

PRIMER ON ARTIFICIAL INTELLIGENCE

JUNE 2024

ESSENTIAL CONSIDERATIONS
FOR CBVs ON THE RESPONSIBLE
USE OF AI





CONTENTS

The promise of AI	3
What can I do with AI?	3
What must I do if I choose to use AI in my work?	5
Essential considerations for CBVs on the responsible use of AI	6
Introduction	6
Accountability and competence	8
Accuracy and bias	10
Transparency and explainability	12
Data privacy, cybersecurity and intellectual property risks	16
Conclusion	16
Preparing for the future	17
Want to build AI fluency?	17
AI & Technology Working Group	17
Engage with CBV Institute	18

Published by the Chartered Business Valuers Institute (CBV Institute)

This primer does not constitute authoritative guidance from CBV Institute and is not intended to replace CBV Institute Practice Standards. Where there is any contradiction or confusion between this primer and the Practice Standards, the Practice Standards take precedence. This primer does not constitute legal advice.



PRIMER ON ARTIFICIAL INTELLIGENCE

Balancing innovation with the ethical and responsible use of emerging technologies

THE PROMISE OF AI

Artificial Intelligence (AI) is promising to automate mundane valuation tasks and free up practitioners to focus on the more critical and value-added aspects of an engagement. However, the use of generative AI or other developing technologies in a valuation professional's workflow raises several risks, some of which may not be fully understood.

With enterprise adoption of generative AI expected to take off in 2024, and as more professionals "lean in" to AI in the workplace, CBVs may be wondering – what can I do with AI as a CBV, and what must I do if I choose to use AI in my work?

WHAT CAN I DO WITH AI?

Several possible AI use cases are being explored right now by valuation providers. Levels of AI adoption and use amongst the CBV community may vary widely – some may be beginning to explore, while others may be coding for AI-driven valuation applications. Here are two types of AI that are being used in financial services and litigation.

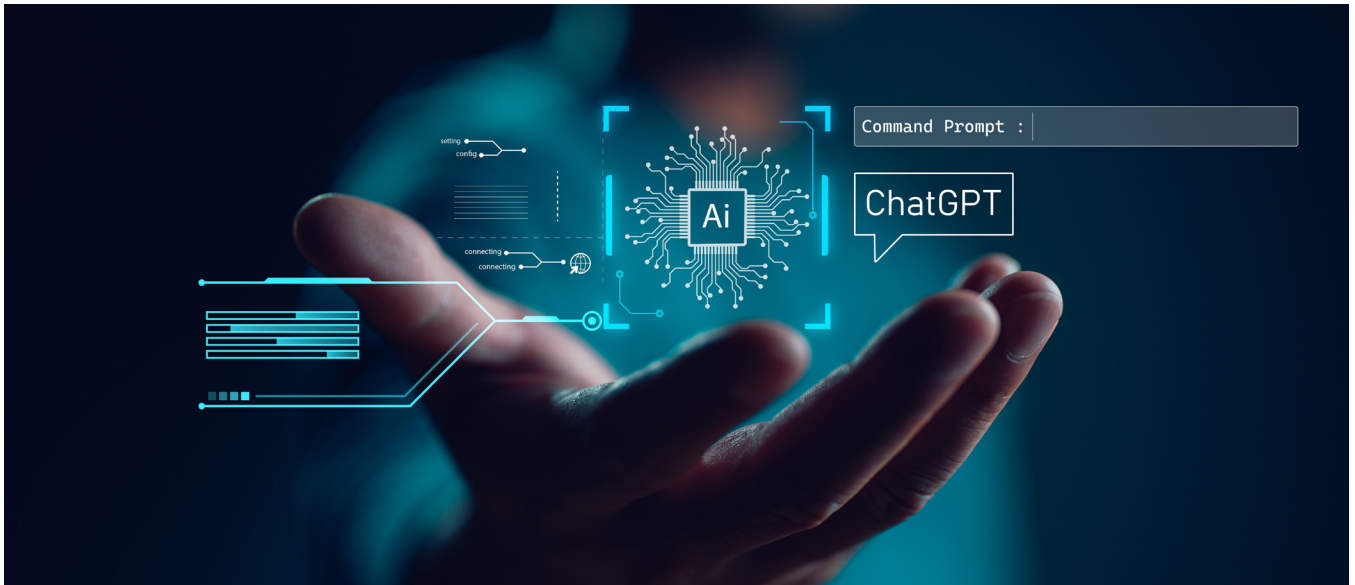
Predictive AI is being used to analyse large datasets to forecast trends and identify patterns, to help professionals make informed decisions. It is also being used to identify potential risks and opportunities in the market. If you use e-discovery software, you may already be using predictive AI.¹ Alternative asset manager Blackstone began recruiting data scientists eight years ago to concentrate on predictive AI "to forecast everything from budgets and sales to customer clicks on a website."² Blackstone now employs over 50 data scientists and has combined predictive AI with generative AI to "instantly gain insights and recognize patterns across every possible business activity." Predictive AI technology is more established in financial services but still presents risks;³ for example, a January 2024 MIT Sloan article categorizes the use of AI for financial applications such as evaluating creditworthiness, managing investment portfolios, or underwriting financial instruments as high risk.⁴

1 Amy Salzyzn, *AI and Legal Ethics* (February 1, 2021) in Florian Martin-Bariteau & Teresa Scassa, eds., LexisNexis Canada, *Artificial Intelligence and the Law in Canada*, available at SSRN: <https://ssrn.com/abstract=3733952>; and Thomson Reuters (April 16, 2019), *How to make the e-discovery process more efficient with predictive coding*, <https://legal.thomsonreuters.com/en/insights/articles/how-predictive-coding-makes-e-discovery-more-efficient>

2 Jonathan Kandell, Institutional Investor (September 6, 2023), *How Blackstone sprinted ahead of its peers in AI*, <https://www.institutionalinvestor.com/article/2c5n7hypxbs38zj9xsutc/portfolio/how-blackstone-sprinted-ahead-of-its-peers-in-ai>

3 Dacheng Xiu, Chicago Booth Review (February 5, 2024), *In finance, humans were the first machines*, <https://www.chicagobooth.edu/review/in-finance-humans-were-first-machines>

4 Beth Stackpole, MIT Sloan School of Management (January 3, 2024), *A framework for assessing AI risk*, <https://mitsloan.mit.edu/ideas-made-to-matter/a-framework-assessing-ai-risk>



Generative AI tools, such as ChatGPT, Copilot, Gemini, DALL-E, and Midjourney are being used to create original media such as text, images, video, or audio in response to prompts from users. These systems are often powered by large language models (LLMs), which learn patterns from vast amounts of data. While it may at first appear to be a splashy over-hyped attention-hog, generative AI was a steep development for AI software that has attracted significant investment dollars and has already been put to use in financial services. Generative AI is already being used to audit data, interpret accounting standards and tax codes, forecast sales, and help perform KPI analysis.⁵ In 2023, JPMorgan Chase used generative AI “to analyse Federal Reserve meetings to try to glean insights for its trading desk.”⁶ In 2024, generative AI will continue its rapid integration into your daily life, popping up in your existing software and tools (e.g., spreadsheets, meeting tools, word processors) as technology companies deploy their latest software updates. However, widespread use of generative AI is still a new phenomenon, and therefore requires great caution from users – and much is being written about how generative AI can be used (or not) in business. For example, a May-June 2023 Boston Consulting Group experiment found it is great for creative tasks but can destroy value when asked to weigh nuanced qualitative and quantitative data to answer a complex business question.⁷

5 Mathieu de Lajarte, CPA Canada (August 1, 2023), *Is AI moving too fast for regulators to keep up?* <https://www.cpacanada.ca/news/innovation/ai-regulation-olivier-blais>; and ICAEW Insights (February 20, 2024), *How generative AI is set to disrupt finance*, <https://www.icaew.com/insights/viewpoints-on-the-news/2024/feb-2024/how-generative-ai-is-set-to-disrupt-finance>


6 Guy Scriven, The Economist (November 13, 2023), *Generative AI will go mainstream in 2024*, <https://www.economist.com/the-world-ahead/2023/11/13/generative-ai-will-go-mainstream-in-2024>

7 François Candelon et al., Boston Consulting Group (September 21, 2023), *How people can create – and destroy – value with Generative AI*, <https://www.bcg.com/publications/2023/how-people-create-and-destroy-value-with-gen-ai>

WHAT MUST I DO IF I CHOOSE TO USE AI IN MY WORK?

Many organizations and professional bodies are grappling with this question right now. The latest breakthrough innovations in the field of AI introduce new risk considerations for CBVs. For example, while generative AI shows great promise, experts agree that it is still “a tool in its infancy” that requires the supervision of “careful humans.”⁸

As at the date of publication, CBV Institute has not issued authoritative guidance specific to the use of AI in engagements. However, Members and Registered Students must abide by CBV Institute’s Code of Ethics at all times, and the Practice Standards when appropriate. CBV Institute’s Code of Ethics and Practice Standards set out the fundamental principle of performing professional services with integrity, good faith and due care, regardless of the tools or technologies used. Other applicable concepts highlighted below include: (a) Section 500 of the code, *Privacy and Confidentiality*, which requires that CBVs safeguard clients’ confidential information, including from data-gobbling chatbots; (b) Section 201 of the code, *False or Misleading Documents and Oral Presentations*, which bars the CBV from making representations they know, or should know, to be false or misleading; (c) Practice Standard No. 120, which requires that valuations are adequately planned and properly executed, with due care and with an objective state of mind; and (d) Practice Standard No. 110, which requires a scope of review that clearly identifies the specific information on which the CBV relied to arrive at a conclusion.



The importance of professional judgment and professional skepticism has only been magnified by the boom in AI. AI is a tool; it does not change the existing requirements to show professional competence and due care as CBVs, and issue credible and appropriately supported valuations.

— Catalina Miranda, Vice President of Regulatory and Standards

Irrespective of the tools and data being used as part of the professional practice of valuations, CBVs remain responsible for the accuracy, credibility and reasonability of inputs, as well as any analyses and conclusions.

8 The Economist (June 6, 2023), *Generative AI could radically alter the practice of law*, <https://www.economist.com/business/2023/06/06/generative-ai-could-radically-alter-the-practice-of-law>



ESSENTIAL CONSIDERATIONS FOR CBVS ON THE RESPONSIBLE USE OF AI

INTRODUCTION

This primer is designed to raise some considerations for CBVs who have incorporated, or may be planning to incorporate, AI into their workflow.

It is designed to provide information that can help CBVs decide whether they want to use AI-powered tools in practice and, if so, some considerations around the responsible use of this evolving technology.

This primer does not raise all the issues, and it does not have all the answers.

CBV Institute acknowledges that the responsible use of AI will differ based on the context and the stage of a valuation engagement, ranging from data gathering and research to analysis, modeling, report writing, editing, and even marketing business valuation services. Use of AI in an engagement may vary from a significant level of reliance on AI, to only tangential or immaterial reliance. Regardless of the stage one is at, significant professional judgment is necessary in determining appropriate uses for AI in a valuation engagement.

This primer is effective as of May 2024. The AI landscape is quickly evolving. As the technology matures, new use cases are emerging, and even the definition of AI is evolving.⁹ The Organisation for Economic Co-operation and Development (OECD) updated its definition of an AI system in November 2023, included below and used as the definition of AI throughout this primer. A pair of OECD articles provide the rationale behind the revision and describe why it is challenging to achieve consensus on how AI is defined, including the difficulty of clearly distinguishing between AI and non-AI machine based systems and the general public's changing perception of which technologies are considered AI.¹⁰

⁹ According to the OECD, "As AI becomes more sophisticated and diverse, some technologies, such as optical character recognition (OCR), which were once widely considered AI, no longer are—at least by the general public—even though they employ textbook AI methods." Source: Marko Grobelnik et al., OECD (March 6, 2024), *What is AI? Can you make a clear distinction between AI and non-AI systems?* <https://oecd.ai/en/wonk/definition>

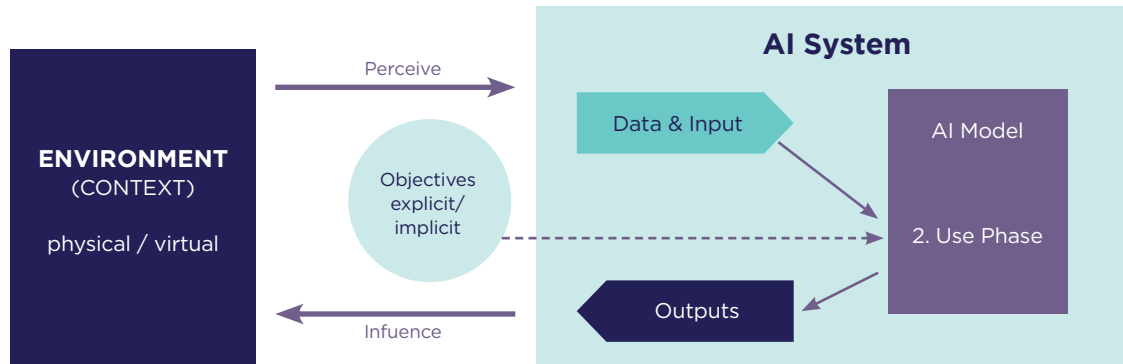
¹⁰ Stuart Russell et al., OECD (November 29, 2023), *Updates to the OECD's definition of an AI system explained*, <https://oecd.ai/en/wonk/ai-system-definition-update>; and Marko Grobelnik et al., OECD (March 6, 2024), *What is AI? Can you make a clear distinction between AI and non-AI systems?* <https://oecd.ai/en/wonk/definition>



THE OECD DEFINITION OF AN AI SYSTEM¹¹

USE PHASE (ONCE THE MODEL IS BUILT):

An AI system is a machine-based system, that



- for explicit or implicit objectives
 - infers, from the input it receives
 - how to generate outputs such as predictions, content, recommendations, or decisions
 - **that (can) influence physical or virtual environments;**
- Different Ai systems vary in their levels of autonomy and adaptiveness (after deployment).**

¹¹ Stuart Russell et al., OECD (November 29, 2023), *Updates to the OECD's definition of an AI system explained*, <https://oecd.ai/en/wonk/ai-system-definition-update>



ACCOUNTABILITY AND COMPETENCE

CBVs remain accountable for the entirety of their work products, even those parts produced by an AI system, and therefore are responsible for any breach of CBV Institute's Code of Ethics and Practice Standards.

At a minimum, practitioners should be well versed in the use of any technology tool, including the benefits and risks associated with it, before using it to assist with the services they provide.

Make sure that you are not using AI in place of your professional judgment. AI is best thought of as another tool in a CBV's toolkit, there to assist with the tasks along the way, but not making any decisions for them. CBVs remain ultimately responsible for the tools and data that they use, including assessing, selecting and reviewing outputs.

Note that an AI system cannot be considered a "specialist" as set out by Practice Standard No. 120. While the standards allow for reliance upon the work of a specialist (e.g., real estate appraisers, engineers, or equipment appraisers), where reasonable assurance concerning the specialist's reputation for competence and degree of independence has been obtained, this does not extend to the use of AI systems.

REQUIREMENTS OF COURTS OR OTHER DECISION-MAKERS

CBVs practicing in litigation should stay informed on the requirements of the applicable court, tribunal, or other relevant decision-maker. It may be permissible or prohibited to use AI in certain engagements, and you may be required to disclose when work is generated or assisted by AI.

Practice directions

Several courts have issued "practice directions" on the use of AI. Practice directions offer procedural guidance and are supplemental to the rules of civil procedure. The Court of King's Bench of Manitoba released the first practice direction from a Canadian court on the Use of Artificial Intelligence in Court Submissions on June 23, 2023.¹² The direction states that when AI has been used in the preparation of materials filed with the court, **the materials must indicate how it was used**. The judge stated that "there are legitimate concerns about the reliability and accuracy of the information generated from the use of artificial intelligence." Three days later, the Supreme Court of Yukon issued a similar practice direction, specifically naming generative AI chatbot, ChatGPT, as an example of a tool that must be disclosed.¹³

¹² Chief Justice Glenn D. Joyal, Court of King's Bench of Manitoba (June 23, 2023), *Practice Direction Re: Use of Artificial Intelligence in Court Submissions*, https://www.manitobacourts.mb.ca/site/assets/files/2045/practice_direction_-_use_of_artificial_intelligence_in_court_submissions.pdf

¹³ Chief Justice Suzanne Duncan, Supreme Court of Yukon (June 26, 2023), *Practice Direction General-29: Use of Artificial Intelligence Tools*, <https://www.yukoncourts.ca/sites/default/files/2023-06/GENERAL-29%20Use%20of%20AI.pdf>



The Federal Court of Canada released guidance on December 20, 2023 regarding the use of AI by parties, self-represented litigants and interveners, in the [Notice on the Use of Artificial Intelligence in Court Proceedings](#).¹⁴ This guide provides an example declaration: “Artificial intelligence (AI) was used to generate content in this document.” The Notice also emphasizes the importance of a “human in the loop”:

“Human in the loop”: To ensure accuracy and trustworthiness, it is essential to check documents and material generated by AI. The Court urges verification of any AI-created content in these documents. This kind of verification aligns with the standards generally required within the legal profession.

Other notices issued by Canadian courts in 2023 appear at the bottom of this [Law360 Canada article](#).¹⁵

Case law

It is still early days for Canadian legal decisions on generative AI. A February 23, 2024, B.C. Supreme Court [judgment](#) reprimands a lawyer for citing two cases made up by ChatGPT.¹⁶ The judgment states:

As this case has unfortunately made clear, generative AI is still no substitute for the professional expertise that the justice system requires for lawyers. Competence in the selection and use of any technology tools, including those powered by AI, is critical. The integrity of the justice system requires no less.

Another February 2024 ruling, a small claims [decision](#) from the B.C. Civil Resolution Tribunal, describes a \$650 dispute over an instance when an Air Canada chatbot gave misleading information about the airline’s bereavement fares.¹⁷ According to the decision, Air Canada effectively suggested “the chatbot is a separate legal entity that is responsible for its own actions.”¹⁸ The decision states “It should be obvious to Air Canada that it is responsible for all the information on its website”, and the Tribunal found “Air Canada did not take reasonable care to ensure its chatbot was accurate.”

Citation styles

The practice directions provide minimal instruction on how to disclose the use of AI. The three most common citation standard setters provide some additional helpful guidance for disclosing use of generative AI: [MLA Style – Generative AI](#), [APA Style – ChatGPT](#), or [Chicago Style – Generative AI](#).

¹⁴ Chief Justice Paul S. Crampton, Federal Court of Canada (December 20, 2023), *Notice to the Parties and the Profession: The Use of Artificial Intelligence in Court Proceedings*, <https://www.fct-cf.gc.ca/Content/assets/pdf/base/2023-12-20-notice-use-of-ai-in-court-proceedings.pdf>

¹⁵ Cristin Schmitz, Law360 Canada (January 3, 2024), *Federal Court mandates AI-usage disclosure; won’t use automated decision-making tools for now*, <https://www.law360.ca/ca/articles/1780574>

¹⁶ Zhang v. Chen, 2024 BCSC 285, <https://www.bccourts.ca/jdb-txt/sc/24/02/2024BCSC0285cor1.htm>

¹⁷ Moffatt v. Air Canada, 2024 BCCRT 149 (CanLII), <https://canlii.ca/t/k2spq>

¹⁸ The decision does not mention generative AI. About the nature of the technology, it appears the Tribunal was kept in the dark; according to the decision “While Air Canada did not provide any information about the nature of its chatbot, generally speaking, a chatbot is an automated system that provides information to a person using a website in response to that person’s prompts and input. The parties implicitly agree that Mr. Moffatt was not chatting with an Air Canada employee.”



ACCURACY AND BIAS

CBVs cannot make or associate themselves with any statement that they know, or should know, is false or misleading (Section 201 of CBV Institute's Code of Ethics). While popular media is full of examples of false or misleading content created by the widely available generative AI tools, all AI systems present risks related to accuracy and bias.

AI is not neutral: AI-based decisions are susceptible to inaccuracies, discriminatory outcomes, embedded or inserted bias.

— UNESCO¹⁹

Inaccuracies and bias in AI systems have several causes and varying effects.²⁰ It can arise in the data used to train the AI system, a phenomenon known as the “garbage in, garbage out” effect – when trained on biased or poor-quality data, AI gives biased or poor-quality outputs. For example, Stable Diffusion, an AI image-generation model, has been criticized for amplifying racial and gender disparities when generating images related to job titles and crime.²¹ Bias can also arise from the code, exemplified by several lending discrimination lawsuits which allege that an algorithm set to exclude mortgage applicants from certain ZIP codes, educational backgrounds, or area codes, may have discriminated against minority and female applicants.²²

In generative AI chatbots, “hallucinations” are also of concern. ChatGPT has been criticized for inventing information and presenting it as fact.²³ When a chatbot does not understand the context of a particular situation, it may generate irrelevant or inaccurate responses. In other words, it makes stuff up! When a chatbot cites its secondary sources, take care to “click through” to ensure that they are well-recognized and reliable sources (e.g., official government websites, trade magazines, reputable news organizations, commonly referenced commercial publishers, peer-reviewed articles). While vetting the quality of the sources, also ensure that the chatbot has not omit something of relevance that appears in the source documents, or inserted something (potentially made up!) that it has not attributed to a source.

19 UNESCO (April 21, 2023), *Artificial Intelligence: examples of ethical dilemmas*, <https://www.unesco.org/en/artificial-intelligence/recommendation-ethics/cases#ai-in-the-court-of-law>

20 Nicol Turner Lee et al., Brookings Institute (May 22, 2019), *Algorithmic bias detection and mitigation: Best practices and policies to reduce consumer harms*, <https://www.brookings.edu/articles/algorithmic-bias-detection-and-mitigation-best-practices-and-policies-to-reduce-consumer-harms/>; IBM Technology (October 16, 2023), *Shedding light on AI bias with real world examples*, <https://www.ibm.com/blog/shedding-light-on-ai-bias-with-real-world-examples/>; and Leonardo Nicoletti and Dina Bass, Bloomberg (June 9, 2023), *Humans are biased. Generative AI is even worse*, <https://www.bloomberg.com/graphics/2023-generative-ai-bias/>

21 Leonardo Nicoletti and Dina Bass, Bloomberg (June 9, 2023), *Humans are biased. Generative AI is even worse*, <https://www.bloomberg.com/graphics/2023-generative-ai-bias/>

22 Web Arnold, Bloomberg Law (April 25, 2023), *Analysis: What lenders should know about AI and algorithmic bias*, <https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-what-lenders-should-know-about-ai-and-algorithmic-bias>

23 “A prominent example of this bug,” according to Canadian Lawyer Magazine, “is the lawyer from New York City who used ChatGPT for legal research and was provided with six cases that the chatbot made up.” Source: Aidan Macnab, Canadian Lawyer Magazine (August 2023), *Hallucinations and exposure of proprietary information among generative AI’s workplace legal issues*, <https://www.canadianlawyermag.com/practice-areas/labour-and-employment/hallucinations-and-exposure-of-proprietary-information-among-generative-ais-workplace-legal-issues/379119>



Always review, test, verify, and critically assess outputs (i.e., predictions, content, recommendations, or decisions) from AI systems before adopting them or disseminating them to others (co-workers, clients, etc.). Never rely solely on AI-generated content without review.

In addition to the Code of Ethics requirements regarding false and misleading information, CBVs may refer to:

- Practice Standard No. 120 which requires that all valuations are adequately planned and properly executed, with due care and with an objective state of mind. A properly executed work product would include adequate consideration of any inputs, whether from AI systems or other sources.
- International Valuation Standards, which now form part of CBV Institute's Practice Standards, provide further guidance on accuracy and other key considerations when evaluating data and models (see IVS 104 Data and Inputs pp. 52 to 54 and IVS 105 Valuation Models pp. 55 to 57).²⁴ Specifically, the characteristics of appropriate inputs and valuation models under IVS are accuracy, completeness, timeliness, and transparency (IVS 104, para 30.02 and IVS 105, para 30.01). To be accurate, data must be free from error and bias and reflect the characteristics that they are designed to measure; valuation models must be free from error and function in a manner consistent with the objectives of the valuation.

CAUTIONS FROM CHATBOTS

When signing up to generative AI chatbots it is commonplace to read and agree to a disclaimer about accuracy and bias. Similar cautions appear in chatbot FAQs. Here are a few we encountered in February 2024.

Gemini will not always get it right²⁵

Gemini may give inaccurate or offensive responses. When in doubt, use the Google button to double-check Gemini's responses.

Are Copilot's AI-generated responses always factual?²⁶

Copilot aims to base all its responses on reliable sources – but AI can make mistakes, and third-party content on the internet may not always be accurate or reliable. Copilot will sometimes misrepresent the information it finds, and you may see responses that sound convincing but are incomplete, inaccurate, or inappropriate. Use your own judgment and double check the facts before making decisions or taking action based on Copilot's responses.

²⁴ International Valuation Standards effective January 31, 2025.

²⁵ Viewed in a pop-up disclaimer when signing up for Google's Gemini, formerly Bard, on February 14, 2024.

²⁶ Microsoft Copilot, *Frequently Asked Questions*, viewed February 16, 2024 at <https://www.microsoft.com/en-us/bing?form=MGOAUO&OCID=MGOAUO#faq>



TRANSPARENCY AND EXPLAINABILITY

CBVs must not rely on the output of technology without an understanding of whether the output is credible. The problem is that AI systems are complex – understanding how they arrive at specific outputs or decisions can be challenging, and some AI systems can generate convincing novel content that looks human-generated. Also, the technology is changing at a rapid pace and AI is being incorporated into existing software systems, sometimes without proper awareness. This raises several concerns around transparency and explainability (T&E): the extent to which an AI system’s workings, and the logic behind its outputs, can be understood.²⁷

Explainability of model outputs enhances the ability to mitigate the risks and unintended outcomes associated with using them and supports model soundness and accountability.

— Office of the Superintendent of Financial Institutions (OSFI) ²⁸

Insufficient T&E carries the risk of inadvertently breaking laws, infringing rights, or causing harm. In addition, the principles of T&E are embedded in CBV Institute Practice Standards, which include the minimum requirements to be followed by CBVs in developing and communicating valuations that are credible and properly supported, and its Code of Ethics.

- For example, to comply with Practice Standard No. 110, a valuation report must include a scope of review **that clearly identifies the specific information on which the valuator relied to arrive at a conclusion**. The valuation report must also disclose sufficient information to allow the reader to understand how the valuator arrived at the conclusion expressed. Furthermore, valuers are obligated to communicate any key assumptions made in arriving at the valuation conclusion.
- More importantly, the Code of Ethics sets out the CBV profession’s commitments to a high standard of behaviour, honesty, prudence, competence, objectivity, truthfulness and impartiality, including the provision of professional services with adequate due care.

Furthermore, as noted above, transparency is a key characteristic of data and valuation models under IVS. Transparent data is defined under IVS as “the source of the data can be traced from their origin” (IVS 104, para 30.02(d)). Under IVS, all persons preparing and relying on the valuation model must understand how the valuation model works and its inherent limitations (IVS 105, para 30.01(d)).²⁹

²⁷ The OECD’s AI principles advise that the ethical and responsible use of AI systems is dependent on being able to understand the factors and logic that served as the basis for the prediction, recommendation or decision. They advise that all actors should “provide meaningful information, appropriate to the context,” and “disclosure should be made with proportion to the importance of the interaction.” The OECD’s AI principles allow that full transparency and explainability may not always be practicable, providing several reasons in their rationale, including intellectual property, privacy, security, and performance concerns. Source: OECD (February 2024), *OECD AI Principles: Transparency and explainability (Principle 1.3)*, <https://oecd.ai/en/dashboards/ai-principles/P7>

²⁸ Office of the Superintendent of Financial Institutions (OSFI) (May 20, 2022), *Proposed Revisions to Guideline E-23 on Model Risk Management*, <https://www.osfi-bsif.gc.ca/en/guidance/guidance-library/proposed-revisions-guideline-e-23-model-risk-management>

²⁹ International Valuation Standards effective January 31, 2025.



In addition, here are some useful T&E questions to keep in mind when testing out AI systems:

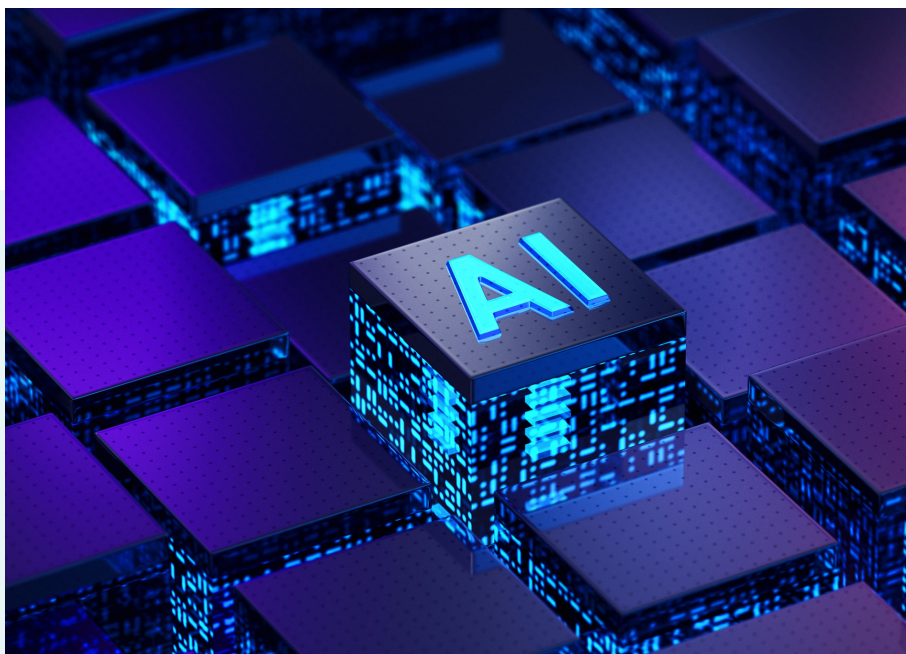
1. What is the tool doing? Specifically, what is being automated?
2. Would you be able to duplicate the results without using the AI tool (ignoring the time it would take to process vast quantities of data)?
3. What inputs are used, for what purpose, and what might affect the system's outputs, recommendations or decisions?
4. Do you have the information you need to understand the benefits, risks and limitations? Keeping in mind that the benefits, risks and limitations to you and to your client, the court, or other third-parties may differ.
5. Who can access the inputs, prompts and outputs?
6. Does the output have an audit trail to the underlying source documents?
7. Is it a "black box", or are you able to maintain appropriate oversight, proportionate to the significance of the outcomes and/or risks associated with using the system?
8. Does the nature and extent of the interaction with the AI system merit disclosure of its use?

THEORETICAL PRACTICE EXAMPLES ILLUSTRATING THE COMPLEXITY OF ASSESSING OUTPUTS FROM AI

CBVs have a wealth of experience critically assessing data and inputs which they can draw from when assessing outputs generated using AI. For example, CBVs are familiar with assessing a **company comp set** generated by Capital IQ (or the equivalent using Bloomberg, FactSet, PitchBook, Refinitiv/LSEG, or other similar data providers). These tools generate a list of comparable companies/transactions based on a set of rules around the industry classification, market capitalization, enterprise value, or other data. CBVs approach these rule-generated comp sets with a high level of professional skepticism, incorporating qualitative as well as quantitative factors into their own independent analysis.

Assessing comp sets generated by AI systems that use more advanced technology such as machine learning may present additional challenges. Machine learning is a set of techniques that allows machines to improve their performance and usually generate models in an **automated** manner through exposure to training data, which can help identify patterns and regularities, rather than through explicit instructions from a human.³⁰ Using machine learning, the AI system (rather than a set of rules fixed by a human programmer or user) may be generating the recommendations or decisions regarding the comp set, based on the training data, which includes patterns it has identified in large data sets or previous prompts. Two potential issues arise: (1) the AI system may

³⁰ Marko Grobelnik et al., OECD (March 6, 2024), *What is AI? Can you make a clear distinction between AI and non-AI systems?* <https://oecd.ai/en/wonk/definition>



be generating the outputs without specific instructions from a human (referred to as **autonomy** in the OECD's definition), based on a pattern that is not transparent to the user and may be ever evolving into something more complex or superior (or worse) to its previous state (referred to as **adaptiveness** in the OECD's definition); and (2) the training data includes heaps of information of a potentially unknown or unknowable quality. For example, the training data could theoretically include sources that vary widely in their credibility, such as: public company filings, analyst reports, news sources, stock consumer chatter on reddit, and stock pundits' blogs or social media. Understanding that anything input into the AI system could serve to feed the outputs, it is easy to see that poor quality training data can lead to poor quality outputs. This poses a unique challenge, because, in the words of Kate Soule, Program Director, Data and Model Factory at IBM Research, "there is so much data that these models have been trained on; even if you had a whole team of human annotators, you wouldn't be able to go through and actually vet every single data point."³¹ Based on this theoretical example, while the technology is complex and often opaque, the CBVs' approach may not need to change – just continue to assess the outputs with a high level of professional skepticism (i.e., review, test, verify, and critically assess outputs to determine whether they are credible). In other words, do not trust outputs from any technology simply because it is "advanced" or makes other claims (e.g., claims that it removes "human bias" by relying on machine learning or algorithms).

31 IBM Technology (March 22, 2023), *What are generative AI models?* <https://www.youtube.com/watch?v=hflUstzHs9A>



Assessing writing from generative AI requires a high-level understanding of the technology. For instance, according to ChatGPT's creator company OpenAI, a generative AI chatbot (a different type of AI system than the one described in the above company comp set example) works by "reading" a large amount of existing text and "learning" how words tend to appear in context with other words.³² It then uses what it has learned to predict – using probabilities and a sprinkle of randomness – the next most likely word that might appear in response to a user request.³³ Importantly, "they do not necessarily know if what they are generating is true or false."³⁴ What does this mean in practice? If a CBV wants to use ChatGPT **to assist in writing the industry overview section** (or any other aspect of a valuation report) they may get some fact and some fiction, and it may not be clear which is which. The outputs from generative AI tend to sound authoritative and factual even when they are not – they must be verified with trusted sources and informed professional judgment.

Furthermore, some AI systems can continue to evolve after their design and deployment (for example, recommender systems that adapt to individual preferences or voice recognition systems that adapt to user's voice).³⁵ Presumably this raises potential issues of bias, but it is likely more complex than this primer can surmise.³⁶

In summary, and as advised by UNESCO, "AI decisions are not always intelligible to humans."³⁷ To illustrate this, UNESCO asks, "would you want to be judged by a robot in a court of law... even if we are not sure how it reaches its conclusions?" By recognizing this challenge, CBVs can approach the use of AI in a responsible and ethical manner while upholding the integrity of the valuation profession, including the provision of professional services with adequate due care.

³² OpenAI, *How ChatGPT and our language models are developed*, viewed February 15, 2024 at <https://help.openai.com/en/articles/7842364-how-chatgpt-and-our-language-models-are-developed>

³³ Author and scientist Stephen Wolfram provides a lengthy plain-language explainer that addresses the use of probabilities and randomness, in which he remarks that "a bit of voodoo begins to creep in" when the tool is permitted occasional randomness to craft a "more interesting" essay. Source: Stephen Wolfram Writings (February 14, 2023), *What is ChatGPT doing... and why does it work?* <https://writings.stephenwolfram.com/2023/02/what-is-chatgpt-doing-and-why-does-it-work/>

³⁴ Stated by Melanie Mitchell, an AI researcher at the Santa Fe Institute in the article: Cade Metz, The New York Times (March 29, 2023), *What makes A.I. chatbots go wrong?* <https://www.nytimes.com/2023/03/29/technology/ai-chatbots-hallucinations.html>

³⁵ Stuart Russell et al., OECD (November 29, 2023), *Updates to the OECD's definition of an AI system explained*, <https://oecd.ai/en/work/ai-system-definition-update>

³⁶ It may be more complex than scientist can currently determine. See: Will Douglas Heaven, MIT Technology Review (March 4, 2024), *Large language models can do jaw-dropping things. But nobody knows exactly why.* <https://www.technologyreview.com/2024/03/04/1089403/large-language-models-amazing-but-nobody-knows-why/>

³⁷ UNESCO (April 21, 2023), *Artificial Intelligence: examples of ethical dilemmas*, <https://www.unesco.org/en/artificial-intelligence/recommendation-ethics/cases#ai-in-the-court-of-law>



DATA PRIVACY, CYBERSECURITY AND INTELLECTUAL PROPERTY RISKS

CBVs should also be aware of the legal and regulatory risks, which include:³⁸

- Data protection and privacy risks: technology companies may be able to see your input and output data. They may use any data you input (prompts, uploaded documents, etc.) to test and develop the technology, and to inform future responses to other users.
- Cybersecurity risks: using technology tools may introduce vulnerabilities to hacking, data breaches, corruption of data sources and other malicious cyber activities.
- Intellectual property risks: it is not clear how one determines the ownership of copyright in both input and output data from generative AI. Furthermore, chatbots may include inappropriate material in their responses (sensitive or confidential) or infringe existing copyrights.

Under CBV Institute's Code of Ethics, CBVs should be aware of the obligations under Section 500, *Privacy and Confidentiality*, requiring that CBVs safeguard clients' confidential information, including when using technology. CBVs must assess if the technology sufficiently protects client data, files and sensitive information, **before** using it. Unless confidentiality is guaranteed, **do not** enter client data (or personal data, or proprietary data).

WARNING FROM OPENAI

OpenAI, the company behind ChatGPT, warns users that “conversations may be reviewed by our AI trainers to improve our systems” and “we are not able to delete specific prompts from your history. Please don't share any sensitive information in your conversations.”³⁹

Regulation around the use of AI is in various stages of development around the globe. CBVs should anticipate an increase in regulation around the use of AI and should remain engaged and informed. In Canada, a regulatory framework specific to AI is under development – a voluntary code was released in September 2023, the Artificial Intelligence and Data Act.⁴⁰ In April 2024, a Federal Budget announcement included \$5.1 million for ‘strengthening enforcement’ of this proposed Act.⁴¹ The same announcement earmarked \$2 billion to boost technological infrastructure for AI research and innovation, \$200 million to promote investment in Canadian AI start-ups, and another \$100 million to encourage SMEs to scale up and deploy new AI-based solutions.

Another federal resource to be aware of is the Office of the Privacy Commissioner of Canada's Principles for responsible, trustworthy and privacy-protective generative AI technologies.⁴² Provincial resources and industry-specific regulations and resources may also be relevant to your situation (consult your legal team for legal advice).

CONCLUSION

Emerging applications of AI are permanently changing workflows for all professionals in the information economy. It is important that CBVs use AI in accordance CBV Institute's Code of Ethics and Practice Standards. By continuing to employ the principles of the CBV Code of Ethics around honesty, prudence, competence, objectivity, truthfulness and impartiality, CBVs can ensure that they maintain the profession's high standard for ethical behaviour and due care.

³⁸ The Law Society (November 17, 2023), *Generative AI – The essentials*, <https://www.lawsociety.org.uk/topics/ai-and-lawtech/generative-ai-the-essentials#h4-heading1-3>

³⁹ OpenAI, *What is ChatGPT?* viewed February 15, 2024 at <https://help.openai.com/en/articles/6783457-what-is-chatgpt>

⁴⁰ Innovation, Science and Economic Development Canada (September 27, 2023), *Artificial Intelligence and Data Act*, <https://ISED-Isde.canada.ca/site/innovation-better-canada/en/artificial-intelligence-and-data-act>

⁴¹ Prime Minister of Canada (April 7, 2024), *Securing Canada's AI Advantage*, <https://www.pm.gc.ca/en/news/news-releases/2024/04/07/securing-canadas-ai>

⁴² Office of the Privacy Commissioner of Canada, (December 7, 2023), *Principles for responsible, trustworthy and privacy-protective generative AI technologies*, https://www.priv.gc.ca/en/privacy-topics/technology/artificial-intelligence/gd_principles_ai/



PREPARING FOR THE FUTURE

CBV Institute is committed to remaining at the forefront of industry trends and emerging technologies, empowering CBVs to navigate the evolving landscape affecting the business valuation profession. We encourage Members and Registered Students to thoughtfully explore the latest tools and trends affecting our industry, to collaborate with peers and colleagues, and to continue engaging in open dialogue with Institute leadership.

WANT TO BUILD AI FLUENCY?

- Explore constantly updated plain-language explainers on generative AI with [MIDAS](#).
- Check out learning hubs from [Microsoft](#), [IBM](#), [Udacity](#), [Wired](#), or [The Washington Post](#).
- Follow relevant LinkedIn accounts: [Generative AI](#), [Olivier Blais](#), [Cassie Kozyrkov](#).

AI & TECHNOLOGY WORKING GROUP

This document has been prepared by CBV Institute with input from members of our AI & Technology Working Group. The Institute extends its gratitude to the following contributors:

Barbora Gaziova, <i>PwC</i>	Jacob Martin, <i>Cohen Hamilton Steger</i>
David Meslati, <i>MNP</i>	Michael Dinger, <i>KPMG</i>
Duane Robinson, <i>CPP Investments</i>	Neal Mizrahi, <i>EY</i>
Eli Brenner, <i>KSV Advisory</i>	Peter Ott, <i>Peter Ott & Assoc.</i>
Gary Sanghera, <i>interVal</i>	

The AI & Technology Working Group was formed in November 2023 to gather input from practitioners on how emerging technologies may impact the CBV Institute and the profession. It consists of ten enthusiastic CBV and non-CBV volunteers, representing small, medium and large practices.



ENGAGE WITH CBV INSTITUTE

The Institute would like to hear from more valuation practitioners on the most compelling use cases for AI in business valuations. We would also like to know if you have encountered or conceived of any other concerns regarding AI, specific to valuations work. Or perhaps you have thought of a different question about technology that the Institute should address? Any other feedback to share?

Reach out to Heather Bennett, Senior Manager, Thought Leadership and Professional Practice at heather.bennett@cbvinstitute.com or Catalina Miranda, Vice President, Regulatory and Standards at catalina.miranda@cbvinstitute.com.

Your input may inform future guidance, training, or requirements on the use of AI by CBVs.