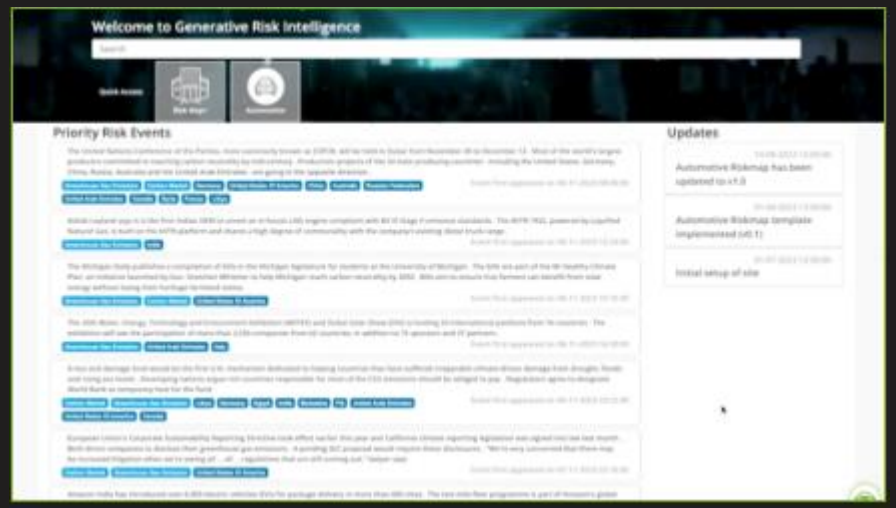
Using LLM grounded in risk domain knowledge for events analysis and risk mitigation

Risk Events

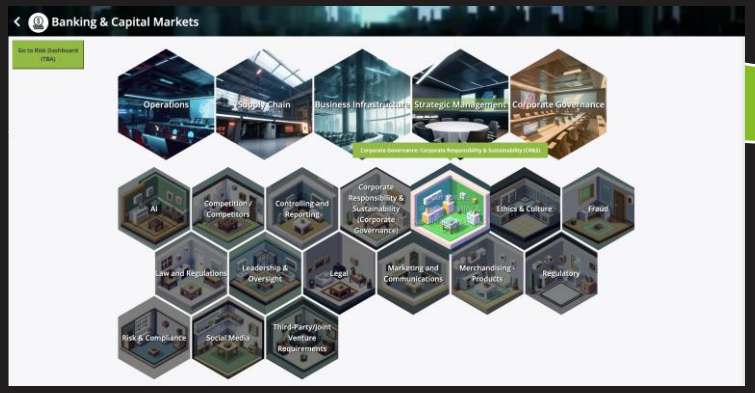
- AI curated events feed
- Key trends discovery

Risk Analyst

Request analysis prompted by a risk event



Risk Maps



Large Language Model

Break down events

Retrieve relevant risk modules

Integrate risk knowledge

Preliminary analysis

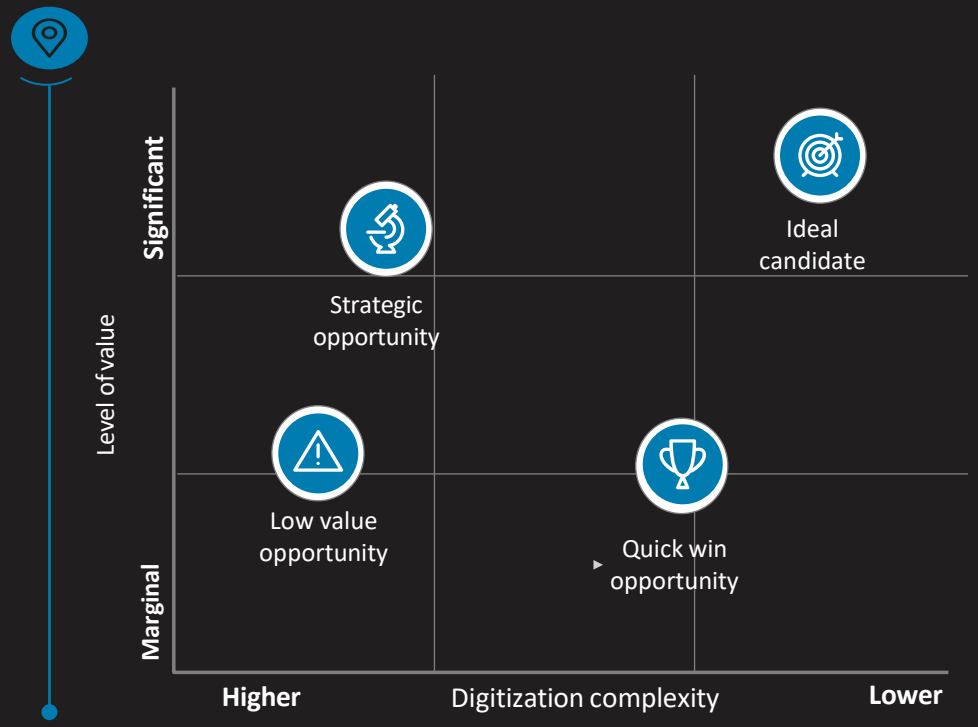
Interactive, situational deep analysis and advisory

Formulate risk mitigations

Present into requested format

Next Steps: Finding ‘Quick-Wins’

Where can we start? We believe that the journey towards Controls Resilience starts with identifying the right opportunities. It is important for us to identify opportunities, prioritize highly transactional, heavy volume, manually-intensive, rules-based processes with high associated value to the business and low complexity to implement.



Pick a use case.
Start small and be specific.

Determine the data requirements.
Consider existing resources and structured data.

Focus areas with higher value relative to complexity– higher ROI

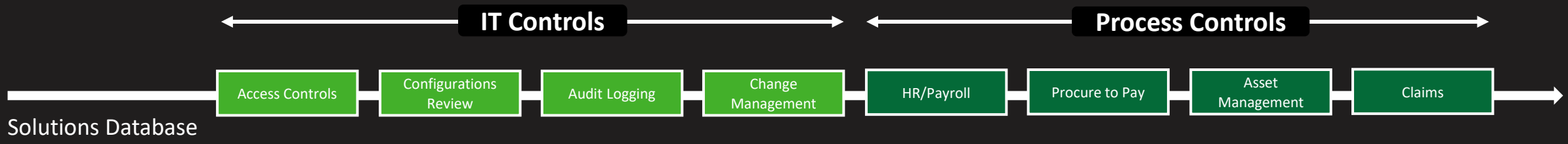
Consider areas that pose heightened risk, across risk domains

Example use case:
IT security administration

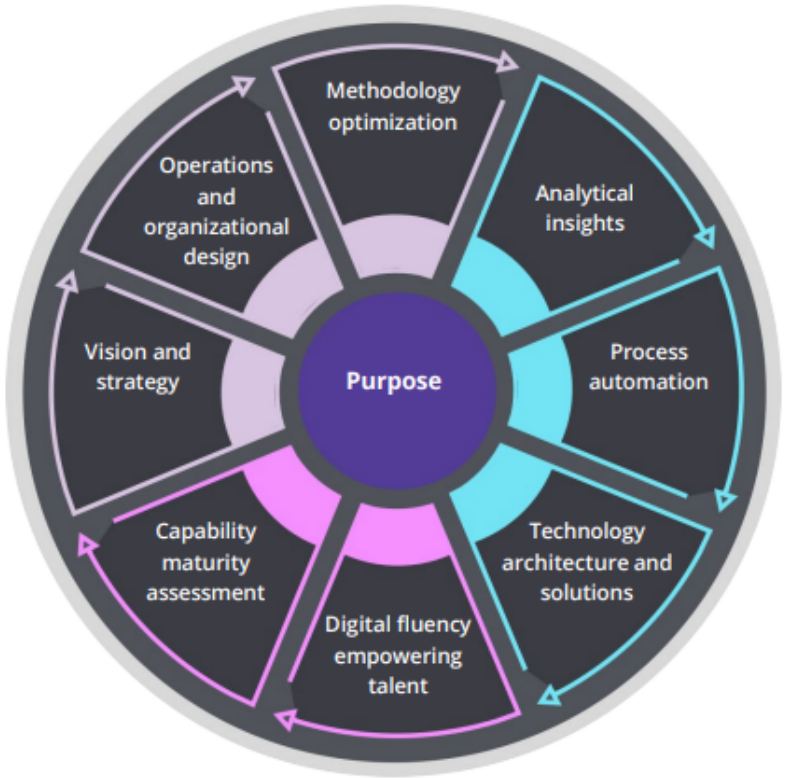
Error prone manual processes
Action: On a daily basis, automatically compare HR transfer and terminations feeds with network and application user listings to identify any changes in employees’ status with active access requiring action.

Example use case: Treasury

Area of organizational risk
Action: Use data analytics and visualization to assess the population of disbursements to identify those with the greatest risk profile requiring further investigation.



Next Steps: Looking Forward into the Future



Purpose

Digital is an enabler of strategy, not a goal. Understanding your north star or purpose can result in a strategic use of digital to deliver better insights, quality, efficiency, collaboration and impact.

Assess

Leveraging Deloitte's Insight Driven Organization (IDO) framework, we can assess IA teams current and desired future maturity levels and identify where opportunities for action exist.

Design

By entrenching data, analysis and reasoning into internal audit's decision-making processes, we turn digital into a core capability while promoting a culture of insight-driven auditing.

Execute

Strategy can be brought to life through the deployment of digital technologies across the internal audit lifecycle including risk assessment, planning, fieldwork, reporting, and monitoring.

How to accelerate your digital program

- **Deloitte's digital strategy lab** can help to identify how to take your IA function to the next level of digital transformation.
- **A digital proof-of-concept** can provide a low-cost, low-risk opportunity to test digital concepts.
- **A digital "POD"** of dedicated technology professionals can provide scale to your internal audit technology team without the long-term commitment of full-time hires.

1 Firmwide risk assessment

- **Development** of **audit universe, key risk indicators (KRIs), and risk scoring methodology.**
- **Dynamic Risk Assessment** application allowing for the assessment of risk **across auditable entities.**
- **AI Risk Assessment Insights** with assessment of prior year audit reports and interview notes.

2 Annual audit planning

- **AI for audit reports** for analysis of past year issues.
- **Web-based portal** for use in **capturing and analyzing audit interview notes** as well as setting **audit plans.**
- **Audit plan and coverage visualizations.**
- **Natural Language Processing** of large volumes of text heavy documents.
- **Audit insights** using **Machine Learning** for **anomaly detection, predictive analytics, clustering & risk scoring.**

3 Audit fieldwork

- **Automated data extraction** for planned audits.
- **Audit procedure automation** providing analysis and work-paper population for common tests.
- **Self-service audit analytics with risk scoring and machine learning models.**
- **SOX controls testing automation.**
- **AI Driven Internal Search Engines or Chatbots.**

4 Reporting and issue tracking

- **AI for audit reports** showing themes and trends across audits.
- **Automated notifications of open audit issues** to key stakeholders.
- **Natural Language Generation or Generative AI** for creation of Audit Reports and other IA documentation.

5 Continuous monitoring

- **Ongoing risk sensing & continuous monitoring** mid-year adjustments to audit plans and scope.
- **TrustIQ™ monitoring** of organization's state of Trust compared against industry benchmarks and external signals.

Deloitte SEA Controls Playbook

Deloitte.

IT Controls and Business Process Analytics

Solutions Playbook

August 2023

MAKING AN IMPACT THAT MATTERS since 1845

Service Offerings

Risk and Audit Support Analytics

- Procure to Pay Analytics
- Payroll Analytics
- Employee Expense Analytics
- Order to Cash Analytics
- Inventory Analytics

IT Controls Analytics

- Access Controls Analytics
- Privileged Access Analytics
- Change Management Analytics
- Incident Management Analytics
- Physical Access Analytics
- Host Configuration Review Analytics
- Information Protection Measure
- Information Security Management Analytics
- Network Security Analytics
- Operational Management

IT Controls, Risk and Audit Analytics

For information, please contact:

Tang Hong Wee
htang@deloitte.com

Muhammed Ameer
mmohammednoor@deloitte.com

Tay Su Qing
sutay@deloitte.com

Deloitte.