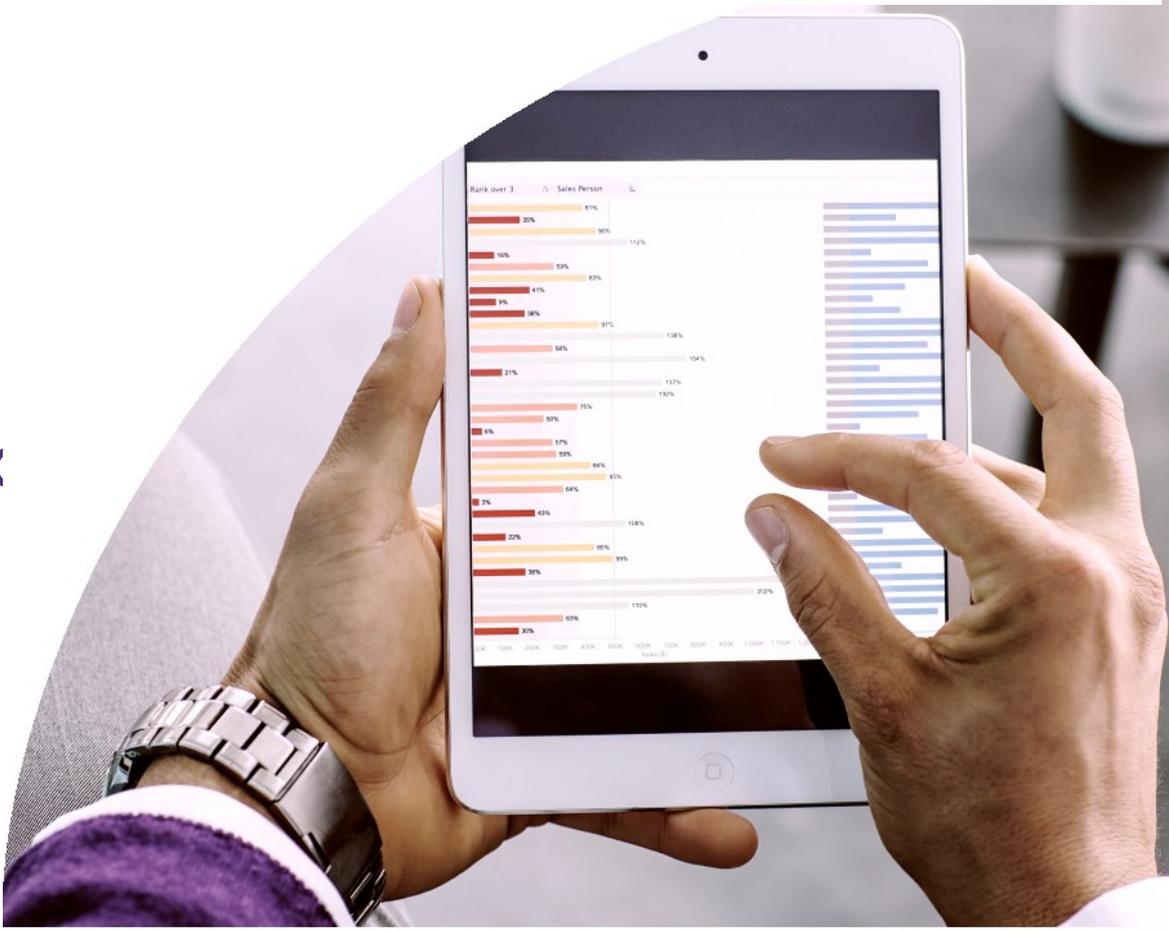
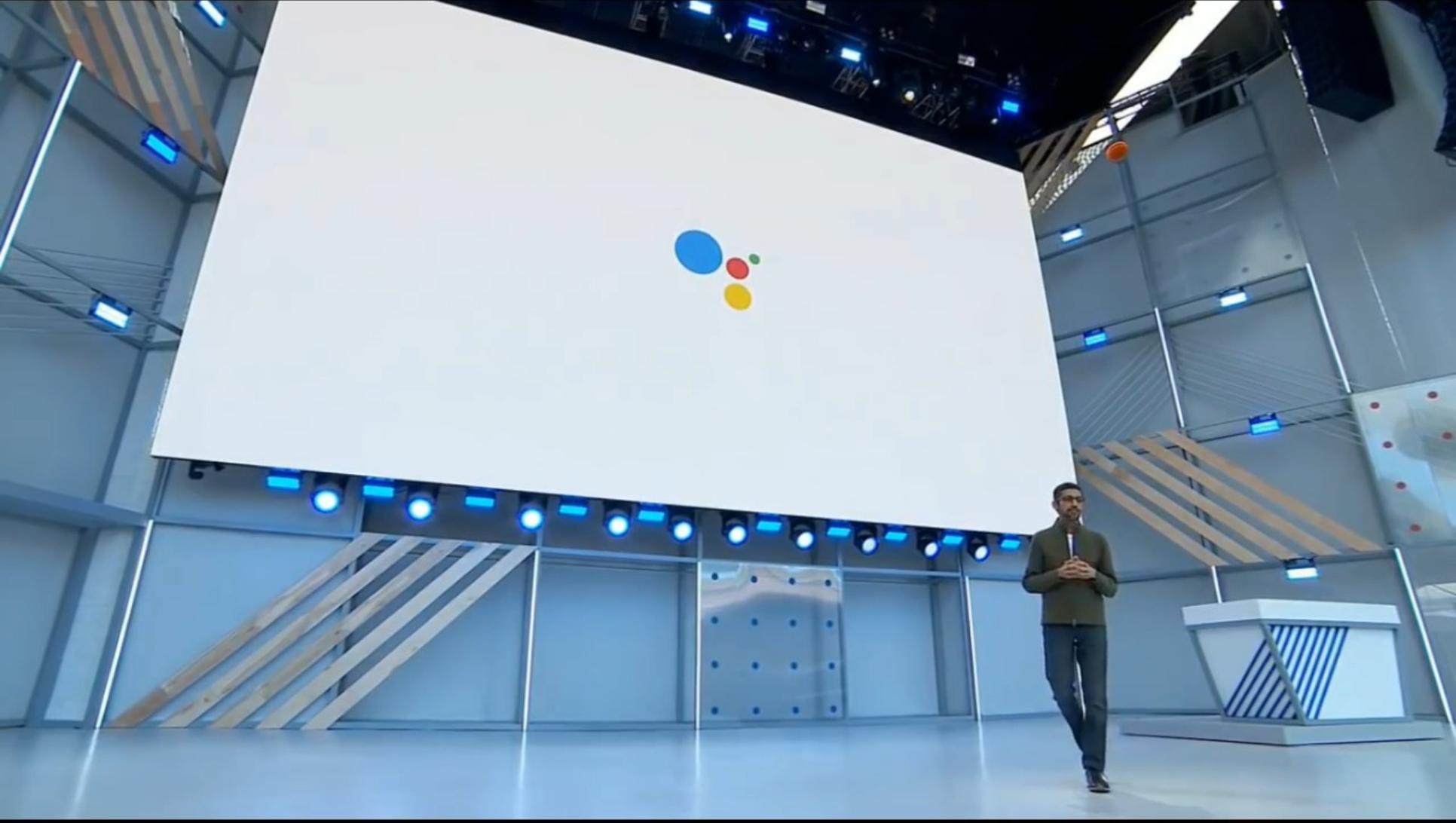


AI in IA

The Impact of Artificial Intelligence to the future of Internal Audit

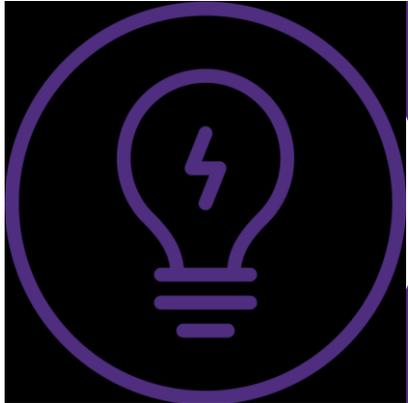




Artificial Intelligence

deep learning
machine learning cognitive augmentation
Intelligence amplification **image recognition**
cognitive computing natural language processing
machine augmented intelligence
augmented intelligence

Artificial Intelligence



The idea of AI dates back to 1950 when Alan Turing first proposed that a machine could communicate well enough to convince a human evaluator that it, too, was human

McKinsey Global Institute's (MGI) discussion paper "Artificial Intelligence: The Next Digital Frontier,"

Artificial Intelligence



manual

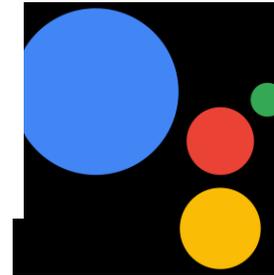
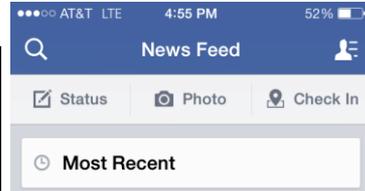
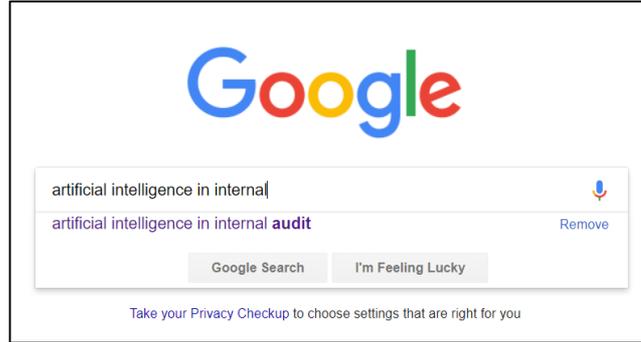
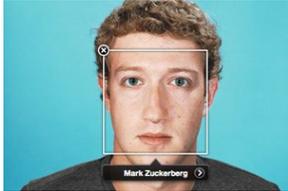


advent of computers, PCs,
spreadsheets, relational
databases, sophisticated
connectivity, and similar
technological advancements



artificial
intelligence

Artificial Intelligence



Artificial Intelligence



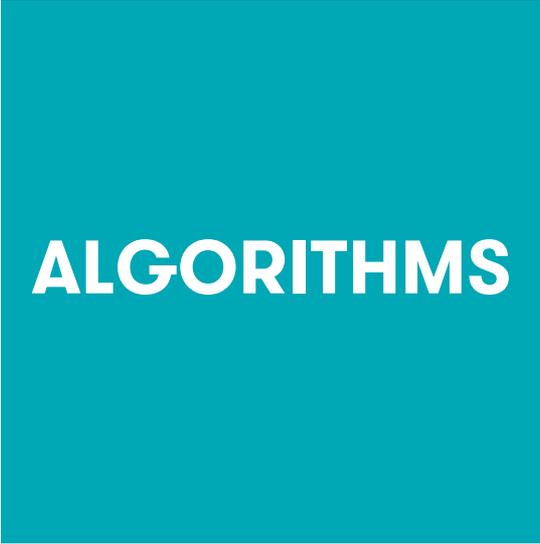
Loss modeling
Credit analysis
Valuations
Transaction processing

Artificial Intelligence

AI is dependent on big data and algorithms



BIG DATA



ALGORITHMS

Artificial Intelligence

AI is dependent on big data and algorithms

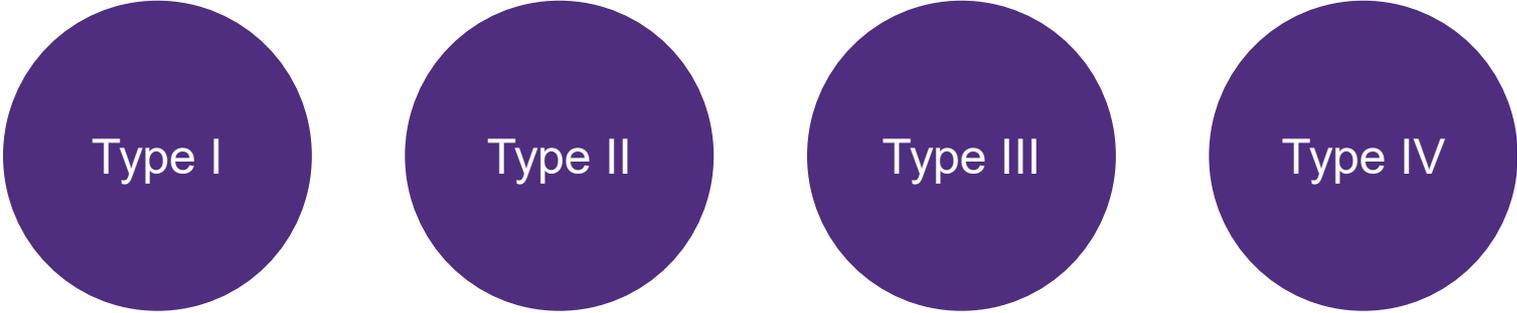
BIG DATA

Big data means more than just large amounts of data — big data refers to data (information) that reaches such high volume, variety, velocity, and variability that organizations invest in system architectures, tools, and practices specifically designed to handle the data.

ALGORITHMS

Algorithm is a set of rules for the machine to follow. It is what enables a machine to quickly process vast amounts of data that a human cannot reasonably process, or even comprehend.

Artificial Intelligence



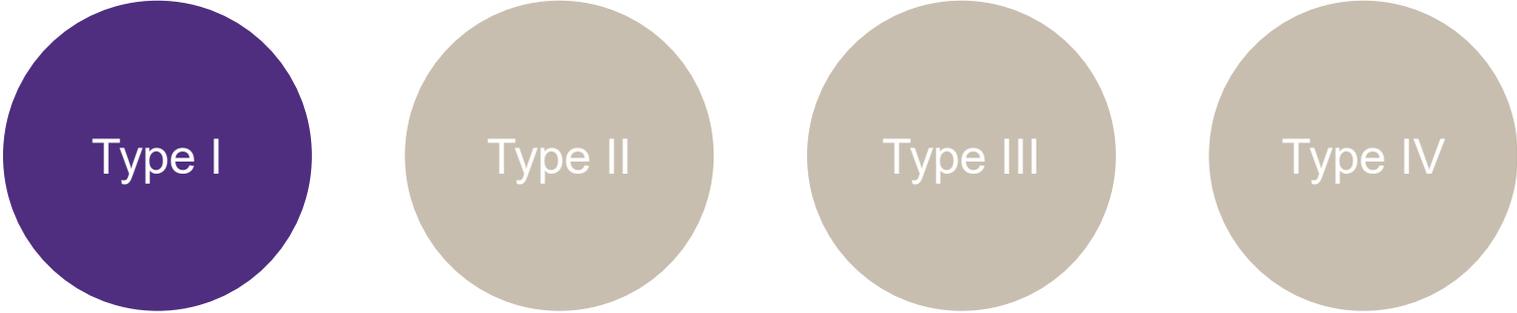
Type I

Type II

Type III

Type IV

Artificial Intelligence



Type I

Type II

Type III

Type IV

Reactive machines:

This is AI at its simplest. Reactive machines respond to the same situation in exactly the same way, every time. An example of this is a machine that can beat world-class chess players because it has been programmed to recognize the chess pieces, know how each moves, and can predict the next move of both players.

Artificial Intelligence

Type I

Type II

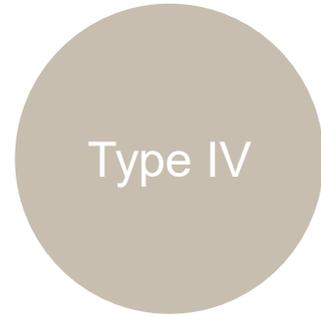
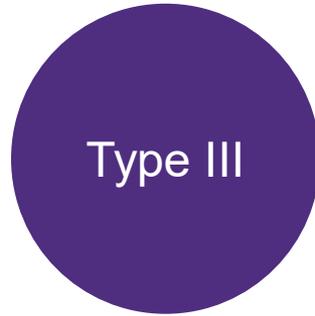
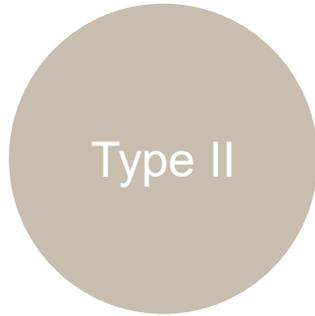
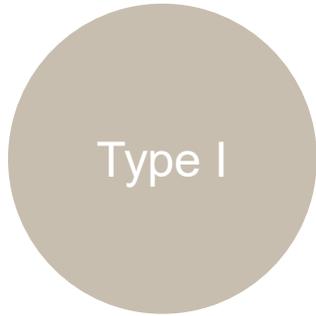
Type III

Type IV

Limited memory:

Limited memory AI machines can look to the past, but the memories are not saved. Limited memory machines cannot build memories or “learn” from past experiences. An example is a self-driving vehicle that can decide to change lanes because a moment ago it noted an obstacle in its path.

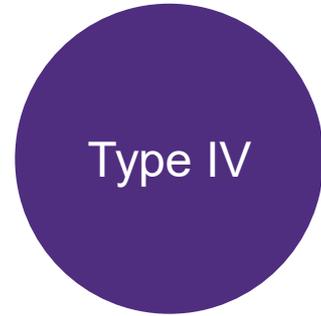
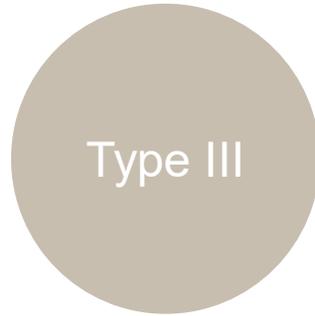
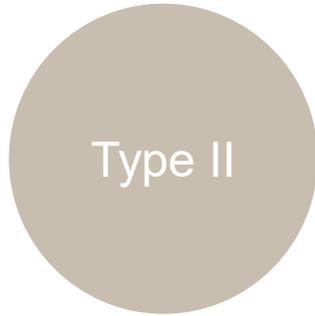
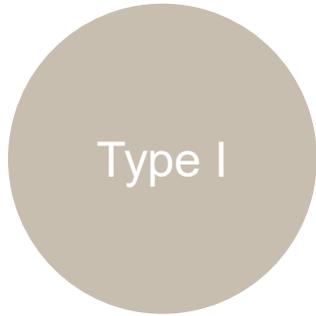
Artificial Intelligence



Theory of mind:

Theory of mind refers to the idea that a machine could recognize that others it interacts with have thoughts, feelings, and expectations. A machine embedded with Type III AI would be able to understand others' thoughts, feelings, and expectations, and be able to adjust its own behavior accordingly.

Artificial Intelligence



Self-awareness:

A machine embedded with Type IV AI would be self-aware. An extension of “theory of mind,” a conscious or self-aware machine would be aware of itself, know about its internal states, and be able to predict the feelings of others.

“

is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.

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“

Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization’s operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.

”

Internal Audit's Role

Internal audit is adept at **evaluating and understanding the risks and opportunities** related to the **ability** of an organization **to meet its objectives**. Leveraging this experience, internal audit can **help** an organization **evaluate, understand, and communicate the degree to which artificial intelligence will have an effect** (negative or positive) on the organization's ability **to create value** in the short, medium, or long term.



Internal Audit's Role

- For all organizations, internal audit should **include AI in its risk assessment** and consider whether to include AI in its risk-based audit plan.
- For organizations exploring AI, internal audit should be **actively involved in AI projects** from their beginnings, **providing advice and insight** contributing to successful implementation. However, to avoid the perception of or actual impairments to both independence and objectivity, internal audit should **not own, nor be responsible for, the implementation** of AI processes, policies, or procedures.

Internal Audit's Role

- For organizations that have implemented some aspect of AI, either within its operations (such as a manufacturer using robotics on a production line) or incorporated into a product or service (such as a retailer customizing product offerings based on purchase history), internal audit should **provide assurance on management of risks related to the reliability of the underlying algorithms and the data on which the algorithms are based.**
- Internal audit should **ensure the moral and ethical issues** that may surround the organization's use of AI **are being addressed.**
- Like the use of any other major system, **proper governance structures** need to be established and internal audit can **provide assurance** in this space.

Internal Audit

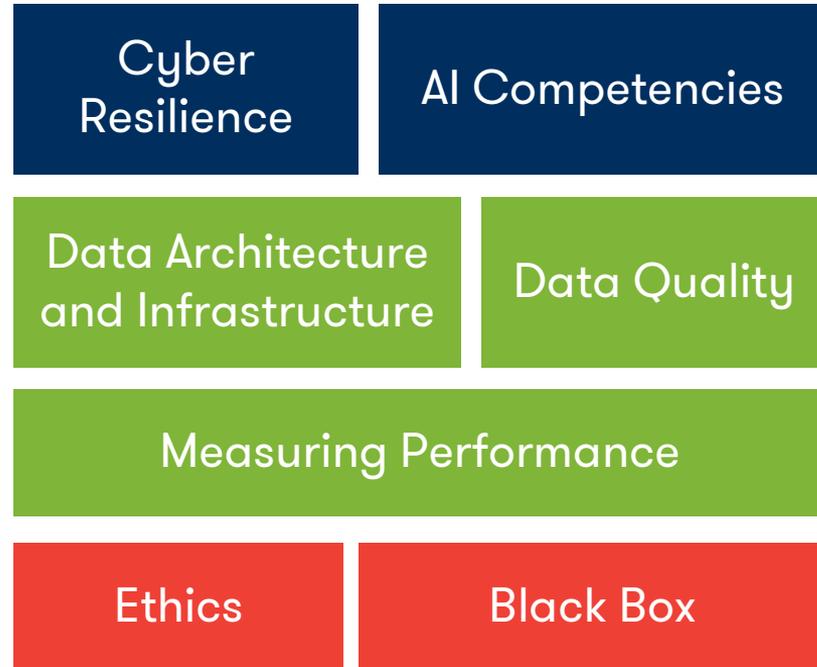
Understands the strategic objectives of the organization, **and the processes** implemented to achieve those objectives.

Is **able to evaluate whether AI** activities are **accomplishing their objectives**.

Can provide internal assurance over management's risk management activities relevant to AI risks.

Is perceived as a **trusted advisor** that can **positively support the adoption of AI** to improve business processes or enhance product and service offerings.

The IIA's AI Auditing Framework



Internal Audit's Role

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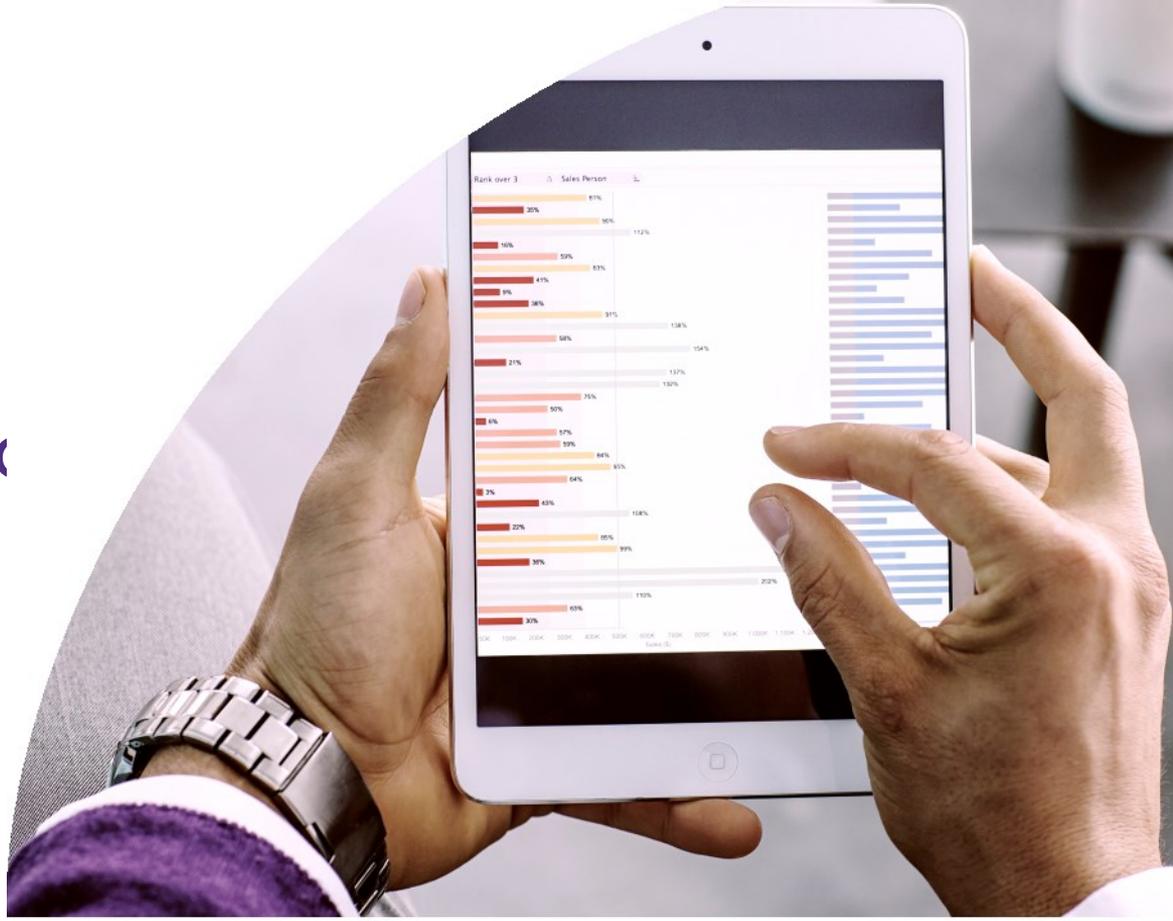
The internal auditing profession cannot be left behind in what may be the next digital frontier — artificial intelligence. To prepare, internal auditors must understand AI basics, the roles that internal audit can and should play, and AI risks and opportunities. To meet these challenges, internal auditors should leverage the Framework to deliver systematic, disciplined methods to evaluate and improve the effectiveness of risk management, control, and governance processes related to AI.

”

Thank you
#IAYS2018

AI in IA

The Impact of Artificial Intelligence to the future of Internal Audit



Thank you.

This presentation is not a comprehensive analysis of the subject matters covered and may include proposed guidance that is subject to change before it is issued in final form. All relevant facts and circumstances, including the pertinent authoritative literature, need to be considered to arrive at conclusions that comply with matters addressed in this presentation. The views and interpretations expressed in the presentation are those of the presenters and the presentation is not intended to provide accounting or other advice or guidance with respect to the matters covered.



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