

# As Technology Changes Audit, So Must the Auditor Change

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37WCARS



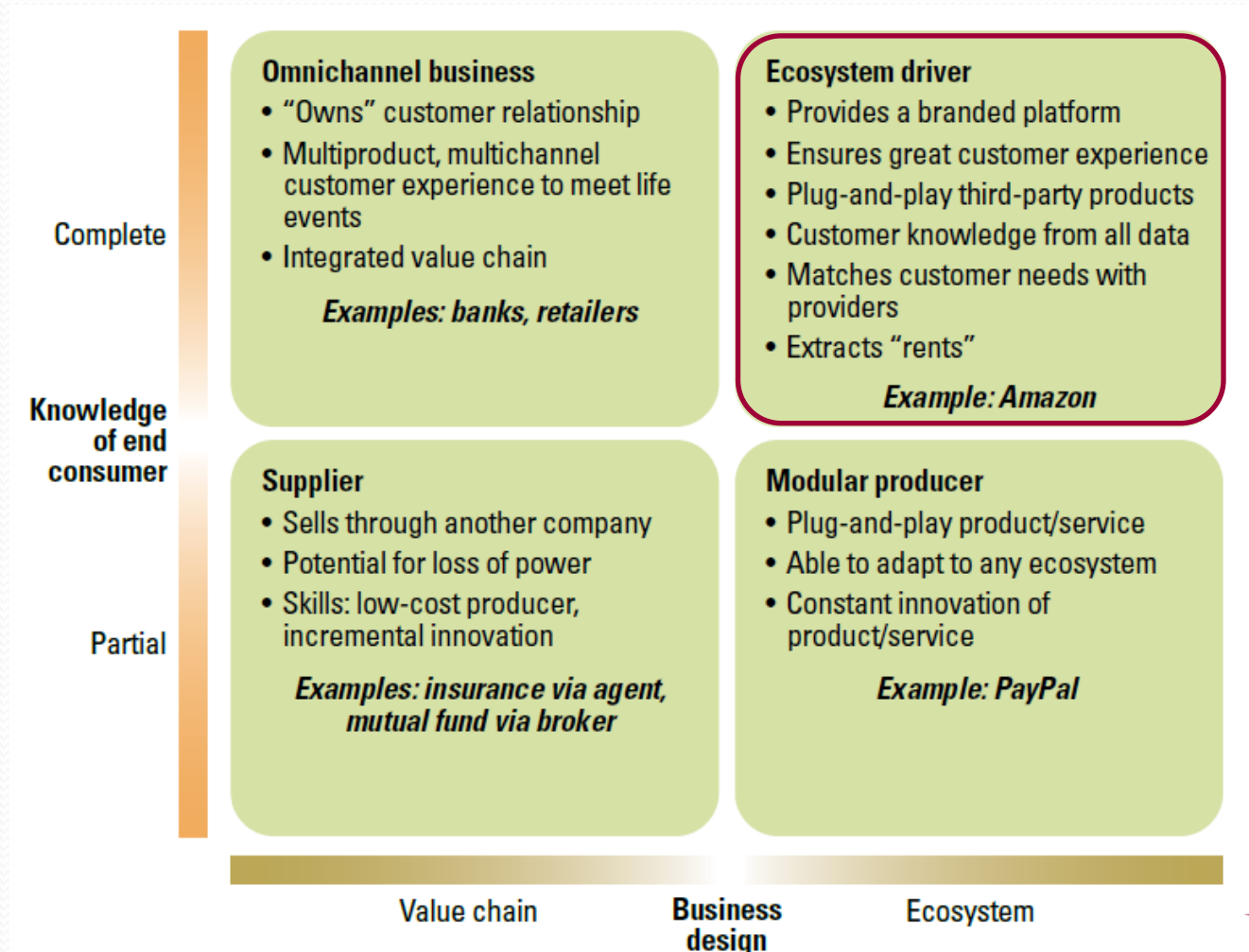
# Agenda

- A Disruptive and Changing World
- Impact on Auditors
- Implications for the Future Workforce

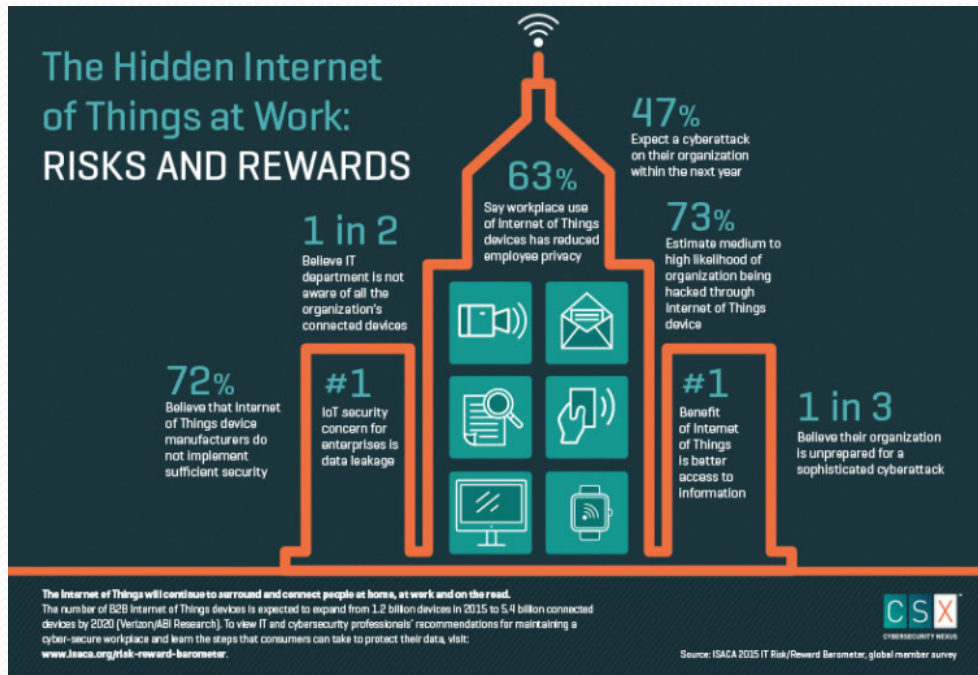
# A Disrupted World

- Digital disruption is already here
  - World's biggest taxi service...has no taxis (Uber)
  - Popular 'banks'...don't have vaults (Venmo, M-Pesa)
  - Most popular 'hotel service'...doesn't own a hotel (AirBnB)
- Transitioning from 'value chain' business models to digital 'ecosystems'

# Business Models for the Digital Economy



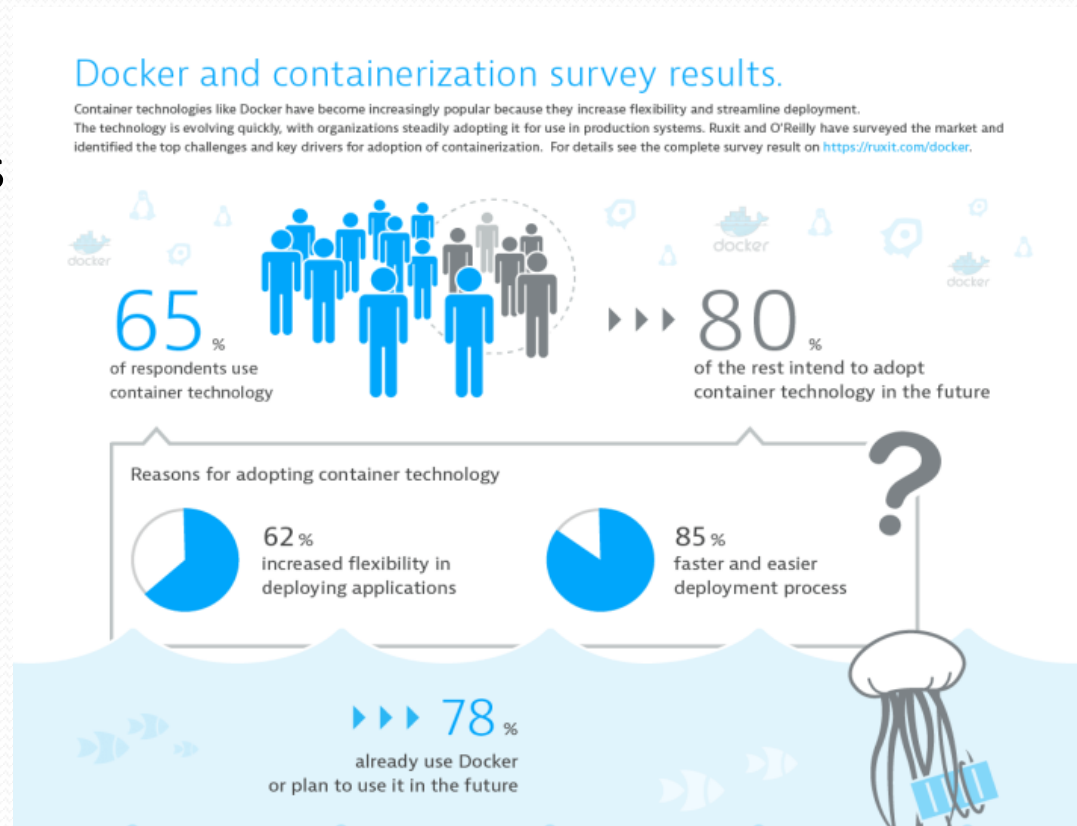
# Towards 21,000,000,000+ Devices



- Gartner predicts that by 2020, 20.8 billion devices will be in use worldwide. This includes:
  - Connected vehicles
  - Industrial and consumer IoT
  - Mobile devices
  - Operational technology (e.g. biomedical and industrial control systems)

# Increasing Tech Complexity

- In addition to the number of devices, technology complexity is also increasing within the infrastructure
  - Containers
  - Virtualization
  - Externalization (cloud)
  - Software defined infrastructure



# Impact on Auditors

# Impact on Practitioners

- Relative to business and technology peers, auditors need to do more to evaluate risk...and they have less time to do it in.
- Two reasons are driving these constraints:
  - Differential in risk vs. usage decision making
  - Adoption dynamics

# Differential in Risk vs. Usage Decision Making

- Consider an automobile...

## Answering “how do I use it?”:

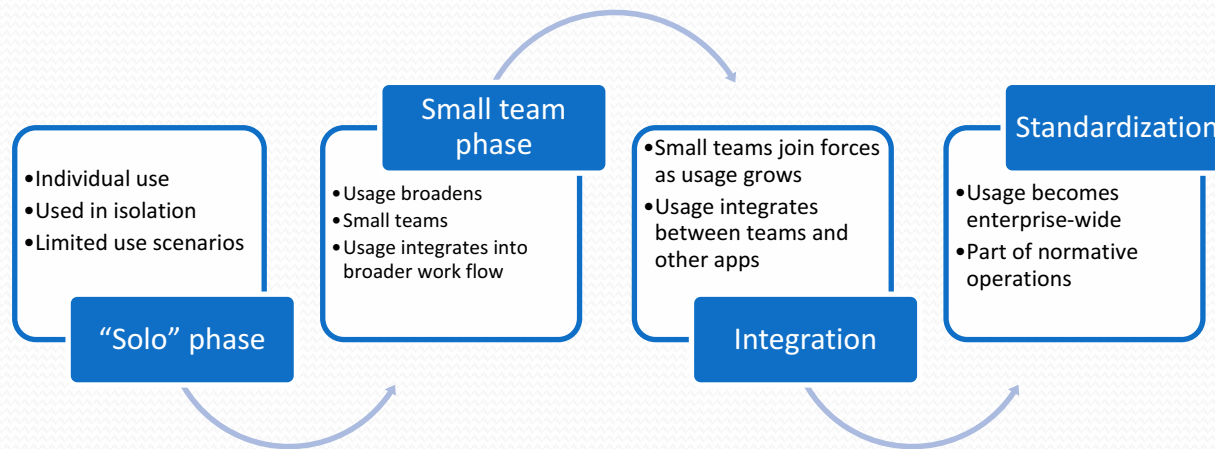
- Learn rules of the road
- Learn to drive
- Understand vehicle maintenance requirements
- Anything else?

## Answering “is it safe?”:

- Learn rules of the road
- Learn to drive
- Weather/traffic conditions
- Seatbelts/safety features
- Steering and drive column condition
- Route/s to be traveled
- Tire condition
- Engine service history
- Road maintenance/condition



# Adoption Dynamics



- Ask yourself: when does the auditor learn about usage?
- In some cases, it may only be after usage is already prevalent:
  - Shadow IT
  - Audit cycle planning (typically annually)
  - "Discovery gap" for new applications and usage

# The Impact

- *“...shortened deployment lifecycle[s] will require more agile auditing techniques such as continuous auditing and audit automation... The profession must become technologically astute, not only to understand it [technology] but also the capability to use it in novel manners to support the audit function as well as the foresight to propose new technology advancements to support the profession.”*  
—ISACA Future of IT Audit Report

- Some “hard questions”:
  - Is your team “technically astute” enough to face what’s coming?
  - Are you staying on top of the newest advancements in technology?
  - Are your auditing techniques agile, continuous, and automated?

# Top Technology Challenges: YoY Trends

2015	YOY Trend*	2014	2013
Emerging technology and infrastructure changes – transformation, innovation, disruption	↑	IT security and privacy/ cybersecurity	IT security: data security, cybersecurity and mobile security
IT security and privacy/ cybersecurity	↓	Resource/staffing/skills challenges	IT governance
Resource/staffing/skills challenges	↓	Emerging technology and infrastructure changes – transformation, innovation, disruption	Lack of successful ERP implementations, development and knowledge
Infrastructure management	↑	Regulatory compliance	Social media
Cloud computing/virtualization	↑	Budgets and controlling costs	Vendor management
Bridging IT and the business	↑	IT governance and risk management	Cloud computing
Big data and analytics	↔	Big data and analytics	Emerging technology and infrastructure changes
Project management and change management	↑	Vendor, third-party and outsourcing risks	Big data and analytics
Regulatory compliance	↓	Cloud computing/virtualization	PCI compliance
Budgets and controlling costs	↓	Bridging IT and the business	NA

Source: Protiviti and ISACA joint IT audit survey, "A Global Look at IT Audit Best Practices"

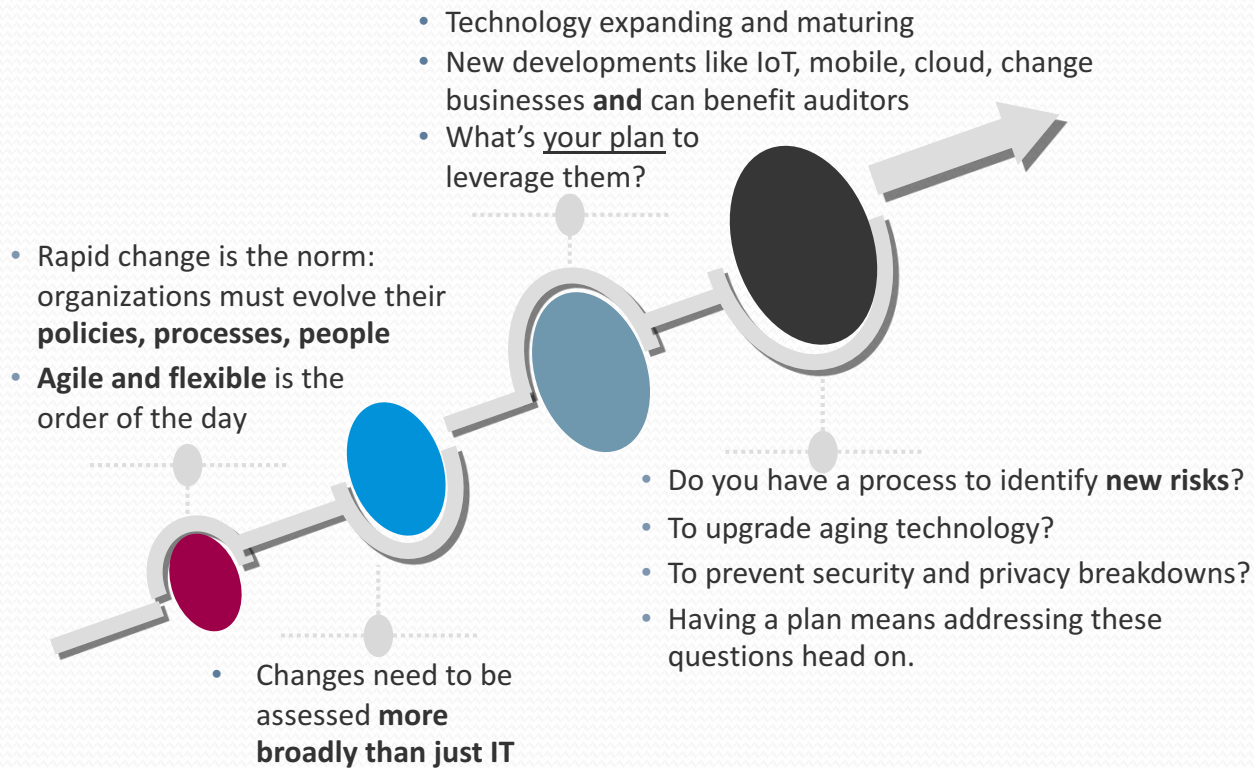
# The Road Ahead



# Digital Solutions Bring Digital Concerns

- Increased systems complexity and risk
- Greater Board-level involvement in IT operations, strategy, etc.
- Faster cycles of innovation
- Robust ROI on technology investments expected
- Increased and more prominent roles for IT Risk, Audit, and Governance, as well as Cyber Security

# Holistic Perspective



# Best Practices: Actions

- Keep business informed about emerging risk and perspectives in strategy
- Audit must always ask and answer:  
*Are we making progress?*  
*Are we doing what we need to do to get where we want to go?*
  - Answering means both an “elevator pitch” and systemic metrics
- Communicate with management and the audit committee regularly to emphasize the importance of conducting an IT risk assessment
- Consider linking your IT audit risk assessment with the ERM catalog to show the integration between the two
- Ensure that IT and cybersecurity risks are understood and monitored as strategic-level risks, when warranted, and as a matter for the board of directors and audit committee to monitor regularly

# Big Data, Analytics, and Visualization: Potential Impact to IT Audit

- **Organizational impact**

If the organization is using big data to drive decision making, IT Audit should audit how big data is managed.

- **Data integrity**

If the organization relies heavily on big data, IT Audit should audit data integrity.

- **IT audit execution**

IT Audit can use big data to perform internal audits in new ways.

- **Visualization**

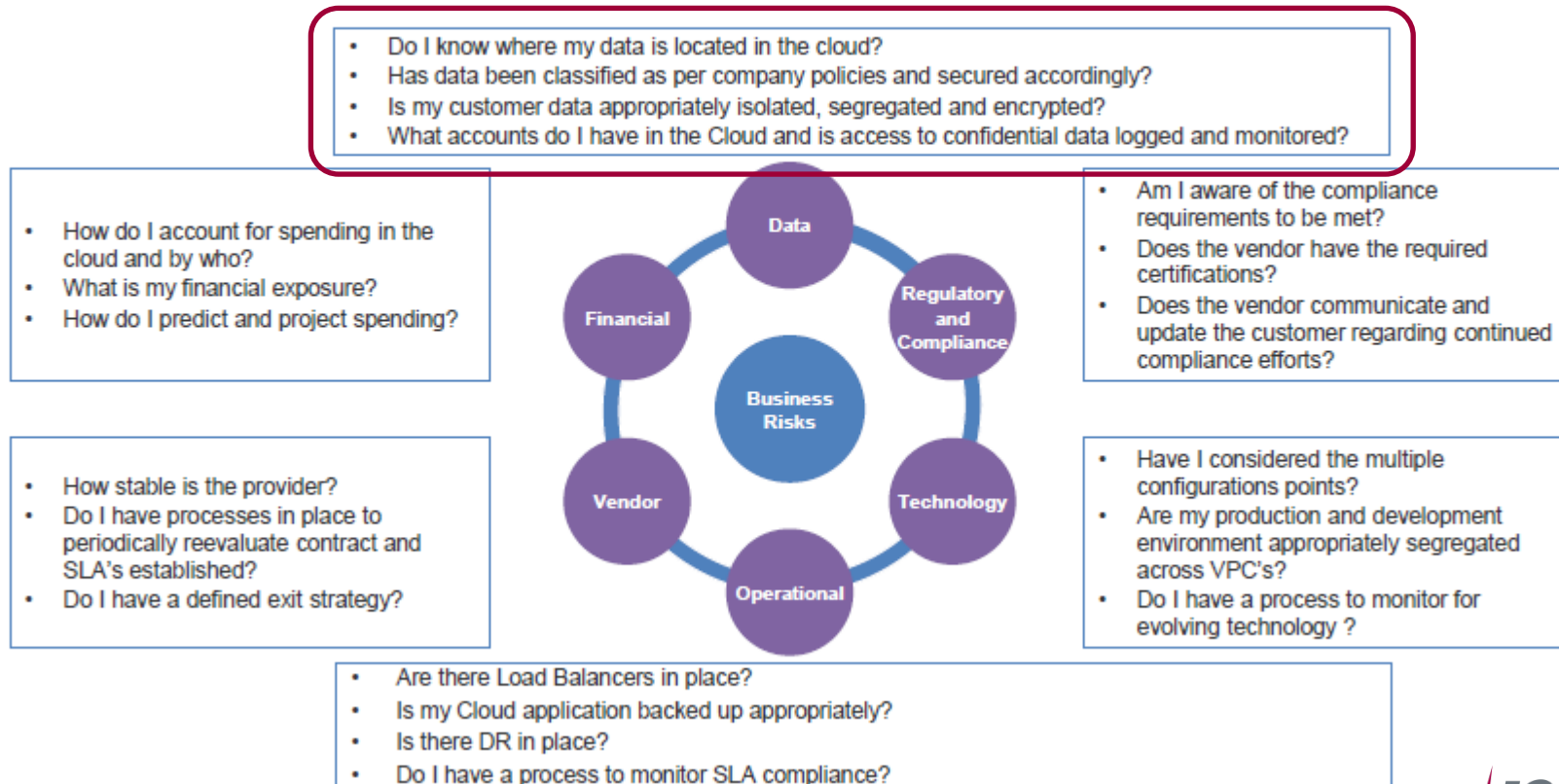
New ways of looking at data can open up opportunities for auditors

# Big Data, Analytics, and Visualization: Action Items

- **“Checking the box” is not Data Analytics**
  - The organization must have a strategy to manage the data life cycle – creation, integrity, normalization, destruction, etc.
- It's a process, not a project
  - Don't stop expanding the scope of data analytics. Start small and build.
- Visualization = opportunity
  - Investigate free or low-cost data visualization tools to find value, prove worth.

# Cloud and Shadow IT: Key Cloud Risks

## OPERATING IN A CLOUD ENVIRONMENT PRESENTS RISKS IN SIX KEY DIMENSIONS



# Cloud and Shadow IT: Main Concerns

- Shadow IT
- Cloud Service Provider Operations
- Poor Due Diligence and Decision Making
- Poor Vendor Management
- Multiple Jurisdictions = Multiple Regulations
- Poor Governance over Cloud
- Legacy Applications are not Cloud Ready
- ROI Erodes by Unexpected Expenses

# Auditing Cyber Security: Why Cyber Security Matters to Audit

- Security has become a board and executive level issue.
- Must ensure the enterprise's cyber security program is defensible in court.
- IT and IT Security have technical experience, but audit understands that all risk is business risk.
- There is a lot of information on cybersecurity. *But there is not an equivalent amount of information on how audit should address efforts to deal with cyber security risk.*
- Within the next few years, external auditing firms may count cybersecurity controls as “in scope” as part of financial audits.
- The problem is not a lack of expertise; it is a lack of dialogue.

# Auditing Cyber Security: Action Items

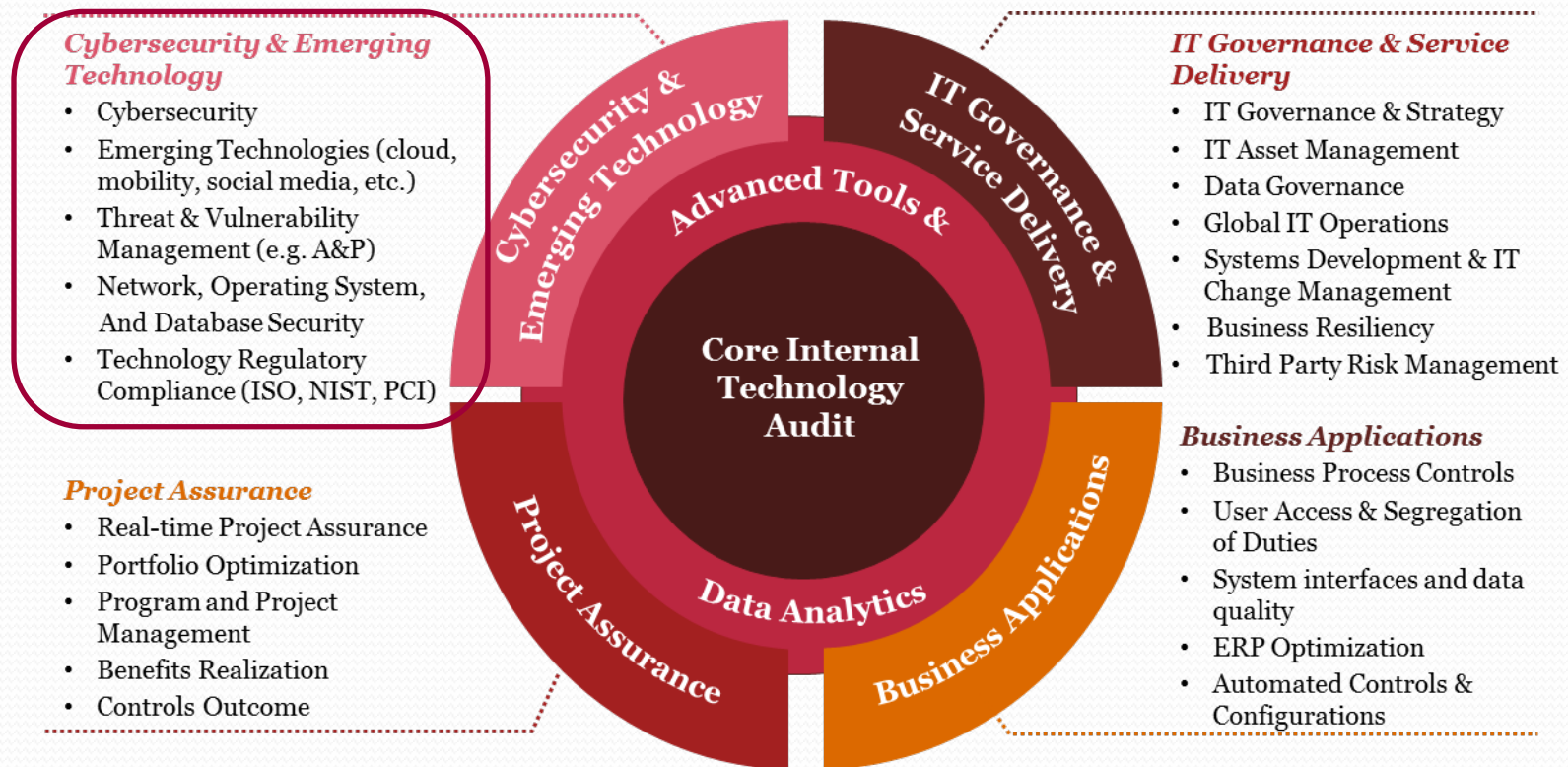
- Ensure cyber security risk is integrated formally into the audit plan.
- Leverage applicable national cyber security frameworks (such as NIST in the U.S.) to increase defensibility and efficiency.
- Identify and act on opportunities to improve the organization's ability to identify, assess, and mitigate cyber security risk to acceptable levels.
- Recognize that cyber security risk is not only external; assess and mitigate potential threats that could result from the actions of an employee or business partner.

# Implications for the Future Workforce

# Talent Acquisition and Retention: Internal Audit Increasing Expectations



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# Talent Acquisition and Retention: Modern-Day Challenges in Recruiting

- **Rise of the contingent workforce, growth of freelance economy**  
As more people seek flexible work opportunities, they are turning to part-time positions and freelance work.
- **Technological advancements**  
People want to work, access and share information the way they live—constantly connected with anybody, anytime, and anywhere.
- **Multi-generational workforce**  
Four generations comprise today's workforce; each one brings unique perspectives, attitudes and communication and working styles.

# Talent Acquisition and Retention: Action Items

- Use the most modern techniques.  
If an organization is using outdated techniques, and not becoming automated, it will lose millennials and digital natives quickly.
- Build an experience that matches the type of talent you are trying to attract.
- Speak their language.
- Sell what the business has rather than only the job itself.
- Give them more than just “grunt work”; focus on what motivates them.
- Give them experiences outside of the office.
- Give unexpected, surprise recognition
- Offer flexible work arrangements

# Future of Work

- The coming “new normal”:
  - “On-demand” economy as chief driver of global economy
  - “Mobile-first” workforces utilizing SMAC technologies to maximize their organizations’ efforts as digital leaders will be standard, across all industries, at all levels
  - Robust and continual upskilling and reskilling, with learning delivered from formal, informal sources

# Digital Natives: The Drivers of Tomorrow's Digital Ecosystems Are Already Arriving

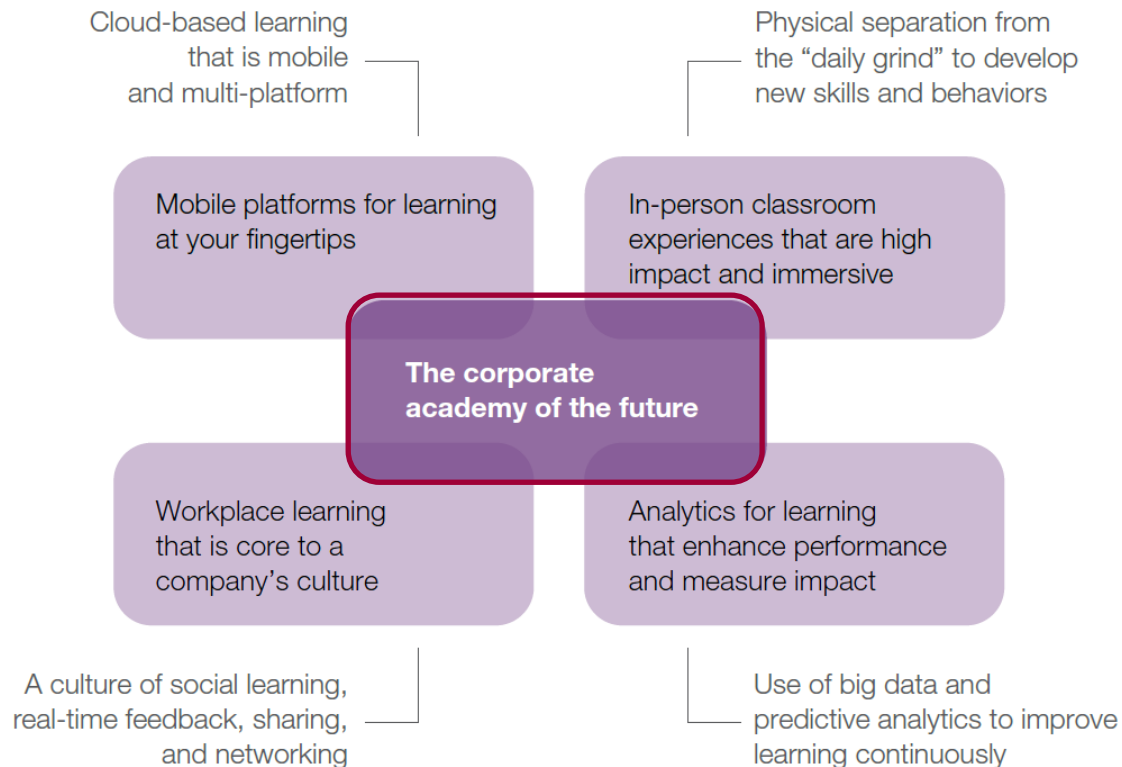
- Digital companies thriving as drivers of digital ecosystems are **already** hiring digital natives and creating digital workplaces
- For digital natives:
  - The world is on-demand, flexible, and borderless
  - Personal/organizational interfaces are expected to be digital—like the rest of their world

# Future of Learning

- Corporate learning expected to change dramatically in future
  - Increasing presence of digital natives in the workforce will be a primary driver of these changes
- **The New Normal:**  
Content in the cloud, accessed by mobile devices employing multiple learning environments, and often generated, shared and curated by the user community itself

# NextGen Learning Environments: Learning at the Speed of Business

**The next generation of corporate academies supports learning at the speed of business.**



Thank You.  
Questions / Comments

