INTERNATIONAL E-LEARNING SESSION

The Institute of Internal Auditors Indonesia

AUGMENTED INTELLIGENCE IN INTERNAL AUDITING – AUTOMATING TESTING

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Speaker :

Naohiro Mouri, CIA
Chairman IIA Global 2018-2019

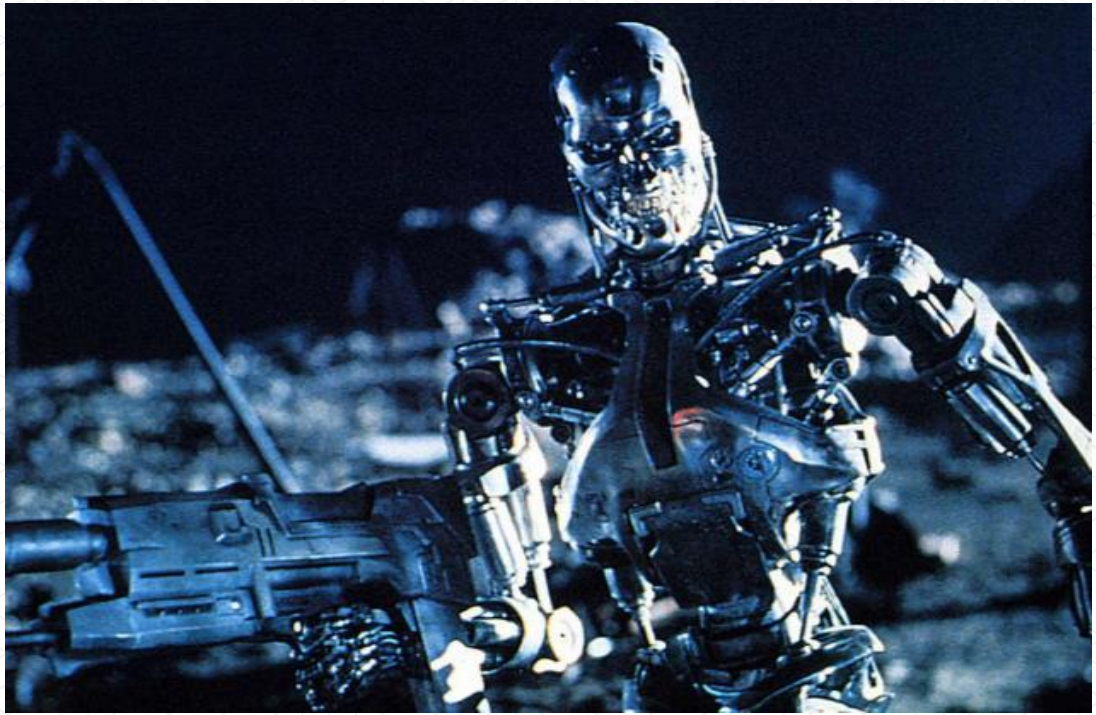
Moderator :

Fandhy Haristha Siregar, CIA, CCSA, CRMA
Secretary of IIA Indonesia
Member of Exam Development Committee
of IIA Global

GAM

WHERE LEADERS EVOLVE.

AI?



Augmented Intelligence

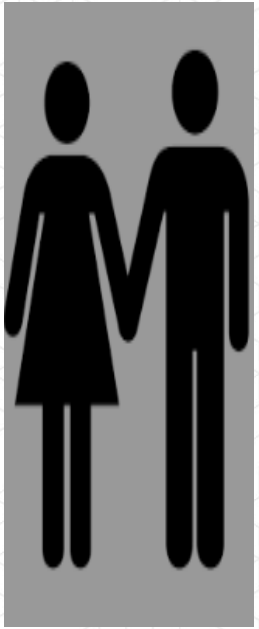
Kasparov on augmented intelligence

Garry Kasparov – the chess grandmaster who was defeated by IBM's Deep Blue computer with three amateur American chess players in 1997 – calls this human-machine cooperation "augmented intelligence". He compares this "augmentation" to the mythic image of a centaur: combine a quadruped's horsepower with the intuition of a human mind.

Definition of augmented intelligence

The AMA's House of Delegates uses the term augmented intelligence (AI) as a conceptualization of artificial intelligence that focuses on AI's assistive role, emphasizing that its design enhances human intelligence rather than replaces it.

Internal Audit; Science and Art



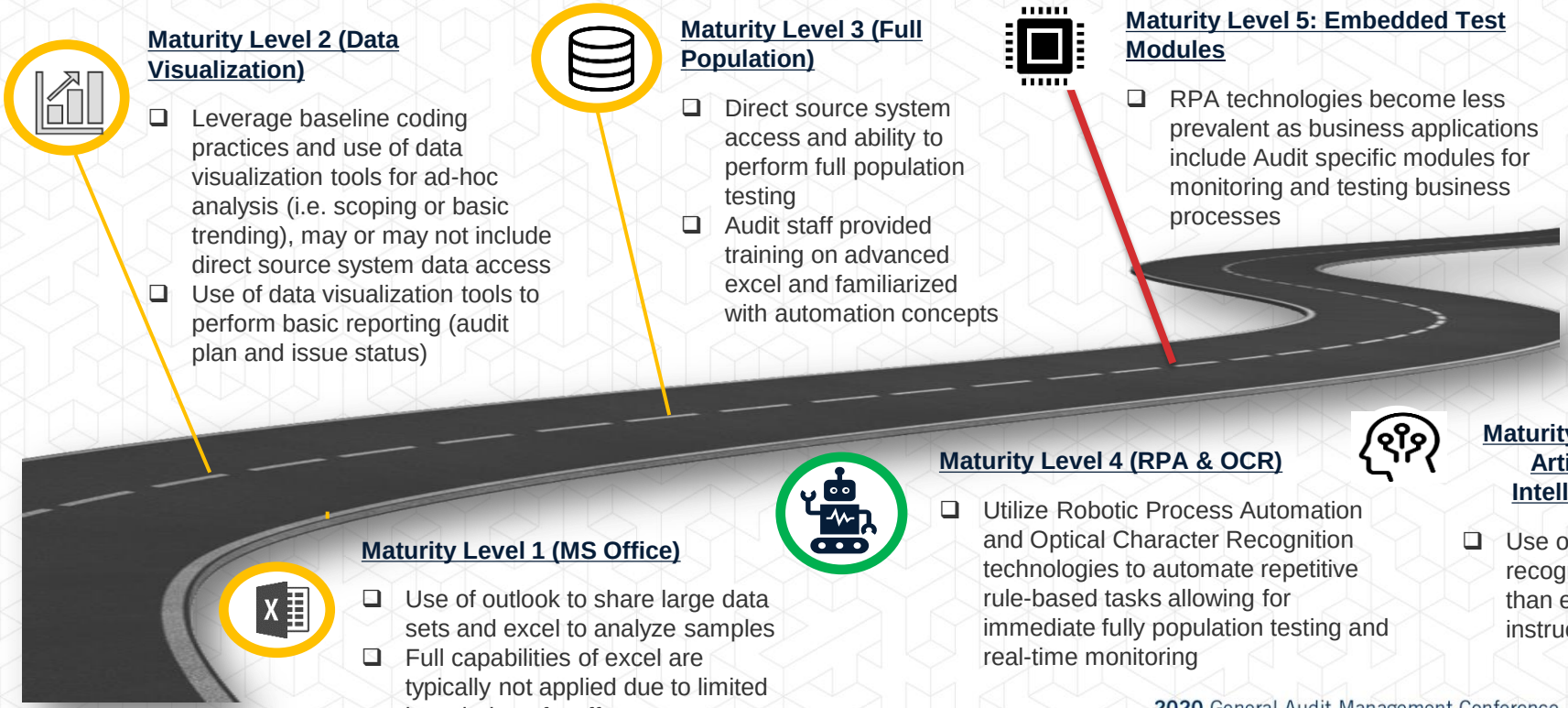
Auditing in Current State

Problem Statement

- Time to collect data and collate them for planning and testing
- Less time to analyze data and communicate them to stakeholders
- Not able to find errors and irregularities by not testing entire population
- Time to deliver audit products
- Greater audit coverage with less cost
- Keeping up with rapid changes in stakeholders

Data acquisition, risk assessment, continuous auditing, and audit testing/reporting

AI Maturity Curve



Maturity Level 2 (Data Visualization)

- ❑ Leverage baseline coding practices and use of data visualization tools for ad-hoc analysis (i.e. scoping or basic trending), may or may not include direct source system data access
- ❑ Use of data visualization tools to perform basic reporting (audit plan and issue status)

Maturity Level 3 (Full Population)

- ❑ Direct source system access and ability to perform full population testing
- ❑ Audit staff provided training on advanced excel and familiarized with automation concepts

Maturity Level 5: Embedded Test Modules

- ❑ RPA technologies become less prevalent as business applications include Audit specific modules for monitoring and testing business processes

Maturity Level 4 (RPA & OCR)

- ❑ Utilize Robotic Process Automation and Optical Character Recognition technologies to automate repetitive rule-based tasks allowing for immediate fully population testing and real-time monitoring

Maturity Level 6: Artificial Intelligence

- ❑ Use of pattern recognition rather than explicit instruction

Maturity Level 1 (MS Office)

- ❑ Use of outlook to share large data sets and excel to analyze samples
- ❑ Full capabilities of excel are typically not applied due to limited knowledge of staff

Benefits of Augmented Intelligence

Cost: Augmented tools can execute tasks 24/7 at speeds greater than human ability, and without challenges of overtime or talent management

Productivity: Manual intensive tasks are eliminated allowing for staff to refocus efforts towards value add activities, including process enhancements, and exception management

Quality: When properly configured, augmented intelligent tools execute as programed, they do not make mistakes, commit violations, or fraud, and overall eliminate risk of human error. Results are easy to trace and audit

Benefits for Internal Audit

- ✓ **Full Population Testing**: Internal Audit coverage moves from imperfect sample based coverage to 100% coverage
- ✓ **Continues Auditing**: augmented intelligent tools can be run at any time, allowing for real-time monitoring and assessment of risk and control environment
- ✓ **Real-time Advice and Insight**: Exception identification, and management resolution can be discussed and solutioned real-time

Consideration for Implementing AI

Vision & Strategy

- Evaluate current state and define opportunities
- Sustainable and practical vision

Stakeholder Support

- Buy-in from stakeholders critical
- Partner with target organization and IT

People

- Auditors adopt and embrace the change
- Continue to train auditors and hire people with right skill-set

Consideration for Implementing AI

Process

- Detail business requirements critical for coding and UAT
- Change management is key for sustainability

Technology

- Selecting appropriate tool
- Auditors trust on augmented tools

Governance

- Standards, guidelines, steering committee
- Clear roles and responsibilities and escalation protocol

AI tool Maturity

	Level 1: Basic	Level 2: Explorer	Level 3: Analytics Specialist
Skills	• Import data into Excel • Data cleansing and manipulation (e.g. Text to Columns) • Light data analysis (e.g. Pivot tables)	• Advanced Excel concepts (e.g. Power Pivots) • Integrating multiple data sources • Data Visualizations via Power BI • Awareness of latest technology	• Powerful data manipulation and scripting tools (e.g. SQL Server, ACL) • Database connection • Automation • Process Excellence • Emerging analytics tools
Uses	• Full population testing for single data source or multiple data sources with simple joins • Summaries for inclusion in audit reports/planning memos • Data quality reviews	• Full population testing involving complex joins • Data visualizations that drive insights and enhance deliverables • Risk awareness of latest technology employed by firm	• Work with large datasets • Access to extract production client data • Perform complex manipulation and data enrichment • Drive best practices and analytics enablement
Who	• Every auditor	• Every auditor	• Subset of auditors that take Specialist track

Automation Life Cycle

Phase	On-Going	5 to 7 Days	5 Days	3 to 6 Weeks	1 Week	On-Going
	Oppertunity ID	Requirements	Technical Design	Coding	UAT	Production
Scope	Opportunity Assessment • Audit Staff Identify Risk & Control Opportunity Set • Automation Staff Assess Availability of Data Sources, and Viability of Automation • Prioritize Opportunities Pre-Build Evaluation • Leadership sign-off on opportunity set • Communicate and agree on approach with key stakeholders • Automation timeline communicated	• Walkthrough Process with Business Owner • Obtain Supporting Sample Data Set of Control Procedures • Create BRD (Business Requirements Document) Inclusive of as is and future state process maps • Sign-off of BRD's by Audit Staff SME • Request Application and Security Access for Applicable Data Sources	• Create (TDD) Technical Design Document • Sign-off of Technical Design by automation team and audit staff SME • Application Access Granted and Validated by Developers • Environments Established and Validated for Development, QA/ UAT, and Production by IT and Developers • Draft UAT Plan and Request Test Data	Week One • Develop Code for Automation • Perform Preliminary Unit Test (one time test run) Week Two (on-going) • Developer Performs Code Demos with Technology Lead, MDG, Business Owners Final Week • Transition to Production Credentials and Application Access (from Development Environment) • Finalize UAT Plan and Test Data • Automation team, MDG, and IT Perform Code Review	• Perform UAT with Audit Staff and Document Technical Exceptions (as applicable) • Technical Expectations in UAT are Addressed • Prepare Production Package (i.e. Standalone Objects, Plan for Production Environment and Larger Data Sets, Contingency Plan for Production Failure, and Prepare User Manual) • Automation Lead, MDG, and IT - Final Code Review • Audit Staff SME Sign-off	First Month • Hyper Care by Development Team • Communication Package Delivered • Training of IT, MD, Audit Staff Completed • Audit Staff Preform Parallel Run (min one instance) Post Month One • Steady State Change Management Owned by MDG Group

Governance Model

Bi-Weekly Development Steering Committee

Monthly Prioritization

Quarterly Department Communication

Voice Technology

Data acquisition and dictation

The Future