

Audit Evidence – Review of Literature and Non-Authoritative Guidance Relevant to Technology and the Use of Automated Tools and Techniques

This Agenda Item outlines the scope and objective of the literature review relevant to technology and the use of automated tools and techniques (ATT) in audits of financial statements. The register of literature compiled and reviewed is provided in Appendix 1 to this Agenda Item. Also refer to **Part A of Agenda Item 8** for the key observations and topical areas identified from the literature review.

Objective of the Literature Review

1. The Audit Evidence Task Force (AETF) identified relevant literature published by regulators and audit oversight bodies, jurisdictional / national auditing standard setters (NSS), audit firms, professional accountancy organizations and other standard-setters addressing a broad range of topics relevant to technology and the use of ATT in an audit of financial statements. In cataloging the literature, the AETF also considered the Frequently Asked Questions (FAQs) developed by the IAASB Technology Consultation Group (TCG) and the IAASB digital technology market scans (see **Appendix 1**).
2. The objective of the review was to inform the AETF of recent literature that is available when using ATT in audits and what common challenges are being encountered by jurisdictional stakeholders when deploying technology tools that would necessitate further guidance. In addition, through the review, the AETF aimed to identify examples and material that could be leveraged when proposing further revisions to proposed ISA 500 (Revised), *Audit Evidence* in response to the feedback for technological modernization to ED-500.¹

Scope of the Literature Review

3. The compilation of the list of relevant literature included searching available public information via the internet, discussion with IAASB Staff supporting the activities of the TCG, and review of information provided by NSS on recent technology-related national activities and developments.²
4. The compiled list of relevant literature is broad but non-exhaustive, and it is intended to be supplemented as additional information becomes available. In compiling the relevant literature list, the AETF scoped out certain literature that related to specialized and novel areas (e.g., guidance related to auditing digital assets such as cryptocurrencies). In addition, IAASB Staff also undertook:
 - A review of extracts from audit firm methodologies made available providing guidance on documentation of the work performed when using technology solutions as part of an audit.
 - A scan of available website information, articles, and whitepapers by technology providers for insight into emerging technologies and issues.³
5. From the identified and examined literature, majority of the material includes non-authoritative guidance that aims to raise awareness of the benefits and hurdles when using technology in audits.

¹ See Exposure Draft (ED-500): [Proposed International Standard on Auditing \(ISA\) 500 \(Revised\), Audit Evidence, and Proposed Conforming and Consequential Amendments to Other ISAs](#).

² In May 2023, a request for information was initiated to NSS to gather input on technology-related activities or developments at jurisdictional / national level undertaken in the past year or planned for the near future.

³ For example, inflosoftware.com, mindgridge.ai, and datasnipper.com.

Such guidance also addresses a range of topics relevant to the use of ATT when obtaining and evaluating audit evidence and examples on how an audit procedure can be undertaken when using ATT (including for risk assessment and further audit procedures).

6. In addition to guidance, from the relevant literature, three relevant standard-setting initiatives were identified and one standard-setting research project, one academic study, and several audit inspection reports that provide specific findings and success factors observed when inspecting audit files, including observations where ATT has been used.

Register of Relevant Literature and Non-Authoritative Guidance

No	Source	Publication Type	Publication, Title and Year	Broad Summary of Content
1.	Canadian Public Accountability Board (CPAB)	Guidance	<i>CPAB Audit Risk Alert: Use of Artificial Intelligence Applications in the Audit, July 2023</i>	The alert raises awareness about Artificial Intelligence (AI) technologies and their potential to improve effectiveness and efficiency in audits. It also sets out considerations for audit firms when using AI technologies to effectively mitigate associated risks, particularly with respect to their reliability, explainability, and confidentiality.
2.	Australian Auditing and Assurance Standards Board (AUASB)	Guidance	<i>AUASB Bulletin: Integrity of Data Obtained for the Purpose of an Audit of a Financial Report, August 2021</i>	The publication provides practical guidance relevant to planning and maintaining the integrity of data during data collection, extraction and its transformation into a usable form when deploying ATT. It also addresses aspects related to audit documentation and data retention.
3.	Australian Auditing and Assurance Standards Board (AUASB)	Guidance	<i>AUASB Bulletin: Evaluating the Reliability of Data Obtained for Use in Audit Technology Tools, November 2022</i>	The publication aims to assist auditors in evaluating the reliability of data when using technology tools in an audit. Among other matters addressed, it provides examples to demonstrate the appropriate procedures to evaluate the reliability of data when using ATT for risk assessment procedures and substantive tests of detail.
4.	Financial Reporting Council (FRC)	Guidance	<i>Addressing Exceptions in the Use of Audit Data Analytics, August 2021</i>	Guidance for auditors, outlining the general principles for dealing with outliers generated by using audit data analytics to respond to identified risks in an audit. The publication provides a practical example based on a real-world scenario and a potential approach that auditors could take when dealing with potential exceptions. It also includes best practice guidance and pitfalls to avoid when refining the parameters of the audit data analytics.

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5.	Financial Reporting Council (FRC)	Guidance	<i>Using Technology to Enhance Audit Quality, December 2020</i>	The paper sets out the FRC's analysis of responses to their consultation: <i>Technological Resources: Using Technology to Enhance Audit Quality</i> . It incorporates feedback from 17 written responses received to the consultation and other matters that have arisen through additional outreach and engagement with stakeholders.
6.	Chartered Professional Accountants Canada (CPA Canada)	Guidance	<i>Audit Data Analytics Alert, June 2016</i>	The publication raises awareness about audit data analytics in the context of the audit of financial statements, by explaining the term, highlighting the opportunities and hurdles to overcome when integrating more extensive use of audit data analytics into the audit of the financial statements.
7.	EY	Guidance	<i>How Big Data and Analytics are Transforming the Audit</i>	The article discusses the power of new data analytics technologies that are fundamentally changing the audit, explores possibilities and explains the key issues facing auditors as they embrace big data analytics. It also examines how auditing standards and regulations can be aligned with the use of data analytics in audits.
8.	Canadian Public Accountability Board (CPAB)	Guidance	<i>CPAB Exchange: Technology in the Audit, August 2021</i>	The publication provides the CPAB perspective on how the use of technology is enhancing the quality of audits and describes challenges that are emerging, as well as expectations of audit firms, when the use of technology becomes a more significant component of the audit effort.
9.	American Institute of Certified Public Accountants (AICPA)	Guidance	<i>Practice Aid: Use of Technology in an Audit of Financial Statements, 2023</i>	The practice aid aims to help auditors focus on the use of technology in the audit of financial statements when using ATT in the auditor's risk assessment. The material is structured in three parts, as follows: Part 1 – discussing the benefits of leveraging technology in risk assessment, Part 2 – explains commonly used ATT in the auditor's

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				risk assessment, Part 3 – provides an example of the auditor’s use of technology when performing risk assessment procedures.
10.	Public Company Accounting Oversight Board (PCAOB)	Guidance	<i>Staff Guidance – Insights for Auditors: Evaluating Relevance and Reliability of Audit Evidence Obtained from External Sources, October 2021</i>	In response to the growing use of information from external sources as audit evidence, the guidance aims to provide additional clarity on evaluating the relevance and reliability of information from external sources in an audit. The PCAOB has compiled the guidance as part of their ongoing research projects on data and technology and audit evidence.
11.	CPA Canada & AICPA	Guidance	<i>A CPA’s Introduction to AI: From Algorithms to Deep Learning, What You Need to Know</i>	The publication is a foundational resource that explains the buzzwords and terms around AI to help auditors to start thinking about AI and how it may impact their work.
12.	CPA Canada & AICPA	Guidance	<i>The Data-Driven Audit: How Automation and AI are Changing the Audit and the Role of the Auditor</i>	In addition to exploring the benefits of an AI-enabled audit and how AI will evolve the audit and the role of the auditor, this publication also considered the change in mindset required to meet the challenges and take advantage of opportunities this evolution presents. It provides insight into the next steps on the digital journey beyond the current state of AI, as well as the assurance related opportunities that will directly result from these advances.
13.	Australian Auditing and Assurance Standards Board (AUASB)	Guidance	<i>AUASB Bulletin: The Consideration of Cyber Security Risks in an Audit of a Financial Report, May 2021</i>	The publication aims to assist auditors to consider the direct and indirect impact of cyber security on the audit of a financial report. It discusses the responsibility of management and those charged with governance, as well as the auditor in relation to cybersecurity risk in the context of an audit and provides specific considerations of cyber security as part of risk assessment.

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14.	IAASB	Guidance	<i>FAQs Regarding the Use of Automated Tools and Techniques in Performing Audit Procedures, September 2020</i>	<p>The non-authoritative support material highlights the impact of technology when applying certain aspects of the ISAs and focuses on how an auditor may use the capabilities of ATT. In particular the FAQ considers:</p> <ul style="list-style-type: none"> • Whether a procedure involving the use of ATT may serve as both a risk assessment procedure and a further audit procedure. • Specific considerations when using ATT in performing substantive analytical procedures, in accordance with ISA 520, <i>Analytical Procedures</i>.
15.	IAASB	Guidance	<i>FAQs – The Use of Automated Tools and Techniques When Identifying and Assessing Risks of Material Misstatement in Accordance with ISA 315 (Revised 2019), November 2020</i>	<p>The non-authoritative support material discusses several topics relevant to use of ATT when applying 315 (Revised 2019),⁴ including what types of ATT can be used, and how they can be applied in risk assessment, how ATT can support the auditor’s application of professional skepticism, how ATT can help the auditor when considering inherent risk factors in the identification and assessment of risks of material misstatement, what are the auditor’s considerations regarding the use of machine learning or AI by the entity, as well as what are the considerations in documenting the auditor’s use of ATT in performing risk assessment.</p>
16.	IAASB	Guidance	<i>FAQs On Investigating Exceptions and Relevance of Performance Materiality when Using ATT, February 2023</i>	<p>The non-authoritative support material explores certain frequently asked questions around investigating exceptions when using ATT and the concept of materiality when performing ATT that have become prevalent with the increasing use of ATT that enable analyzing data sets with large volumes of information. For example, when performing further and risk assessment procedures by using</p>

⁴ ISA 315 (Revised 2019), *Identifying and Assessing the Risk of Material Misstatement*

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				ATT is the auditor required to investigate all exceptions identified and does the concept of materiality still apply when the auditor performs an audit procedure using ATT on entire populations.
17.	IAASB	Guidance	<i>FAQs: Audit Documentation When Using ATT, April 2020</i>	The non-authoritative support material provides practical assistance to practitioners in understanding relevant considerations for audit documentation and using ATT. It highlights that ISA 230 ⁵ does not differentiate between the use of ATT and manual tools with respect to documentation requirements, but the use of ATT may result in different documentation considerations.
18.	IAASB	Guidance	<i>FAQs: Addressing the Risk of Overreliance on Technology – Use of Information Procedures by the Entity’s Systems, March 2021</i>	The non-authoritative support material highlights how the auditor can address automation bias and the risk of overreliance on technology when using ATT and when using information produced by the entity’s information systems.
19.	IAASB	Guidance	<i>Digital Technology Market Scans, March 2022 – May 2023</i>	The IAASB scans cover exciting trends, including new developments, corporate and start-up innovation, noteworthy investments and what it all might mean for the IAASB.
20.	American Institute of Certified Public Accountants (AICPA)	Guidance	<i>Guide to Audit Data Analytics, 2017</i>	A comprehensive guide to help auditors apply audit data analytics in an audit of financial statements. The specific objectives of the guide are to: <ul style="list-style-type: none"> • Make auditors aware of how various audit data analytics may be efficiently and effectively used in each phase of the audit.

⁵ ISA 230, *Audit Documentation*

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				<ul style="list-style-type: none"> Helping auditors identify and address matters that they may encounter in deciding whether and, if so, how to use audit data analytics.
21.	Institute of Singapore Chartered Accountants (ISCA)	Guidance	<i>Audit Guidance Statement: Data Analytics in a Financial Statements Audit, August 2021</i>	The publication provides guidance on the key principles of the application of data analytics in the audit of financial statements, comprising the considerations prior to the use of data analytics, preparing data for use, relevance and reliability of data, use of data analytics, evaluation of results and other relevant considerations.
22.	Institute of Chartered Accountants of India (ICAI)	Guidance	<i>Technical Guide on Digital Assurance</i>	The guide intends to help auditors to adopt enhanced use of technology in audits and implementing the use of digitally available audit evidence and information. It aims to raise awareness about online sources of audit evidence and explains them through various illustrations.
23.	Public Company Accounting Oversight Board (PCAOB)	Inspection Report	<i>Spotlight: Staff Update and Preview of 2021 Inspection Observations, December 2022</i>	These spotlights present the PCAOB aggregate inspection observations. Among the common recurring themes from the observations in the 2021 and 2020 inspections are deficiencies in auditing revenue that include instances where auditors, in performing tests of details or substantive analytical procedures, did not test, or did not identify and test any controls over the accuracy and completeness of data or reports produced by the public company used in their testing. The spotlights also include other observations for emerging technologies and related risks and opportunities.
24.	Public Company Accounting Oversight Board (PCAOB)	Inspection Report	<i>Spotlight: Staff Update and Preview of 2020 Inspection Observations, October 2021</i>	
25.	International Forum of Independent Regulators (IFIAR)	Inspection Report	<i>2022 Survey of Inspection Findings, March 2023</i>	Presents information collected by IFIAR through its annual survey of the results of its member regulators' inspections of the six largest audit firm networks. In addition, observations and findings during the

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				<p>2022 Annual Virtual Inspection Workshop related to technology and use of ATT included:</p> <ul style="list-style-type: none"> • Insufficient data extraction and preparation. • Inappropriate documentation of audit procedures.
26.	Financial Reporting Council (FRC)	Inspection Report	<i>Tier 1 Firms – Overview, Audit Quality Inspection and Supervision Report, July 2022</i>	The FRC summary inspection report for Tier 1 firms elaborates on the 2021-2022 most common inspection findings, based on the number of firms where key findings were raised. It also provides insights on the state of audit quality.
27.	Independent Regulatory Board for Auditors (IRBA)	Inspection Report	<i>2022 Public Inspections Report on Audit Quality</i>	The Public Inspections Report provides a section with a summary of success factors and deficiencies noted with respect to information technology and the use of ATT in audits from the audit quality inspections performed throughout the year.
28.	Public Company Accounting Oversight Board (PCAOB)	Research Project	<i>Spotlight: Data and Technology Research Project Update, May 2021</i>	The PCAOB has established a research project on data and technology to assess whether there is a need for guidance, changes to standards, or other regulatory actions. The publication highlights relevant observations from the research on the use of technology-based tools in an audit.
29.	Public Company Accounting Oversight Board (PCAOB)	Standard-Setting	<i>Proposed Amendments Related to Aspects of Designing and Performing Audit Procedures that Involve Technology-Assisted Analysis of Information in Electronic Form, June 2023</i>	The PCAOB issued a proposal to amend its audit evidence and responses to risks of material misstatement auditing standards to bring greater clarity for certain auditor responsibilities when using technology-assisted analysis. If not designed and executed in accordance with PCAOB standards, audit procedures that involve analyzing information in electronic form with technology-based tools may not provide sufficient appropriate audit evidence. PCAOB research indicates that the standards may be more effective if they more

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				specifically address aspects of audit procedures that involve technology assisted analysis.
30.	International Ethics Standards Board for Accountants (IESBA)	Standard-Setting	<i>Technology-Related Revisions to the Code</i>	The project included technology-related revisions that extended to the entire IESBA Code, ⁶ including the independence provisions. Among the key areas addressed, enhancements were proposed to the considerations relating to threats from the use of technology and the ethical dimension of a professional accountant's reliance on, or use of, the output of technology in carrying out their work.
31.	American Institute of Certified Public Accountants (AICPA)	Standard-Setting	<i>Statement on Auditing Standards (SAS) 142, Audit Evidence</i>	The AICPA's standard on audit evidence explains what constitutes audit evidence in and audit of financial statements and sets out attributes of information that are taken into account when evaluating information. The standard also provides an exhibit on using audit data analytics to simultaneously accomplish multiple audit purposes.
32.	Dereck Barr-Pulliam University of Louisville, Christopher G. Calvin University of Dayton, Marc Eulerich University of Duisburg-Essen, Arpine Maghakyan University of Glasgow	Academic Study	<i>Audit Evidence, Technology and Judgement: A Review of the Literature in Response to ED-500, May 2023</i>	The study includes a review of academic literature published in the past ten years to synthesize extant knowledge specifically on the use of technology and the application of professional skepticism during audit evidence evaluation. The review offers factors the IAASB should consider as the Board seeks to modernize and future-proof its standards, suggests improvements to the proposed ED-500 and identifies avenues for future academic research.

⁶ The International Ethics Standards Board for Accountants' *International Code of Ethics for Professional Accountants (including International Independence Standards)*