

Thanks for joining

Association of Chief Audit
Executives of Banks in Nigeria
[ACAEBIN]

2021 Annual Retreat/Conference and General Meeting of Members

Theme: **Exploiting digitisation and disruption for value creation**

 25 – 27 March 2021

Session starts 9:00am



Day one

1

The disruptive landscape and
assurance in the era of disruption

Femi Osinubi
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“

Technologies make the once
impossible, possible.

Organizations will either evolve, lose
relevance or
DIE.

As Banks look to recover from the pandemic, there'll be an increase in the use of emerging technology.

Emerging technology that supports the following initiatives will be prioritized.

New business

New innovative products and customer acquisition models

Customer intelligence

Deeper insight into customer preferences and needs

Efficiency

Getting more done with fewer resources

Service Delivery

Superior service delivery and customer engagement


Artificial intelligence


Augmented reality


Blockchain


Drones


Internet of things


Robotics


Virtual reality


3-D printing

The use of emerging or disruptive technology in the Banking industry is no longer a thing of the future, it is here to stay.

Key considerations that are driving Banks to adopt emerging technology to drive the business include:



Evolving client demands, consumer patterns and industry trends



Agile adoption to survive or stay ahead in a very competitive industry.



Megatrends



Increased availability and explosion of data



Explosion of innovation technology and decline in the cost of technology



Response to the pandemic

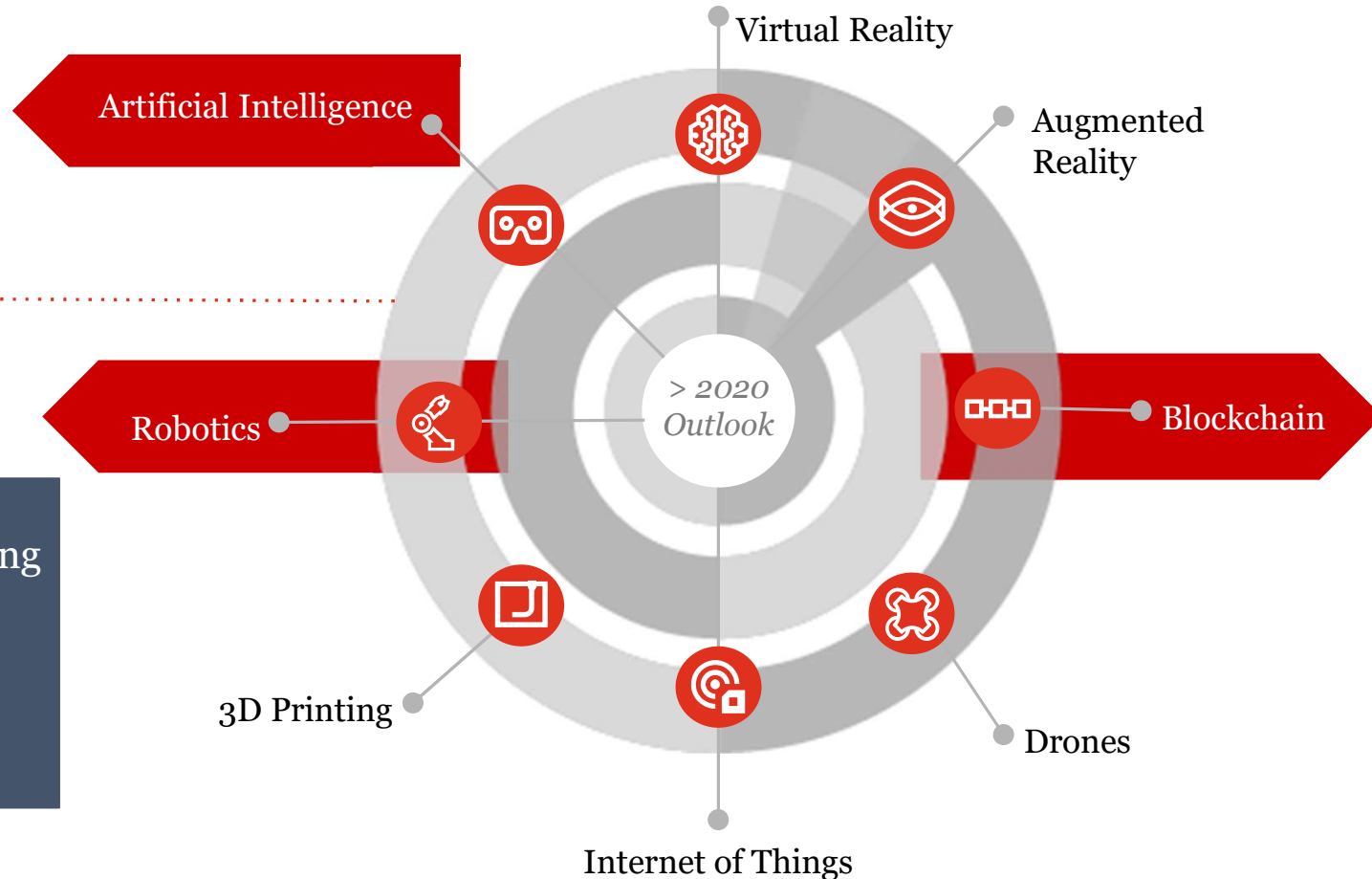
The Essential Eight technologies that matter most for most businesses today. However, the power comes from the individual convergence to yield better solutions.



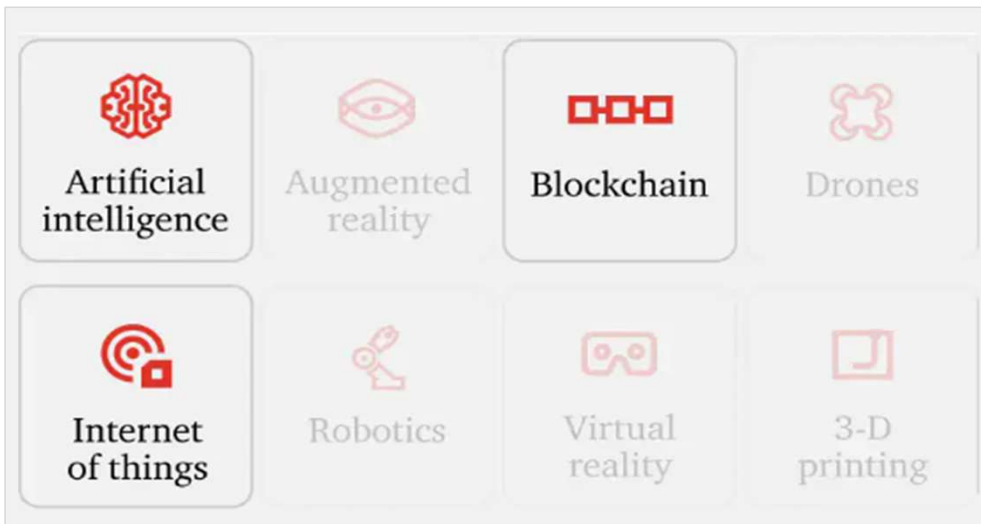
Robotic Process Automation

RPA is included as an extension of the Essential 8 in this document, as interest and activity in this area has exploded after the initial Essential 8 analysis.

The Banking industry has started the journey of leveraging some of these essentials technology in driving its business and the Banks in Nigeria have not left behind.



Solving the **problem of trust** in the financial services industry



How do we ensure the **authenticity of customer** (e.g. in the loan origination process, invoice details, etc.), **verify customer identity** (i.e. customer on-boarding, transaction beneficiary, etc.) and **enable secure multi-party transactions**?

Invoice Discounting & Factoring

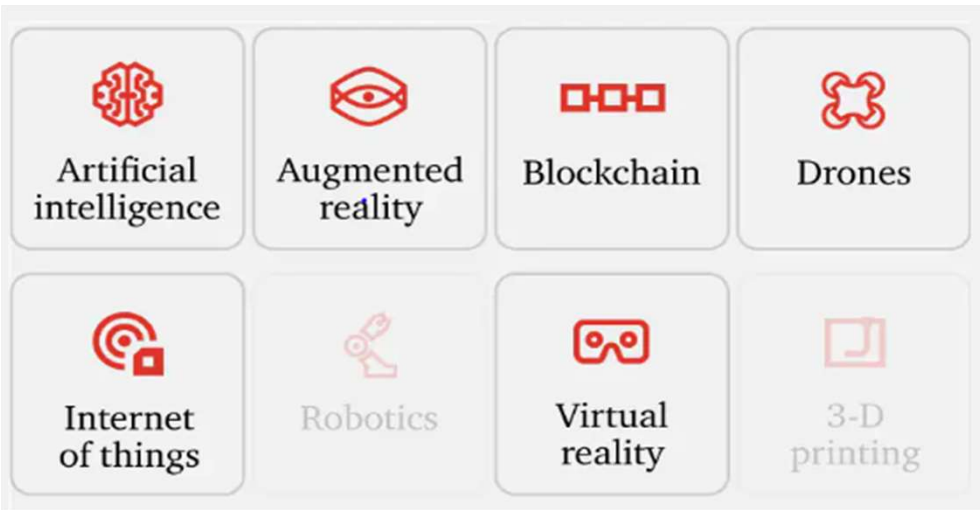
Banks are leveraging the power of a Blockchain network and Artificial Intelligence to combat the fraud of fictitious Invoices and payment defaults.

Blockchain networks consisting of banks, customers and suppliers **reduces the bottlenecks in the verification process** and **AI helps reduce the risk of Banks financing fictitious invoices.**

Know-your-customer

With the rise in Fraud and AML issues, Banks are collaborating and turning to Industry-wide Blockchain networks to share KYC information. SWIFT is rolling out a network for all its customers across the world.

Driving **working autonomy** to improve efficiency and productivity in operations across the enterprise.



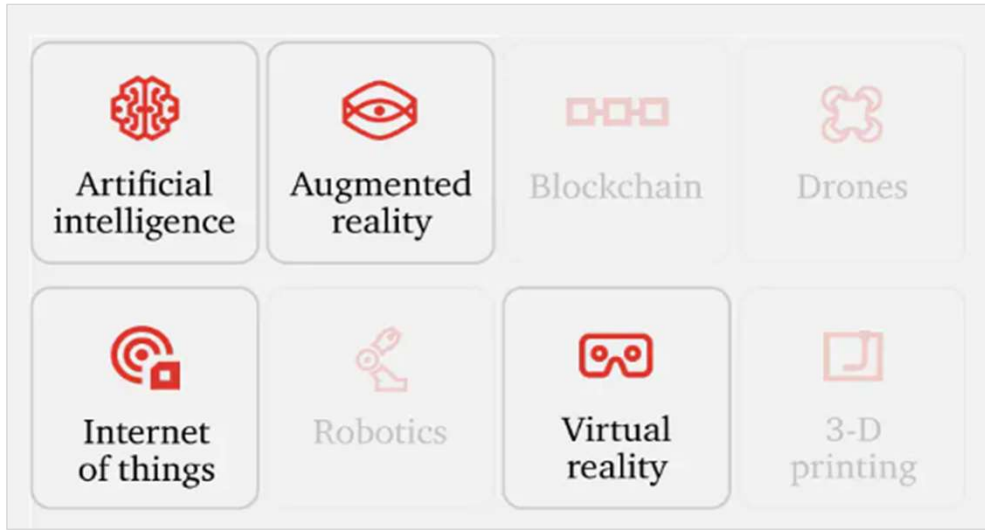
How do we **unlock immerse value from humans and machines working together** in unison across the organization to increase efficiency and effectiveness?

Back office transformation

Banks are leveraging Artificial Intelligence to transform their Back office processes for efficiency and effectiveness.

- **Customer onboarding** using a combination of **OCR & AI**, to read information from documents, on-board them in the Bank and identify potential red flags.
- **Credit Administration** process acceleration using **RPA and AI** to cut short the time spent during credit approval process.
- **Collateral Management** that leverages **Drone technology** and **Artificial Intelligence** for on-site verification and data collection and suspicious collateral sharing or splitting.

Delivering the right experience to stakeholders wherever they are



How do we maximize technology to create more **innovative and immersive experiences** for the evolving generation?

Customer Experience

Banks are leveraging reality based technology to provide new experiences for its customers, for marketing/sales and other interactions.

Axis Bank, India, is utilizing Augmented Reality to create AR enabled applications that contain views that can define a geographical radius and show/ direct customers to the nearest branches/ATMs, third-party loyalty programs, etc.

Recruitment & Training

Leveraging Augmented Reality (AR) and Virtual Reality (VR), banks can conduct staff trainings and simulate team based activities without the hindrance of physical location.

As Banks continue to leverage Disruptive technology as a key enabler to achieving its strategic objectives, Auditors must step up to the plate to play its role and not be seen as just exception finders during this transformative phase .

Questions that Auditors need to ponder on?



How do we provide assurance to key stakeholders on these essential technologies when they are deployed, as traditional audit approaches are not sufficient?



How should we play our roles as a Strategic Business Advisors as our organizations embark on leveraging these essential technologies?



How do we as auditors leverage these essential technologies to transform our practice to be more effective and efficient?

Thank you



Day one

2

**The global economy and
developments in the Nigerian
banking sector**

Andrew Nevin
andrew.x.nevin@pwc.com



Nigeria must find her own development path...



https://www.google.com/search?q=Image+of+Nigeria%27s+manufacturing+sector&rlz=1C1GCEA_enZA918ZA918&source=lnms&tbm=isch&sa=X&ved=2ahUKEwik07qhl7fuAhUnyoUKHc0FDagQ_AUoAnoECBAQBA&biw=1707&bih=781#mgrc=nXofuZF5jlec7M

Countries that fit in the Africa map...

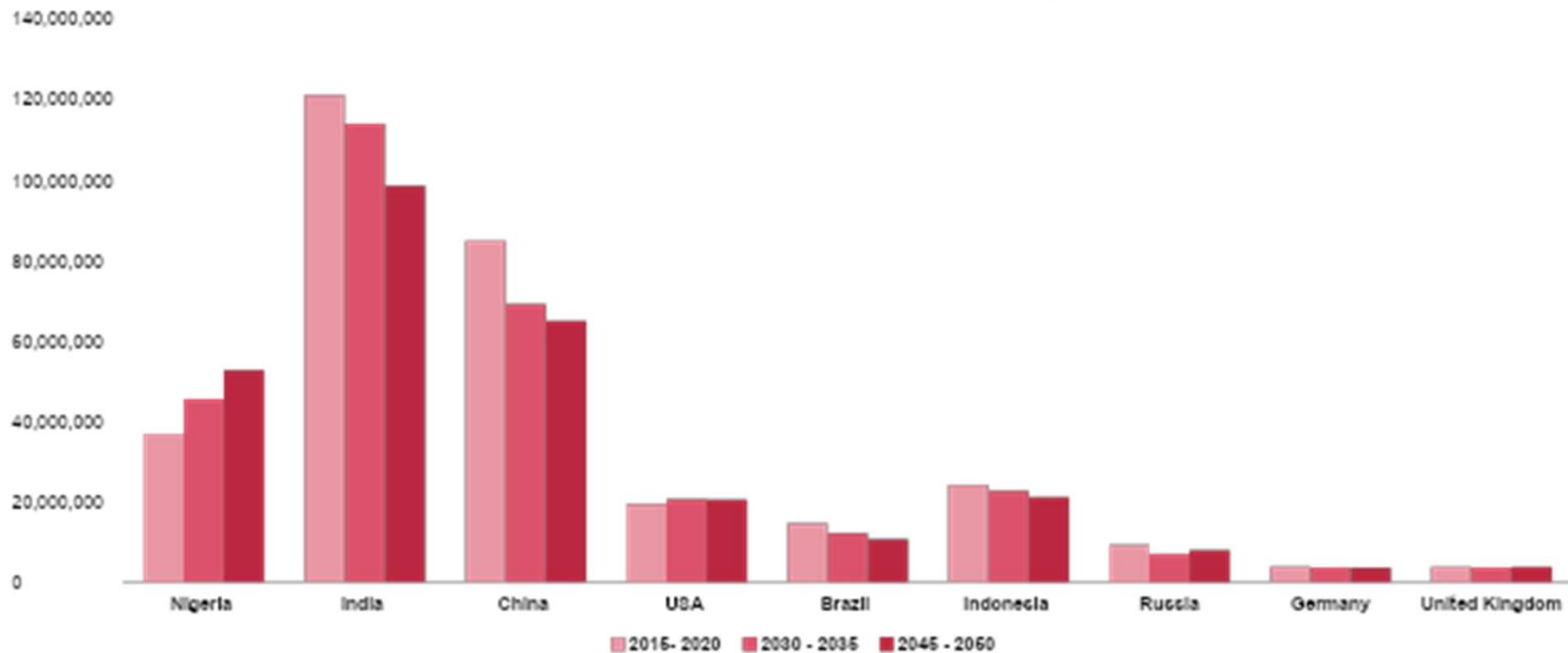
Africa is not just one country...all the continents fit into Africa...



Country by country comparison of births in selected countries...

Population of births in Nigeria were estimated to account for almost 40% of total births in West and Central Africa, and more than 23% of births in SSA in 2019...Globally, over half of the world's births are estimated to take place in just eight countries, including Nigeria (UNICEF)...

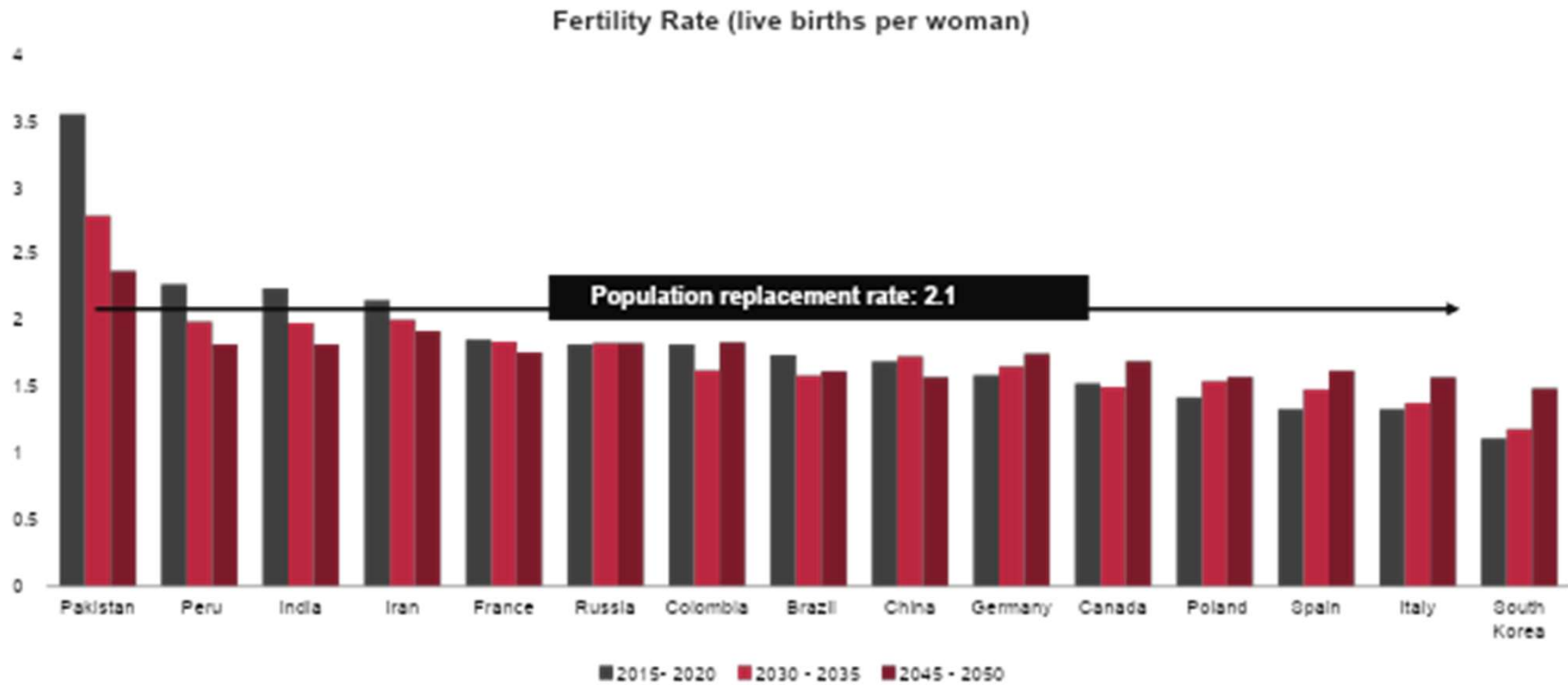
Number of births across selected countries, 2019



Source: UN DESA

Fertility rate by countries

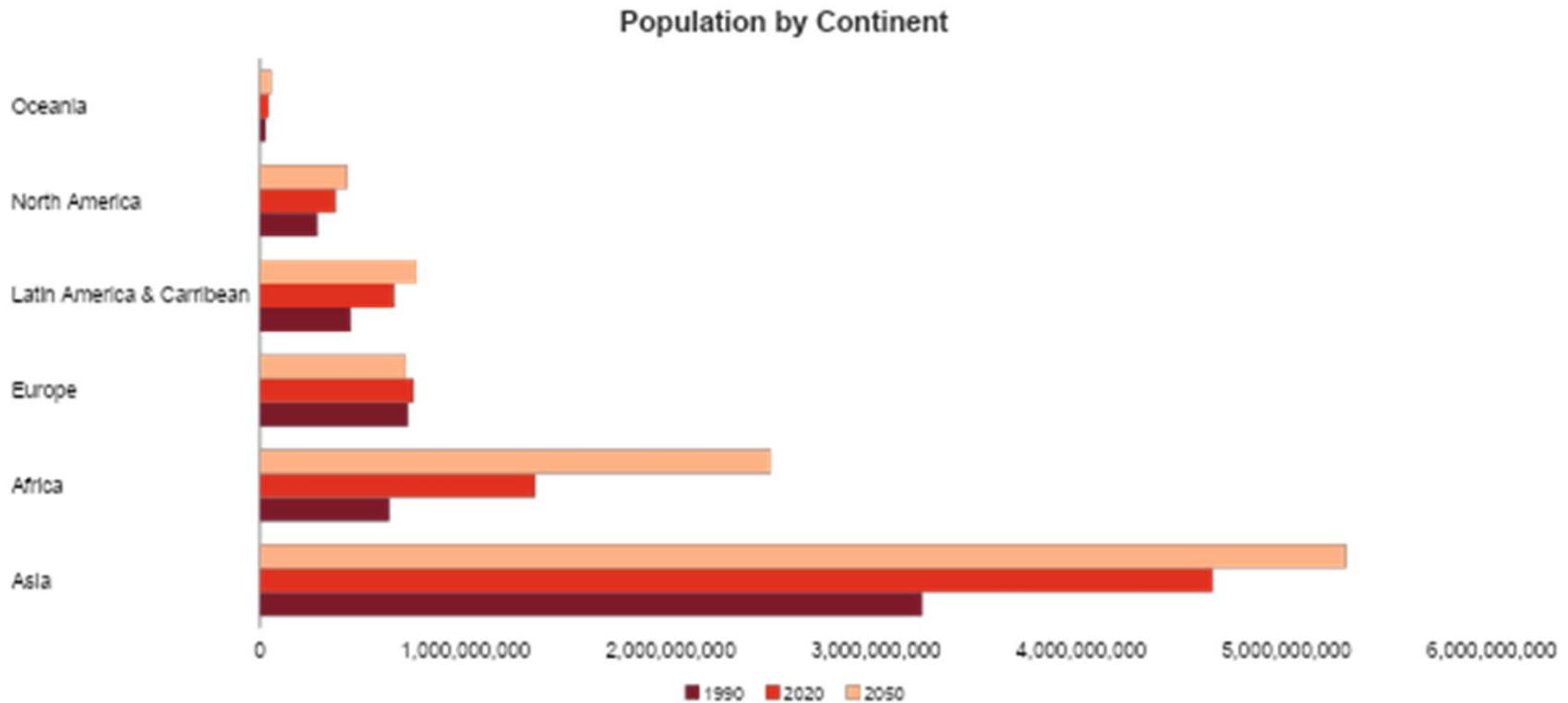
In the last two decades, majority of the countries in the more developed regions of the world have fertility rate at an average of 1.6, while less developed regions have an average of about 2.7; with the least developed countries at average of 4.5.



Source: UN DESA

Population projections by Continent...

The world population is increasing, with Asia and Africa contributing the largest growth respectively. Africa's population is expected to grow by 86% from 1.3 billion in 2020 to 2.5 billion by 2050. The Continent will remain the second most populous in the world behind Asia in the period under review...

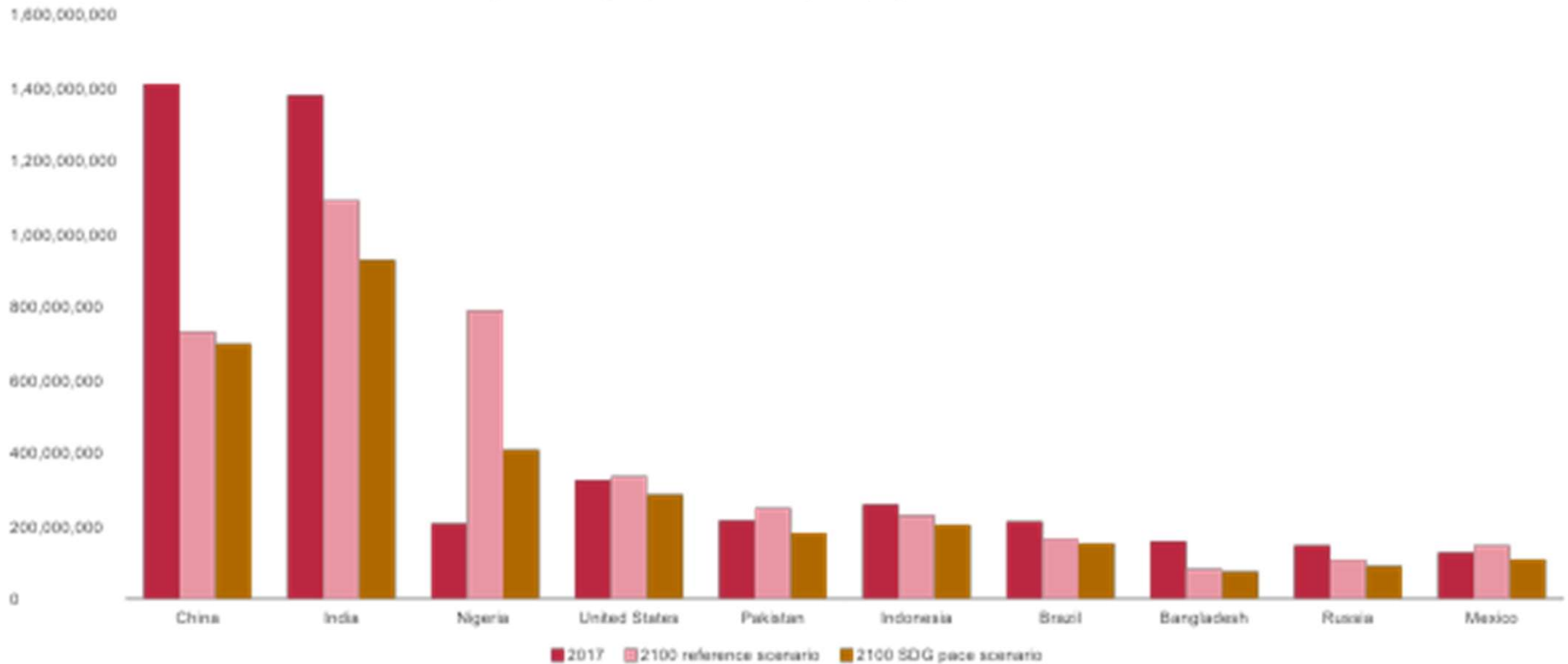


Source: UN DESA
www.worldometers.info

Projection for country ranking by population (top 10 countries) 2/2

Some analysts have projected that Nigeria could become the second most populous country in the world by 2100 behind India, with China ranked third. According to a Lancet study, the five largest countries by 2100 are projected to be India (1.09 billion), Nigeria (791 million), China (732 million), the USA (336 million) and Pakistan (248 million).

Population projections of top 10 populated countries



Source: Lancet Report

Reference scenario = Continuation of current policies | SDG pace scenario = **Pace** of progress accelerates to achieve the SDGs

Top 10 largest cities by 2100...

The distribution of the world's largest cities has shifted from North America and Europe to Asia and Africa. This trend is expected to continue, as populations continue to increase significantly in emerging economies.

2100

- 1** **LAGOS, NIGERIA - 88.3 MILLION** - Set to become home to more than 88 million people –Lagos in Nigeria will be the largest city in the world by 2100.
- 2** **KINSHASA, DEMOCRATIC REPUBLIC OF THE CONGO - 83.5 MILLION** -DRC will have a larger population than the entire nation of France by 2100
- 3** **DAR ES SALAAM, TANZANIA - 73.7 MILLION**-, Dar Es Salaam has grown significantly in both population and regional influence.
- 4** **MUMBAI, INDIA - 67.2 MILLION** - Predicted to become the world's largest city by 2050, it is expected that Mumbai will rise afterwards to 4th place by 2100.
- 5** **DELHI, INDIA - 57.3 MILLION** - Delhi will remain a major draw for rural populations throughout the next 80 years.
- 6** **KHARTOUM, SUDAN – 56.6 MILLION** - While home to a modest 5.1 million people in 2010, the city will become home to 56.6 million residents by the end of this century
- 7** **NIAMEY, NIGER – 56.1 MILLION** - The capital of the West African country of Niger, Niamey, looks set to see the highest level of growth of any city in the top 10.
- 8** **DHAKA, BANGLADESH – 54.3 MILLION** - With a growing number of climate refugees, Dhaka's population is set to hit 54.3 million people by the turn of the century.
- 9** **KOLKATA, INDIA – 52.4 MILLION** - As the first of three Indian entries in the top 10, Kolkata is set to become the world's 9th largest city by 2100 with 52.4 million residents.
- 10** **KABUL, AFGHANISTAN – 50.3 MILLION** - Coming in as the 90th largest city in 2010 with 3.7 million people, the Afghan capital is set to see a meteoric rise over the course of the 21st century.

<https://www.theb1m.com/video/top-10-largest-cities-by-2100>

Top 10 Themes shaping Nigerian Economy in 2021



Unlocking dead assets



Harnessing the Power of the Diaspora



Drive export growth through services



Need for growth across the country



Low investment/ gross capital formation



Move informal to formal sector



Improving the business environment



Nigeria's big 3 distortions



Shifting from GDP lens to SDG lens



Climate change



Unlocking Dead Assets

Nigeria holds as much as US\$900 billion worth of dead capital in residential real estate and agricultural land... According to Nigerian Institute of Builders, the value of Federal Government's abandoned properties is projected at about N230 billion...

7 million

The housing deficit has been estimated at up to 7 million

700,000 units

700,000 units of houses needed every year to bridge the deficit



Some abandoned properties

- Nigeria Social Insurance Trust Fund (NSITF) along Lagos-Badagry expressway
- The National Assembly Complex at Tafawa Balewa Square
- NECOM House at 15, Marina Street
- NITEL Building; Secretariat in Ikoyi
- Federal Government Ministry of Communications at Obalende, Lagos.
- Federal Government Secretariat in Ikoyi Lagos.
- There are over 60 abandoned properties belonging to the federal government in Lagos state.

200,000 units

Estimates of the current output of the formal housing sector range between 100,000 and 200,00 per year

80%

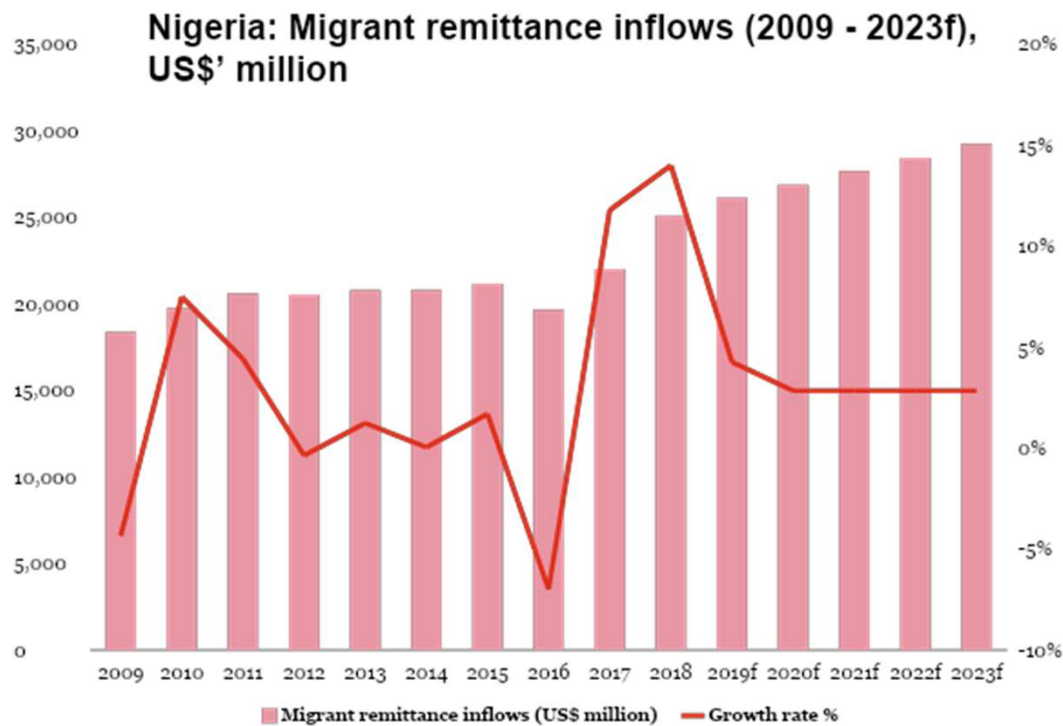
Almost 50% of the population live in cities and about 80% live in substandard conditions



https://www.google.com/search?q=image+of+housing+in+Nigeria&rlz=1C1GCEA_enZA918ZA918&tbm=isch&source=iu&ictx=https://businessday.ng/news/article/n100-billion-abandoned-property-should-trouble-our-conscience-gbajabiamila/

Harnessing the Power of the Diaspora

Nigeria is the largest recipient of remittance in SSA accounting for over a third of flows to the region. Country's biggest export is human capital..



https://www.google.com/search?q=image+of+housing+in+Nigeria&rlz=1C1GCEA_enZA918ZA918&tbm=isch&source=iu&ictx=1&fir=se58F5AcdivoqHM%252CR3Nm5sUJsFdVvM%252C_&vet=1&usg=AI4_kTLCsm79fX4hN4cd537iHneiZaaqw&sa=X&ved=2ahUKEwiW-vy7fuAhUO1xoKHRihAbQQ9QF6BAGFEAE#imgrc=_GPDAPSzabwuM

Drive Export growth and diversification through services

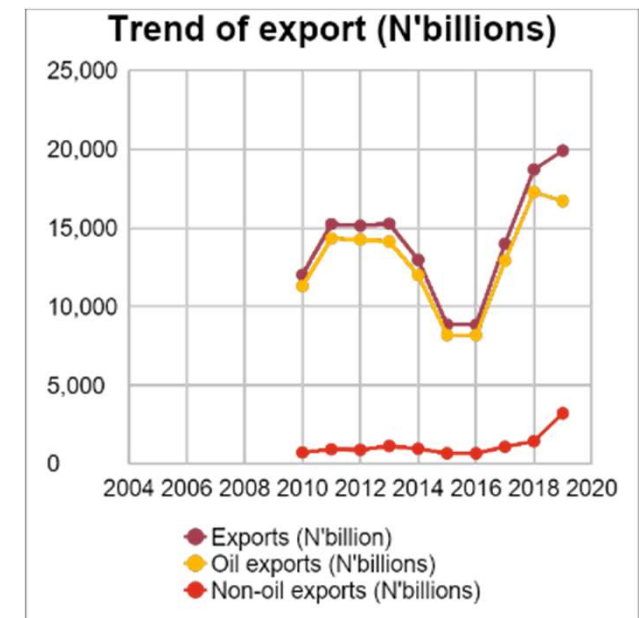
Two-thirds of the global economy is made up of the services sector which are higher value-added than physical goods. Nigeria's creative and cultural industries (CCI) presently plays an important role and will probably generate \$1 billion export revenue in 2020. Nigeria's exportation of Nollywood, technology and financial services are good exports to invest in. Outsource Global, a leading ICT and BPO firm services the international market...

Shift from capital infrastructure to human capital



Nigeria's exportation of physical goods is constrained





Need for growth across the country...

Catalysts for Growth



Innovation Hubs



Industrial clusters



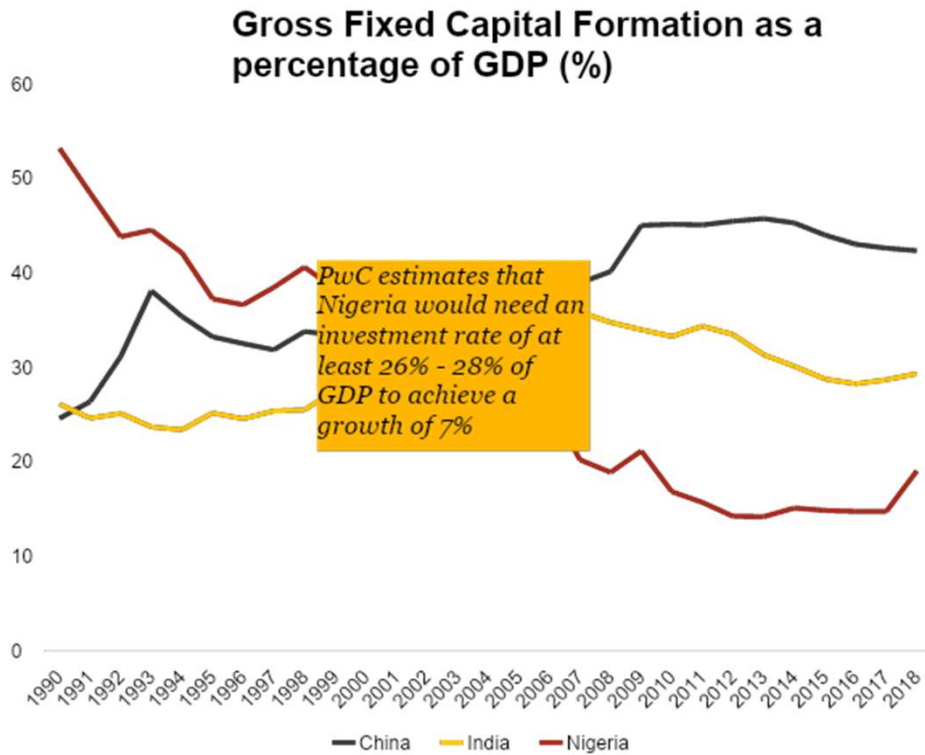
Education



<https://www.proshareng.com/news/Tech%20Trends/Innovation-Hubs-in-Nigeria--Challenges-and-Opportunities-for-Growth/45595#:~:text=Today%20there%20are%20several%20innovation,and%20catalysts%20of%20technological%20advancement.>

Low investment/ gross capital formation

Nigeria's Gross Fixed Capital Formation stood at less than 20% of GDP in 2019...



Source: IMF, PwC analysis



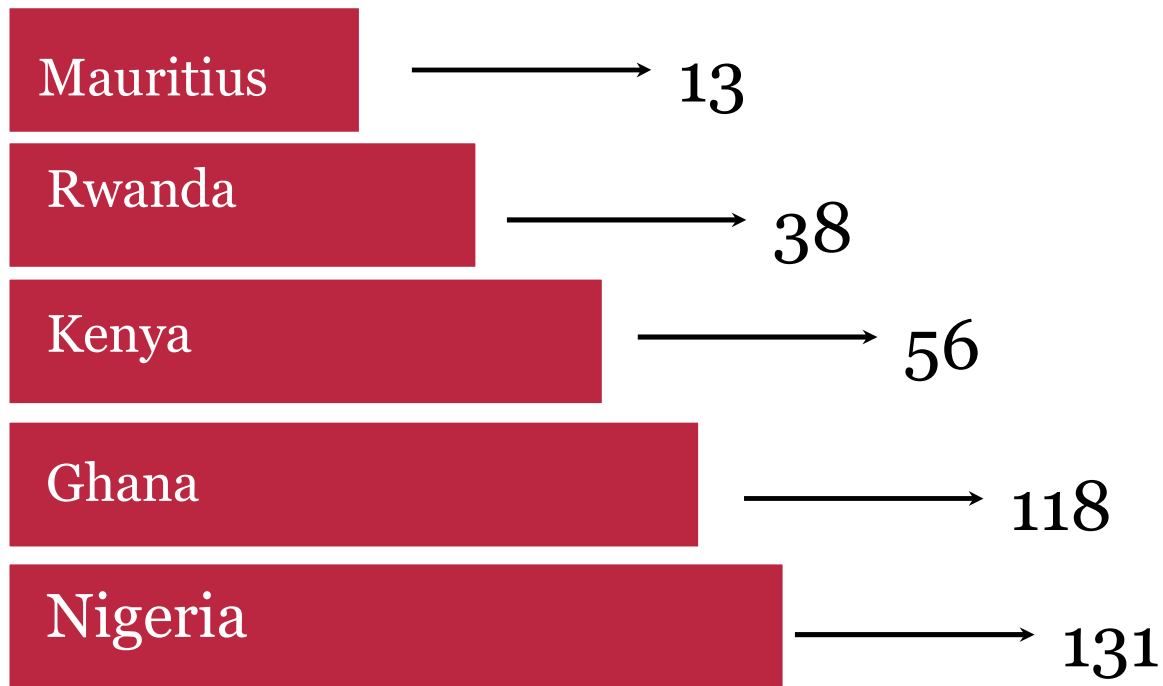
Moving the Informal Sector to the Formal Sector



Improving the Business Environment

Nigeria currently ranks 131st on the World Bank's 2020 Doing Business Index

Ease of Doing Business Ranking (of 190)



Source: World Bank Group



The big 3 distortions

The exchange rate, fuel subsidy and power sector need total structural/policy reforms as they are largely distorted...



Exchange rate

The CBN aims to operate a market-determined rates, however this has not been implemented.



Fuel subsidy

According to the PPPRA (Petroleum Products Pricing Regulatory Agency), Nigeria spent about N10 trillion on fuel subsidy between 2006 and 2018.



Power

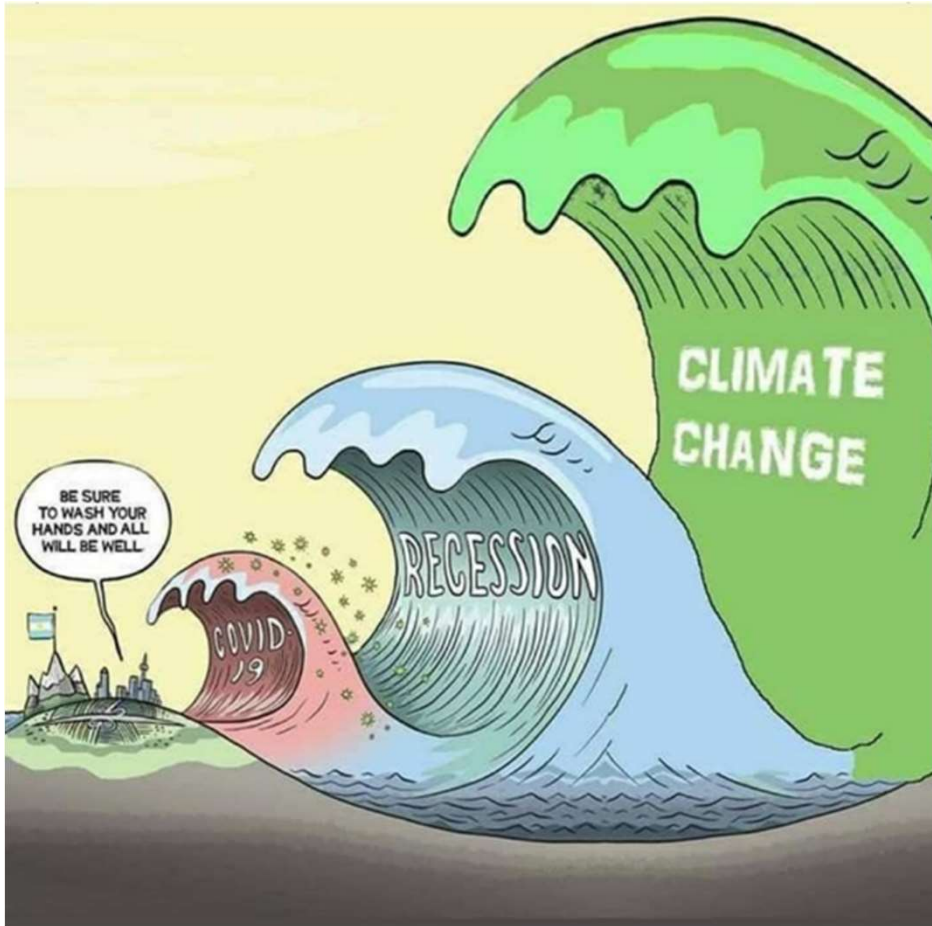
Nigeria's power and electricity industry is challenged with low electricity generation, poor transmission infrastructure, liquidity issues, high electricity consumer debts among others, due to non-cost reflective tariff.

Source: PPPRA, Solving the liquidity crunch in the power sector

Shifting from GDP Lens to SDG Lens



Climate change



'Highest temperature on Earth' as Death Valley, US hits 54.4C.

17 August 2020





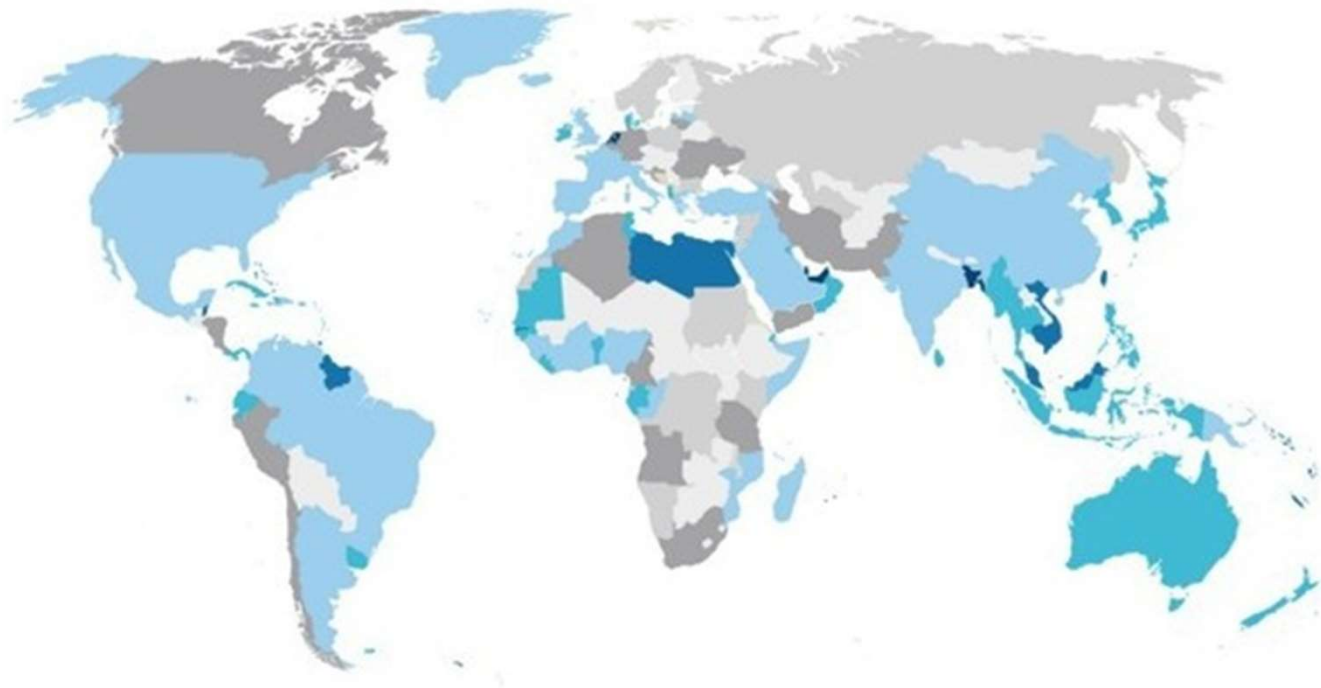
the guardian

August 20th 2020

Greenland ice sheet lost a record 1m tonnes of ice per minute in 2019

Percentage of national populations who live in places that will be drowned by a rise in long-term sea levels - even if global warming is held at 2C

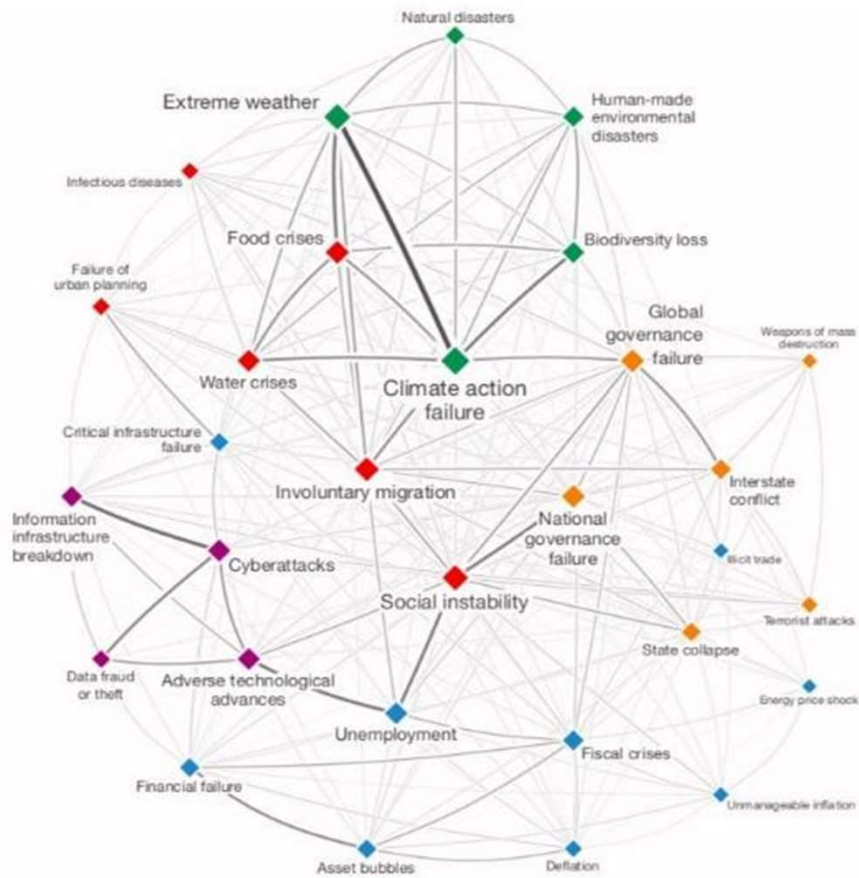
0% 0.1-5 5-10 10-25 25-50 50-75 75-100



Guardian graphic

Source: Nature Climate Change

Interconnectedness



“Having heard all of this you may choose to look the other way but you can never again say you did not know.”



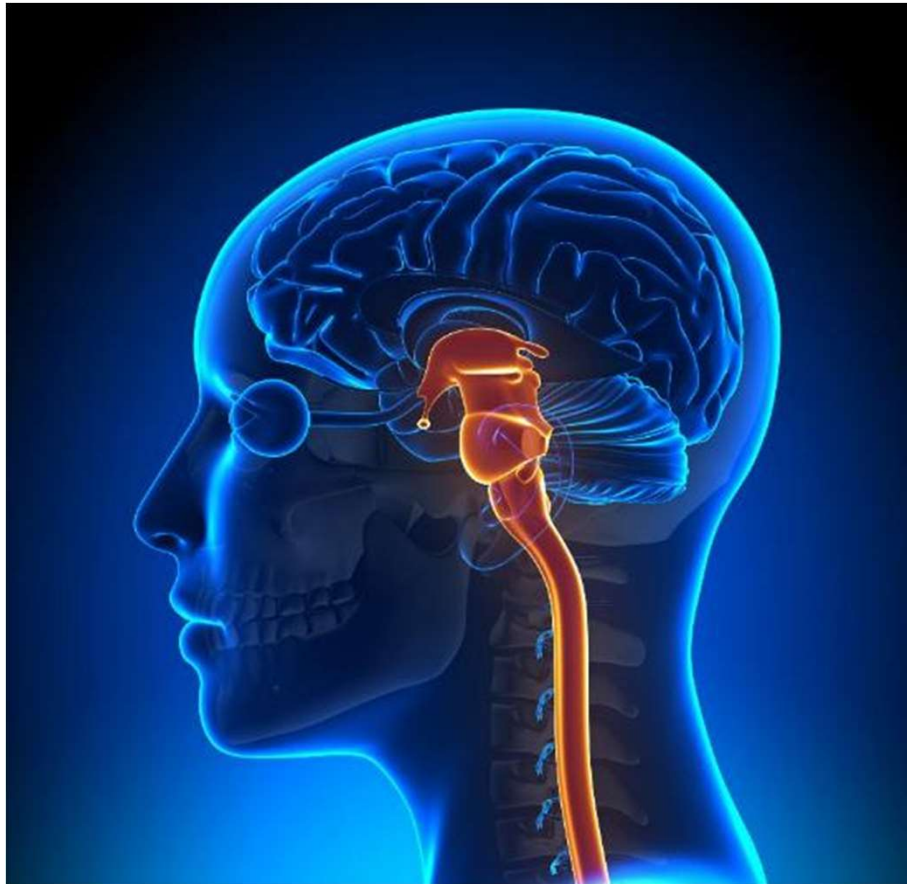
William Wilberforce

The
Economist

Espresso

Brain capital as a National strategy

Nigeria can become the first country to embrace Brain Capital as a core strategy ...



<https://www.psychiatrytimes.com/view/move-over-data-brain-capital-is-the-new-oil>

Thank you

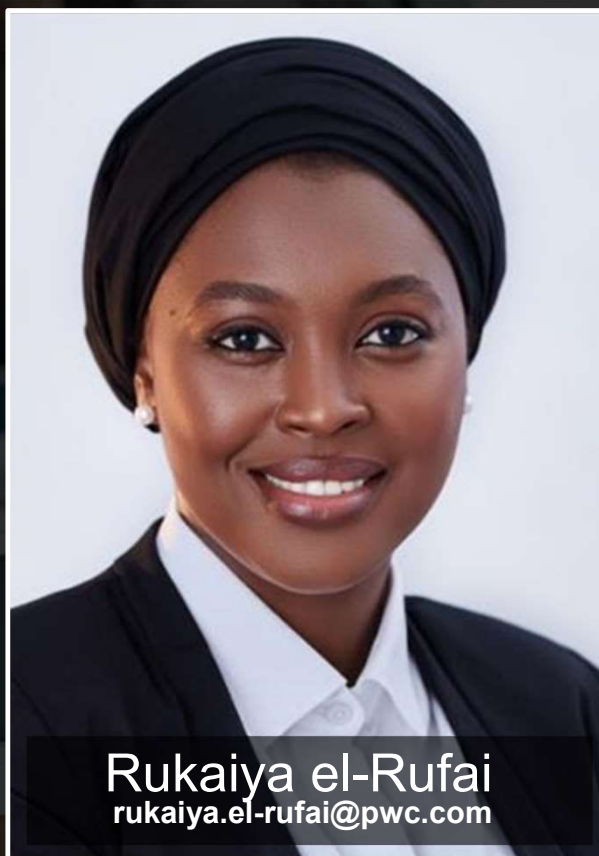


Day one

3

**Sustainability & Disruption,
Is there value in disruptive
innovation?**

Is disruptive innovation sustainable?



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Ada Irikefe
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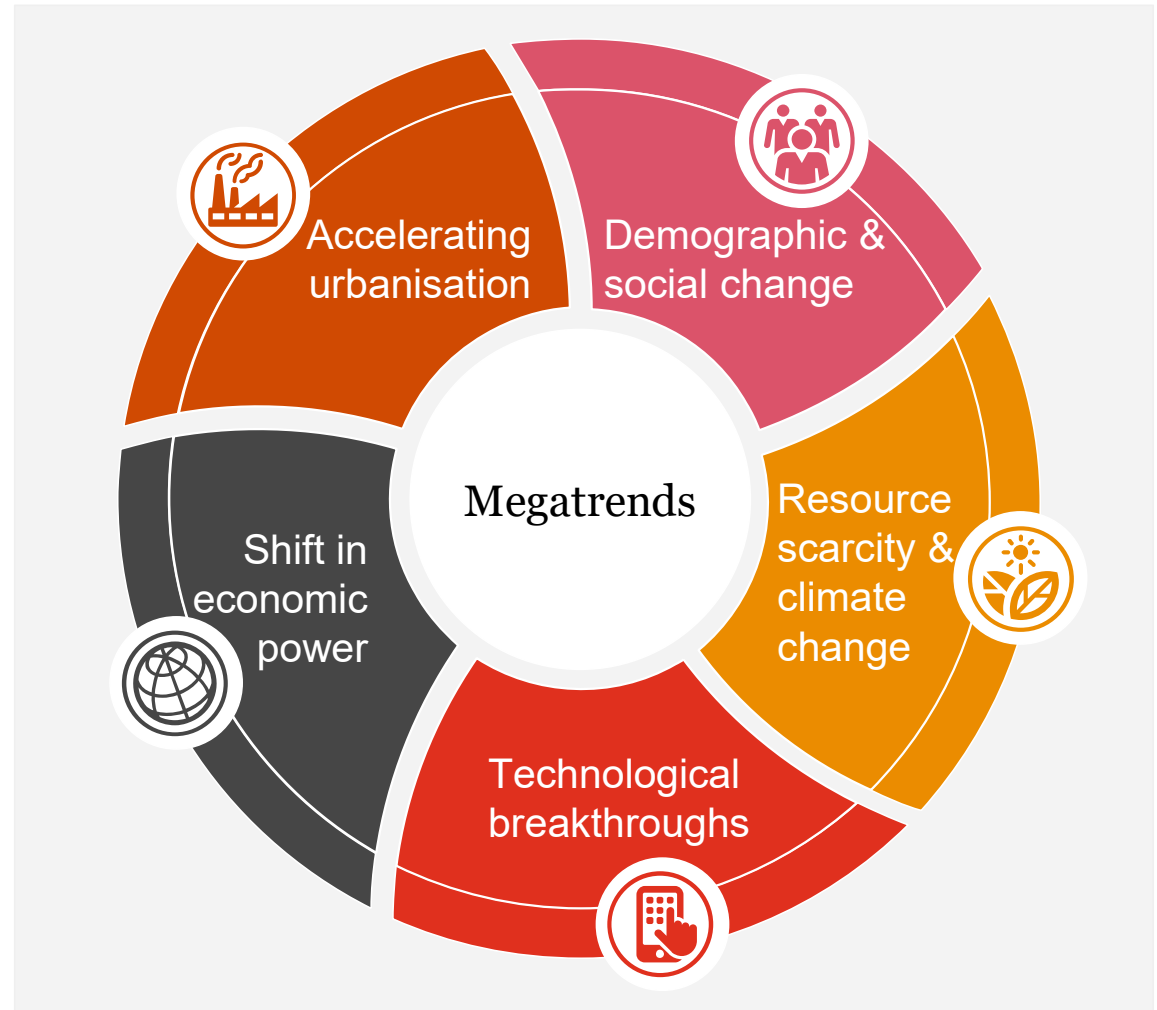


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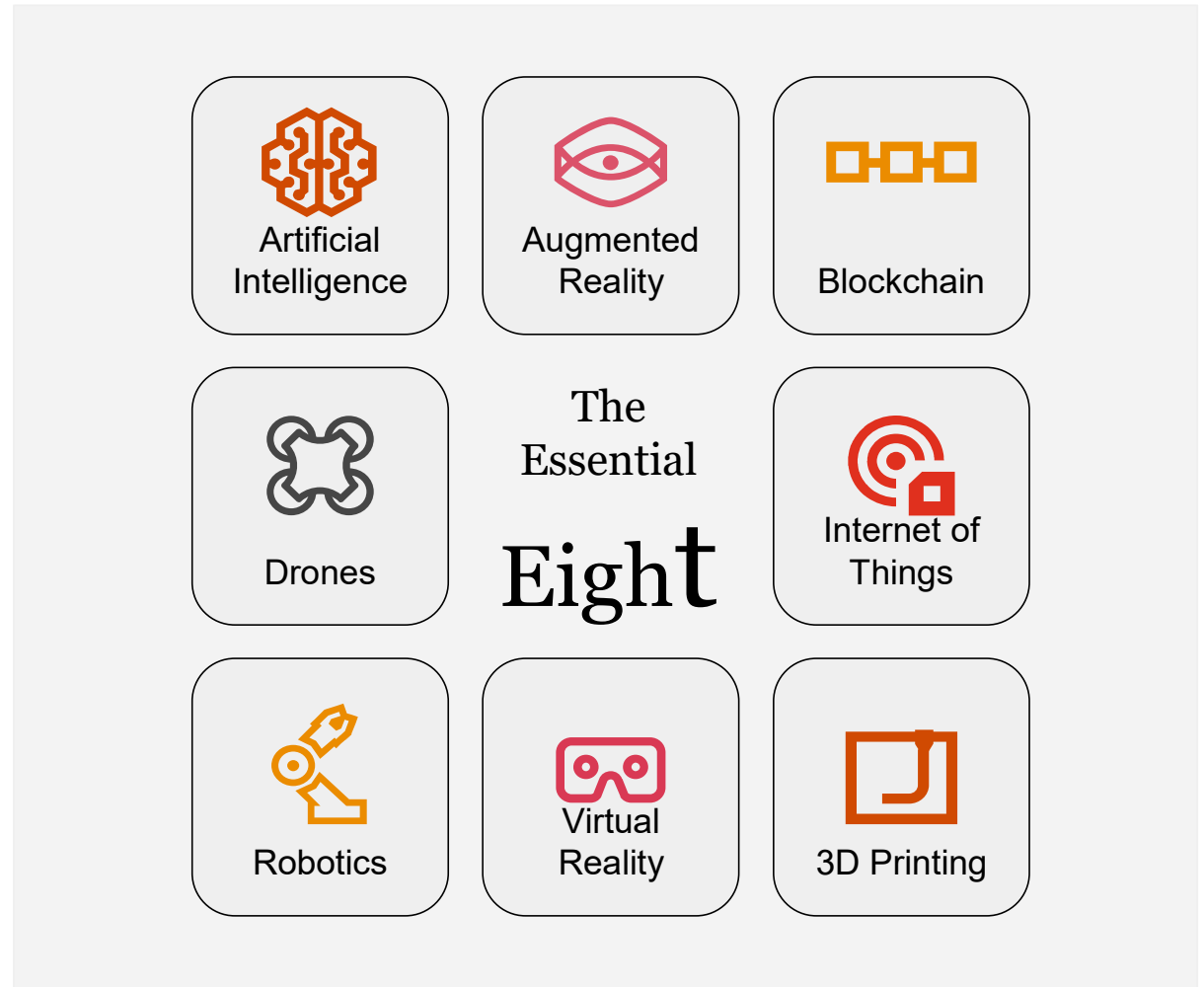
When was the last time you were faced
with something unexpected?

How did you react?

Five key global megatrends affecting business and lives



Eight essential
technologies having the
biggest business **impact**
now



Emerging Trends	Identity management	Reassessment of customer value
New Technologies	Machine Learning & Predictive Modelling	Cloud-based storage
Opportunities for Disruptive Innovation	Product personalisation	Process optimisation
Threats to Incumbents	Data Privacy	Weak data governance

Major disruptors are opportunities to drive **innovation**

Disruptor:
Big Data

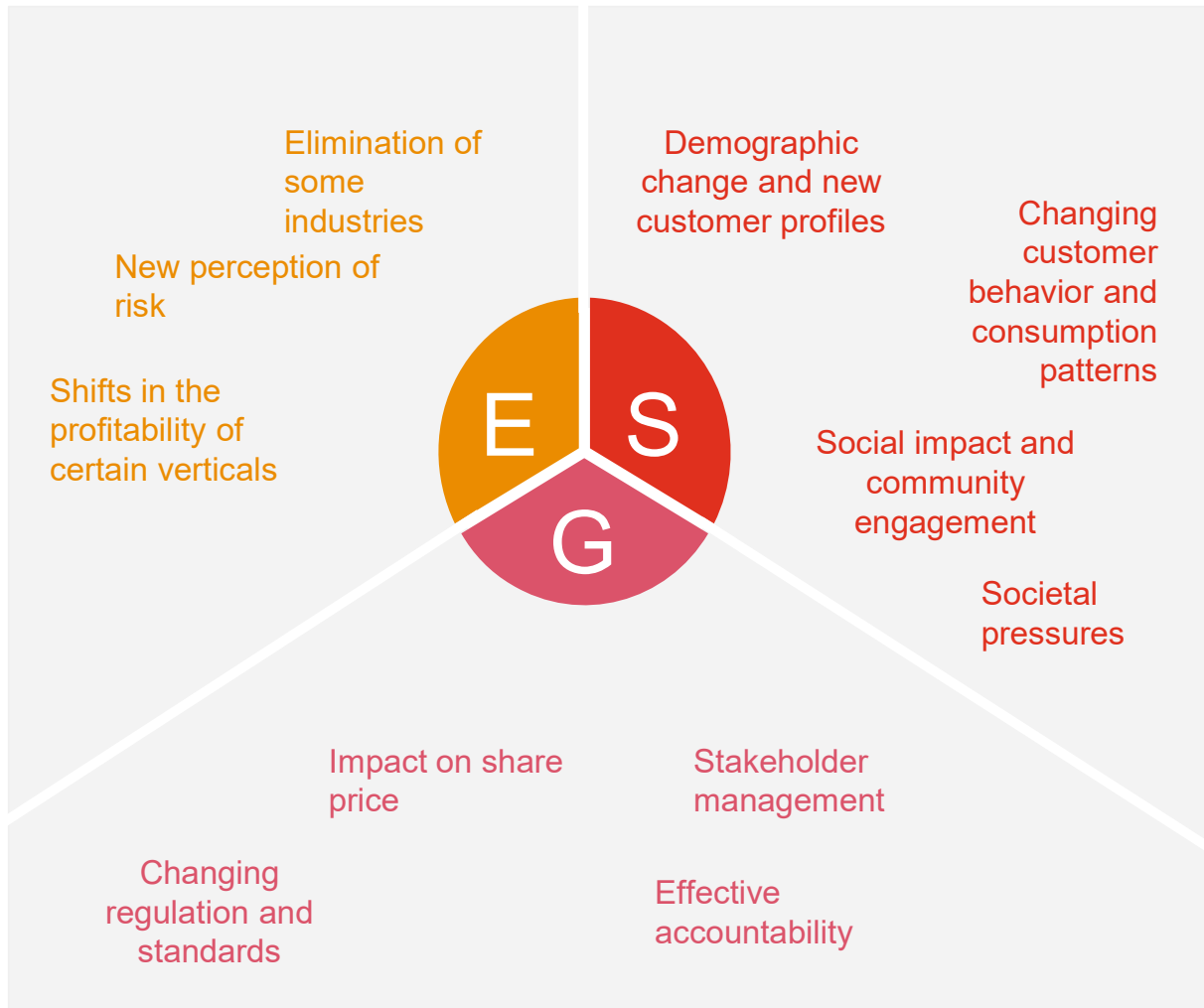


Disruptors threaten to leave unadaptable players **behind**

Disruptor:
Open Banking



Emerging Trends	Changes in consumer expectations	Changes in regulation
New Technologies	APIs	Cloud-based storage
Opportunities for Disruptive Innovation	New revenue streams	Market expansion for auditors
Threats to incumbents	Increasing competition from new/niche players	New terrain for fraud protection



Building a sustainable organisation requires banks to embrace **change**

Disruptor:
Sustainability
?

‘The arrogance of success

is to think that what
you did



yesterday

will be sufficient
for tomorrow’

William Pollard



ARE THERE ANY OPPORTUNITIES TO OFFER NEW PRODUCTS AND SERVICES?

HOW CAN I INTEGRATE THIS INTO OUR REPORTING?

SUSTAINABILITY TARGET:
CO₂ FREE UNTIL 2040
strategy& pwc

WHAT IMPACT DOES THIS HAVE ON THE VALUE OF OUR COMPANY AND WHERE ARE THE RISKS AND OPPORTUNITIES?

HOW CAN I TRANSFORM OUR ENERGY PRODUCTION TO RENEWABLES EVEN FASTER?

HOW CAN I BETTER EMBED THE CONCEPT OF SUSTAINABILITY ACROSS OUR EMPLOYEES?

The quest for sustainability is transforming the competitive landscape, which will compel businesses to innovate around their products, technology, people, processes, and business models

Demographics – How **diverse** is the workforce, and how attractive is it to the **emerging workforce** e.g. **Gen Z**?

Long term value creation – Increased stakeholder demands and regulatory needs

Social and behavioural change – rising customer expectations and the need to engage through digital channels

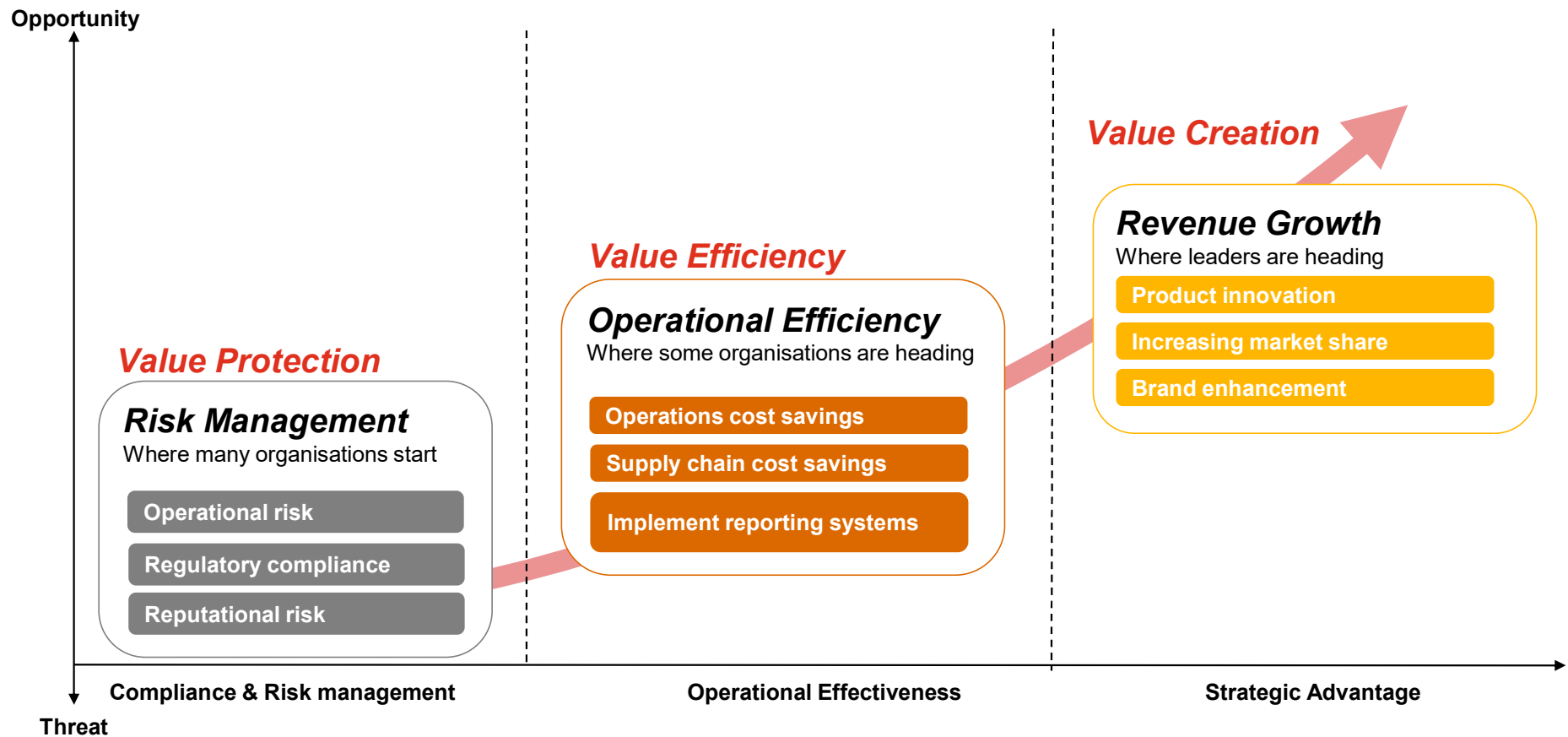
How does the bank **engage** with **communities** it works within?

How do we create **products** that are **environmentally friendly** given the sector we play in?

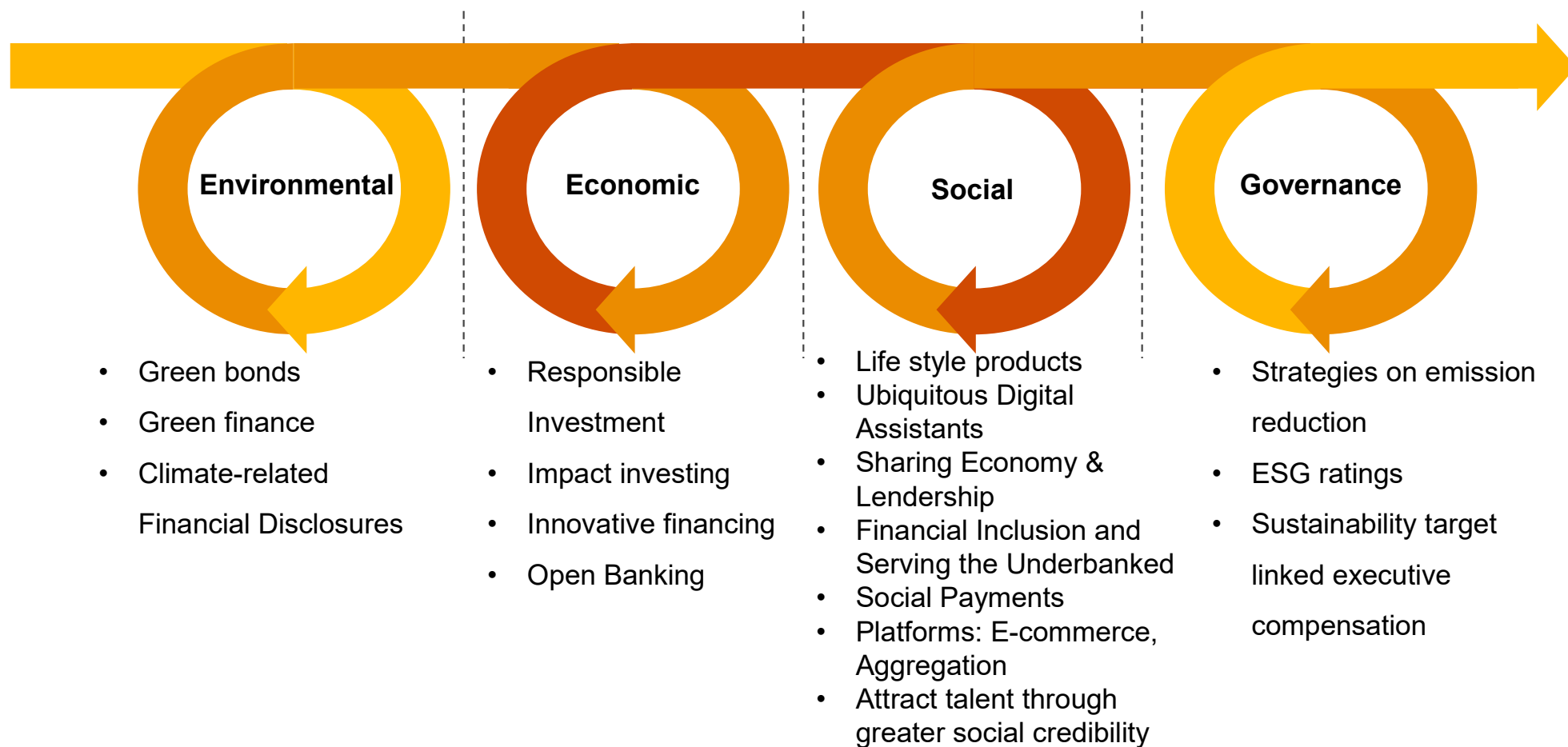
Is there availability of **funding** for **climate related and green projects**?

The financial services sector is an innovation leader, but a growing reliance on technology and the complexity of an interconnected world brings challenges that impacts the **Environmental, Social and Governance** factors

As a result of these disruptions, Banks need to continuously self-disrupt to remain future proofed as a responsible company



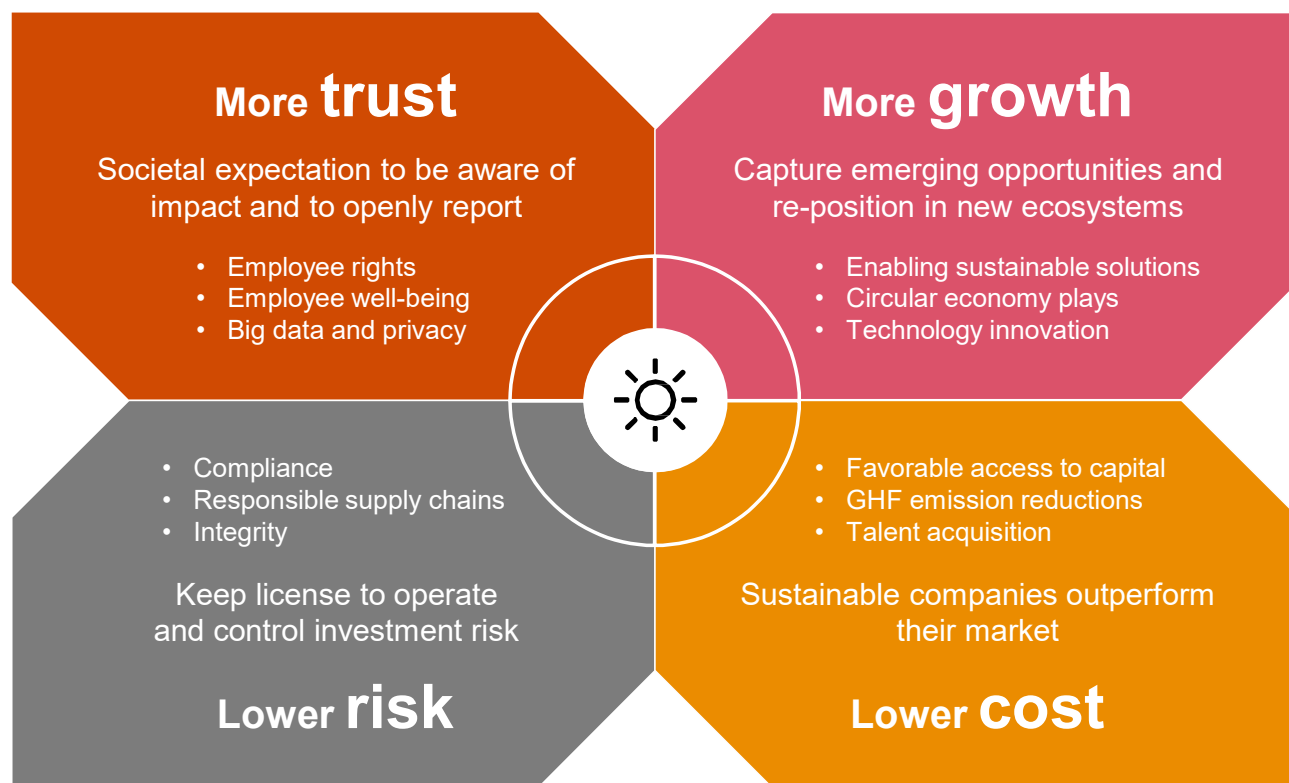
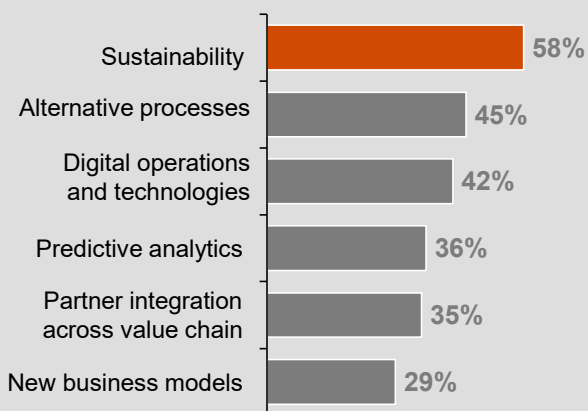
How banks are designing from the outside-in through a sustainability lens



Innovating through a sustainability lens can create value in four ways for Banks – and thus is high on the C-level agenda

58%

of CEOs are prioritising investments in sustainability in the upcoming year¹



Source: PwC, 23rd Annual Global CEO Survey © 2019 PricewaterhouseCoopers LLP

Now is the time to act – to address the unprecedented changes sustainability measures are to bring to the Banking Sector



- New and stricter regulations, in relations to the Taskforce on Climate-related Financial Disclosures (TCFD)



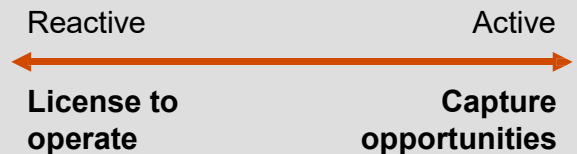
- High speed of the development of new technologies, e.g., AI Cloud in managing supply chain, Bots, cryptocurrencies, holograms



- New players entering the market, e.g., Fintech and Challenger Banks; with Niche customer-centric, green and ethical products

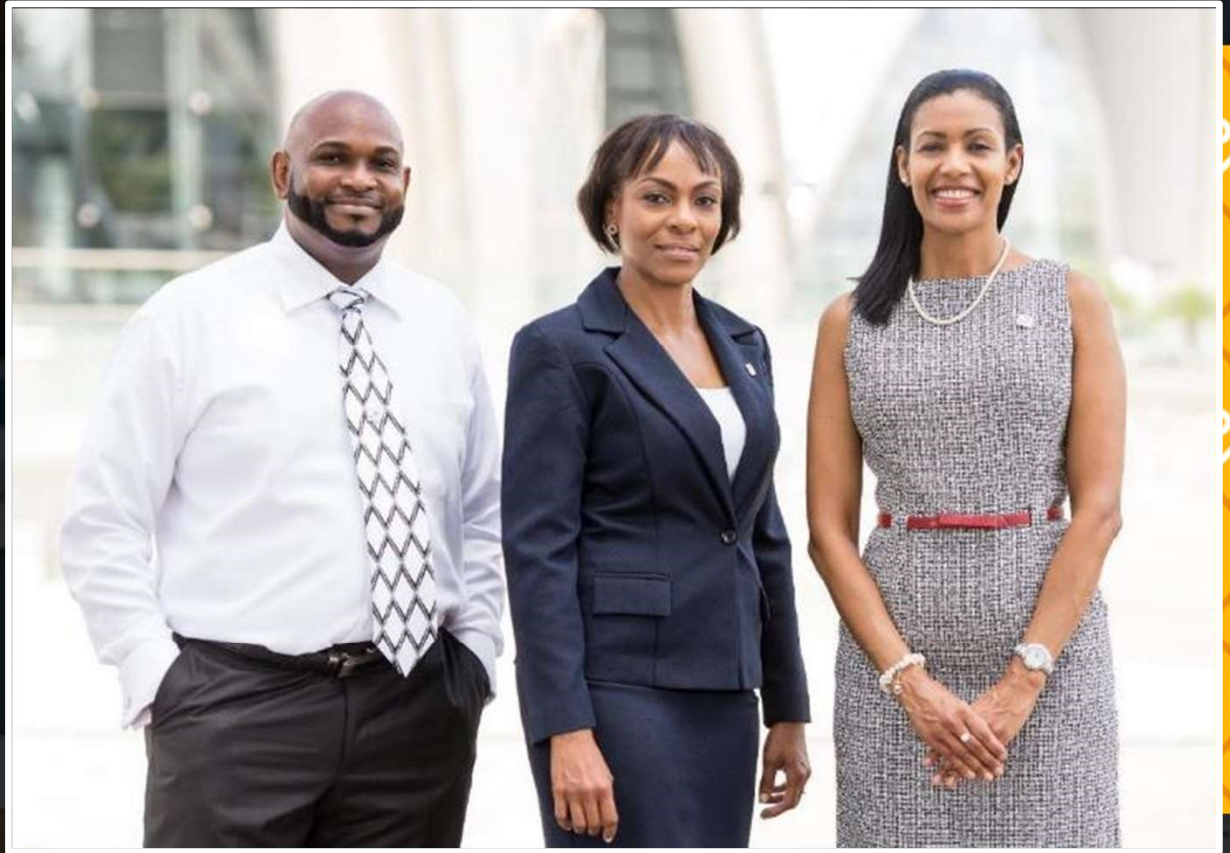
External changes

How does your company currently respond to the sustainability discussion?



Banks which are at the **forefront** of the **sustainability and innovation discussion** can benefit from **growth opportunities** rather than reacting to purely **keep their license to operate**

Thank you



Day one

4

Driving a digitally fit internal audit practice (IA's response to disruptive technologies & innovation)

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Table of content

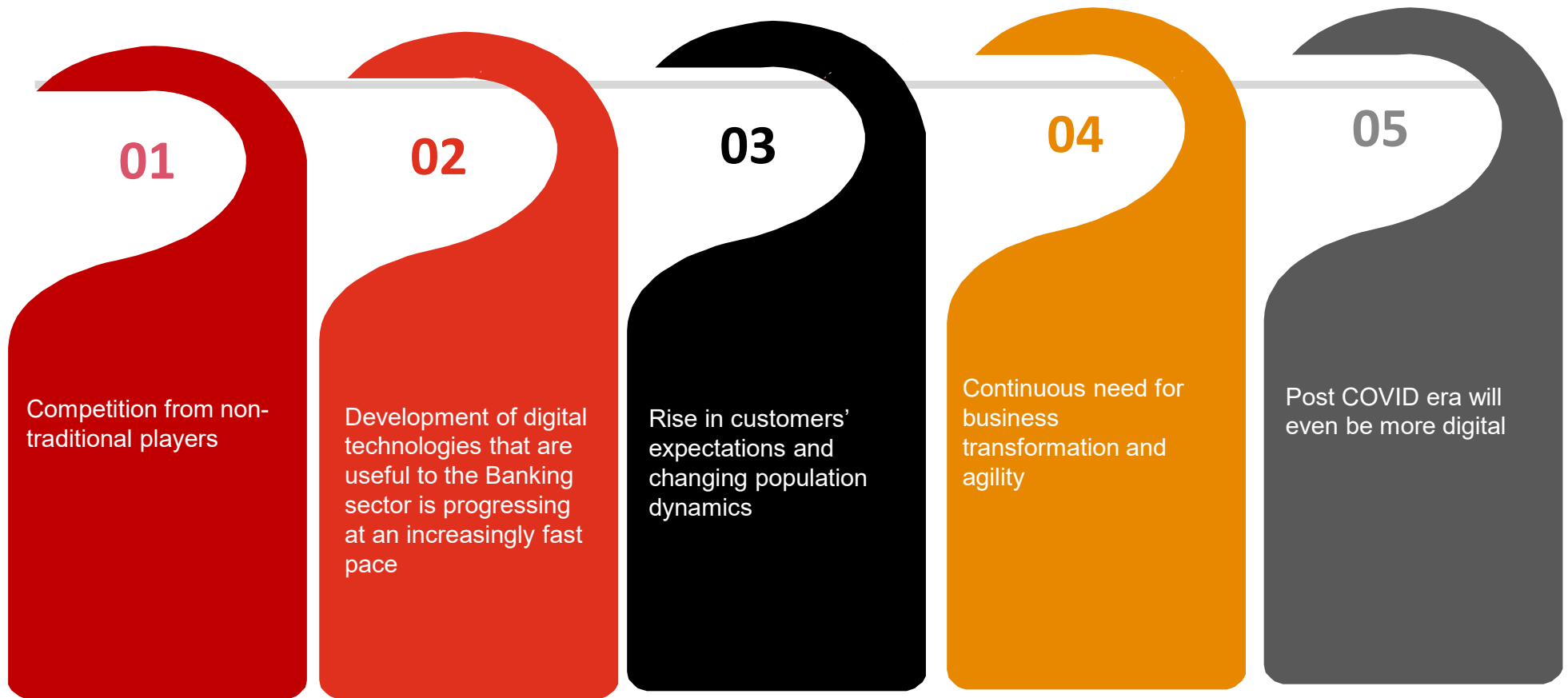
- 01 | ▶ Introduction
- 02 | ▶ Making Sense of Disruption for Internal Audit
- 03 | ▶ Sample Responses by IA to Digital Disruption in the Financial Service Industry
- 04 | ▶ Next Steps for Internal Audit (IA) Professionals

The background is a dark, blurred photograph of a meeting. In the foreground, a laptop is open on a wooden table, displaying a dashboard with three circular gauges. To the left of the laptop is a white mug and a glass of water. In the background, several people are seated around a table, looking at laptops. A white square with the number '01' is overlaid on the left side of the image.

01

Introduction

The 5 Key Drivers for Digital Disruption in Banking



Insight from PwC's 24th Annual Global CEO Survey 2021

For business, 2021 will be a year of reinvention. One year into the COVID-19 pandemic, PwC surveyed 5,050 CEOs around the world about their plans to respond to new threats, transform their operating model and create a more sustainable future. An excerpt from the survey is shown below:

50%

50% of CEOs surveyed plan to increase their rate of digital investment by 10% or more

54%

54% of CEOs surveyed in Africa express concerns over rising cases of cyber threats

36%

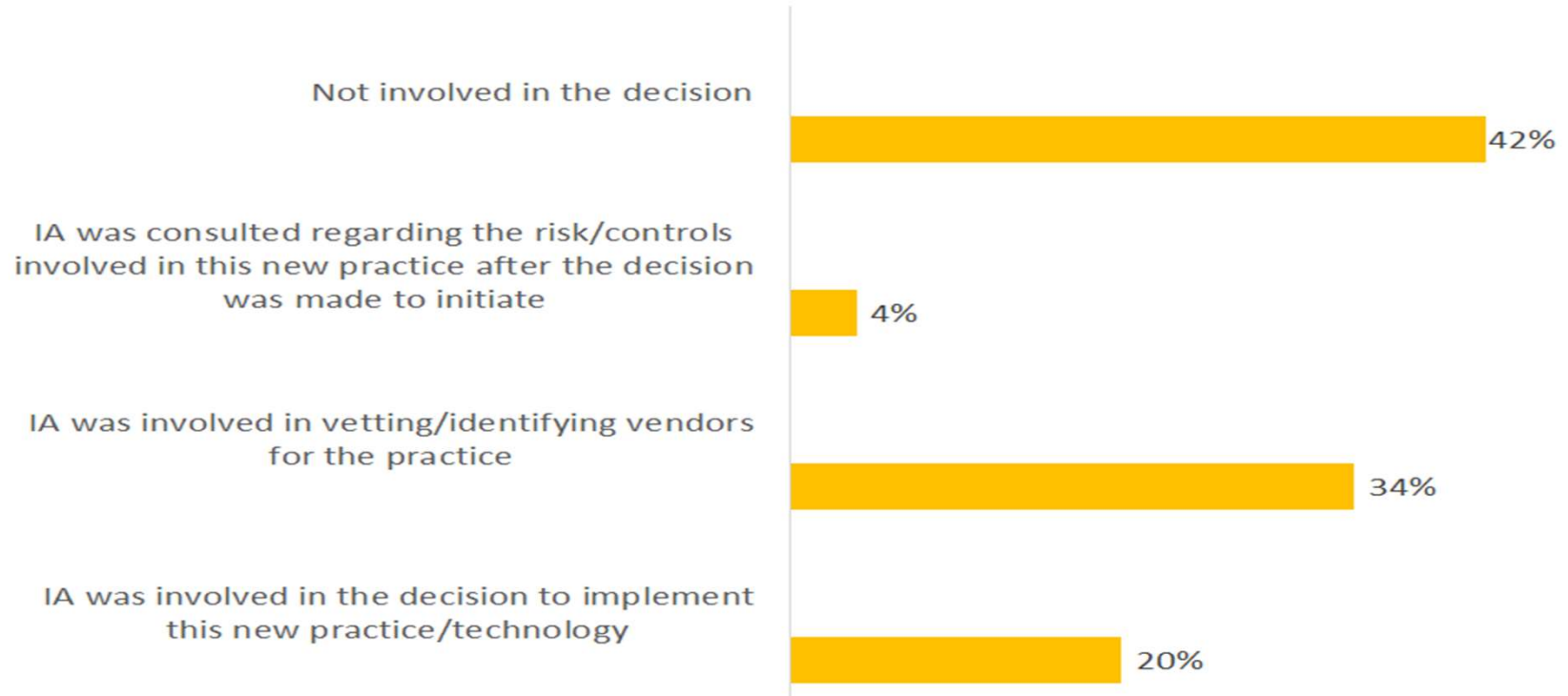
Share of CEOs focusing on productivity through automation and technology, a 124% increase compared to 2016

76%

Share of CEOs who believe global economic growth will improve in 2021

Source: PwC's 24th Annual Global CEO Survey - 2021

Internal audit's involvement in disruption is still low



Source: IIA paper- IA's response to disruptive innovation June 2019

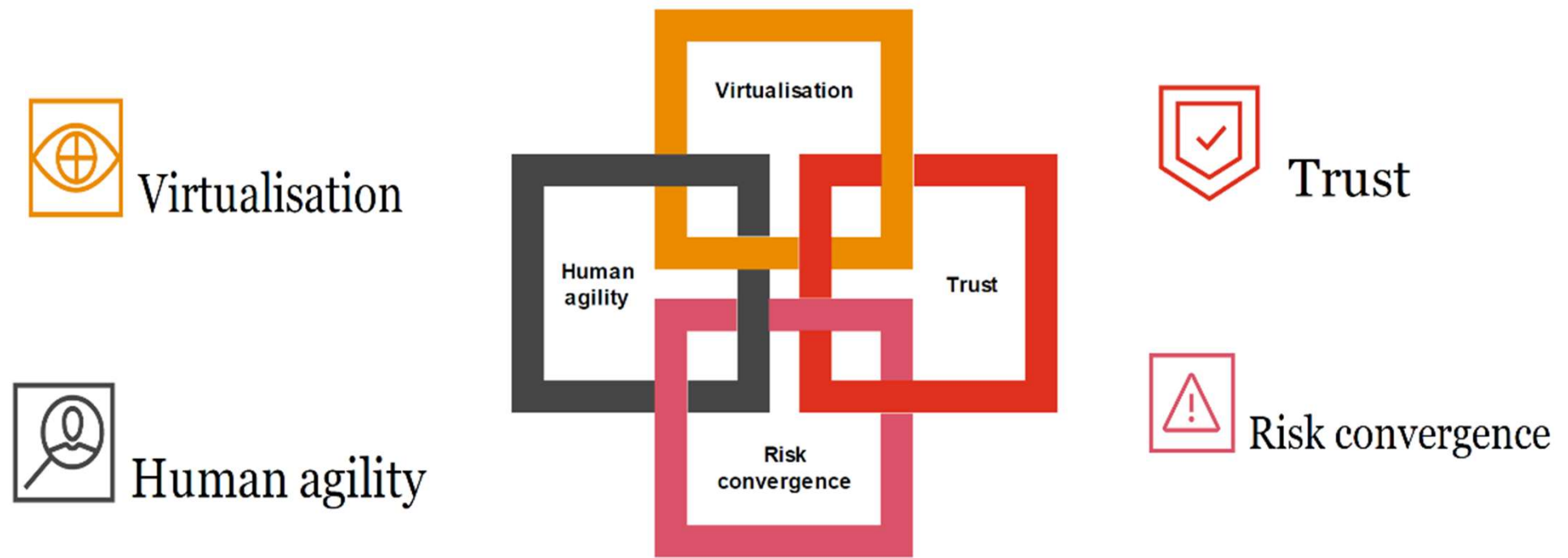


02

Making Sense of Disruption for Internal Audit

Making Sense of Disruption for Internal Audit

PwC has identified four (4) mega trends as a result of our extensive work in Internal Audit functions, spanning every size and type of organization across every sector and every geography. These are forces which Internal Audit leaders and practitioners need to understand and provide adequate response. Defining them will, we believe, help to cut through the multitude of current and emerging influences impacting Internal Audit in order to create a clear path for action.



Making Sense of Disruption for Internal Audit

Virtualisation

Virtualisation is the technological immersion of all Internal Audit activities in a real time, continuous and connected environment.

Virtualisation

How to future-proof IA: Practical steps

-  Work out what technology you have available already – Not just in Internal Audit.
-  Assess the digital fitness of the IA team.
-  Develop a realistic technology and data investment strategy.
-  Refresh your operating model to take advantage of this trend e.g. virtual fieldwork, off-shore teams and data analytics in advance of fieldwork to provide areas of focus.
-  Adopt a 'digital first' mindset when planning the audit execution.

The future of IA involves virtual and globalised teams interacting in real time, leveraging technology.

Making Sense of Disruption for Internal Audit

Trust



Trust is the new priority for Internal Audit if it wants to thrive in a socially conscious and values-driven society.

Internal audit expectations have evolved, merely going beyond providing assurance is longer going to be enough

Trust



How to future-proof IA: Practical steps



Develop an IA values and behaviours statement complementary and aligned to your organisation.



Ensure that all IA recruitment, promotion and development activities look for, have or develop attributes which are aligned to the values.



Create or enhance the IA annual report to ensure that trust and transparency measures are clearly monitored and reported on.



Champion trust and transparency throughout the business.

Making Sense of Disruption for Internal Audit

Risk convergence



Risk convergence describes the increased connectivity between internal and external risk factors, driving a need for greater breadth and depth from Internal Audit.

The goal of risk convergence is to integrate risk disciplines that are significant to an organization, within a single framework to provide a holistic view of risk for the organization

Risk convergence



How to future-proof IA: Practical steps



Identify both external and internal sources of risk insight.



Refresh your risk assessment framework to consider a broader range of insights.




Utilise guest auditors or co-source insights into risk from providers, secondees and subject matter experts and work with other risk functions in your organisation.



Maximise technology to help gather and aggregate risk, for example, using Dynamic Risk Assessment principles which predict areas of risk based on historical trends.


Making Sense of Disruption for Internal Audit

Human agility 


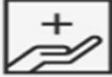


Human agility is the key requirement for Internal Audit to adapt to co-exist with technology, be more intuitive, iterative and celebrate IA practitioners' unique human traits.

“These are challenging times for many organizations. Internal audit have spoken about agility and value add for a long time. Our businesses need that now more than ever. This is our opportunity”

Jason Agnolette – National Leader Internal Audit

Human agility 

How to future-proof IA: Practical steps






-  Develop a clear vision of human-led IA activities as distinct from technology-led auditing e.g. Intelligent Controls methodology.
-  Invest in developing training and a culture of celebrating and strengthening human traits e.g. creativity, influencing etc.
-  Identify, log and baseline the mundane activities which have been automated to keep the focus on how technology can help.
-  Put away existing audit programs and build your audit plans and scopes iteratively as you progress through the audit.



03

**Sample Responses by IA to
Digital Disruption in the
Financial Service Industry**

Internal Audit in the Age of Disruption – Issues & Risks

Risk Considerations	Key Issues
 Digitisation and Business Model Disruption	<ul style="list-style-type: none"> • How well informed are senior management about the potential disruptors for the business and its industry? • Is our business model likely to still be viable in five to ten years? If not, what is being done to protect the firm's future? • Do we have the capacity and capabilities to innovate? • Are our efforts to digitalise and keep pace with competitors having an effect on our internal control environment? • How can we improve our technology implementation to prioritise a risk-control mindset?
 Cybersecurity and Data Privacy	<ul style="list-style-type: none"> • Is there evidence we have the basics covered? This includes malware detection, software updates, staff awareness and access rights. • Are we prepared for the evolving nature of cyber risks to our organisation, given the fast pace of digitalisation? • Is our IT security team staying up to date with evolving information security threats?
 Regulatory Change and Compliance	<ul style="list-style-type: none"> • Are we taking a forward-thinking approach to regulatory changes that affect our industry? • Are our first- and second-line defense efforts well coordinated and able to comply with the necessary regulations? • Is the extraterritorial nature of regulations creating more risk for our organisation?
 Third Party and Supply Chain Risks	<ul style="list-style-type: none"> • Do we regularly review the appropriateness of our outsourcing programme? Can our auditors gain physical access to third party sites if required? • Are audit rights included in our contracts? Can we physically access third-party sites if required? • Do we know our third party exposure and what processes are handled by these organisations? Have we been recording an appropriate inventory of these exposures? • Are our suppliers complying with data security requirements?
 Business Continuity and Brand Reputation	<ul style="list-style-type: none"> • Are we aware of the main continuity risks to our organisation? Have these risks been codified? • Do we have a comprehensive business continuity plan in place and has it been tested? • Who is accountable when business continuity is hindered? Are these individuals aware of their responsibilities? • What is our PR and communications damage-limitation policy? • How sophisticated is our understanding of our reputation and the impact this has on brand value?

Top 3 Emerging Technologies Disrupting the Global Business Landscape

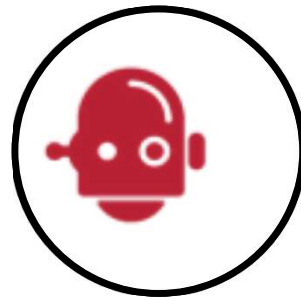
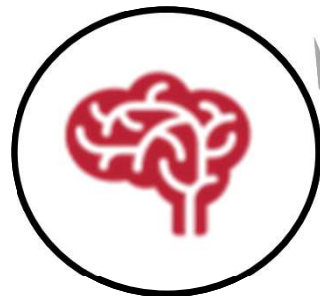
Forbes 2020 Technology Publications has listed Artificial Intelligence, Blockchain and Robotic Process Automation amongst the top 7 biggest technology trends that will disrupt banking and financial services in 2020 and beyond



Chatbots & conversational AI
\$17.7B
 Intelligent Virtual Assistant market by 2023

Source: Middle East Emerging Technology Report 2020

Artificial intelligence



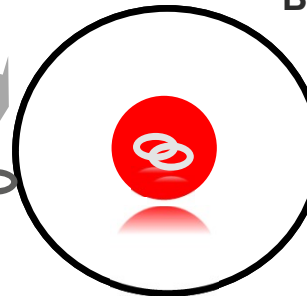
Robotic Process Automation (RPA)



Robotics & cognitive automation
\$8.75B
 Global RPA market by 2024

Source: Middle East Emerging Technology Report 2020

Blockchain



6x

Number of Bitcoin transactions has grown from just over 50,000 in 2014 to over 300,000 as at Feb. 2021.

Source- Blockchain

Blockchain



Applicable Areas

- ❖ Payments
- ❖ Clearing and Settlement Systems
- ❖ Fundraising
- ❖ Securities
- ❖ Loans and Credits
- ❖ Trade Finance
- ❖ International Remittances
- ❖ Customer KYC and Fraud Prevention

Nasdaq, Citi, Australian Security Exchange, Abra, Bitpesa, Circle, BBVA, Mycelium

Anticipated Risks

- ❖ Insecure Application Programming Interface (APIs)
- ❖ Data Confidentiality and Privacy
- ❖ Weak Blockchain Application Development Protocol
- ❖ Data Regulations across different geographic boundaries

IA Response

- ❖ Provide independent, substantive evidence of the “private key and public address pairing” which is one of the pieces needed to establish ownership of cryptocurrency.
- ❖ Securely interrogate the blockchain to independently and reliably gather corroborating information about blockchain transactions and balances.
- ❖ Auditors must be able to determine whether the data put on blockchain will expose the enterprise to liability for non compliance with applicable laws and regulations.

PwC UK uses an analytic tool called Halo to provide assurance services to clients transacting in Bitcoin, Bitcoin Cash, Bitcoin Gold, Bitcoin Diamond, LiteCoin, Ethereum, ERC20 - OAX token, and Ripple (XRP).

Artificial intelligence



Applicable Areas

- ❖ Chatbots and Personalized Customer Service
- ❖ Credit Agreement Analysis
- ❖ Fraud Prevention
- ❖ Risk Management
- ❖ Regulations and Rules

UBA, AccessBank, Bank of America, Wema Bank, StanbicBTC, JP Morgan, Wells-Fargo

Anticipated Risks

- ❖ Algorithm bias
- ❖ Bugs and Vulnerabilities

IA Response

- ❖ A review of AI should ascertain whether unintended bias has been added to the algorithms.
- ❖ Auditors should assess the effectiveness of algorithms and whether their output is appropriately reviewed and approved.
- ❖ Auditors must also consider cybersecurity and search for possible bugs and vulnerabilities that can be exploited to impact AI functionality

Tools:
Intelligent Auditing Assistance
AI –driven Audit Reporting
Data Analytics
Journal Entry Testing

Robotics Process Automation



Applicable Areas

- ❖ Trade Clearing
- ❖ Transaction Processing
- ❖ Payment Operations
- ❖ Shipment Scheduling and Tracking

Union Bank, BNY-Mellon, SunTrust Bank, Ambit Energy, ANZ, EMC, AT&T, AutoNation, Comcast, GM, J.P. Morgan Chase, Citibank Clydesdale Bank, Nomura Financials, Tesco, and USAA

Anticipated Risk

- ❖ Operational
- ❖ Change Management
- ❖ Implementation
- ❖ Functional

IA Response

- ❖ Understand the RPA processes, which include data extraction, aggregation, sanitization and cleansing.
- ❖ Review of the source code.
- ❖ Review logs, configuration controls, privileged access controls and the like. General IT controls are applicable as always.
- ❖ Substantive testing, auditors must have an understanding of the tools used to develop and maintain RPA

PwC Nigeria used data analytics tools to audit an RPA Bot for ATM reconciliation



04

Next Steps for IA Professionals



Next steps

Digitise Internal Audit

Embrace and leverage new technologies in performing internal audit activities. Be at the forefront of adopting emerging technology in reviewing internal processes as organizations implement new business processes.

Invest in capacity

Develop an adaptive, flexible, innovative staffing model with technological competence and the ability to rapidly understand and leverage new tools, techniques, and processes.

Agility/Flexibility

Internal audit professionals should be continuously agile in their approach and methodology to keep up with speed of disruptive technologies, constantly learn about new technologies and the complex and emerging risks that face your organization

Build trust and collaboration

Earn trust by doing credible internal audit work and holding the team to higher standards. Align internal audit work with the expectations of key stakeholders and seek collaboration.

Thank you



Day one

5

Use Cases 1



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01

Enterprise Continuous Monitoring

Present Challenges



- 
- 1 Manpower required:** a good number of staff that should be deployed to more productive tasks spend time performing manual reviews.
 - 2 Volume of transactions:** the high volume of daily transactions make it impossible to perform 100% review of all transactions.
 - 3 Speed & Effectiveness of review:** due to the high volume of transactions to be reviewed, a sampling approach is adopted which leads to a risk of omitting control breaches or fraudulent transactions. It is also time consuming & labor intensive
 - 4 Managing the lifecycle of exception:** manually managing the lifecycle of exceptions (i.e. assignment, escalation, delegation) is a tedious and labor intensive process.
 - 5 Oversight over the activities of the assurance team:** Difficulty in performing oversight activities by the assurance leadership team over tasks assigned to team members to ensure they are completed timely.

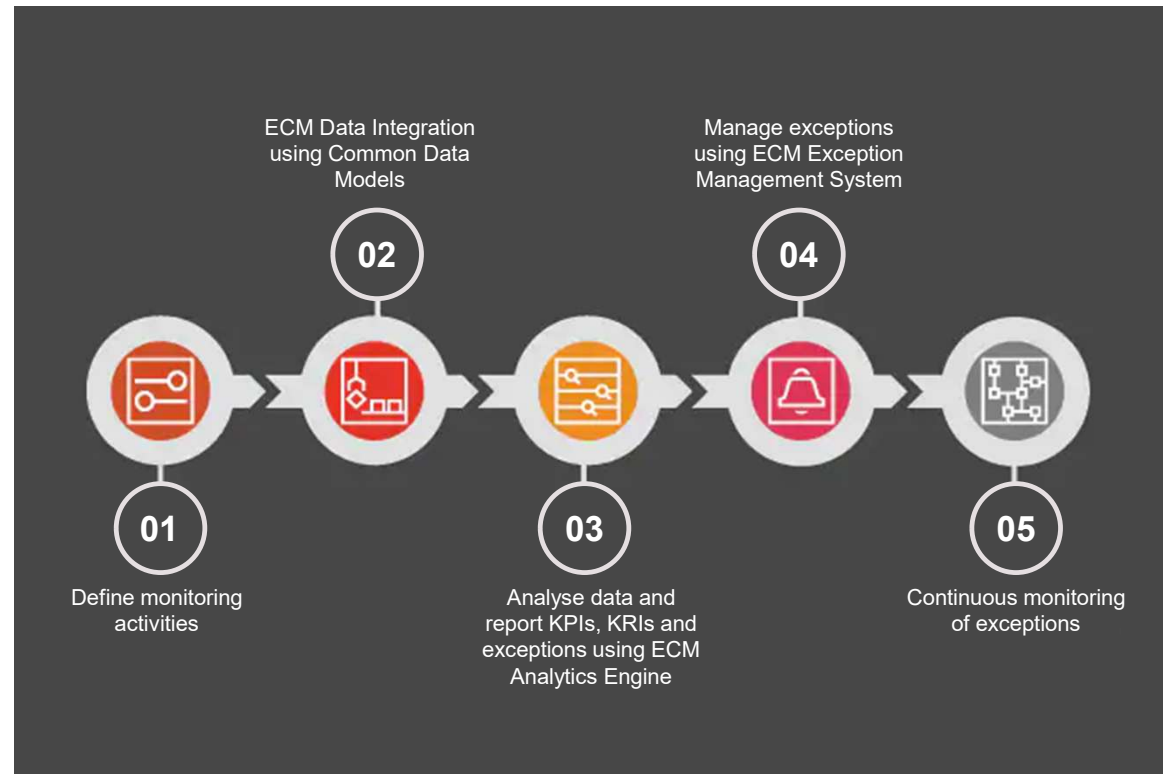
Our Value Proposition

Product Description



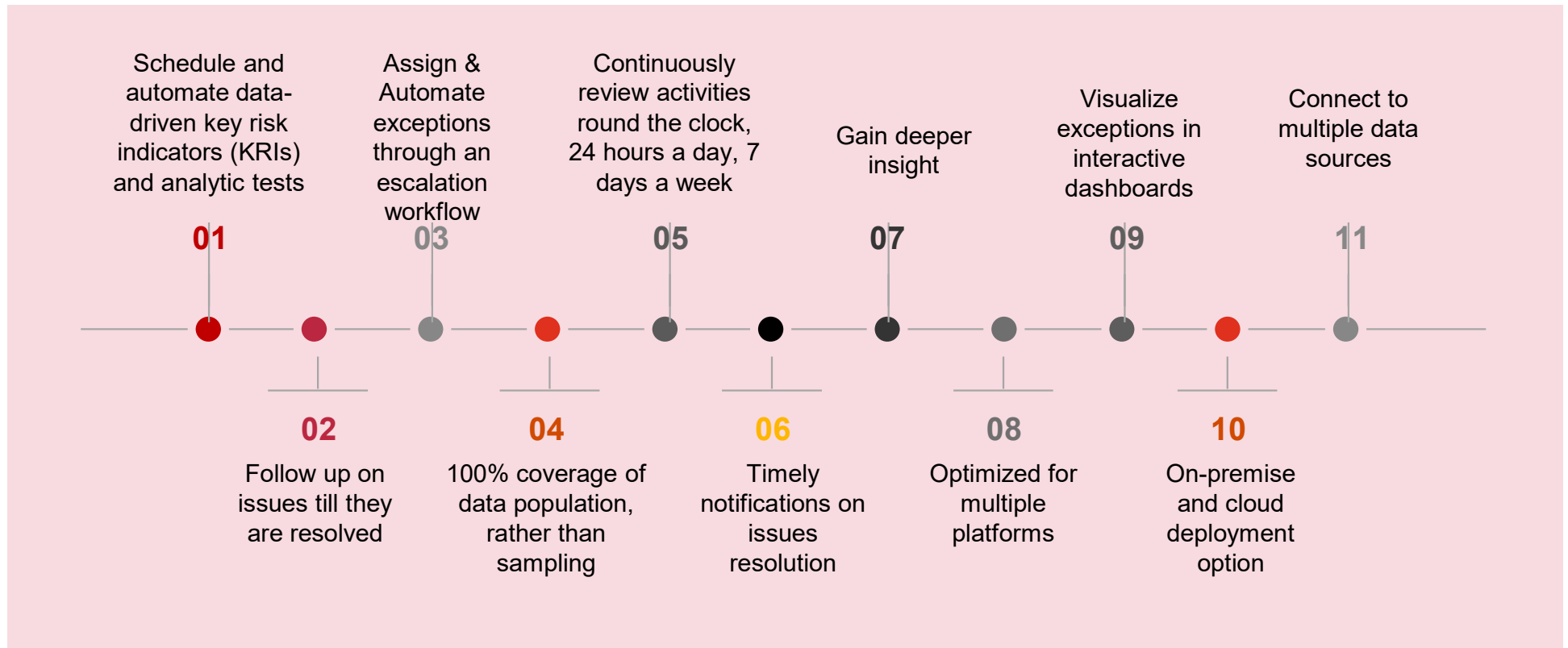
PwC's Enterprise Continuous Monitoring (ECM) allows assurance providers gain early **insight into control failures** & compliance violations, **escalates exceptions** to responsible officers as soon as they are identified and **tracks the resolution** of those issues. The solution continuously reviews underlying transactional data and ensures assurance is provided over events **in near real-time**.

How it works

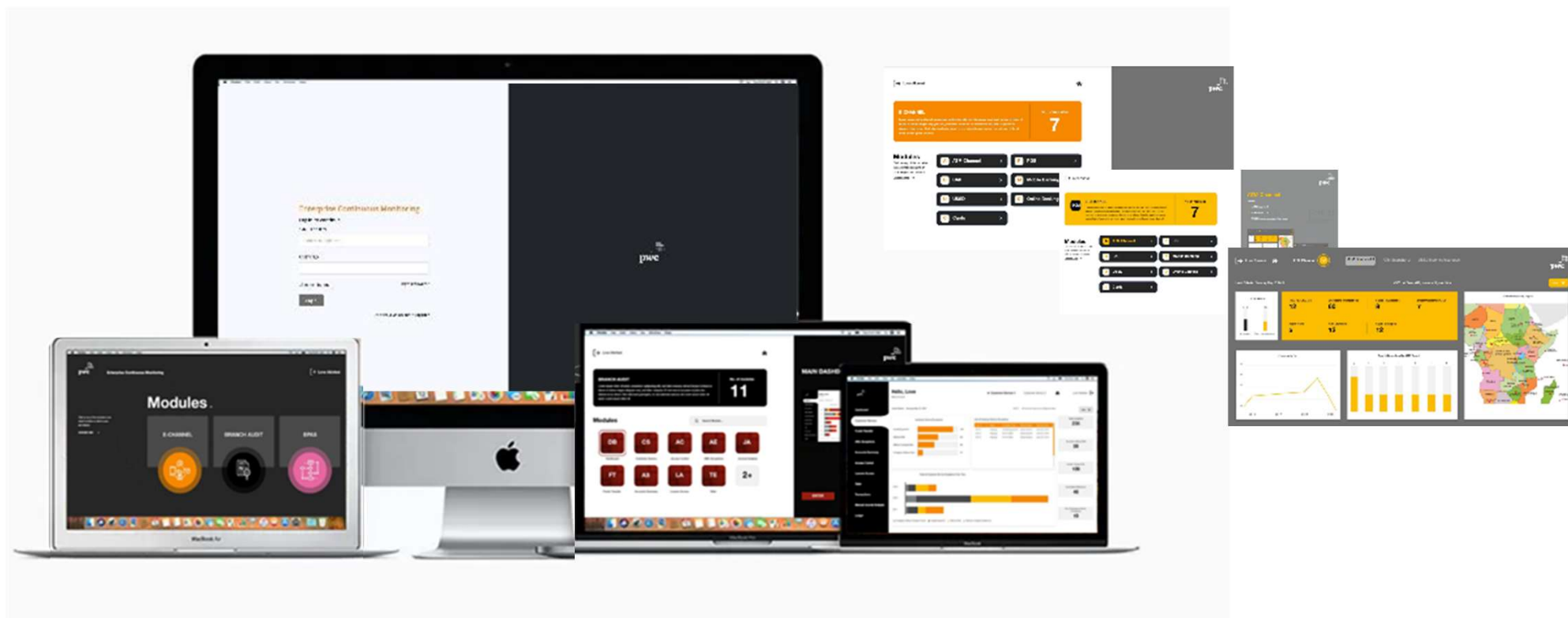


Features/Benefits

Listed below are some of the benefits of implementing the solution:



ECM Design

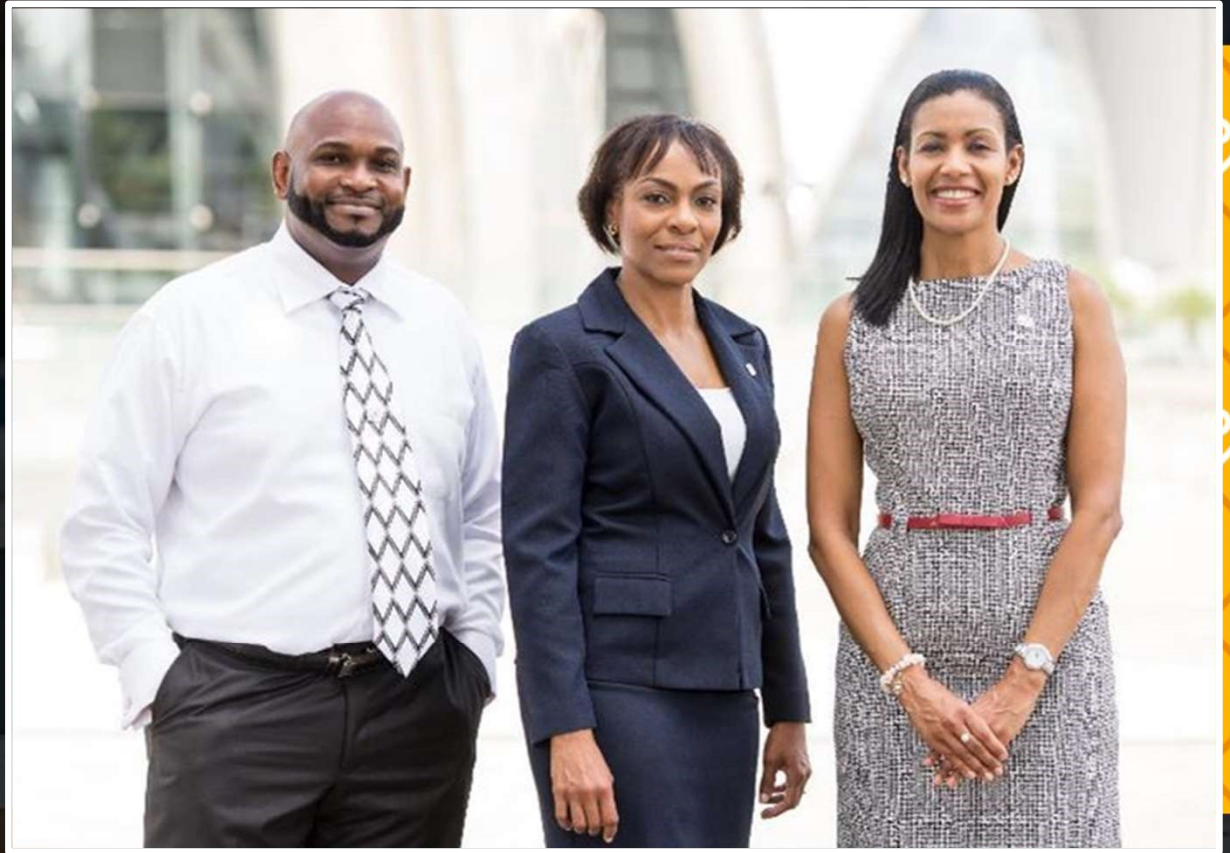


Sample Solution



A screenshot of a web application interface for 'Enterprise Continuous Monitoring'. The page has a light blue background. At the top, it says 'Enterprise Continuous Monitoring' in orange. Below that, it says 'Log in to continue'. There are two input fields: 'DEV_ACCOUNT' with the value '16167@pwc.com' and 'PASSWORD'. There are checkboxes for 'Remember me' and 'Forgot password?'. A 'Login' button is at the bottom left. At the bottom right, there is a link 'Don't have an account? Register'. On the right side of the screenshot, there is a dark grey vertical bar with the 'pwc' logo.

Thank you



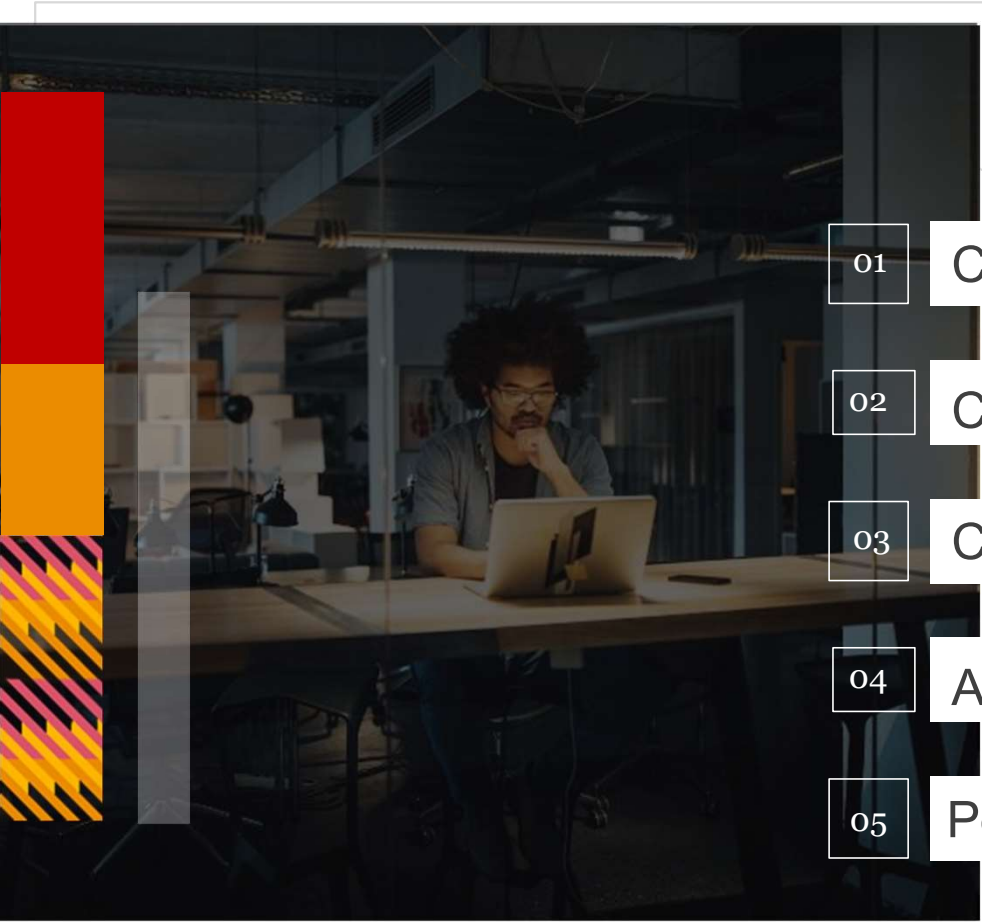
Day two

6

Cyber Risk Management
(Securing The Digital Bank)

Nkiruka Aimienoho
nkiruka.aimienoho@pwc.com





Outline

- 01 Cybercrime in the News

- 02 Cyber-risks Facing the Digital Bank

- 03 Cyber Risk Management

- 04 Auditing Cybersecurity

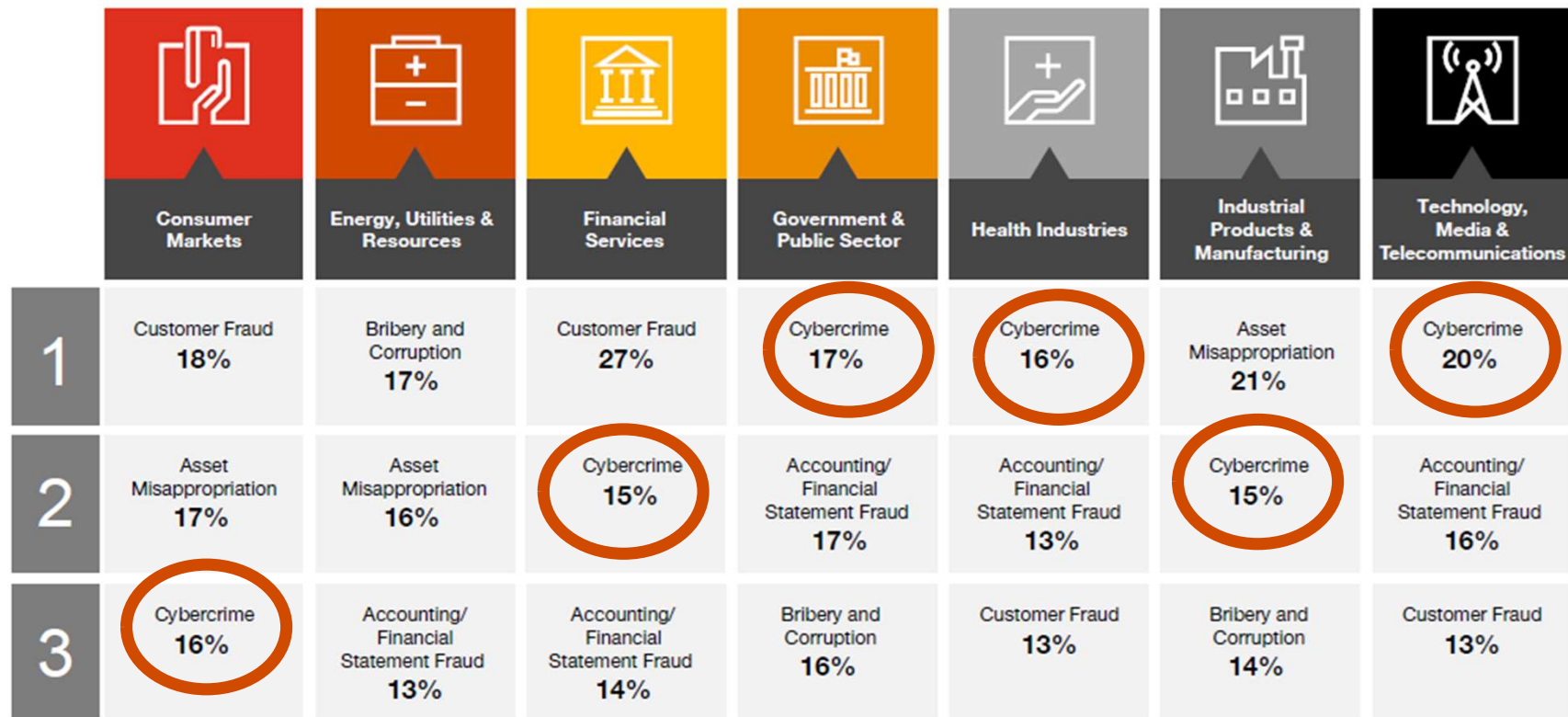
- 05 Powering Forward



01

Cybercrime in the News

Most disruptive fraud events – by industry



Source: PwC's 2020 Global Economic Crime and Fraud Survey

42



CAEs and Audit
Committee Chairs
interviewed



579

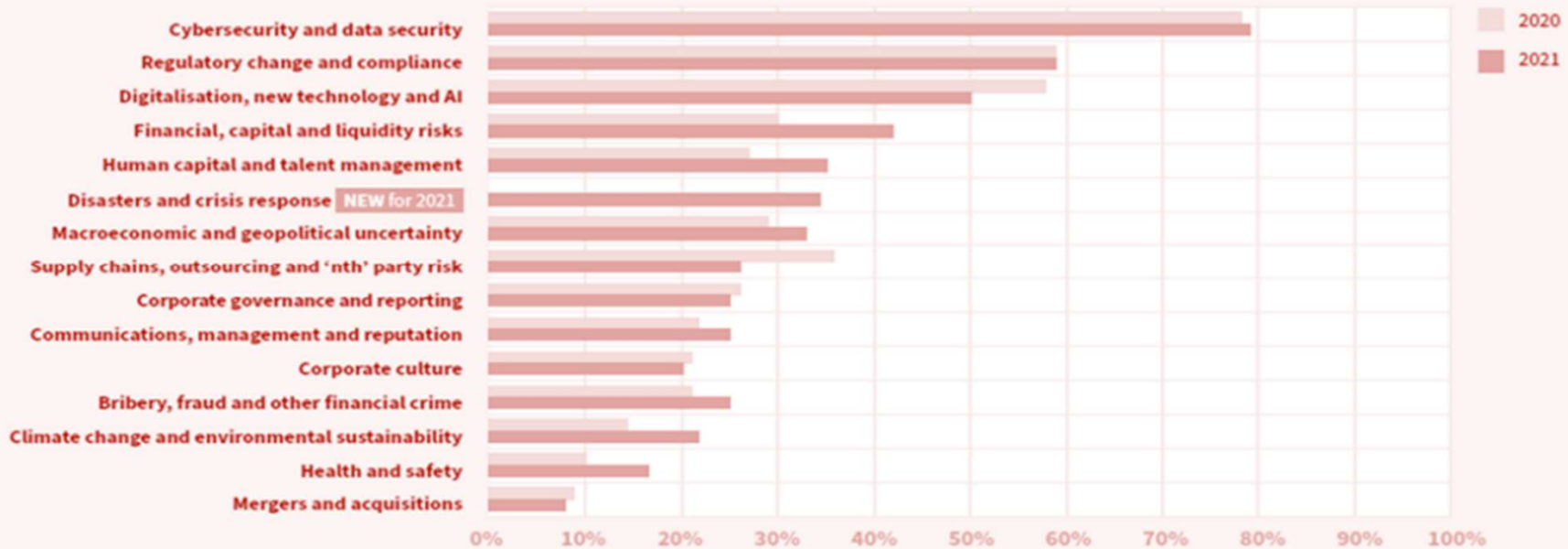
survey
respondents

51



experts
interviewed

What are the top five risks that your organisation faces?



Cybercrime in the news

Five security breaches of note in the last year



Cyber fraud rises 534% as Nigerian banks lose N3.5bn



Microsoft Hack (March 2021)

Zoom credentials for sale (April 2020)

- Zoom application became vulnerable to various security threats and eventually became a victim of a data breach.
- 500,000 stolen Zoom passwords allegedly available for sale in dark web crime forums.

Twitter (15 July 2020)

- Hackers hijacked Twitter accounts of high profile US personalities like Barack Obama, Elon Musk, Joseph R. Biden Jr., Bill Gates, and many more.
- Hackers posted fake tweets from these accounts, offering to send \$2000 for \$1000 sent to an unknown Bitcoin address.

Solarwinds (December 2020)

- Hackers infiltrate Solarwinds in September 2019 and plant SUNBURST malicious code (with a backdoor) into automatic updates for its Orion IT management software between March and June 2020.
- 18,000 organisations (including US agencies, Microsoft, FireEye, Intel, Cisco and Deloitte) were affected.

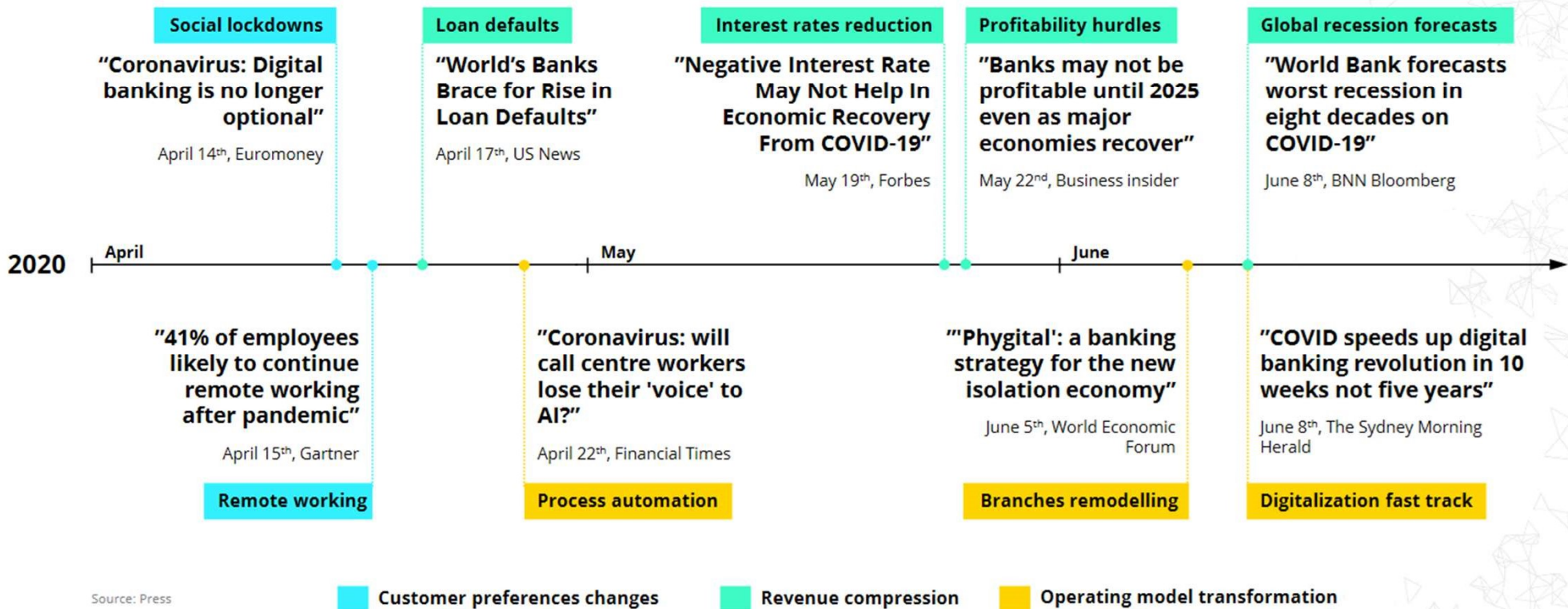


02

Cyber Risks Facing the Digital Bank

2020 brought a number of challenges for banks, fast-tracking digital (r)evolution

Illustrative



Source: Press



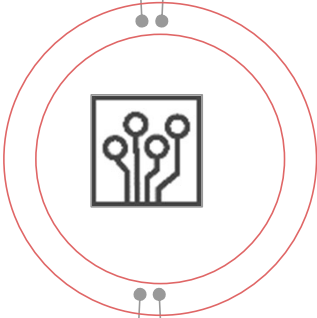
With digital banking elevating the banking experience did security follow?



Ransomware Attacks



Social Engineering

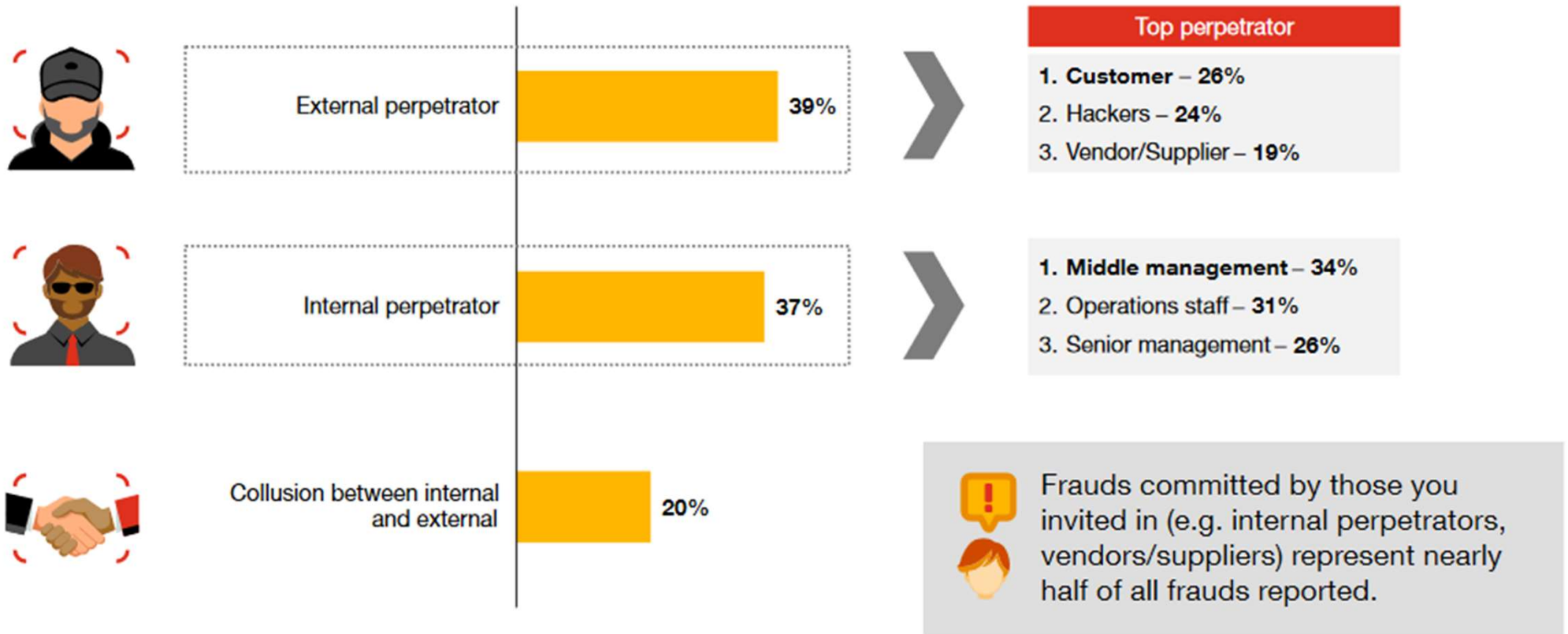


Third Party Risks



BEC

Perpetrators: external, internal and collusion between them



Source: PwC's 2020 Global Economic Crime and Fraud Survey



Nearly half of reported incidences **resulting in losses of US\$100 million or more were committed by insiders.**

Source: PwC's 2020 Global Economic Crime and Fraud Survey



03

Cyber Risk Management

An evolving risk



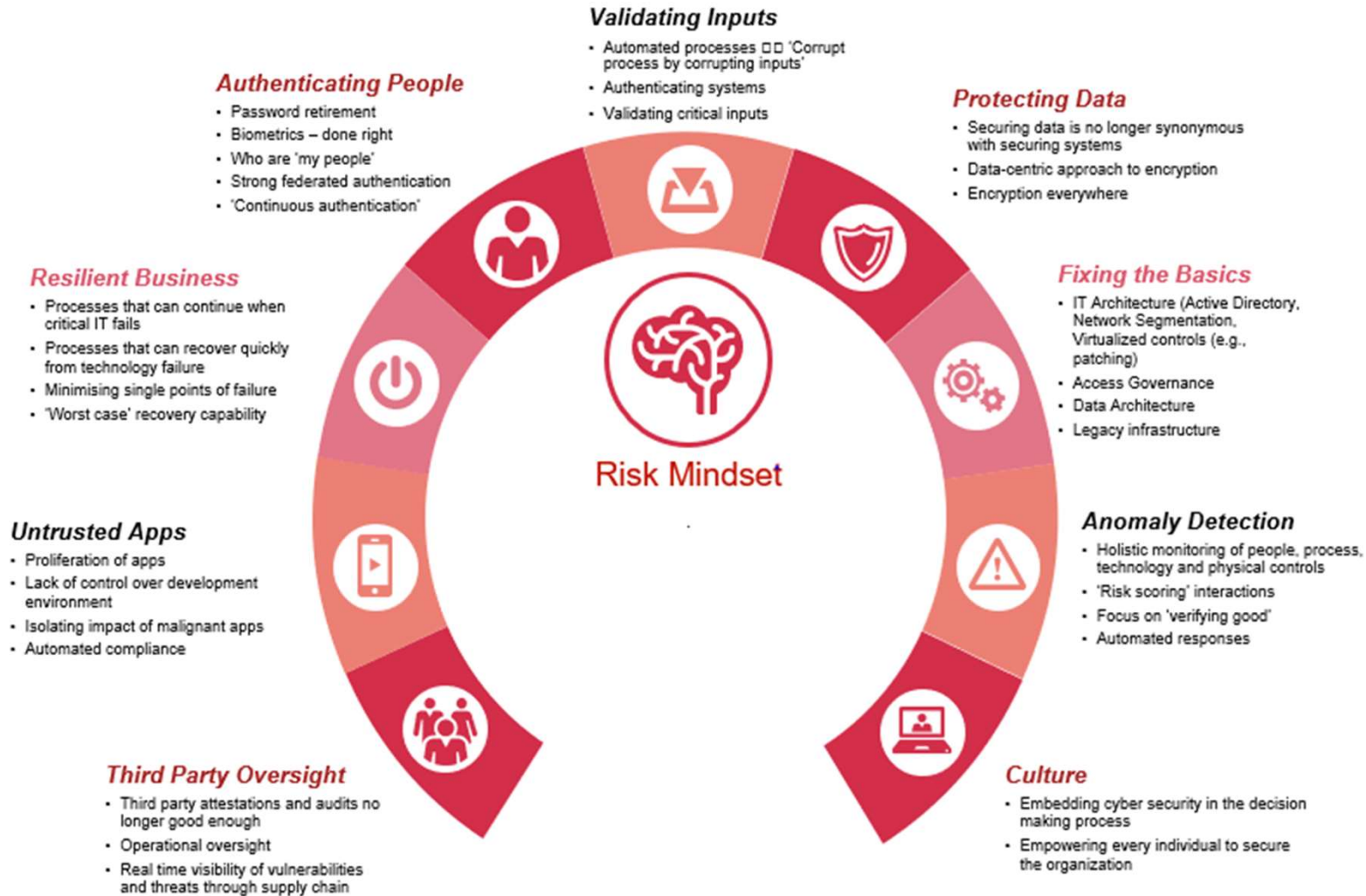
PwC's Hazard catalog: The seven categories of hazards that apply to any financial institution

Unfavorable audit findings	Lawsuits	Disruptive change	Supply discontinuity	Ineffective recruiting	Brand degradation	Terrorism
Insider trading	New legislation	Technology incompatibility	Infrastructure failure	Inadequate capabilities	Loss of market position	War
Unfavourable market conditions	New treaty	Intellectual property leakage	Supply chain issues	High turnover	Low customer confidence	Natural disaster
New taxation	Sanctions	Espionage	Execution failures	Training inadequacy	Loss of partner relationships	Pandemic
Balance sheet infidelity	Whistle blower	Fraud	Supply fulfillment gaps/delays	Succession gaps	Unfavourable price elasticity	Geopolitical instability
Balance sheet write-offs	Regulatory non-compliance	Data breach	Low supplier quality	Low employee confidence	Communication mismanagement	Money laundering
Asset deflation		Apps. and network vulnerability	Physical security breach	Performance gaps	Poor market access	Counterfeit
Embezzlement				Discrimination		Kidnap and ransom

Key:

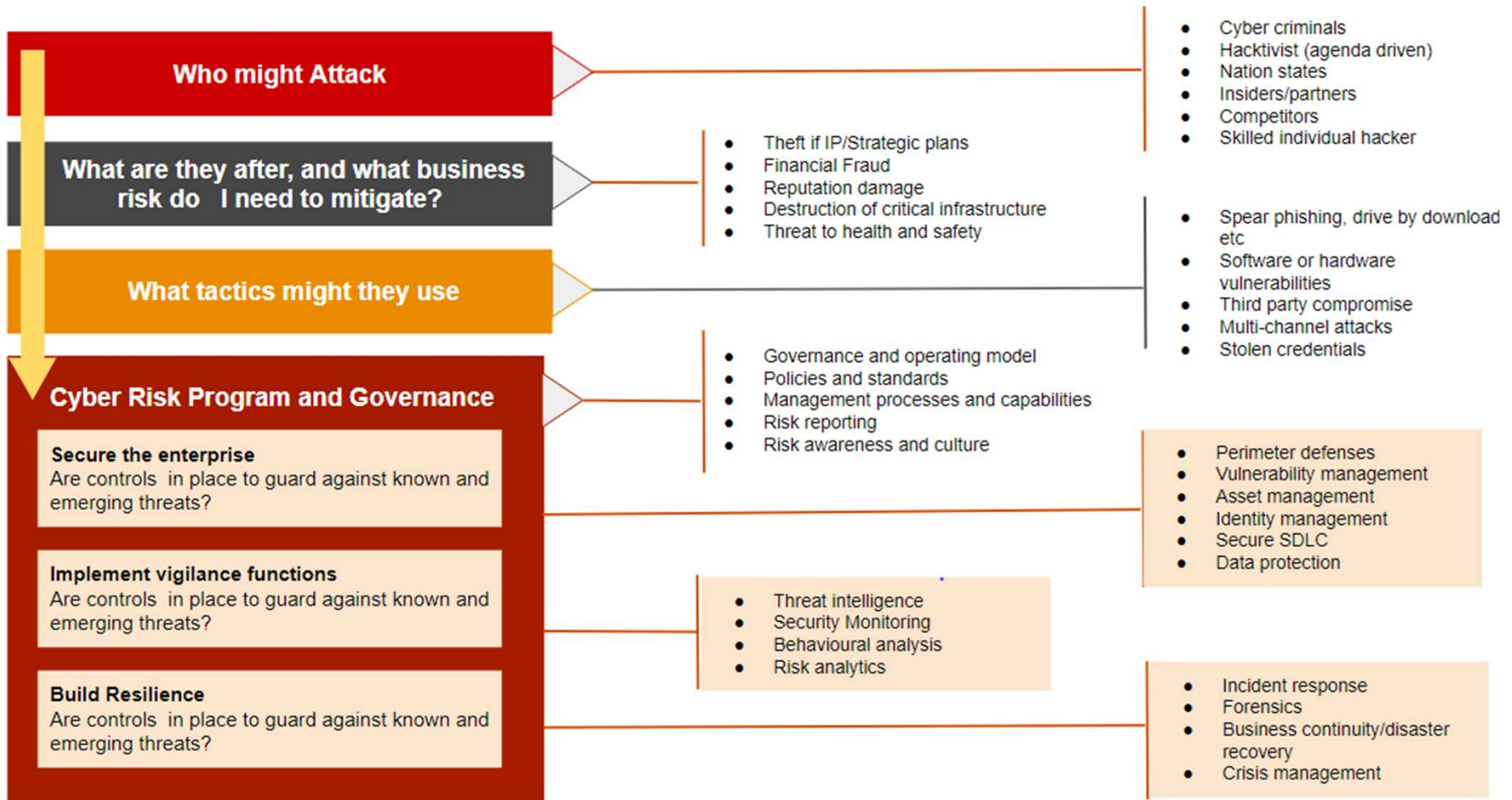
 Areas where cyber incidents are either the source, cause or a contributor of hazards for large global financial institutions.

*Abstract from PwC's Risk & Resilience Framework and benchmarking studies in the financial services sector. The hazards were selected after the analysis of industry incidents, and incorporating industry standards and frameworks (e.g., Basel II, ISO 27000). The hazards presented here are a representative sample – PwC works with financial institutions to "customize" the catalog for them, so that management can see hazards across the organization.



Managing cyber risk is a multifaceted challenge...

Mitigating or Addressing Cyber Risks



The background image shows a dimly lit office environment. In the foreground, a laptop sits on a wooden desk, displaying a dashboard with various charts and graphs. To the left of the laptop is a white mug and a glass of water. In the background, several people are seated around a table, engaged in a meeting. The overall scene is professional and focused on data analysis.

04

Auditing Cybersecurity

Cyber risk in the audit



Internal auditors:

Informing the board and executive management about how effectively the organisation assesses and manages its cyber risks



External auditors:

Considerations related to cyber risk include the potential impact on the financial statements, ICFR and the ability of an organisation to report on a timely basis.

Scope

- ✓ Clearly define the boundaries of the audit subject
- ✓ Understand the critical dependencies
- ✓ Manage expectations: what is the objective of the audit?
- ✓ Exclusions need to be carefully considered

Risk

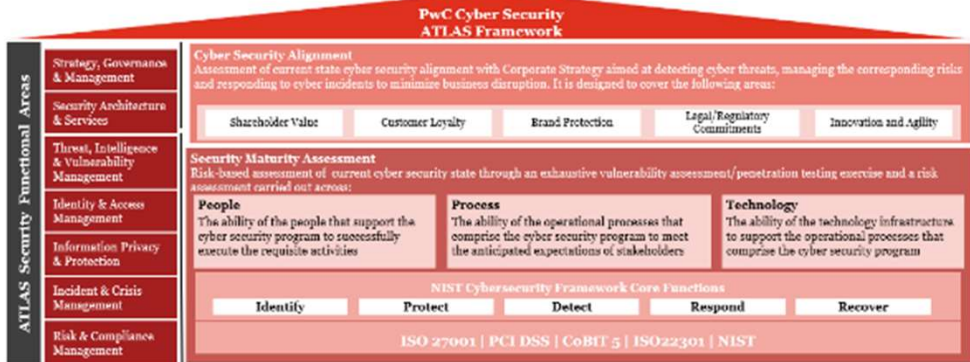
- ✓ Risk of material misstatement
- ✓ Management's cyber risk assessment and our risk assessment
- ✓ Typical risk areas should be considered



Cybersecurity Assessment Framework

PwC ATLAS Framework

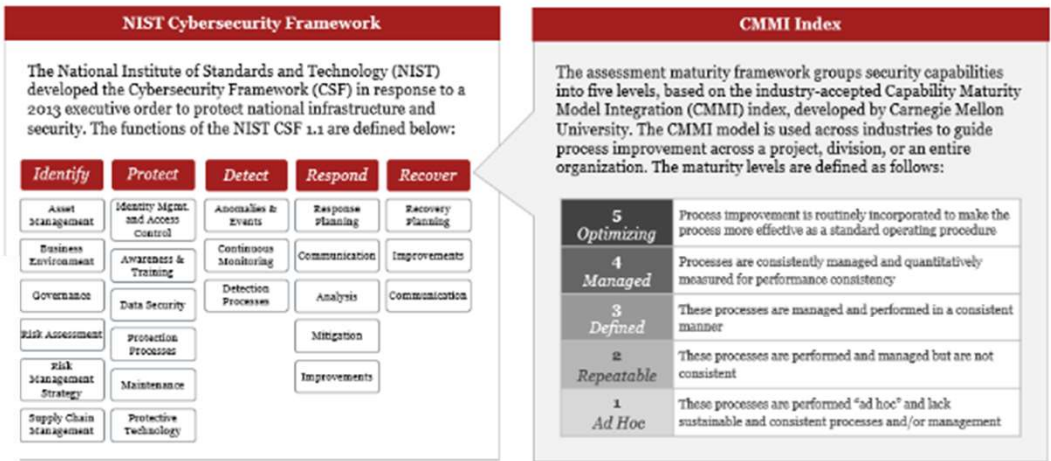
PwC's Cyber Security ATLAS Framework, is a comprehensive and flexible framework for assessing enterprise information security, to ensure that work and deliverables are appropriately aligned with globally known frameworks and standards. We assess the seven security functional areas as they have been implemented in order to gain a strong perspective of organizational information security.



Designing & Building a Cybersecurity Program Based on the NIST Cybersecurity Framework (CSF)



PwC will utilize the CMMI model to assess [CLIENT]'s security practices against the NIST Cybersecurity Framework



Cybersecurity Maturity Analysis

Developing the Cybersecurity Internal audit plan



The COSO Cube

- 

Control Environment

Do we have an effective organization and governance structure to manage Cyber Risk?
- 

Risk Assessment

Do we have critical information about our processes, risk(s) impacting our strategy or business operating model, and are we operating within our risk appetite limits?
- 

Control Activities

What is our coverage over our risks? Are we addressing our gaps and do we have compensating controls?
- 

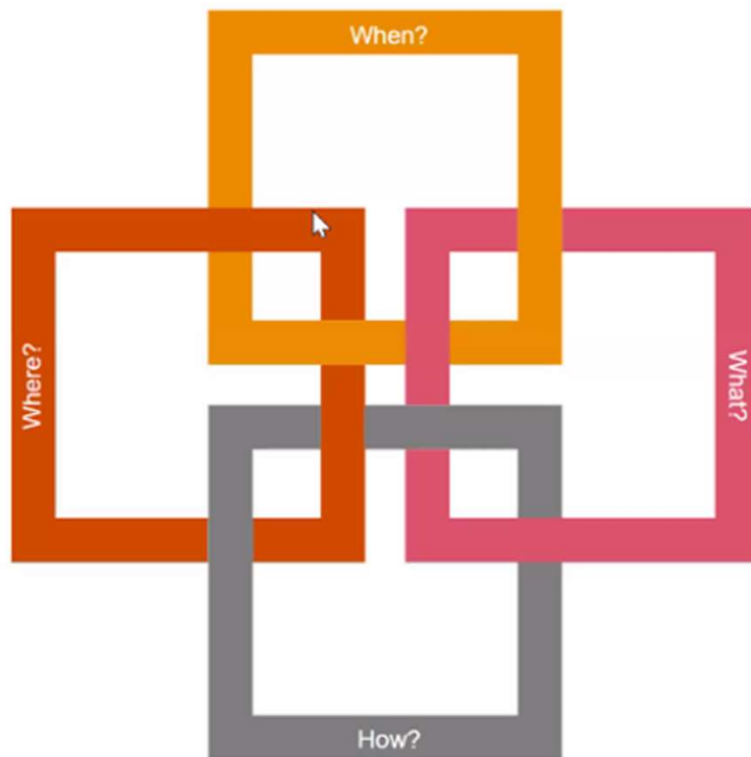
Information & Communication

Has the organisation defined internal and external communication channels and protocols that support the functioning of internal audit? How will we respond to, manage, and communicate a cyber risk event?
- 

Monitoring activities

What are we doing to monitor their cyber risk profile? Do we have timely access to data that support our metrics? Are our target states reasonable?

Responding to a cyber incident



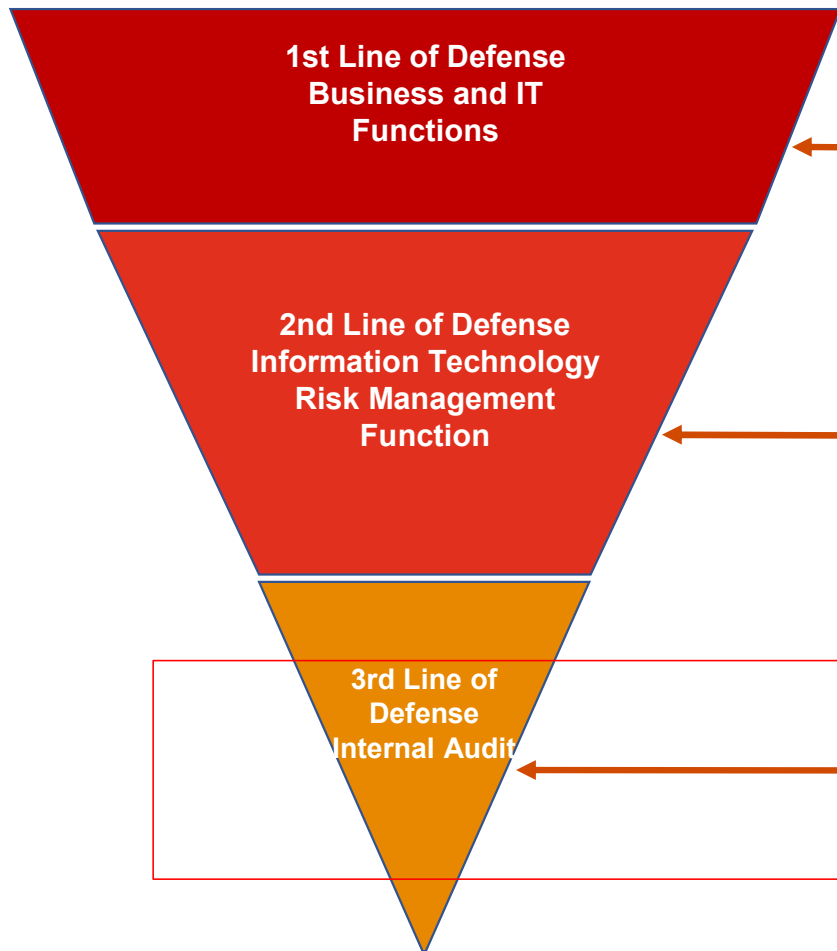
- **What?**
Nature of attack, objective, what data was compromised.
What steps were taken to control the breach and respond
What has been communicated internally and to the market / authorities
- **When?**
When did the attacker gain access?
When did they reveal their presence in the network
Timing between the incident happening, management's identification and response
- **Where?**
Which servers, databases, applications?
Which entities / businesses / countries / geographies?
Compromised operations
- **How?**
What was the vulnerability that was exploited to access the systems?
How did management learn of the incident?
Have management engaged cyber experts / legal counsel?
How did management determine whether the incident represents a financial risk

The background image shows a dimly lit office environment. In the foreground, a laptop is open on a wooden desk, displaying a dashboard with several circular charts. To the left of the laptop is a white coffee cup and a glass of water. In the background, several people are seated around a table, engaged in a meeting. The overall atmosphere is professional and focused.

05

Powering Forward

The role of the CAE, Internal Audit & Audit committee in strengthening cybersecurity



Three Lines of Defence Model

Roles and responsibilities

- Include risk-informed decision making into daily operations.
- Define risk appetite and escalate risks outside of tolerance.
- Perform risk mitigation procedures as appropriate.

- Establish risk governance, including baselines, policies, and standards.
- Implement risk mitigation tools, processes, procedures and monitoring.
- Monitor and call for action, as appropriate
- Provide risk oversight.

- Independently assess program effectiveness
- Provide confirmation to the board on risk management effectiveness
- Comply with SEC requirements and disclosure obligations related to cybersecurity risks.

Build Confidence in your Digital Future

You can't secure everything

- Enterprise security architecture
- Protect what matters
- Strategy, organisation and governance
- Threat intelligence

It's not if but when

- Continuity and resilience
- Crisis management
- Incident response and forensics
- Monitoring and detection

Fix the basics

- Identity and access management
- Information technology, operations technology and consumer technology
- IT security hygiene
- Security intelligence and analytics



Seize the advantage

- Digital trust is embedded in the strategy
- Privacy and cyber security legal compliance
- Risk management and risk appetite

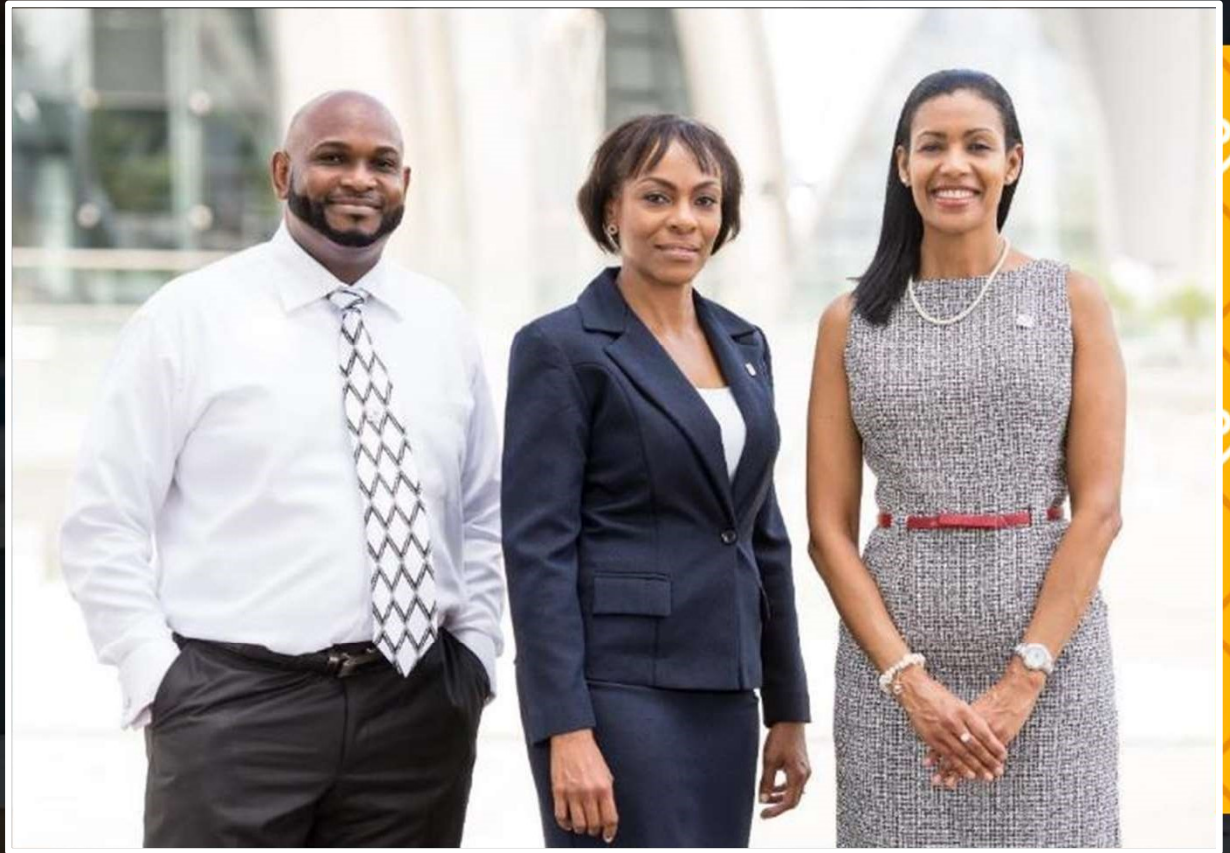
Their risk is your risk

- Digital channels
- Partner and supplier management
- Robust contracts

People matter

- Insider threat management
- People and 'moments that matter'
- Security culture and awareness

Thank you



Day two

7

Disruptive technology use cases 2

Femi Madariola
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What is a Blockchain?



Blockchain technology is a **distributed digital ledger** where data (e.g. transactions, contracts, etc.) are recorded and confirmed **without the need for a central authority**.



Distributed Digital Ledger

- Several nodes in the network has a representation of the ledger
- There is usually no designated owner of the ledger.
- Links between records across the network.

Membership Consensus

- Decentralized system, hence, all participants must agree on how transactions are added to the ledger.
- Transactions recorded can never be changed.

Increased transparency

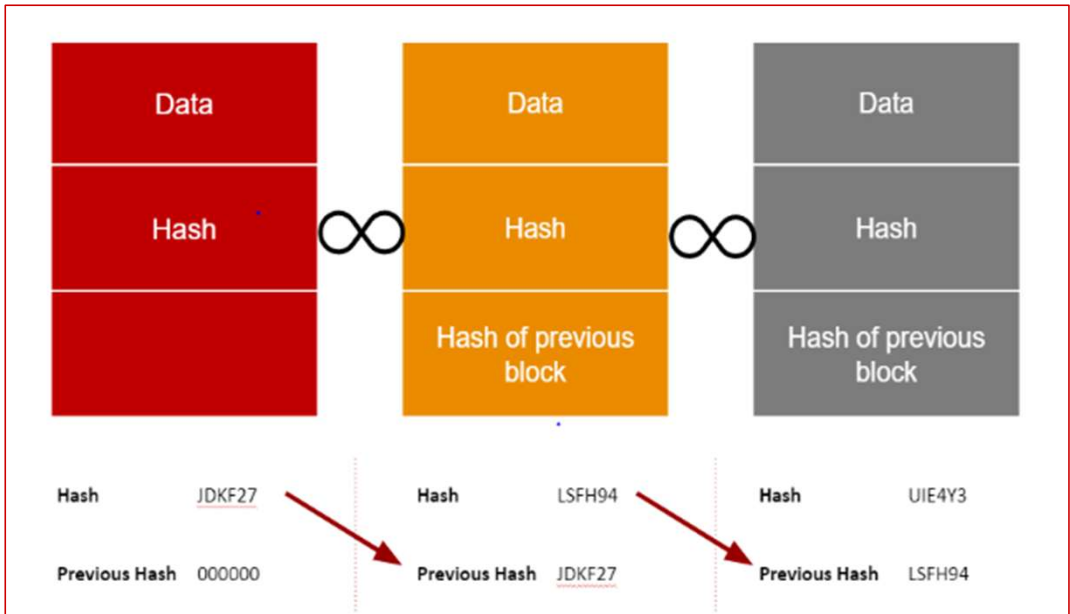
Accurate tracking

Permanent ledger

Cost reduction

How a Blockchain works?

Diagrammatic representation of a Blockchain



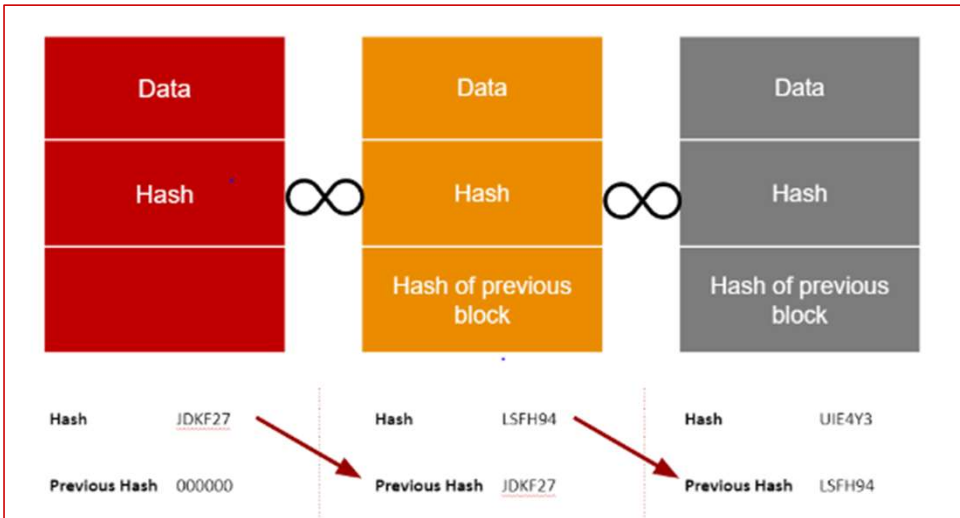
The “chain” in the Blockchain name is due to the links between Blocks (records) that makes the storage look like a physical chain.

Leverages 3 major techniques for security of the records on the network:

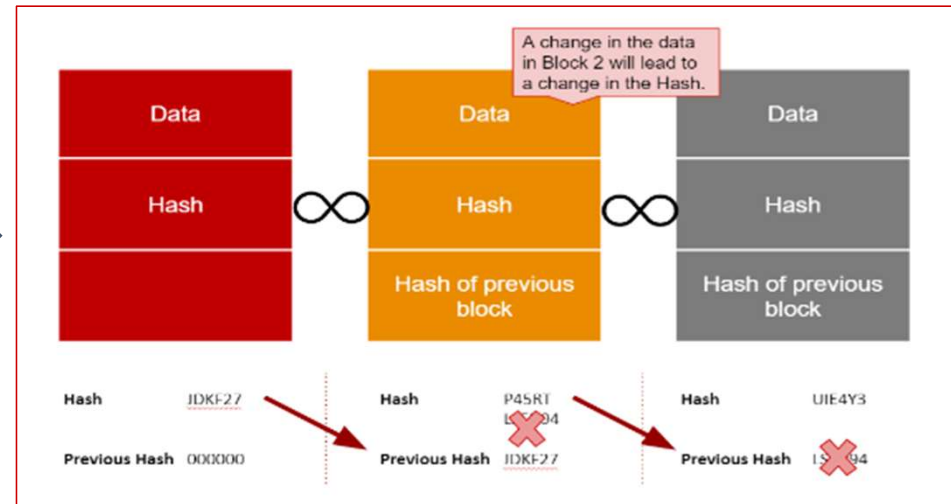
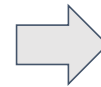
- Immutability;
- Proof of work; and
- Distributed storage.

How a Blockchain works - Immutability

Diagrammatic representation of a change in a record on a Blockchain



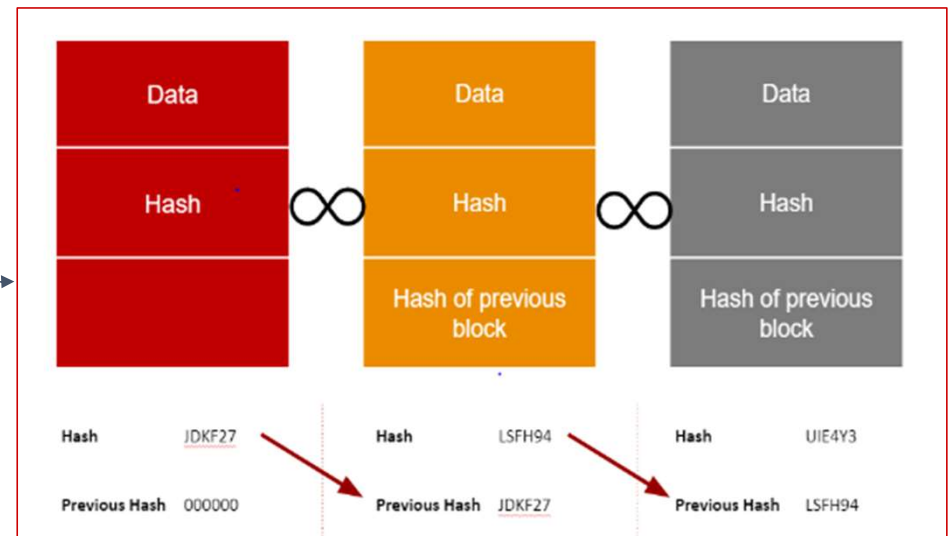
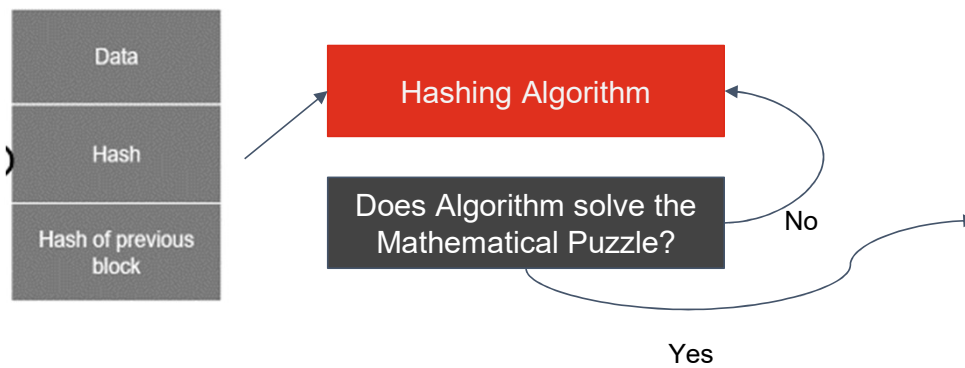
Blockchain records before a change to a record in the chain.



A change in one of the previous records invalidates all the subsequent records because the Hash of the previous Block needs to be carried forward into the next record.

How a Blockchain works - Proof of work

Diagrammatic representation of how Proof of Work on a Blockchain network works.



Proof-of-work is a complex “mathematical puzzle” that needs to be solved to add a record to the network chain. The Proof-of-work is designed to slow down the addition of new records to the chain but easy to verify by others.

How a Blockchain works - Distributed Storage

Diagrammatic representation of a Blockchain network.



Blockchain records are distributed/stored across multiple peers/participants in the network.
50% or more participants on the network are needed to validate a new record, for it to be deemed valid on the network.

Understanding the challenge - rise in fraudulent activities.

Over **15bn**
Naira fraud reported in
2018.

*NDIC 2019 Annual Report

~**50%** increase
YoY in digital channel
adoption.

*NIBSS Annual Report

52% cited **customer's**
lack of awareness as the
major contribution to fraud.

*NeFF Annual Survey 2016

~**56%** of channel
frauds are due to **Social**
Engineering.

*NIBSS Fraud Insight

Prevalent trends

Digital frauds are on a rapid increase.
Mostly unsophisticated fraud due to social
engineering.

Occurrence of fraudulent activities by the
same fraudsters across multiple banks.

Fraudsters create fictitious customer
profiles by rapidly identifying weaknesses in
the KYC process in digital solutions (e.g.
mobile wallets, agency banking, etc.)

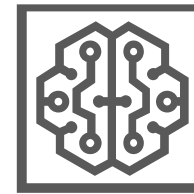
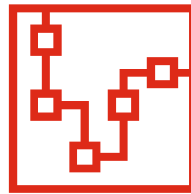
Beating the fraudsters with technology.

Our hypothesis

There will be a drastic reduction in fraud across the industry, if financial institutions shared the details of fraudsters (e.g. BVN, Phone numbers, Device Identifiers, etc.) online and realtime amongst themselves.

Our proposed solution

A network that connects the Banks and allows them share information on fraudsters online and realtime in a decentralized and secure manner using Blockchain technology and Artificial Intelligence.









Blockchain technology to drive Secure and Immutable distribution of fraud artefacts.

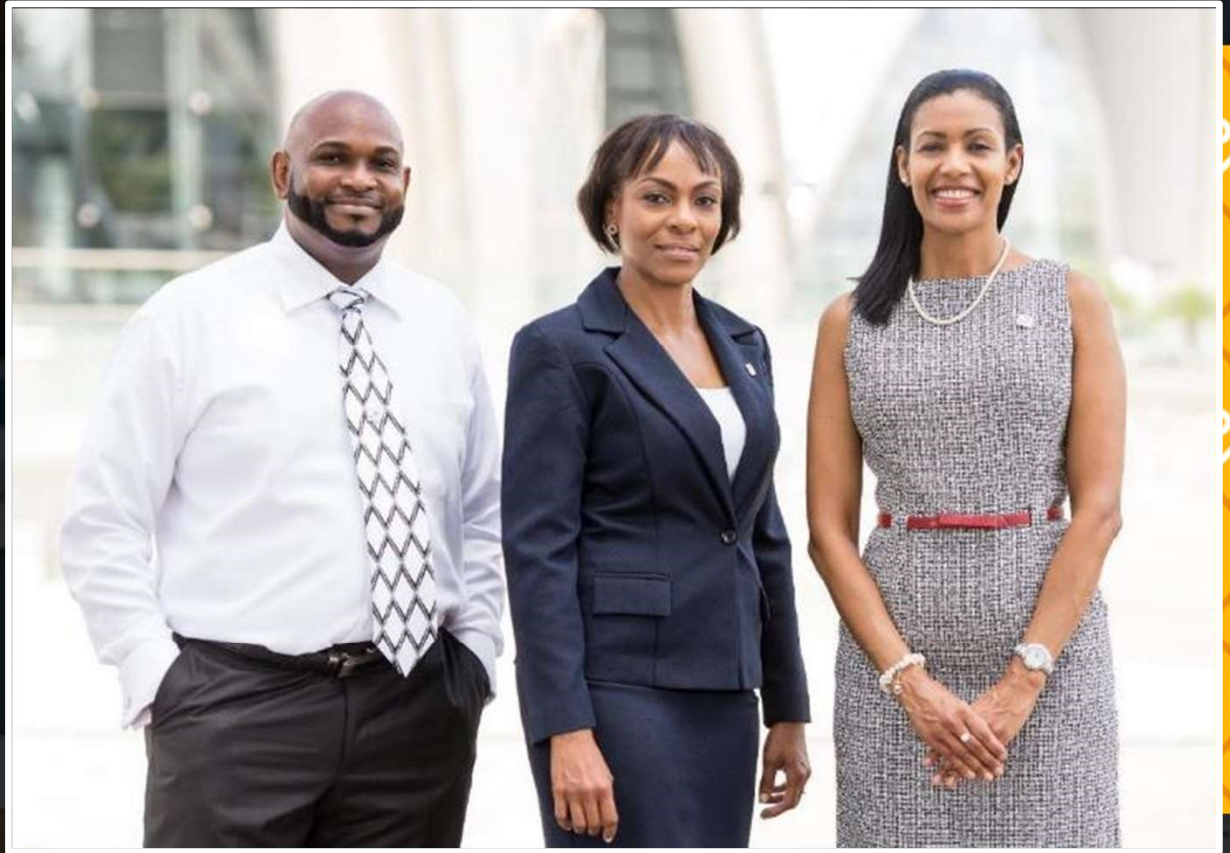
Artificial Intelligence to build relationship graphs among fraud artefacts to identify fraud syndicates.

Up-to-date database of fraudsters in all Banks, which can be leveraged real-time to prevent fraud.

Benefits to the financial industry

 Reduction of costs & complexity	 Shared trusted transactions	 Reduction of fraud	 Audit trail & transparency	 Security & Immutability	 Continuous improvement
Removal of intermediaries between the banks and OFIs to exchange information. Decentralised technology ensures high availability.	Leverage distributed ledger technology to enable banks and OFIs to securely exchange and access data in realtime.	Prevent fraudsters from defrauding other banks and OFIs based on shared information on fraud.	Consolidated data of confirmed fraudsters across the industry.	Integrity and security of the information across all nodes on the blockchain are ensured with cryptographic functions	Improved customer confidence. Banks are able to confidently roll out cutting edge digital initiatives to customers.

Thank you



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