

Digitization, Emerging Technology and Data Governance: Is Your Skillset Outdated?

By *Marc-André Paquette and Irene Wiecek*



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In a world defined by change, how do CPAs stay ahead of the tidal wave of change in order to remain relevant and engender trust? Must the CPA ethical mindset evolve? How do we deal with the mountains of data that are resulting from more and more organizations increasingly turning information into machine-readable form (digitization)? As technological and other innovations continue to have an impact on the way we do things, and as societal views and preferences evolve, these are important questions.

Stakeholders trust CPAs' expertise and ethical mindset. To maintain that trust, however, CPAs must demonstrate that they are ahead of the curve.

CM2.0: A Broader Foundational Common Core and a Changing Mindset for New CPAs

In March 2022, the *CPA Leading the Way: Competency Map 2.0 (CM2.0)*¹ was issued, updating the required skills and competencies for newly certified CPAs. The CPA Competency Map Task Force took a blank-sheet approach to creating the map,

acknowledging the fluid environment within which CPAs work. CM2.0 is a high-level conceptual map that is future-focused and agile. It is framed within a context of “Evergreen Learning” (defined in the map as involving curiosity, a thirst for knowledge and a commitment to continue to learn). The idea behind this is that the accounting body of knowledge is not static (as it continues to evolve to meet the needs of an increasingly broad group of diverse stakeholders) and CPAs must embrace this perspective in order to continue to add value, including fulfilling their duties as professionals.²

Stakeholders trust CPAs’ expertise and ethical mindset. To maintain that trust, however, CPAs must demonstrate that they are ahead of the curve.

CPAs bring a solid foundation of integrity, professionalism and duty of care to the table. While these fundamentals will remain important and valued, much of the technical knowledge that CPAs have learned in past will quickly become outdated in a changing world. Therefore, all CPAs need an Evergreen Learning mindset – a mindset where it is expected that skills and competencies will always be refreshed.

CM2.0 also highlights emerging areas of opportunities for CPAs, including, for instance, data governance, data and information systems, big data/data analytics, non-financial reporting, innovation, human behaviour/bias, sustainability, emerging technologies, indigenous views and systems thinking. These, as well as more traditional areas of accounting (such as assurance, tax, financial reporting and management decision making) form what is referred to as the CM2.0 Foundational Common Core for newly qualified CPAs.

Emerging technologies (including, for instance, process automation, artificial intelligence and machine learning) are changing the way we do things, replacing much of the lower-level cognitive tasks that human beings used to perform. Computers can do things much more quickly and consistently than humans. That means CPAs need to increasingly focus on higher-order cognitive tasks that humans can perform better than machines, including being able to contextualize information and engage in creative problem-solving.

Newly-minted CPAs (under CM2.0) will have this broad and solid foundation from which to launch their careers, in addition to the Evergreen Learning mindset.³ The Evergreen Learning mindset and Foundational Common Core will equip them with the skills, competencies and mindset to move forward and embrace change.

Upskilling CPAs Is Not a One-Size Fits All

A remaining question, however, is how the 220,000 CPAs, who are already practicing, become competent in emerging areas so that they can play a lead role in the ongoing transformation of the business environment and, more broadly, the economy?

Once qualified, CPAs work in many different areas – thus building expertise in a diverse range of practice areas and environments, including for-profit, not-for-profit and the public sectors. Canadian CPAs also work in international environments. Thus, upskilling cannot be viewed as a “one size fits all” process. For example, blockchain and crypto assets are important themes for CPAs working in the financial or banking sector, but they are not typically critical or urgent for the personal tax practitioner (unless the tax practitioner’s clients are investing in or trading crypto assets that is!). Unlike CM2.0 for newly qualified CPAs, it is not possible to have a single competency map for the entire membership.

Some organizations, large and small, have structured learning programs and support the development of their employees.⁴ Other employers leave it to the professionals themselves to identify learning needs. The CPA profession offers opportunities to learn – whether it be through in-person or online structured courses, conferences and/or research/publications. Resources are available but the question is where to start?

Is Continuing Professional Development the Same as Having an Evergreen Learning Mindset?

As noted earlier, CM2.0 introduced the concept of Evergreen Learning for entry-level CPAs. Having said that, the CPA profession already has a strong culture of learning and development. This is part of the role of the profession – to protect the public and act in the public interest. There are regulatory requirements for mandatory professional development, which require a minimum number of continuing education hours per year. CPAs must maintain their professional skills and competence – and this involves staying up to date.

For newly qualified CPAs, it is not possible to have a single competency map for the entire membership.

Many CPAs update themselves in specific areas such as understanding changes in accounting and assurance standards or changes to the Tax Act. But what about keeping up to date in areas such as Artificial Intelligence or Machine Learning? Are these considered to be part of the accounting body of knowledge? Furthermore, is the existing CPA learning culture involving continuing professional development the same as the CM2.0 Evergreen Learning mindset? This is an interesting question. Are all CPAs curious? Do all CPAs embrace change? Are these defining traits of the accounting profession? Are curiosity and embracing change critical in protecting the public and acting in the public interest? And where do things like evolving technology and digitization fit into the accounting body of knowledge? Under CM2.0, these areas are an integral part of the accounting body of knowledge.

The public places its trust in professionals, and expects high-performing *professionals* to use high-performance *technologies*. Keeping up with technology that enhances a CPA’s work is, therefore, an important, if not strategic, cornerstone for any professional.

Demand for qualified professionals is certainly there. Jobs are changing faster than the pipeline of talent can produce upskilled and newly skilled applicants. Organizations, particularly those that are at the forefront of innovation, need qualified individuals so that they can quickly respond to market evolution. Continual upskilling of existing employees must be a priority and it is the responsibility of employers, the profession more broadly and individual CPAs. All stakeholders in the CPA learning system need to continually learn and be curious.

Which Skills to Focus On?

Many organizations have thought about what skills to develop, to remain relevant in a world where increasing amounts of automation are a constant. According to research done by McKinsey & Company⁵:

“The need for manual and physical skills, as well as basic cognitive ones, will decline, but demand for technological, social and emotional, and higher cognitive skills will grow.”

At the World Economic Forum’s 2022 annual meeting in Davos, there were 13 dedicated sessions related to the future of work.⁶ Speakers noted that many of the drivers of change – precipitated by things such as a global movement to reduce greenhouse gas emissions, including a move to electric vehicles, transformation of our energy resources and a migration to a more sustainable economy – involve technology and data. Better information is needed to effect these changes and, therefore, more and better data is key. But humans cannot effectively process the increasing amounts of data. Digitization, as well as enhanced technologies, allow computing power to be harnessed to access and analyze this “big” data. Humans can then use higher-order skills to make optimal decisions – working hand-in-hand with technology.⁷

But which technologies? This depends on the sector in which CPAs work. Having said that, there are some fundamentals that all CPAs should have to keep ahead of the curve and to match the skills and competencies in newly qualified CPAs (who will be accredited under CM2.0). In the context of a tech-forward world, where more and more is being digitized, this article identifies two areas that are particularly important for CPAs right now. These areas include 1) digitization and emerging technologies, and 2) data governance. Both are part of the CM2.0 Foundational Common Core. As an added bonus, if CPAs can gain a basic understanding in these two areas, they can use them as a foundation for delving into other very prominent emerging areas of opportunities, including sustainability.^{8,9,10}

The case for understanding digitization and emerging technologies

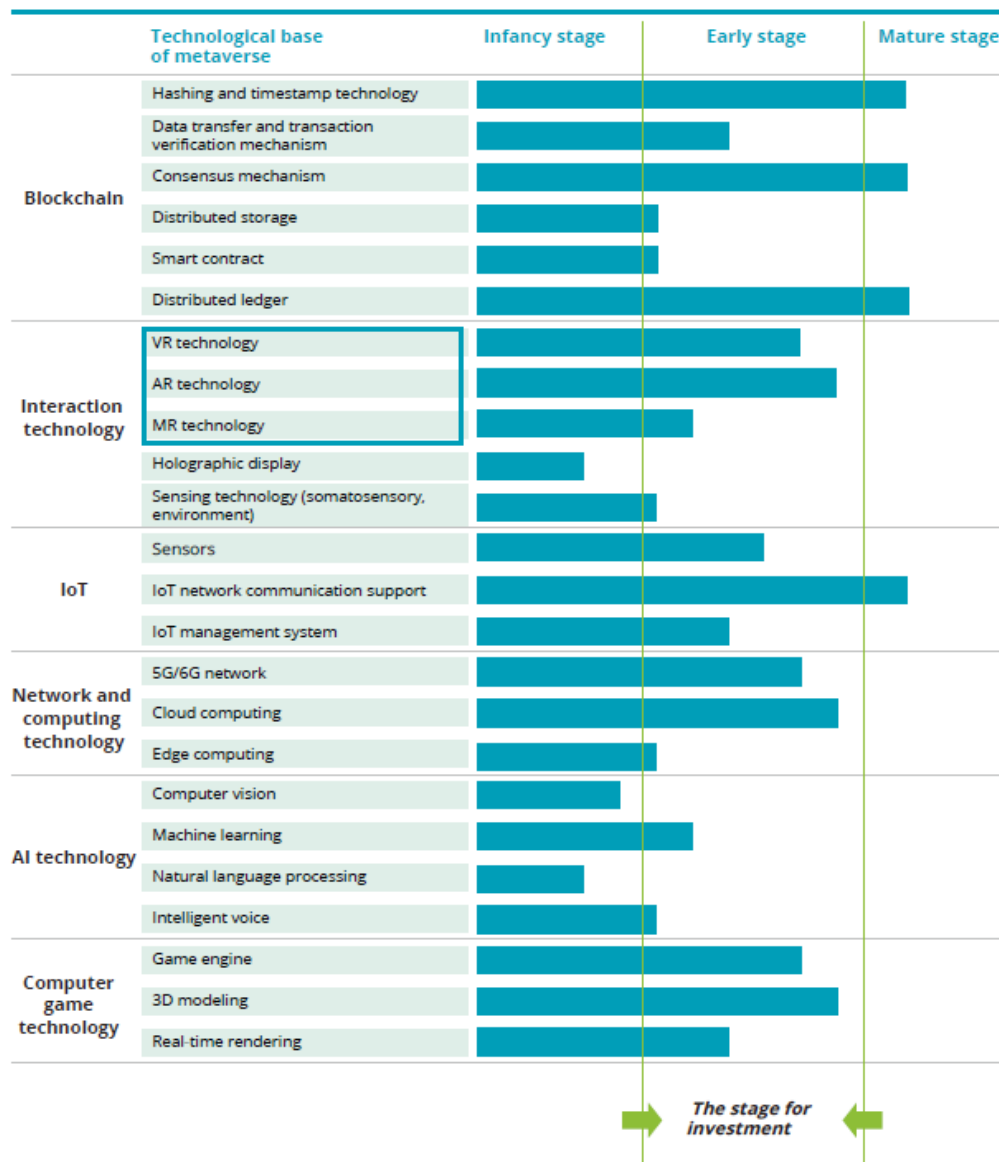
Understanding that a fair bit of technology exists to capture, process, share and store very large amounts of data, begs the question: how much data and what type of data is needed to make and effect good decisions? Is there information out there that is not being incorporated into decision making because it is not yet being captured and digitized? We are fast approaching the space where it may be considered negligent if sufficient and relevant data are not considered.¹¹ The sufficiency/relevance benchmark

is moving higher – especially since costs associated with dealing with large amounts of data are decreasing.

In addition, how are our information and data systems being affected by these newer technologies? Can we still rely on the systems? Do we understand enough about them to conclude that we can rely on the information that they generate?

New technologies developed in recent years have been quickly taken up in the business world. Figure 1 illustrates the development stage of various technologies. As noted in the diagram, many technologies are either in the mature stage or approaching that stage of development.

Figure 1: Development Stage of Various Technologies¹²



Source: Gartner; Metaverse Token; Deloitte Research and analysis

CPAs should understand these new technologies, at least at a conceptual level, in order to determine how they might have an impact on their organizations and the organizations of their clients. They need to be comfortable with the underlying systems designs and operations so that they can assure stakeholders that all is fine and the systems and information generated is trustworthy. Otherwise, opportunities might be missed and, even worse, there may be significant risk.¹³ Without at least a foundational understanding of emerging technologies, CPAs will not be able to act as agents of change and will need to rely on other professionals to lead transformation projects. On the risk side, how can CPAs provide trust if the technologies are a “black box”? How can they rely on other professionals if they do not have at least a baseline understanding of risks associated with specific technologies? How can CPAs even decide whether they can rely on other professionals in the first place?

How much data and what type of data is needed to make and effect good decisions?

CPAs don't need to become technical experts in all technologies. For instance, they do not necessarily need to be able to create algorithms or blockchains. However, they must understand enough to determine where and how these technologies can improve different types of processes and business models and they need to understand how certain technologies may be exposing them (and organizations) to more risk – and they must apply an ethical lens. They must understand enough that they can collaborate effectively with other professionals (such as computer and data scientists) on whom they may rely, including speaking the language and understanding basic concepts. They must be able to translate technical risks and opportunities into understandable and transparent inputs for business decisions.¹⁴

As a core value add, CPAs provide assurance over information and processes relating to measuring and managing performance.¹⁵ This is central to what CPAs do and must be preserved.

The case for data governance

CPAs have always been involved in the area of governance – that is, making sure that an organization's resources are being appropriately utilized and deployed to sustain and create value for stakeholders.¹⁶ The accounting ecosystem is central in any good governance system. Historically, accounting has been dominated by the use of mechanisms, such as a general and other ledgers, as well as internal management information systems, which capture all transactions in a controlled environment with extremely restricted access (i.e., access is allowed only by an organization's employees, such as accountants, who are presumably capable and qualified). A large amount of information captured and used for decision making has historically been financial.

But, as we move into a data dominated world, our accounting ecosystems have changed. More and more relevant data is not necessarily financial data, and not all data

lives within the organization (and especially not in the general ledger or management information system). Increasingly, relevant data is non-financial (including for instance customer reactions to products, clicks on a website, weather patterns that may affect production, supply chain details that may affect distribution and others) and much is generated externally (i.e., outside the organization). This data may be captured and stored through shared ledgers (for instance, using distributed ledger technologies), stored outside the organization (using cloud technologies) and it may be captured and shared directly using machines (through the internet of things).

As noted in the earlier section, understanding digitization and emerging technologies are pretty foundational requirements and are a jumping off point for discussing the related area of data governance.

We know the role of CPAs in corporate governance but what is the CPA's role in data governance? CPA Canada and IFAC published a Discussion Paper on the accountants' role in data.¹⁷ In the publication, the authors note:

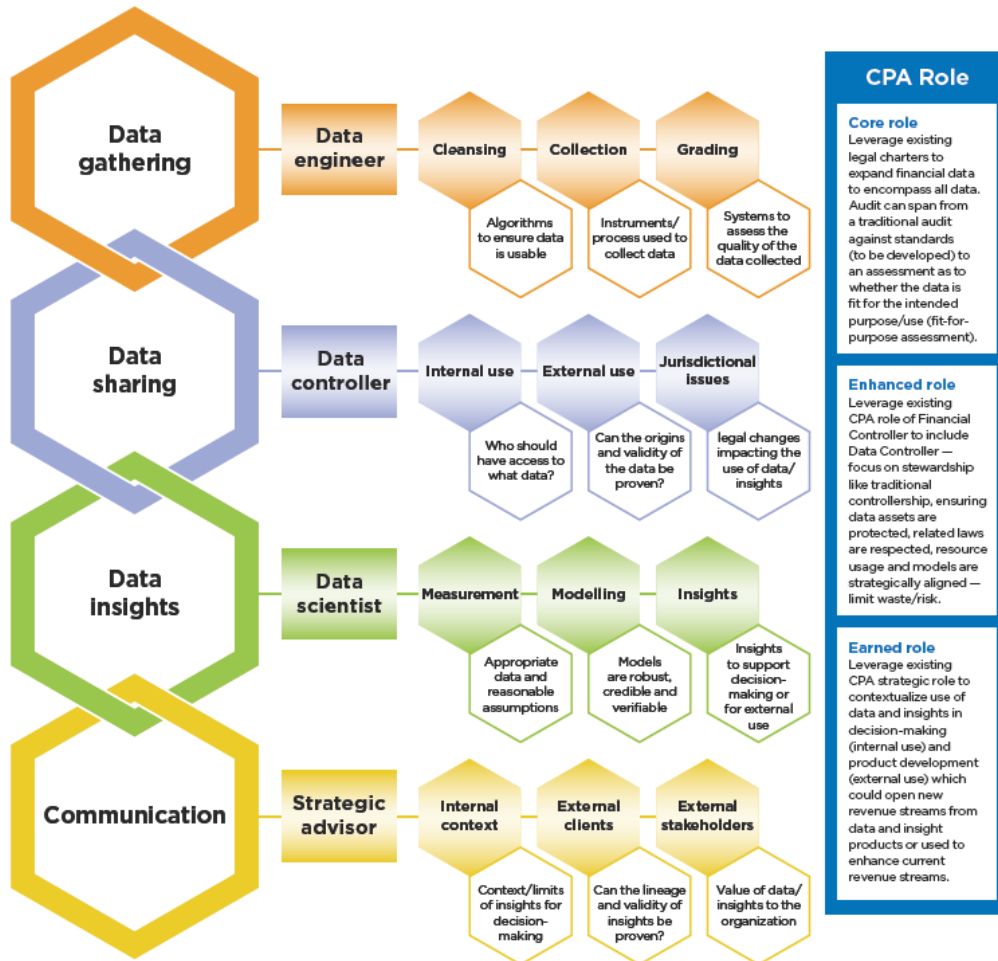
“Professional accountants, in their many roles, are uniquely positioned to meet the challenges of disruption. They need to support organizations as they navigate the uncertainty that accompanies this technological and economic transformation. By building upon core competences and expanding skills and knowledge to fulfill key roles in the data management value chain, not only can accountants secure a strong and vibrant future for themselves in the digital economy, but we can shepherd organizations across sectors and industries to adapt and even forge new paths with integrity and longevity. This report outlines our way forward.”

The publication also sets out what the authors refer to as the “data management value chain.” Figure 2 captures the value chain.

The diagram illustrates the various stages in the value chain – from data gathering, to communication – and it shows the potential roles for CPAs through each stage. One of the roles is “data controller” which involves being accountable for access to the data, ensuring provenance and jurisdictional issues relating to use of the data and related insights.

Data confidentiality and privacy are critical, as is the threat of a data (or systems) breach. The more data collected/transmitted, the more risk to the organization, should a breach occur. Responsibility for cybersecurity rests not only with those in charge of the information technology infrastructure, but also with accountants. Managing cyber risks is part of the broader discussion of business risks, an area in which the CPA has a predominant role. The CPA is already committed to safeguarding the assets of the organization, and digital assets are no different. Who better to trust with your data and data systems than a CPA?

Figure 2: Data Management Value Chain



How To Move Forward?

So how do CPAs move forward to learn more about opportunities and risks associated with digitization, emerging technologies and data governance? Continuous and Evergreen Learning is the key and there are a lot of resources available. Think about digitization, emerging technology and data governance in the context of your particular role in the organization and industry that you work for. Where are the opportunities to add value? Where are the risks and how might they be managed? You might even engage your team or other teams within the organization about opportunities and risks they see with increased digitization, emerging technology and data governance. As you move forward in your learning journey, here are some things to think about.

Reduce the opacity of new technologies

With the right knowledge and understanding, CPAs can help reduce the opacity of decision making when it involves technology. They can explain how new, powerful tools support optimal decisions – all the while questioning assumptions made, risks associated with the technology and bias introduced (whether these be introduced by

humans or machines¹⁸). In public practice, CPAs can provide external assurance that the technology is doing what the organization needs it to do and that the organization has a risk management processes in place to manage related risk.

Consider developing a network of high-level professionals, able to assess the risks and opportunities of new technologies

While upskilling in key foundational areas is critical, it is not possible to have all the skills needed to support the organization but CPAs can learn a lot by working with others with differing skill sets and perspectives.

CPAs might consider building a network of professionals with expertise in their respective (and often “non-accounting”) fields, who can augment the CPAs’ skills and competencies and help them see things from differing perspectives. The CPA’s value will rest in part on the ability to create and draw on this network.

Without at least a foundational understanding of emerging technologies, CPAs will not be able to act as agents of change.

Think of digitization, emerging technologies and data governance as a strategic consideration

Technology and increasing amounts of data are rapidly changing the way organizations create and sustain value. New technologies and data should be at the heart of the organization’s business strategy because they not only support current operations, but also make accessible business opportunities that were hitherto unavailable. Data is more than an operational by-product. In a context where the best decision is based on comprehensive analysis, timely access to quality data is critical for successful companies. Consideration of financial and non-financial data, generated internally or collected externally and from reliable but different sources, will be a differentiating factor in a competitive industry. Learn from what others in the industry are doing.

Balance opportunities created by digitization and technology with associated risks

While the collection and use of data can create exciting opportunities, it can also create new risks, including those related to maintaining confidentiality of personal data and the reliability of external information sources. Data governance is becoming more and more important in all organizations.

Consider human impacts relating to change

CPAs have always led change in business, whether it be the introduction of a new financial reporting system, the integration of an acquired business or dealing with new reporting standards. Without sound change management, the benefits of these

powerful tools may not be realized, or may be completely undermined if there is reluctance to change.

Change is not easy. Work with the users in the accounting and other organizational ecosystems to ensure that people are supported appropriately through the change process. It is humans who effect change and not technology – so remember the human side of things.

In conclusion, staying ahead of the curve is critical for all CPAs in order to continue to engender trust. CPAs have a real opportunity to become leaders and agents of change.

¹ www.cpaleadstheaway.ca.

² For instance, it is more important for new CPAs to understand how accounting standards such as IFRS and regulations such as the Tax Act are created and updated, and the research, concepts and language that underpin them (as opposed to learning every standard). Then, when standards and regulations (new or changed) are issued, CPAs can immediately access and apply them.

³ CM2.0 outlines the skills and competencies of newly qualified CPAs in Canada. A new project team (Certification 2.0) is now studying where, when and how the skills and competencies outlined in CM2.0 will be learned and assessed. The new CPA education program, which will encompass all this, will launch in 2024/2025.

⁴ PwC and other employers are investing significantly in upskilling. See <https://www.reuters.com/business/sustainable-business/pwc-planning-hire-100000-over-five-years-major-esg-push-2021-06-15/>.

⁵ <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/defining-the-skills-citizens-will-need-in-the-future-world-of-work>.

⁶ <https://www.weforum.org/agenda/2022/05/future-work-jobs-davos-experts/>.

⁷ This is often referred to as intelligence augmentation.

⁸ The IFRS Foundation announced the creation of the International Sustainability Standards Board in November of 2021. The new board has already issued two proposed new standards as exposure drafts for comment. See www.ifrs.org. This is creating significant opportunities for CPAs. As organizations move to adopt these standards and other frameworks relating to sustainability, there will be growing opportunities for CPA to 1) rethink how organizations add value, 2) develop and report on related performance metrics and 3) provide assurance on all this. Technology will play a big part in how accountants capture data (in order to digitize it) and how they create information systems that will produce relevant and reliable information.

⁹ Trillions of dollars are flowing into the sustainability space – especially on the environmental side as organizations start to articulate their plans to move to net-zero greenhouse gas emissions. See “[Asset managers commit \\$16 trillion of assets to net-zero target](#)”.

¹⁰ See <https://sdg-action.org/a-digital-revolution-to-tackle-climate-change/#:~:text=Digital%20technology%20itself%20has%20the,significant%20contribution%20to%20climate%20action>.

¹¹ As an example, note that IFRS 9.5.5.17 (c) states that measurement of expected credit losses on loans should reflect various things and should be based on “reasonable and supportable information that is available without undue cost or effort.” When is that threshold met? We need to think more carefully about what is meant by “undue costs or effort,” especially given the fact that more and more data is indeed available and at increasingly lower costs. Note also that, as we continue to move forward with reporting increasing amounts of information relating to sustainability, it is important to identify the different types of data we need to collect (including non-financial data) and how much data is sufficient in order to engender trust.

¹² <https://www2.deloitte.com/cn/en/pages/technology-media-and-telecommunications/articles/metaverse-whitepaper.html>.

¹³ IFAC, ICAS, CPA Canada and IESBA have authored a four-part series dealing with ethical leadership in an era of complexity. Paper 2 of this series entitled “[Technology is a double-edged sword, with both opportunities and challenges for the accountancy profession](#)” provides a focus on technology and risk.

¹⁴ CPA Canada has some good publications dealing with digital transformation, ensuring trust in data ecosystems and risk management in this area. See <https://www.cpacanada.ca/en/foresight-initiative/data-governance/mastering-data>.

¹⁵ CM2.0 notes, in the CPA Ethical Mindset – that CPAs “.....create and sustain value for stakeholders by bringing logic, structure and trust to information as well as to the process of measuring and managing performance.”

¹⁶ See <https://www.cpacanada.ca/en/business-and-accounting-resources/strategy-risk-and-governance/corporate-governance/publications/corporate-oversight-and-governance-resource-guide>.

¹⁷ <https://www.cpacanada.ca/en/foresight-initiative/data-governance/role-professional-accountants-in-data>.

¹⁸ As an example, as more and more artificial intelligence is being used in more and more environments, are there ethical issues relating to the way algorithms are created and deployed? Are algorithms, which are created using historic and therefore perhaps biased information, fair? IFAC, ICAS, CPA Canada and IESBA issued a four-part series dealing with ethical leadership in an era of complexity and digital change, which discusses the issues in the context of ethics and duty. See <https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/publications/professional-accountants-role-data>.