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ACN VIEWPOINTS

Boards explore the frontiers of artificial intelligence

January 2024

In November 2022, San Francisco-based OpenAI released its ChatGPT model, and the technology and company have been at the forefront of world news ever since. One year later, Tapestry Networks convened four in-person and two virtual meetings of US audit chairs to examine how generative artificial intelligence (GenAI) has evolved since then and to discuss how boards and audit committees are seizing the opportunities and managing the risks associated with AI.

Members were joined by Richard Jackson, global artificial intelligence assurance leader at EY; Samta Kapoor, Americas energy AI and trusted AI leader at EY; Devika Kornbacher, co-head of the Clifford Chance Tech Group and Houston office managing partner; Ken Kumayama, partner at Skadden, Arps, Slate, Meagher & Flom; Professor Peter Stone of the University of Texas, Austin; and Professor Steve Weber of the University of California, Berkeley, and Breakwater Strategies. In one of these meetings, members visited the Robotics Laboratories at the University of Texas, Austin.

For a full list of meetings and participants, please see the appendix 1 (page 9). For a list of reflection questions for audit committees, please see appendix 2 (page 13).

This *ViewPoints*[1] synthesizes four topics that emerged during the meetings:

EY Building a better working world

GenAI represents a highly significant technology development

AI covers a wide range of technologies, including robots' sensing and manipulation systems; machine-learning software that can isolate tiny but important anomalies within the gigabyte of data in an MRI scan of the human brain; and, most recently, the language capabilities of generative pretrained transformer (GPT) language-processing models, loosely grouped under the category GenAI. It is these GPT models that have attracted unprecedented attention and investment.

Members and experts agreed that the economic and social impact of GenAI is both broad and deep, surpassing developments such as blockchain. *"The scientists who built these models didn't expect them to be able to do what they do, and they were stunned by the public reception and uptake,"* said Prof. Weber. EY's Ms. Kapoor agreed: *"GenAI is not a hype cycle. It is a technology that will have long-term implications."*

Goldman Sachs estimates that "the widespread adoption of AI could contribute 1.5% to annual productivity growth over a ten-year period, lifting global GDP by nearly $7 trillion."[2] McKinsey's researchers identified 63 use cases for the technology, with an aggregate annual profit contribution of $2.6 trillion to $4.4 trillion.[3] Members saw the technology as highly significant, even while noting that applications in their own firms are for the most part in early stages. One said, *"I do think there will be real, fundamental change from this, but I also think it is the broadband of 2001. I just don't see the applications right now. The cost is high. People are building the artillery right now, but it's strategic. Most people are talking about it but don't really have anything today."*

A factor that makes GenAI different is its "multimodality": even though the technology was first built on large collections of written text, it was rapidly applied to still and moving images, music, software coding, the movements of robots, and even the solution of difficult biotechnology problems. The fundamental structures that make language work seem to have extraordinarily wide applications. Prof. Weber said that GenAI went far beyond the data analytics and optimization that had dominated AI in recent years: *"There's something very human about this technology because it involves how people talk to people and take in the assumptions and understandings about the world that are embedded in language. To human beings, this feels really different than a factory optimization algorithm, and I think that's really important."* Directors who visited the University of Texas robotics laboratories witnessed human-machine interaction played out in settings ranging from surgical operating rooms to unpacking and stowing groceries in a "robot apartment."

Microsoft researchers have emphasized that GenAI not only operates in multiple modalities (text, images, sounds, etc.) but does so simultaneously, just as humans do: "As human perception and problem-solving in the physical world leverage multiple modalities, such multimodal systems provide an even more natural and seamless support than those operating across a single modality."[4] Multimodality and the potential for wide-ranging

application make GenAI difficult to compartmentalize, said EY's Mr. Jackson: *"It could be the transformation of your talent workforce; it could be the transformation of the user experience from your client, your customer base; it could be better management of the risks inherent within the business. Some of these things don't lend themselves to traditional models when people are thinking about return on investment."*

Expert guests also touched on the social and political impact of GenAI. Discussing President Biden's recent executive order on AI,[5] Prof. Weber offered an international perspective: *"It's a statement to the world that the administration believes this is a transformational technology. There will be an enormous amount of paperwork and lobbying. What's not been widely remarked is that this executive order is mostly about China and the concern about competition with technology built by autocratic states. How does this technology influence America's ability to compete with China, especially as we move into the election cycle? China is in the background of these regulations and what is coming next."*

GenAI's speed of evolution creates a significant challenge for boards

The unprecedented speed of GenAI's uptake has been thoroughly documented. ChatGPT, released in November 2022, captured users at a pace that far eclipsed TikTok and Instagram, and demand for microchips needed to run the neural networks underlying GenAI has driven the market capitalization of chipmaker Nvidia from $280 billion (October 14, 2022) to $1.2 trillion (December 17, 2023).

But members and experts noted that changes in the technology and its use have accelerated. The following are just a few of the relevant events and developments that took place over the six weeks in which ACN members met:

- Elon Musk's company xAI released Grok, a chatbot designed for information retrieval and coding assistance, able to handle "spicy" questions that other AI systems might reject.[6]
- OpenAI celebrated the one-year anniversary of ChatGPT, announcing plans to launch a GPT store for users to share and monetize their GPT creations.[7] Some experts see this is as significant a development as Apple's launch of the App Store in 2008.
- Actors and producers settled the longest strike in Hollywood's history, with agreement on the first-ever terms protecting actors against AI, including digital "resurrections" of deceased celebrities.[8]
- OpenAI itself went through major restructuring, as the board fired CEO Sam Altman, came close to losing all of its staff to Microsoft, and then agreed to rehire Altman, to reorient the company from its nonprofit origins. Several directors stepped down and new members joined the board.[9]
- As noted above, the White House released its *Executive Order on the Safe, Secure, and*

Trustworthy Development and Use of Artificial Intelligence, an extensive set of policy announcements, administrative orders, and legislative recommendations aimed at "harnessing AI for justice, security, and opportunity for all."

- The European Union finalized the text of its AI Act, an equally sweeping set of regulatory and policy reforms, including a scheme for classifying systems as high risk. The act bans a wide variety of existing or emerging AI uses, including biometric categorization systems using sensitive characteristics, untargeted scraping of facial images for recognition databases, emotion recognition in workplaces and educational institutions, social scoring, and AI that manipulates human behavior or exploits vulnerabilities.[10]
- Researchers at the University of Technology Sydney unveiled a portable, noninvasive system that uses GenAI to translate unspoken thoughts into words, drawing on electrical brain signals while the user wears a lightweight cap[11]—a breakthrough for stroke victims as well as a threat to privacy.

A member noted the challenges of keeping up with this rapidly changing picture—*"not just the acronyms, but the moral issues as well"*—and pleaded for some sort of regular update publication or webinar that would help directors stay current. Prof. Weber was sympathetic: *"I spend several hours every day reading technical papers, and I fall further behind every day."* Mr. Jackson identified a further complication: Regulators and policymakers are, in an unprecedented way, *"trying to keep pace with technology, and that creates its own set of difficult risks and challenges."*

Ms. Kornbacher pointed out that AI-based research tools can themselves complicate the task of keeping up in a quickly evolving technical, regulatory, and compliance environment. *"We're seeing more in-house counsel using AI to find the answers to all the questions that the government is going to ask,"* she explained. *"They are finding references and surprising things and then you spend half your time trying to figure out whether something is really a surprise or it's wrong. When you can find everything, that is great, but sometimes you find things that not even the regulator would have found."*

Members acknowledged that their board oversight of GenAI is less developed than in other areas of risk and opportunity—cybersecurity or environmental, social, and governance, for example—primarily because of the newness of the technology and the speed of its evolution. *"Audit chairs think about AI from an internal finance and IT perspective,"* said one member. *"The bigger issue is how the broader company is thinking about AI. I want AI to be elevated, top of mind for the board."*

For the most part, directors reported, AI policy and oversight are in their early stages. *"It's about doing an inventory of where the technology is being used today,"* said one. *"Policy is still in development. We talk about it with the CIO,"* said another. A director pointed to the need for further education: *"Boards are not qualified to test these kinds of risks."*

Companies are seizing opportunities, but in a limited way

Several experts pointed out applications that the latest developments in GenAI make possible. Prof. Weber noted that Anthropic's chatbot Claude 2.1 can handle inputs of roughly 150,000 words—three times the number in F. Scott Fitzgerald's *The Great Gatsby*, and a massive increase over the 22,500 that OpenAI's GPT-4 model can process. This vastly expanded "context" means that users can hold rich, complex dialogues with these new systems. One private company is using the technology to emulate dialogue between patients and psychotherapists, enabling accelerated training for therapists and automated mentoring and feedback for therapists in the field. Zoom's AI Companion captures a transcript of an online meeting, then uses GenAI to break the transcript into meaningful sections, summarize the discussion, identify action items, and even provide participants with feedback on their contributions.

Beyond text processing, guests pointed to GenAI's multimodal capabilities, enabling it to seamlessly integrate visual, auditory, and textual information. Mr. Jackson described how leading consumer businesses are using AI *"to accelerate aggressively through the development of new products to reflect consumer tastes."* For example, a major consumer goods manufacturer uses GenAI to *"scrape social media,"* finding out what consumers see as *"emerging trends, things that are hot in terms of popularity,"* and then turns these into design ideas. *"It changed the product design cycle from weeks or months into hours and days,"* he said.

AI is being used in fields that its first designers would never have anticipated. Google's DeepMind has created AlphaFold, using technologies that slightly predate GenAI, to solve complex protein folding problems that would previously have been difficult even for the world's largest supercomputers.[12] GenAI, in the form of large language models, has been used to analyze not only the existing scientific literature but also the "language" of biomolecules, in search of novel drug-design approaches.[13]

Members are aware that the technology has extraordinarily widespread applications, but most reported that their companies are still in the early stages of using these tools, often deploying them to boost knowledge-worker productivity—for example, generating and checking computer code, conducting preliminary reviews of contracts, and performing advanced customer-relationship management.

Recognizing that GenAI can support fraudsters and cyberattackers, some companies are using it in compliance and cyber protection. *"We can use it on offense,"* said a director. *"You can put a bunch of code into OpenAI and it will tell you where the flaws are in the code—and it sees some that the standard code-scanning tools miss. On the other hand, it will show you the way to write a really effective phishing email."*

A few companies are already using AI for deeply strategic purposes. A director said, *"I am*

on the board of a company that does commercial real estate valuation, and we are developing an AI tool that will be at the heart of our business."

Directors' personal experience of the technology is limited. Only a handful of the many audit chairs in the meetings said that they had made any use of publicly available AI tools such as ChatGPT, and none were using GPT-4, the far more capable model. One audit chair had tried the technology himself: *"I asked ChatGPT to describe how you would do a goodwill impairment test. Could it explain complex rules to me? And, for the most part, indeed it could. That was a huge plus."* He went on to identify application areas: *"Things like audit standards are language plus basic math—very suitable for using OpenAI. Law is all language. We could be using it for legal documents and contracts. We could digest every email in the company, if we wanted to."*

Many audit chairs described efforts to grow more familiar with GenAI and its uses. *"We took a half-day session to learn about AI and where it applies,"* said one. Another added, *"We did an offsite to understand the technology and how the bank is using it."*

Boards and regulators are beginning to grasp the risks created by GenAI

Just as the applications of GenAI are widespread, so are the risks that it introduces. Some go far beyond any individual company. *"I am worried about the dumbing-down of the next generation,"* said a director. *"If you're not having to think critically, are we going to lose some of that capability as humans."* Prof. Weber agreed: *"Your fear is justified. We'll have to find new and different ways to learn."*

Other concerns involve industry structure, competitiveness, and the suppression of innovation. Prof. Weber described the *"walled garden"* that Microsoft has created around OpenAI, whose models operate only on the Azure cloud: *"It's not just a legal restriction but a technology co-evolution, a vertically integrated stack where, as a smaller customer, you can't take OpenAI's model and run it somewhere else to evolve the way you want it to. A walled garden can slow down innovation. There is one price to bring your data into the walled garden, and a much higher price to take your data out—in the event that you want to bring it to a different model or a different cloud platform."*

Audit chairs' primary concern is for their own companies. For the most part, they are seeking to inventory and understand the uses of GenAI in their firms, and they are beginning to frame questions for management. A director described an offsite focused on *"understanding what the guardrails are."* Biased behavior toward customers was a key concern: *"How do you ensure that the data has no bias? What's the basis for making decisions? We've spent the last few months on the compliance side of it, making sure there's not preferential treatment for certain customers."*

Other audit chairs worried about intellectual property and privacy problems created by GenAI, which relies on large sets of training data to produce its models. One explained,

"The biggest GenAI risk is copyright infringement. You have to look at the different stages of the model: (1) Collect the data. (2) Train the model—is that infringement? In Israel, they have already determined that it is fair use. (3) The outputs—are those infringement?"

Another audit chair framed these issues strategically: *"You will be more effective if you use larger amounts of data, not small datasets, but large datasets bring confidentiality and privacy issues. How will we decide what we want to use in order to have differentiated business models? What data policy do we need if we want the ability to grow and innovate for long periods of time?"*

Like directors, regulators and policymakers are grappling with this new technology. Mr. Kumayama pointed to existing regulatory structures: *"There are already relevant regulations in place—e.g., CCPA [California Consumer Privacy Act], GDPR [the EU's General Data Protection Regulation]—that limit the use of AI with personal data. There are limitations on automated decision-making when it can impact someone's life in an important way—e.g., a loan or insurance. Even today in the EU, you need to insert a human into the process, ensure the ability to appeal decisions."*

But both the United States and the European Union have come forward with substantial policy and legislative frameworks for regulating AI. President Biden's executive order focuses on a wide variety of risks created by AI, including threats to national security, anticompetitive activity, worker security, consumer protection, and civil rights. It addresses a fundamental issue: how to identify, precisely, the things that are to be regulated. The order imposes reporting requirements for certain models and for data centers having more than a certain processing capability.

But some experts believe that this approach may prove impractical. Advances in GenAI have already produced large language models that run on much smaller infrastructure—in some cases, relying only on the storage and capacity of a late-model mobile device such as an iPhone. Regulating the use of GenAI, rather than its provision, may be the only way forward. This is the approach taken by the European AI Act, which, like the Biden executive order, was completed just as the network meetings covered in this *ViewPoints* drew to a close. China has also released broad and deep regulations covering GenAI.[14]

Mr. Jackson summed up the conversation well, comparing the regulatory mission to that of a company's board as well as its auditors: *"They all start from one premise: Do you understand where AI is being used? Have you understood the proliferation of its use? Do you understand the impact of its use? And then a series of questions cascades from that. If you start through that lens, at some point the financial statement auditor is going to ask you those questions."*

About this document

The Regional Audit Committee Networks are a group of audit committee chairs drawn from leading North American companies committed to improving the performance of audit committees and enhancing trust in financial markets. The network is organized and led by Tapestry Networks with the support of EY as part of its continuing commitment to board effectiveness and good governance.

ViewPoints is produced by Tapestry Networks to stimulate timely, substantive board discussions about the choices confronting audit committee members, management, and their advisers as they endeavor to fulfill their respective responsibilities to the investing public. The ultimate value of *ViewPoints* lies in its power to help all constituencies develop their own informed points of view on these important issues. Those who receive *ViewPoints* are encouraged to share it with others in their own networks. The more board members, members of management, and advisers who become systematically engaged in this dialogue, the more value will be created for all.

Appendix 1: Meeting participants

West Audit Committee Network-North—October 3, 2023

The following members participated in all or part of the meeting:

Prat Bhatt, Seagate Technologies
Phyllis Campbell, Air Transport Services Group
Raman Chitkara, SiTime Corp.
Earl Fry, Hawaiian Holdings
Carol Hayles, eBay and Webster Financial Corp.
Laurie Hodrick, Roku
Bala Iyer, Power Integrations
Jack Lazar, Resideo Technologies
Ellie Mertz, DoorDash
Karen Rogge, Onto Innovations
Janice Sears, Sonder Holdings
Nina Tran, Apartment Income REIT
Janet Woodruff, Altus Group

EY was represented by the following:

Robyn Bew, Director, Markets and West Region Leader, Center for Board Matters
Scott Hefner, Senior Global Client Service Partner
Frank Mahoney, Vice Chair and Regional Managing Partner – US-West
Steve Maier, Partner

Tapestry Networks was represented by the following:

Dennis Andrade, Partner
Kate Cady, Project and Event Manager Team Leader

Southwest Audit Committee Network—November 6, 2023

The following members participated in all or part of the meeting:

Vanessa Chang, Transocean
Barbara Duganier, MRC Global
Ryan Edone, LGI Homes
Sue Gove, IAA
Debbie Kissire, Celanese
Cathy Lego, Guidewire Software
Angela Minas, Crestwood Equity Partners, Vallourec SA., and Woodside Energy
Don Robillard, Cheniere Energy and Helmerich & Payne
Valerie Williams, Devon Energy Corp and DTE Energy

EY was represented by the following:

Robyn Bew, Director, Markets and West Region Leader, Center for Board Matters
Kaki Giauque, Partner
Scott Hefner, Senior Global Client Service Partner
Pat Niemann, Partner, Americas Center for Board Matters

Tapestry Networks was represented by the following:

Beverly Bahlmann, Principal
Kate Cady, Project and Event Manager Team Leader
Jonathan Day, Chief Executive

Southeast Audit Committee Network—November 8, 2023

The following members participated in all or part of the meeting:

Candy Duncan, Discover Financial Services and Teleflex (CACN member)
Juan Figuereo, Deckers Outdoor and Wester Alliance Bancorp
Joe Householder, Advanced Micro Devices
Frank Jaehnert, Nordson (CACN member)
Karole Lloyd, Aflac
Rich Macchia, Fleetcor Technologies
Maureen Morrison, Asbury Automotive Group
Darrell Thomas, Pitney Bowes
Mary Winston, Acuity Brands
Carol Yancey, BlueLinx

EY was represented by the following:

Kevin Brower, US Central Region Audit Leader
Cigdem Oktem, Central Region Leader, Center for Board Matters

Tapestry Networks was represented by the following:

Noni Abdur-Razzaq, Associate
Beverly Bahlmann, Principal
Kate Cady, Project and Event Manager Team Leader
Jonathan Day, Chief Executive
Ashley Vannoy, Project and Event Manager

West Audit Committee Network-South—November 13, 2023

The following members participated in all or part of the meeting:

Traci Dolan, Steel Dynamics

Ken Goldman, GoPro
Ginnie Henkels, LCI Industries
Leon Janks, Pricesmart
Michelle Kerrick, American Homes 4 Rent
Pat Kinsella, PennyMac Financial
Diana Laing, Spirit Realty
Tim Leyden, Itron
Tally Liu, Super Micro
Jeanne McGovern, Huntsman
Jim Morris, Edison International
Kristy Pipes, AECOM and Public Storage
Jim Scilacci, Hawaiian Electric Industries
Daren Shaw, Ensign Group
Steve Sordello, Atlassian
Les Sussman, East West Bancorp
David Tehle, Jack in the Box, National Vision, and US Foods
Malia Wasson, Columbia Sportswear
Noel Watson, Affirm

EY was represented by the following:

Robyn Bew, Director, Markets and West Region Leader, Center for Board Matters
Scott Hefner, Senior Global Client Service Partner
Jennifer Lee, Managing Director, Center for Board Matters - Americas
Kristin Valente, Accounts Managing Partner - West Region

Tapestry Networks was represented by the following:

Kate Cady, Project and Event Manager Team Leader
Jonathan Day, Chief Executive
Kelly Gillen, Associate
Tucker Nielsen, Partner

Central Audit Committee Network—November 29, 2023

The following members participated in all or part of the meeting:

Kapila Anand, Elanco Animal Health
Pat Condon, Entergy
Frank Dellaquila, Reliance Steel & Aluminum
Candy Duncan, Teleflex
Cheryl Francis, Morningstar
Mike Hanley, BorgWarner
Sandy Helton, OptiNose

Cary McMillan, Hyatt Hotels
Neil Novich, Hillenbrand
Derrick Roman, WEX
Phoebe Wood, Invesco and Leggett & Platt

EY was represented by the following:

Kevin Brower, US Central Region Audit Leader
Jennifer Lee, Managing Director, Center for Board Matters - Americas
Pat Niemann, Partner, Americas Center for Board Matters
Cigdem Oktem, Central Region Leader, Center for Board Matters
Jud Snyder, Global Client Service Partner

Tapestry Networks was represented by the following:

Kate Cady, Project and Event Manager Team Leader
Jonathan Day, Chief Executive
Kelly Gillen, Associate

East Audit Committee Network—December 8, 2023

The following members participated in all or part of the meeting:

Mary Ann Cloyd, Fresh Del Monte Produce
Art Garcia, ABM Industries and American Electric Power Co.
Tom Gayner, Graham Holdings
Debra Perry, Korn Ferry
Leslie Seidman, Janus Henderson
Gina Wilson, Charles River Labs

EY was represented by the following:

Jennifer Lee, Managing Director, Center for Board Matters - Americas
Molly Tucker McCue, US-East Assurance Managing Partner

Tapestry Networks was represented by the following:

Noni Abdur-Razzaq, Associate
Beverly Bahlmann, Principal
Jonathan Day, Chief Executive
Marsha Ershaghi Hames, Partner
Todd Schwartz, Principal
Ashley Vannoy, Project and Event Manager

Appendix 2: Reflection questions for audit committees

- ? How does management stay informed about regulatory and legislative developments related to AI, machine learning, data privacy, and emerging technologies in relevant jurisdictions? How is it monitoring whether the company is staying in compliance and assessing potential impacts to strategy?
- ? Do the organization and the board have a complete inventory/database of AI applications, models, deployments, embedded capabilities, use cases, etc., within the organization to better understand the associated risks and related impacts?
- ? How is the company assessing and mitigating the risks of generative AI? Is it using an external framework such as the NIST AI Risk Management Framework? How does management establish that these applications are performing as intended to mitigate ethical and compliance risks?
- ? How is the company using generative AI to challenge the existing business model and key strategic assumptions?

Endnotes

[1] *ViewPoints* reflects the network's use of a modified version of the Chatham House Rule whereby names of members and their company affiliations are a matter of public record, but comments are not attributed to individuals or corporations. Italicized quotations reflect comments made in connection with the meeting by network members and other meeting participants.

[2] Jared Cohen and George Lee, "The Generative World Order: AI, Geopolitics, and Power," Goldman Sachs, December 14, 2023.

[3] Michael Chui et al., "The Economic Potential of Generative AI: The Next Productivity Frontier," McKinsey, June 14, 2023.

[4] "Frontiers of Multimodal Learning: A Responsible AI Approach," *Microsoft Research Blog*, September 6, 2023.

[5] White House, "Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence," news release, Oct. 30, 2023.

[6] Jason Dean, "Elon Musk Unveils 'Grok,' an AI Bot That Combines Snark and Lofty Ambitions," *Wall Street Journal,* November 5, 2023.

[7] Emma Roth, "OpenAI Is Launching a GPT Store Later This Month," *Verge,* November 6, 2023.

[8] Katey Rich, "The AI Issue in the SAG-AFTRA Strike May Have Finally Been Resolved," *Vanity Fair,* November 7, 2023.

[9] Nicola Jones, "What the OpenAI Drama Means for AI Progress—and Safety," *Nature,* November 23, 2023.

[10] European Parliament, "Artificial Intelligence Act: Deal on Comprehensive Rules for Trustworthy AI," news release, December 9, 2023.

[11] "Portable, Non-Invasive, Mind-Reading AI Turns Thoughts into Text," University of Technology Sydney, December 12, 2023.

[12] "AlphaFold," Google DeepMind, accessed December 19, 2023.

[13] Abraham Stern, "NVIDIA Expands Large Language Models to Biology," NVIDIA Blog, September 20, 2022.

[14] Matt Sheehan, "China's AI Regulations and How They Get Made," Carnegie Endowment for International Peace, July 10, 2023.