

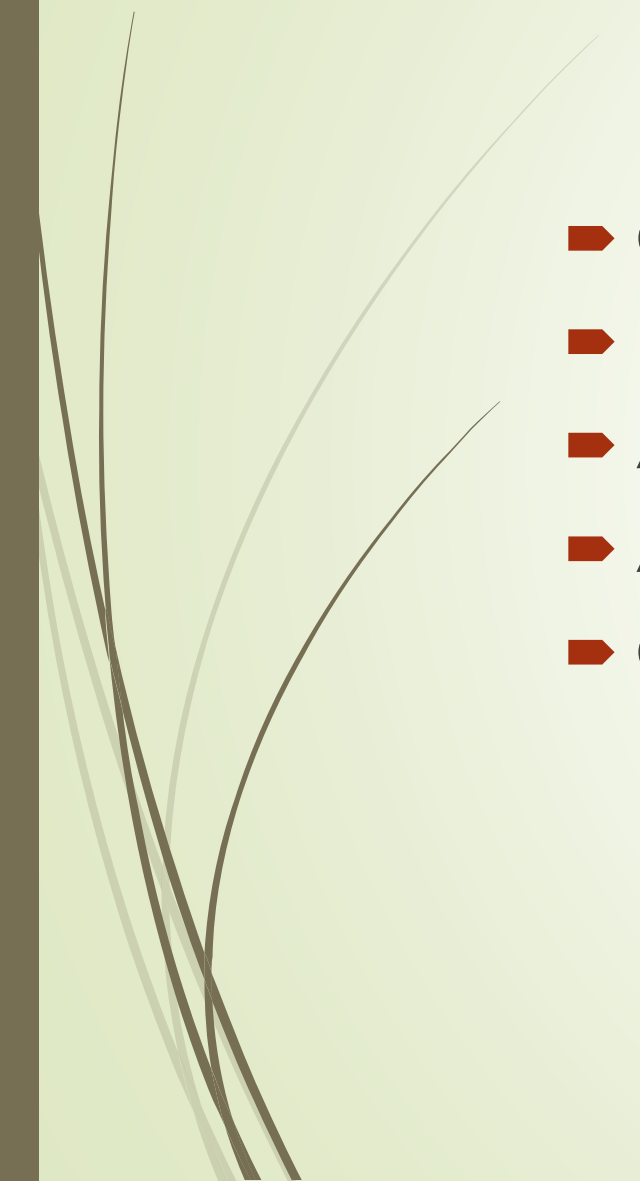


Challenges of security and integrity of data in audits of financial processes executed by artificial intelligence programs

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WHAT TO EXPECT

- Concepts definition
 - Daily Life Examples
 - Accounting Impact
 - Audit Focus
 - Control Objectives
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ARTIFICIAL INTELLIGENCE



- “Artificial intelligence addresses the use of computers to mimic the cognitive functions of humans.” - Data Science Central (DSC)
- “Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks.” – SAS
- “The science of teaching programs and machines to complete tasks that normally require human intelligence.” – AICPA



MACHINE LEARNING (ML)

- ▶ “Machine learning is a subset of AI and focuses on the ability of machines to receive a set of data and learn for themselves, changing algorithms as they learn more about the information they are processing.” – DSC
- ▶ “Machine learning automates analytical model...to find hidden insights in data without explicitly being programmed for where to look or what to conclude.” – SAS
- ▶ “Ability of algorithms to learn from experience rather than being provided with instructions.” – AICPA



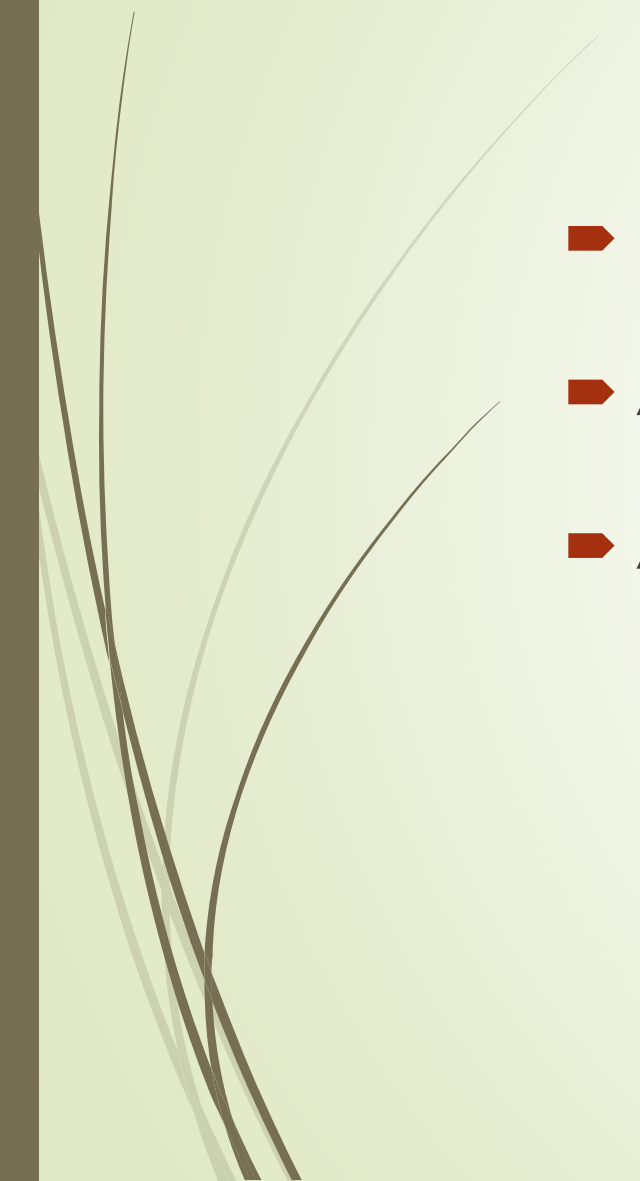
DAILY LIFE EXAMPLES



- ▶ **Siri** (*Apple's personal assistant*): uses ML technology to get smarter and better able to predict and understand our natural-language questions and requests.
- ▶ **Pandora**: has an incredible track record for recommending songs that would otherwise go unnoticed but that people inherently love.
- ▶ **Google Maps**: analyze the speed of movement of traffic, incorporate user-reported traffic incidents like construction and accidents, and reduce commutes by suggesting the fastest routes to and from work.



ACCOUNTING EXAMPLES

- Invoice Processing
 - Audit of Expense Submission
 - Accounts Receivable Processing
- 



OPPORTUNITIES



- The ability to compress the data processing cycle.
- The ability to replace time-intensive activities with time-efficient activities, reducing labor time and costs.
- The ability to make better predictions, for everything from predicting sales of certain goods in particular markets to predicting epidemics and natural catastrophes.
- The ability to reduce errors by replacing human actions with perfectly repeatable machine actions.



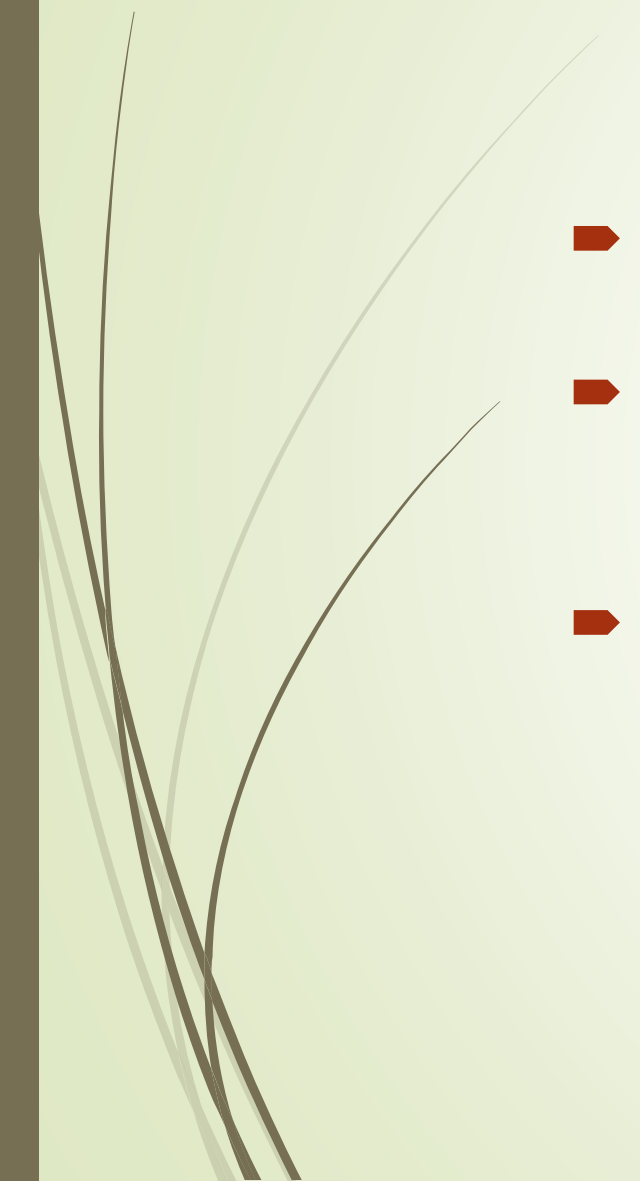
RISKS



- The risk that unidentified human biases will be imbedded in the AI technology.
- The risk that human logic errors will be imbedded in the AI technology.
- The risk that inadequate testing and oversight of AI results in ethically questionable results.
- The risk that AI products and services will cause harm, resulting in financial and/or reputational damage.



DATA ARCHITECTURE & INFRASTRUCTURE

- ▶ The way that data is accessible.
 - ▶ Information privacy and security throughout the data lifecycle (data collection, use, storage, and destruction).
 - ▶ Roles and responsibilities for data ownership and use throughout the data life cycle.
- 



DATA QUALITY

➤ **Characteristics**

- Completeness
- Accuracy
- Reliability

➤ **Considerations**

- Data reconciliation
- Data validation
- Data standardization



AUDIT FOCUS

- “Auditors will focus on the **controls and governance** structures that are in place and determine that they are operating effectively.” - ISACA
- **Risk Management:**
 - Achievement of the organization’s objectives.
 - Reliability and integrity of financial and operational information.
 - Effectiveness and efficiency of operations and programs.
 - Safeguarding of assets.
 - Compliance with laws, regulations, policies, procedures, and contracts.



CONTROL OBJECTIVES

- ▶ **Provide assurance over the reliability of AI's underlying algorithms and the data on which algorithms are based.**
 - ▶ Obtain a sample of the raw data that are inputs to AI. Verify that the organization has implemented methodologies to validate AI outcomes with actual, real-world outcomes.
- ▶ **Provide assurance that data input is reconciled and normalized to maximize accuracy.**
 - ▶ Verify that the organization has policies and procedures in place to continuously measure, monitor, escalate, and rectify data accuracy and integrity issues.



CONTROL OBJECTIVES

- ▶ Provide assurance that the completeness of data is measured and monitored and that any material exceptions that impact decision-making are identified and explained.
 - ▶ Review AI metrics and metric reports. Assess whether those responsible for decision-making have received and considered explanations on material exceptions related to data quality.



CONTROL OBJECTIVES

- ▶ **Provide assurance that AI activity audit trails provide sufficient information to understand what AI decisions were made, and why.**
 - ▶ Review AI audit trails. Determine whether audit trails provide sufficient information to understand what decisions were made, and why.



CONTROL OBJECTIVES

- ▶ **Provide assurance that policies and procedures have been implemented and are working as designed, and that employees are compliant.**
 - ▶ Review helpline/hotline reports and follow up on any reports alleging noncompliant or malicious activities related to AI. Identify and review AI access policies and procedures. Evaluate access policies and test access controls. Assess whether regulatory control objectives reflect emerging regulations, standards, and guidance.



CONTROL OBJECTIVES

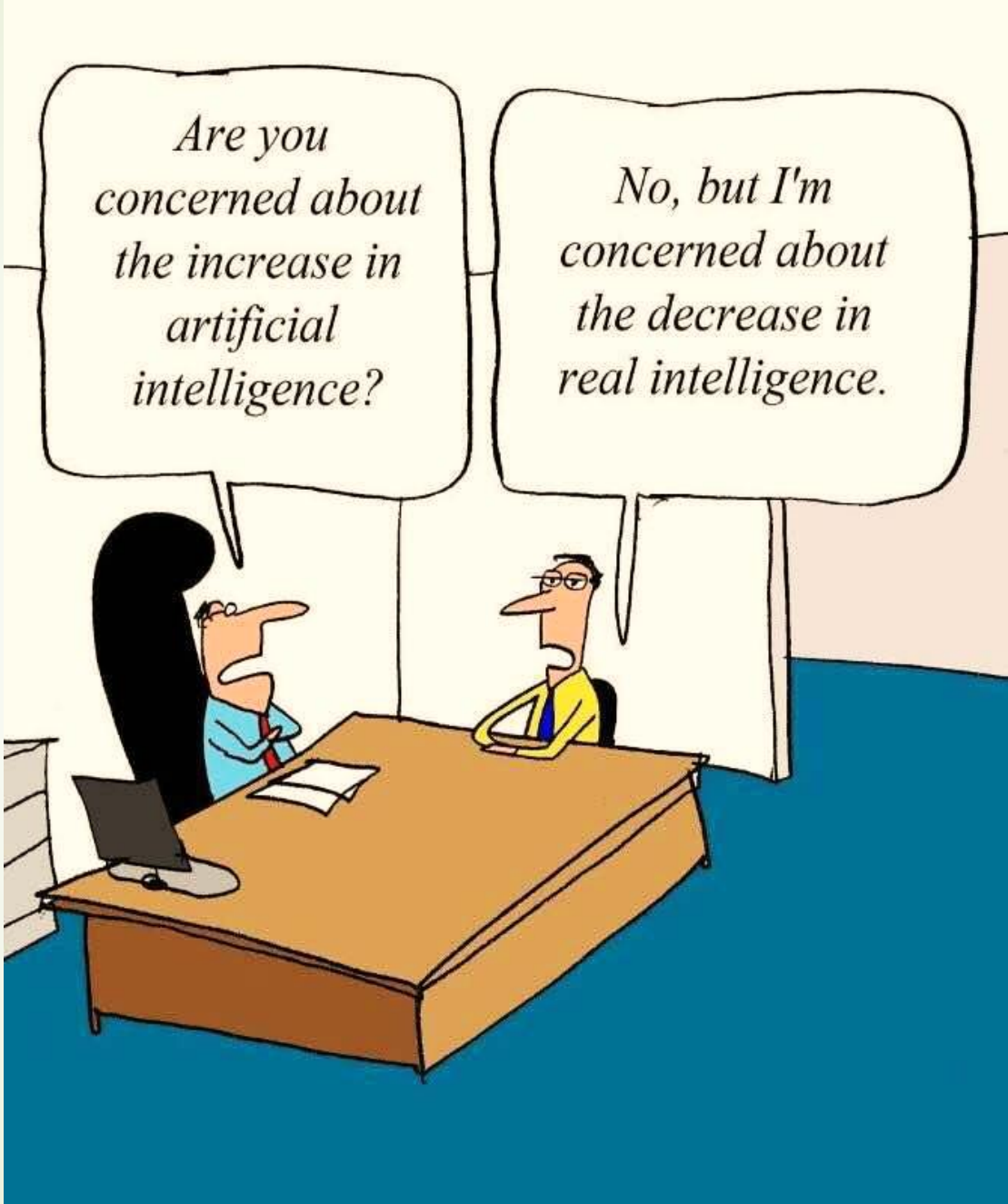
- ▶ **Provide assurance that the organization is cyber resilient. Cyber resilience includes, but is broader than, cybersecurity alone. Cyber resilience encompasses security (resistance), reaction, and recovery.**
 - ▶ Assess whether the organization is preparing for compliance with new technology regulations, such as the EU's General Data Protection Regulation (GDPR). Assess whether the organization's disaster recovery protocols include AI failures, including the breakdown of controls that maintain the rules set forth by AI governance.



REFERENCES

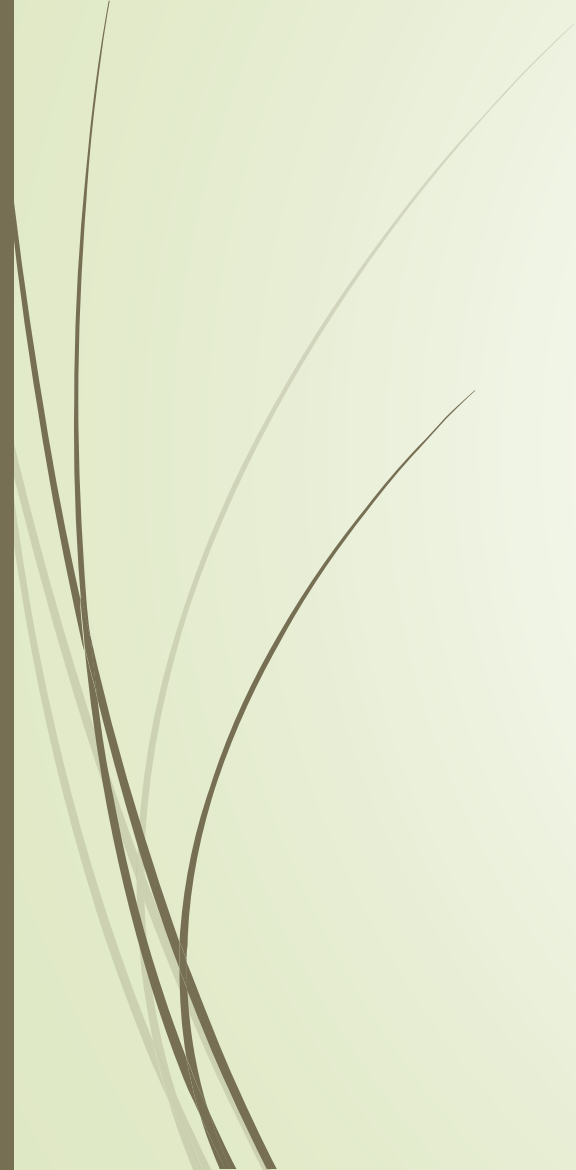


- “Global Perspectives And Insights: The IIA’s AI Auditing Framework” – IIA
- “Auditing Artificial Intelligence” – ISACA
- “A CPA’s Introduction to AI: From Algorithms to Deep Learning, What You Need to Know” – AICPA
- “Artificial Intelligence vs. Machine Learning vs. Deep Learning” – DSC
- “Artificial Intelligence: What it is and why it matters” – SAS
- “The Machine Learning Audit” – ISACA Journal
- “From Artificial Intelligence to Accounting Intelligence” - Accounting Today Magazine



*Are you
concerned about
the increase in
artificial
intelligence?*

*No, but I'm
concerned about
the decrease in
real intelligence.*



THANK YOU