

The 16th Annual
Conference -IIA

Emerging Technologies
and Internal Audit



2005



“ We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before ”

World Economic Forum, 2016

NOW



Digital Trends



Cognitive automation

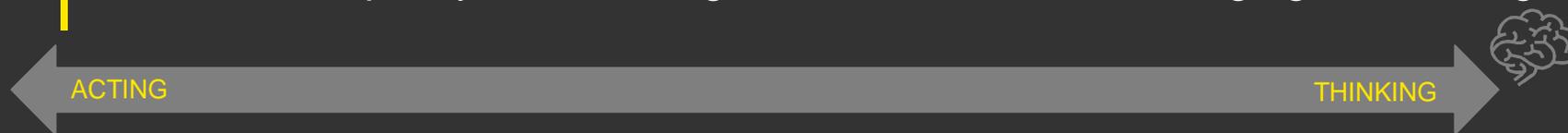
Robotics Process Automation



Robotic Process Automation (RPA) and Cognitive Automation

Robotic Process Automation (RPA)

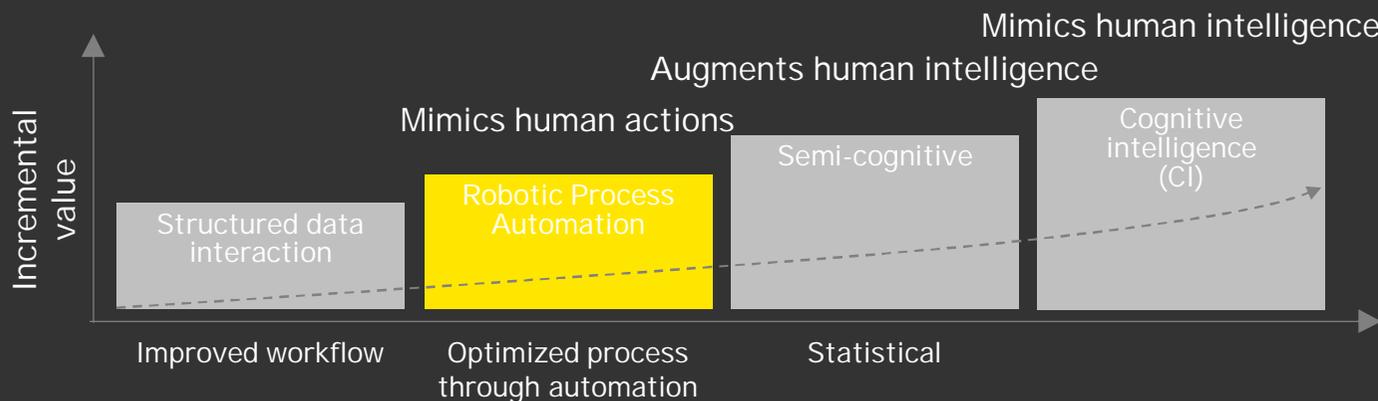
RPA is the application of software “robots”, not physical robots, that mimics human action and connects multiple systems through automation without changing the existing IT landscape.



Rules-driven Robot

Semi-Cognitive Robot

True Cognitive / Machine Learning Robot



Enables organizations to automate existing high-volume and complex process steps as if business users were doing the work.

Digital Trends



Cognitive automation

Robotics Process Automation



Artificial Intelligence



AI "the study of the computations that make it possible to perceive, reason, and act"

Techniques of AI

Algorithms

Fundamental applications

Integrated applications

Perception



Extracting information from devices

Reasoning



Logical and orderly thinking (deduce, plan, decide, interpret, ...) to achieve a goal

Acting



Transforming itself or its environment by moving, moving objects, communicating with people or information systems, etc.



Natural Language Processing



Machine Learning



Virtual agents



Machine perception



Reasoning



Autonomous objects

Digital Trends



Cognitive automation

Robotics Process Automation



Artificial Intelligence



Blockchain

Block chain is a network and a database

Kenya Appoints Taskforce on Blockchain and Artificial Intelligence

March 1, 2018

April 18, 2018

Posted in: Big Data Analytics, Blockchain, IBM Research-Africa

IBM and Twiga Foods Introduce Blockchain-Based MicroFinancing for Food Kiosk Owners in Kenya

Late last year Nairobi-based Twiga Foods, a business-to-business logistics platform for kiosks

ce (DLAI). The taskforce has 11
mer Information PS E



Distributed ledger

Smart contract
(Trust rules inside
transactions/
interactions)

Time-stamped and
permanent

Consensus
Validation(SPOF
censorship)

Secure and
encrypted (Self-
execution, buss
logic, self enforce)

Trust vs No Trust

Smart wallet

Peer to peer
network

Immutable

Traceable

Digital Trends



Cognitive automation

Robotics Process Automation



Artificial Intelligence



IoT



Blockchain

Internet of Things

Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

By 2020 there will be **21 billion connected devices** worldwide

By 2019 global IP traffic will reach **two zettabytes per annum**

AI Start-up funding **rose sevenfold** from 2010-2015

By 2025 global spending on robotics will reach **\$67 billion**



Digital Trends



Cognitive automation

Robotics Process Automation



Artificial Intelligence



IoT

Cloud Computing

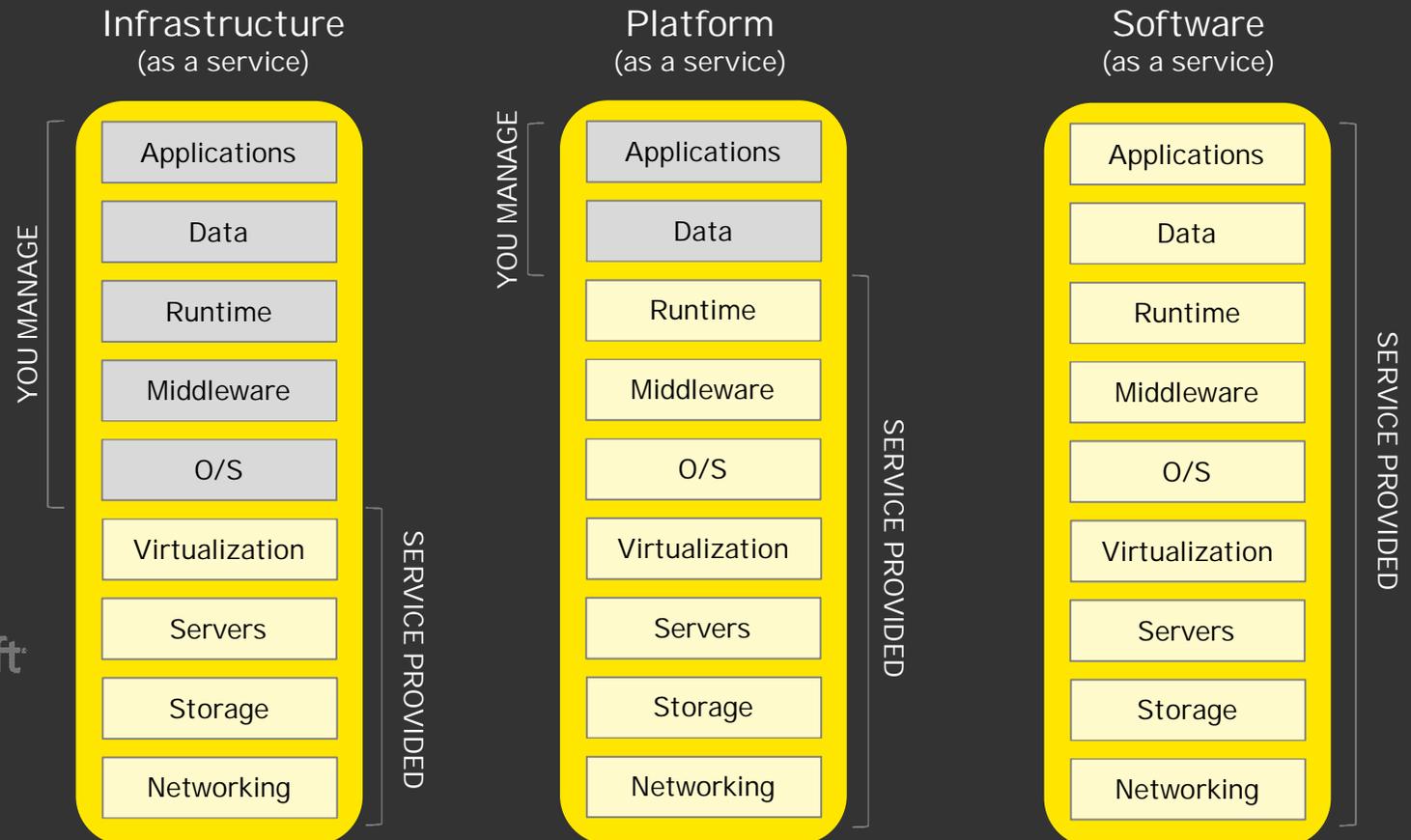


Blockchain

Cloud Computing

Cloud computing is the delivery of computing services over the Internet.

Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations.

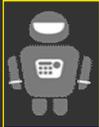


Digital Trends



Cognitive automation

Robotics Process Automation



Cybersecurity

Artificial Intelligence



IoT

Cloud Computing



Blockchain

Cybersecurity



US\$4.6b - \$53b

Estimated loss of a global cyber attack

Lloyds of London, July 2017



US\$141

2017 PONEMON Institute Study

Average cost per stolen record in a data breach

Cybersecurity context in Kenya

https://www.the-star.co.ke/news/2017/08/23/banks-given-up-to-nov-30-to-present-cybersecurity-plans_c1621157

Banks given up to Nov 30 to present cybersecurity plans
Aug. 23, 2017, 12:30 am | By VICTOR AMADALA @itsamadala



www.nation.co.ke/news/Kenya-Election-Hacking-IEBC/1056-4051976-dv9uuyz/index.html

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Kenya set to pass cyber-crime bill as east Africa seeks legal harmony



Amid calls for regional harmonisation of cyber-crime laws, the government of Kenya is proceeding with the passage of a bill to address the growing problem of cyber-crime.

The Kenya government is set to pass the Computer and Cybercrime Bill into law after its approval by cabinet as east African countries push for regional harmonisation of cyber-crime laws



KRA seeks cyber crime solution after Sh4bn theft

TUESDAY, JUNE 20, 2017 21:56

PesaLink-reports-hacking-attack-to-the-central-bank/539552-4079014-ip0fvZz/index.html

MARKETS

PesaLink reports hacking attack to the central bank

FRIDAY, SEPTEMBER 1, 2017 9:24



CENTRAL BANK OF KENYA

CBK Guidance Note on Cybersecurity

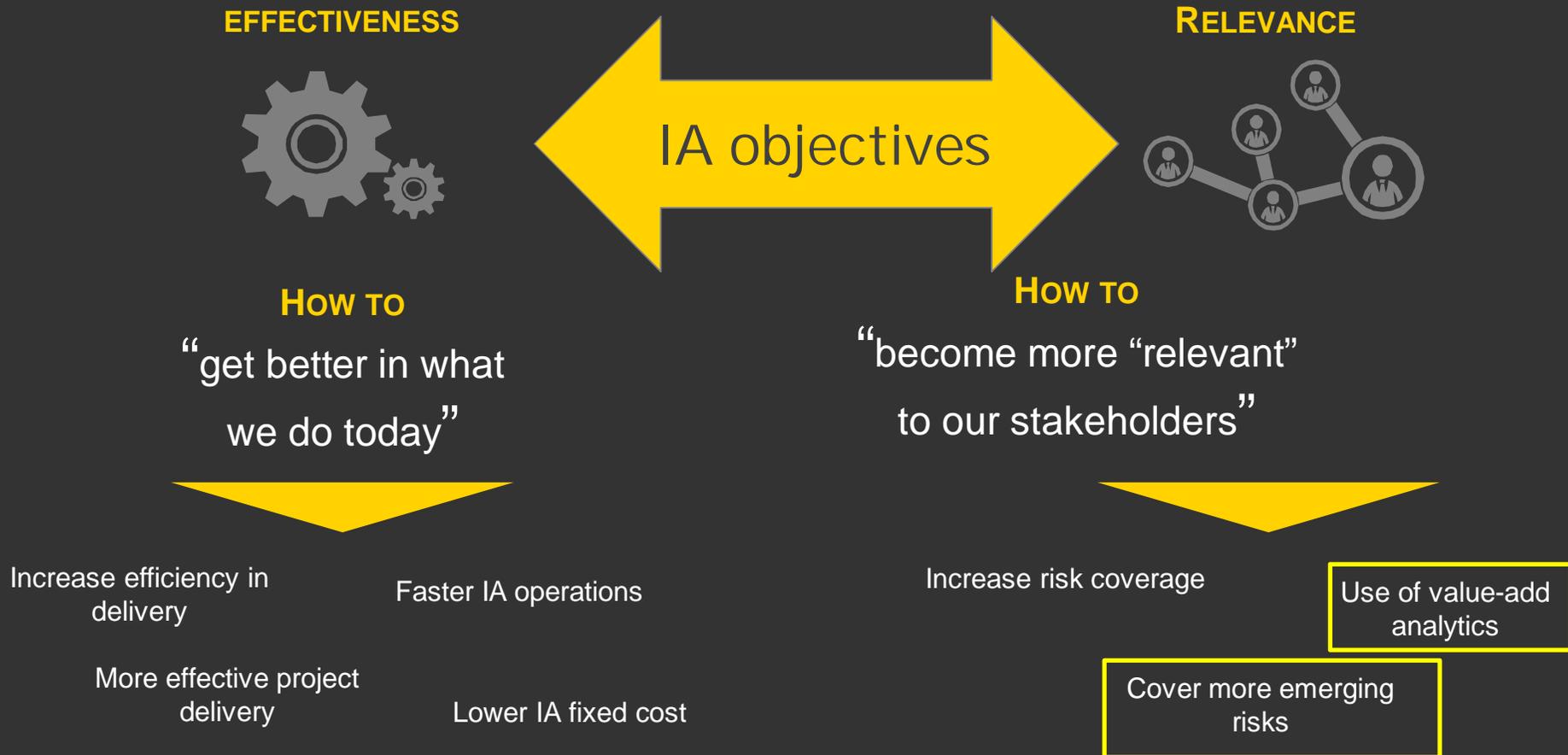
Uhuru signs into law Computer and Cybercrimes Bill

By Fredrick Obura | Published Wed, May 16th 2018 at 11:13, Updated May 16th 2018 at 12:25 GMT +3



How does the Internal Audit of the Future Look like?

We typically focus on how to be relevant and effective – but what does it actually mean?



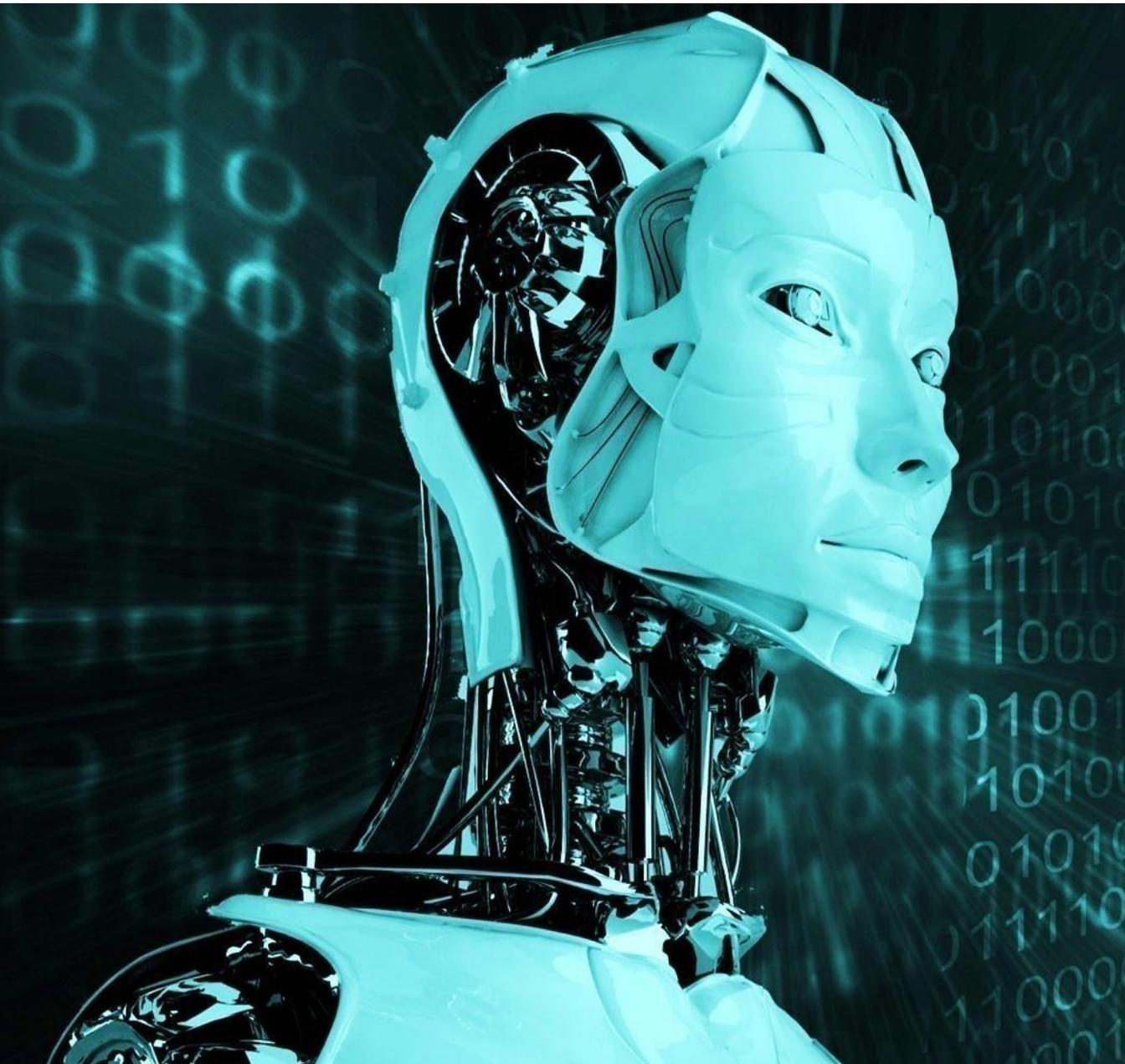
Is Internal Audit ready for the ongoing digital revolution and how can it be utilized?

- IA need to be ready:
- ▶ to digitalize itself
 - ▶ to lead the 'digital journey' for the organization and
 - ▶ to transform to take the challenge to deliver more comprehensive solutions?

Emerging Technologies as an Enabler
in Internal Audit

Role of Internal Audit in Digital
Disruptions

Emerging Technologies as an Object
of Internal Audit

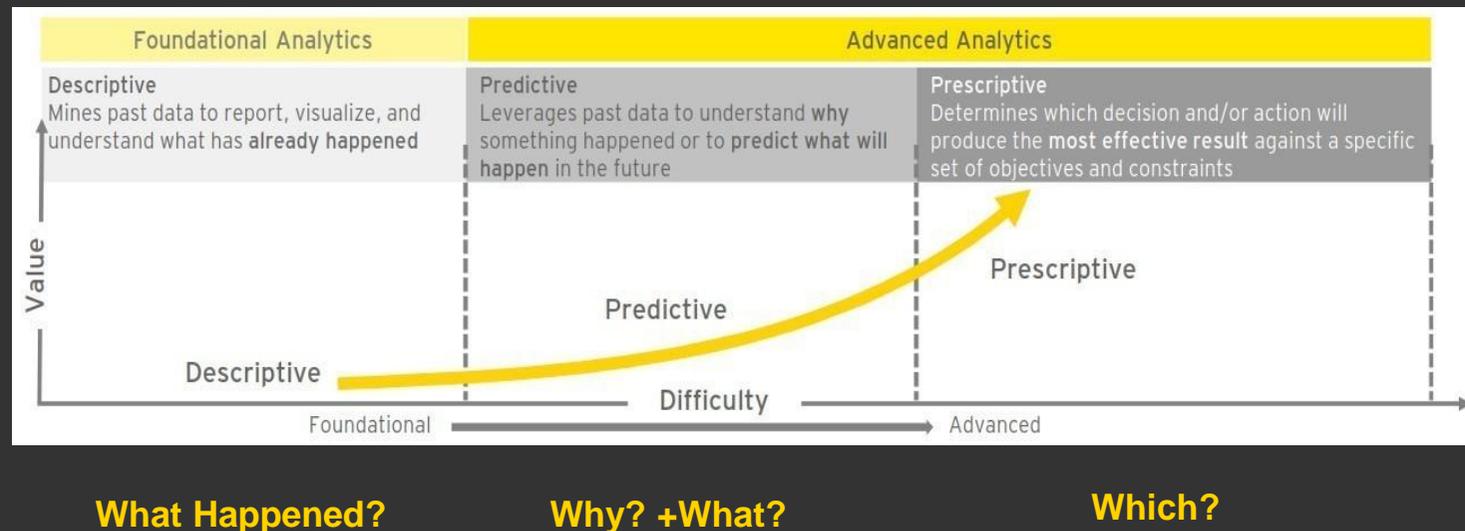


Emerging
Technologies as an
Enabler of Internal
Audit

Analytics based testing will shift the focus from traditional sample based audit procedures to data analysis and the identification of key risk indicators

- ▶ Analytics data is generated but not summarized in a manner that is valuable to management.
- ▶ Business and Internal Audit leadership struggle to spot trends in data.
- ▶ Businesses lack the resources to apply **Advanced Analytics**.

**Analytics for:
Risk Assessment | Scoping |
Audit Execution**



Predictions: HOW are internal audit tools & technologies changing?



Analytics based testing will shift the focus from traditional sample based audit procedures to data analysis and the identification of key risk indicators



IA will digitally augment their capabilities with bots and machine learning to handle the accelerating volume, speed and complexity of data



The adoption of continuous monitoring, will shift IA's focus from detecting to predicting control failure and risk triggers

According to Gartner, the need for data scientists is growing at about **three times** that for statisticians and business intelligence analysts, and there is an anticipated **talent shortage of 100,000 or more analytics personnel through 2020**

Predictions: Will Internal Audit will still exist in the future?



IA will be highly connected, proactive and forward looking in setting its priorities in response to market disruptions

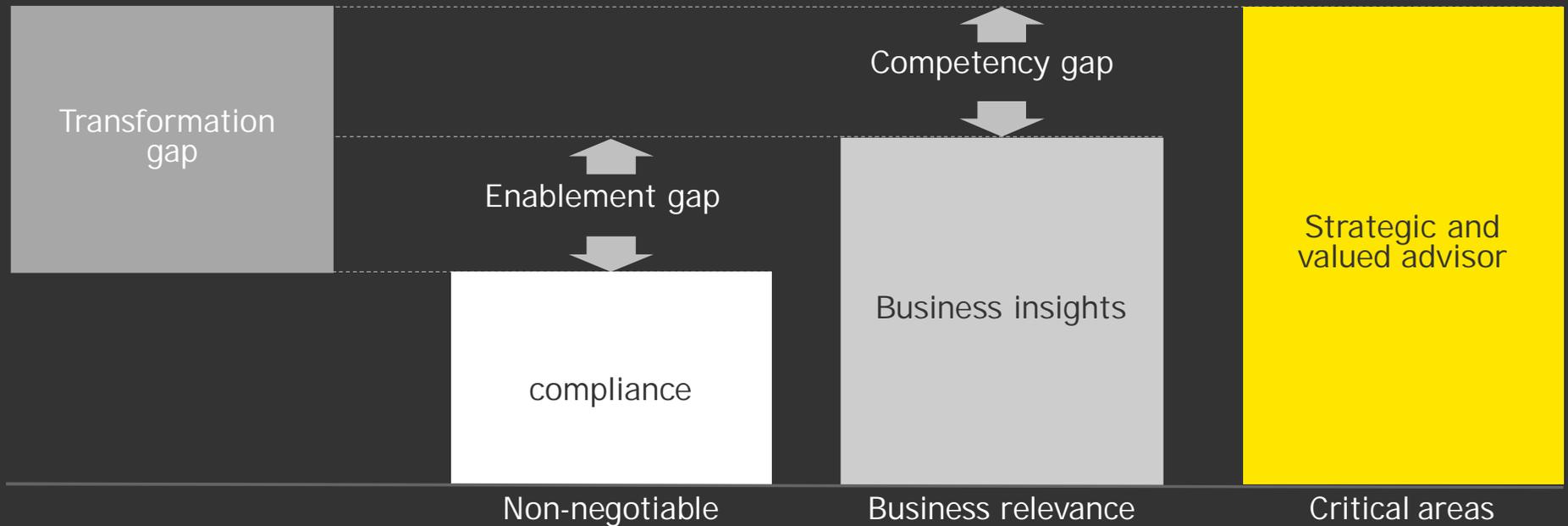


IA will extend beyond its traditional assurance provider role and become a strategic and valued advisor



Technology will enable the convergence of the three lines of defense with common platforms to collaborate and exchange information

IA will extend beyond its traditional assurance provider role and become a strategic and valued advisor

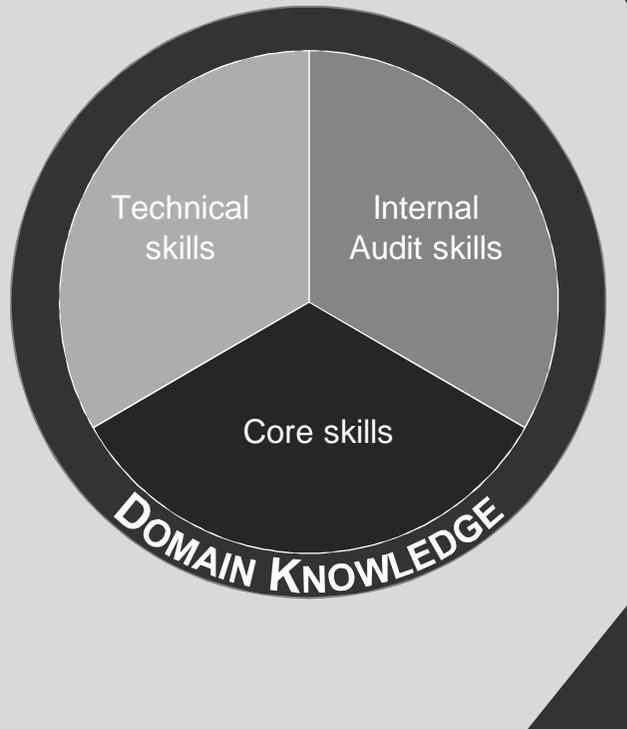


From Compliance

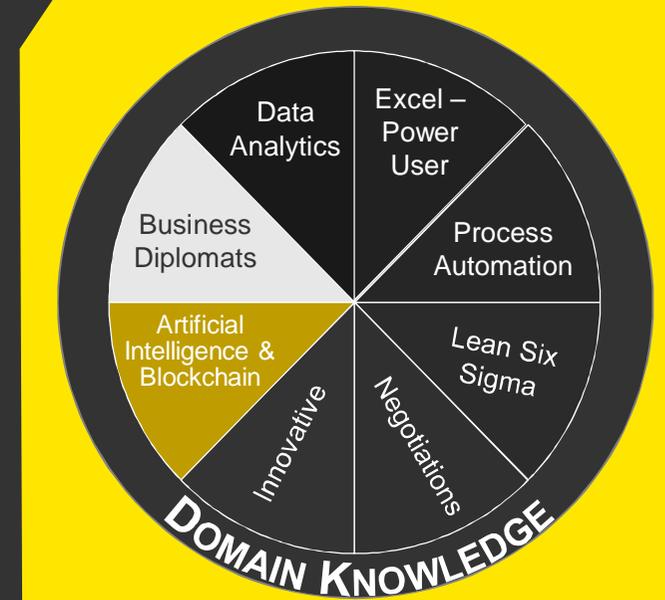
To Assurance

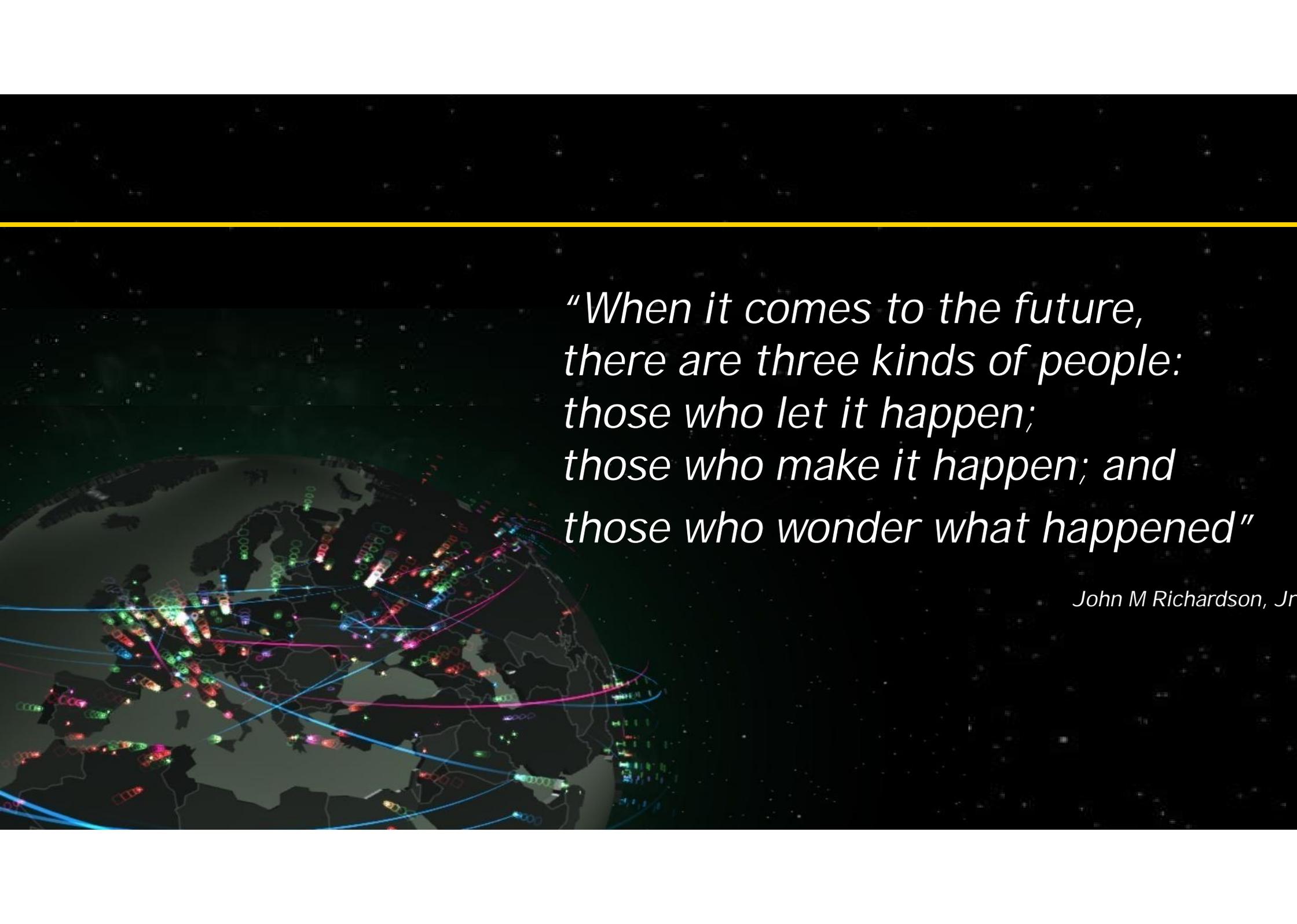
Creative problem-solving, innovative mindset and social intelligence will become more valuable than technical knowledge

Skills of Yesterday for current workforce



Skills of Today.... for workforce of the future





*“When it comes to the future,
there are three kinds of people:
those who let it happen;
those who make it happen; and
those who wonder what happened”*

John M Richardson, Jr

Q&A

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