The Changing Technology Landscape:

Moving to Internal Audit 2.0
Raising internal audit’s game
The technology landscape is changing faster than ever before

Key trends

- Cybersecurity & privacy risk
  - Theft of customer data and intellectual property
  - Organized crime activity
  - Global ecosystem

- Digital disruption
  - Social
  - Mobile
  - Blockchain
  - Cloud

- Business & technology transformation
  - Consumerization of IT
  - Evolving business models
  - Massive transformation of applications and infrastructure

- Big data
  - Increased transaction volumes
  - Data quality
  - Data governance & management

- Regulatory pressure
  - Complex regulatory environment
  - Increased pressure and audits

What this means for our Internal Audit

- Expectations
  - Higher expectations from executive management and boards

- Trusted Advisor
  - Provide value-added services and proactive strategic advice to the business

- Drive Value
  - Greater focus on quality and driving value and impact from investment in internal audit

What this means for Internal Technology Audit

- Clarity
  - Need to clearly articulate full suite of IT internal audit solutions

- Leadership
  - Opportunities to grow, innovate, and drive quality

- Differentiation
  - Organic and inorganic growth through specialization
Continuous Auditing
### What is Continuous Monitoring (CM) and Continuous Auditing (CA)?

<table>
<thead>
<tr>
<th>Continuous Monitoring</th>
<th>Automated continuous monitoring of relevant internal and external events and their outcomes to ensure that business processes, systems and controls are operating as prescribed. CM feedback can be used for continuous auditing or trigger an on-demand audit.</th>
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<tr>
<td>Continuous Auditing</td>
<td>Continuous auditing is collection of audit evidence by an auditor related to business processes and controls on continuous basis based on which auditor can provide a continuous or on-demand opinion on state of business process or control in question.</td>
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*Institute of Internal Auditors defines continuous audit as a means to issue an audit report simultaneously or immediately after the event in question.*
Data Analytics

• Applying analytics to an existing audit program will not usually produce efficiencies and can in fact minimize, if not eliminate, the benefit of the tool.

• Analytics tools should be just one part of a comprehensive audit automation strategy.

• This strategy should be linked to a risk based audit approach and part of a “start from scratch” mentality in terms of universe and entity definition.

• The actual tools and methods employed should be determined by the risks identified and the goals of each audit.
## How Audit Automation changes the model..

<table>
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<tr>
<th>Data Discovery and Presentation</th>
<th>Gaining effective insight through advances in visualization capabilities (“Audit by sight”)</th>
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<tr>
<td>Agile Analytics</td>
<td>Alternative modeling and analytic techniques that can tackle audit objectives in hours instead of weeks</td>
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<td>Unstructured Data Integration</td>
<td>Emerging methods to collect, organize, structure and search massive amounts of data not found in traditional databases</td>
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<td>Enhanced Audit Management</td>
<td>Collaborative project management technology integrated into Audit Planning, Execution, and Reporting</td>
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- **Increased Risk Coverage**
- **Efficient Audit cycle time**
- **Insight in Real-time or “Right-time”**
- **Manage Risk / Return**
- **Build a Learning Organization**
Sample reporting dashboard

Summary dashboards would present the results of all detailed dashboards and provide an excellent means for assessing the state of IT

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Summary dashboards would present the results of all detailed dashboards and provide an excellent means for assessing the state of IT.
Blockchain, Algorithmic Sciences
Blockchain is NOT Bitcoin

Bitcoin is an *implementation* of Blockchain; one of potential many use cases

What is Blockchain technology?
The use of advanced *cryptographic techniques* to implement a *distributed system*, and allow *rapid processing* of transactions in a *potentially trustless* environment.

Why the interest?
After 30+ years of software investments, & reorganizations; *business processes*, inside your own four-walls, are quite efficient, which creates challenges in developing and executing high ROI business cases, Blockchain technology offers the possibility of *process optimization* with significantly higher return characteristics.

Bottom Line:
We are starting down a road to help companies re-engineer their business processes with a new type of technology. With the difference being an SAP-like project investment might generate a 10% ROI, a blockchain-based project might allow for a 30-90% reduction in a business unit’s expenses for certain processes.
A look at Blockchain technology

**How it works:**

1. Someone requests a transaction.
2. The requested transaction is broadcast to a P2P network consisting of computers known as nodes.
3. The network of nodes validates the transaction and the user’s status using known algorithms.
4. Validation
   - A verified transaction can involve cryptocurrency, contracts, records, or other information.
   - Once verified, the transaction is combined with other transactions to create a new block of data for the ledger.
5. The new block is then added to the existing blockchain, in a way that is permanent and unalterable.
6. The transaction is complete.

**Benefits**
- Increased transparency
- Accurate tracking
- Permanent ledger
- Cost reduction

**Unknowns**
- Complex technology
- Regulatory implications
- Implementation challenges
- Competing platforms

**Cryptocurrency**
- Cryptocurrency is a medium of exchange, created and stored electronically in blockchain, using encryption techniques to control the creation of monetary units and to verify the transfer of funds. Bitcoin is the best known example.

- Has no intrinsic value in that it is not redeemable for another commodity. Such as gold
- Has no physical form and exists only in the network
- Its supply is not determined by a central bank and the network is completely decentralized
Challenges

Main Audit Challenges

- Assessment of BC core requires extensive technical expertise that most IA shops won’t have
- Ecosystem audit requirements require participation from a number of groups, extensive business knowledge, and advanced architecture experience and knowledge
- Requires a fundamental shift in audit philosophy

Other Challenges

- Participants need to agree on defined business rules
- A legal and regulatory framework must be developed to govern digital records
- Need improvement on existing data retrieval, inquiry, reporting or analytic tools
- Data searching is not equivalent to modern databases
- Low integration with modern data management tools
- Provide high-speed access to data analytics in the same way as big data
- Need to address the non-technical requirements of processing systems

A wise man adapts himself to circumstances, as water shapes itself to the vessel that contains it.
Algorithmic Sciences (AS)

• AS covers a lot of ground, you probably have heard of it in the form of Robotic Process Automation or Artificial Intelligence (AI).

• Audit activity has to be front loaded and should be built IN to the logic.

• Ongoing monitoring is key, especially for adaptive AI because the algorithms adapt their output based on input from multiple variables leading to predictive decisioning and can produce unintended results.

• Again, this activity requires significant investment in capabilities.
Social media
Social media risk on a page

- Access controls
- External threats
- Careless employees
- Data classification and governance
- Sharing of confidential information
- Use of offshore organizations and 3rd parties

- Employee misuse/inappropriate communications
- Negative impact to the brand
- Loss of employee, customer and/or investor confidence

- Enforcement actions from government and/or regulators
- Compliance with self-regulatory frameworks (i.e. US-EU Safe Harbor, TRUSTe)
- Data retention/personal data off-shore

Companies face several financial risks associated with a breach:
- Deferred Prosecution Agreement – Fines
- Stock price decline
- Crisis management/Remediation efforts

Lack of good governance leading to:
- Reduced employee productivity
- Increased process complexity
- Loss of competitive advantage
- Disruption of business activities
- Insufficient moderation leading to poor content
Third Party Risk Management
Overview

Infra-structure
App Dev/Support
DC Mgmt.
System Integration
Product Dev
Security Mgmt.

Strategic risk assessment
Third Party due diligence
Contracting decision
Contracting
Ongoing monitoring
Relationship exit

Third Party Risk Management Program

Strategic
- New Products and Markets
- IP protection
- Business model
- Brand Value
- Fraud

Operational
- Physical & logical security
- Business continuity & disaster recovery
- Operational Competency

Financial
- Credit risk
- Financial viability
- Third Party payments
- Transaction Processing

Compliance
- GLBA
- FedRAMP
- HITECH
- PCI
- HIPAA
- Sarbanes-Oxley
- Legal

Reputational
- Customer Facing activities
- Brand value
- Number of Customers impacted

Technology
- Security
- Availability
- Processing Integrity
- Confidentiality
- Privacy
- Change Management

Common 3rd Party IT Relationship
Relationship lifecycle
Risk environment
Third Party Risk Management
Risk and control considerations

• **Strategy** - Outsourcing strategy is not aligned with corporate objectives.

• **Feasibility**: Assumptions (e.g., payback period, customer and supply-chain impacts, and cost savings) are wrong as the result of inadequate due diligence from suppliers and the organization’s failure to assess relevant risks.

• **Transaction**: Procurement policies are not met; proper service-level agreements are not implemented; operational, human resources (HR), and regulatory implications are not considered; and contingency arrangements are not planned.

• **Transition**: There is a lack of formal transition planning, failure to plan for retention of appropriate skills, and an ineffective escalation and resolution of operational IT issues.

• **Optimization and Transformation**: The outsourcing contract is not managed effectively. Therefore, outsourcing benefits and efficiencies are not realized.

• **Termination and Renegotiation**: There is an inadequate termination of outsourcing processes.
**Third Party Risk Management approach**

A robust TPRM program is based on adoption of key building blocks, and successfully linking the program strategy, policies and processes together. We can help our clients assess their current state programs and develop a road map for designing, building, and optimizing their current programs.
In Conclusion
IT audit considerations – Implementation and ongoing risks

**Project Assurance**

- Formalized Project Plan
- Development and Implement Project Risk Model

**Transactional Level**

- Risk Identification and Measurement
- Annual Review Process
- Ongoing Risk Monitoring
- Risk Remediation and Mitigation

**Risk Management Framework**

- Risk Escalation
- Periodic Risk Reporting
- Risk Appetite

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**IT Operational Audit**

**Blockchain Infrastructure**
Blockchain and the Algorithmic Sciences require a major shift in philosophy. It must go from retrospective, or forensic, point in time efforts to actual real time auditing where the underlying foundations of audit and control become part of the nature of each discrete transaction.
For more information, please contact:

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