



THE AI FROTH

Charting the CTO's role amid the hype

Cassie Raazi and Bruce Cameron
Technology Strategy Partners

In 2023, investment in Generative AI increased 260% over 2022, reaching \$29 billion¹. This explosive growth has executives clamoring to integrate Generative AI into their businesses. A recent survey reported that 63% of respondents characterize the implementation of GenAI as a “high” or “very high” priority, yet 91% of these respondents don’t feel “very prepared” to do so². Given challenges posed by readiness, feasibility, data quality, and privacy concerns, many leaders question whether any implementation is better than none? Has Generative AI become table stakes? Do we want to avoid the froth or capitalize on it?



Positioned between the fear of missing out and the investment magnitude required is the firm’s Chief Technology Officer (CTO). In most organizations, this is the role responsible for figuring out where a new technology will be transformative, and where to avoid getting caught in a bubble. Hype-fueled promises of revolutions often lack specificity. The CTO is responsible for defining business use cases, identifying data needs, and educating the organization about the opportunities and threats that accompany Generative AI. Building on the possibilities of Generative AI will require the CTO to rethink the entire enterprise stack to support a new generation of AI-driven applications.

Much as the growth of AI has created uptake of OpenAI and Copilot, it has also led a whole new crop of CTOs, brought in to interpret AI and face its challenges. For

example Bentley Systems hired new CTO, Julien Moutte (former Head of Technology at SAP) as they “believe AI is at a watershed moment for the infrastructure sector.” Similarly, Microsoft recently hired Jason Taylor (former VP of Infrastructure at Meta) as Deputy CTO for Microsoft’s AI supercomputing efforts “to help build the next set of systems that will push the frontier of AI forward” says Microsoft’s corporate CTO Kevin Scott, explaining in a press release, “this work is mind-boggling in its ambition and complexity. It takes a special kind of team to pursue a goal that requires the assumption you’ll be able to solve a bunch of previously impossible problems.”

Key Challenges with AI Faced by CTOs

The adoption of a new technology sheds light on corners of the firm that are ill-prepared for change. In our experience with AI, we see three key challenges.

Data capture, storage, and hygiene practices are insufficient to power modern AI models.

Siloed and untrustworthy data, inefficient data management practices, and a lack of meaningful insights get in the way of unlocking the full potential of AI. Many businesses have large quantities of data that are unstructured and unused, while AI projects are dependent on data quantity and quality.

Business cases for AI feel like special exceptions, not the norm.

The return on AI investments may not have near-term financial impacts, and it is dependent on simulating potential cost and value realization across a range of activities. The ROI of AI investments can be both tangible (such as increases in revenue, reduction in operating costs, and faster time to market) and intangible (such as increases in customer engagement, end-user productivity, and added value to existing products). In particular, the value of user data and the firm’s ability to monetize that data is often a point of contention.

¹ VCs go vertical in backing specialized AI. January 29, 2024.

² Implementing generative AI with speed and safety. McKinsey. March 13, 2024.

Organizational unease with the opportunities and threats presented by AI.

The speed with which AI has emerged, the excitement around its transformative potential and the fear of missing out has created a sense of urgency in deploying AI throughout many organizations without a thorough understanding of the opportunities and risks that accompany it. Defining use cases helps clarify the opportunities in AI. However, a lack of widely accepted standards for AI risk assessment, a shortage of experts knowledgeable in both AI and risk management, and underestimating the complexity and impact of implementing AI systems emphasizes the lack of preparedness most organizations are experiencing. As Chevron's Chief Data Officer shared, "The demand for AI governance and risk experts is outpacing the supply."

To understand how CTOs are responding to these three challenges in this dynamic environment, TSP interviewed 16 CTOs from a wide range of industries. The role of the CTO is to establish, communicate, and execute a technology vision for the organization. Simple to state, but not so easy to achieve. The discussions spanned early-adopters to self-declared laggards, focused on how they are navigating a hype-fueled technology adoption cycle. Nowhere is this challenge more present than in the CTO's first year, when the CTO has maximum opportunity for directional changes. For new CTOs hired in to capitalize on AI (or for existing CTO aiming to take a fresh look at how Generative AI has changed the landscape), this paper is organized into 3 core tasks over 12 months.

THREE CORE TASKS FOR CTOs

At the onset, incoming CTOs are in learning mode; learning about the organization's strategy, technology, and culture. One CTO interviewee joked, "the first 90 days are read-only mode." Understanding the organization's corporate strategy and goals helps calibrate how broad a reset is required and how broad a mandate the CTO is given. Reviewing the existing technology portfolio

with the understanding of the company's strategy will help shape the incoming CTO's initial steps to align the technology strategy with the organization's goals.

To these ends, TSP divides the first 12 months into three key areas of focus for an incoming CTO: Assess and Obsolete, Set the Vision, and Invest in the Vision.



TASK 1: ASSESS AND OBSOLETE

Incoming CTOs have a precious window in which broad re-evaluations are possible, before expectations mount to present "the answer". Incoming CTOs often inherit a backlog of technical debt that they will have to grapple with as they work to establish their vision. The incoming CTO should use this window to conduct an assessment of current products, operations, and technology portfolios relative to the firm's overall strategy and stated goals.

In TSP's experience, CTO assessments have included:

Conducting a product strategy review

Identifying how technology has impacted value for the organization, which products are delivering value, and which aren't is a good place to start. Sort through products, assessing whether the juice is worth the squeeze, and whether they align with the firm's overarching goals. Proliferation in a portfolio can create a huge burden for a firm, and it's the CTO's job to implement process and culture to minimize this. For example, has the firm's remote monitoring service generated the training data for other products that was originally expected, or has it proven out that there aren't strong margins in remote monitoring?

Conducting an obsolescence check

Firms frequently lack a systematic process for evaluating the technology portfolio for pruning opportunities. The CTO's initial assessment can function both as a check on obsolescence as well as set the tone for more regular reviews. For example, has the firm's sales navigator questionnaire shown its age relative to simpler GenAI-enabled chatbots?

Defining priorities

A technology roadmap prioritizes initiatives based on their alignment with the firm's goals. With an understanding of the existing technology initiatives and the firm's strategy, the CTO must recast priorities to support the firm's goals. This prioritization should be succinct and pull no punches - no CTO wants to start their tenure with proclamations that everything is important. For example, have the firm's investments in screening drug candidates for toxicity and for binding affinity competed for resources, to the extent that toxicity screening should be outsourced so the firm invested in training models to screen for affinity?

Given the 3 key challenges resulting from advances in AI, Task 1 Assess and Obsolete should include:

AI DATA

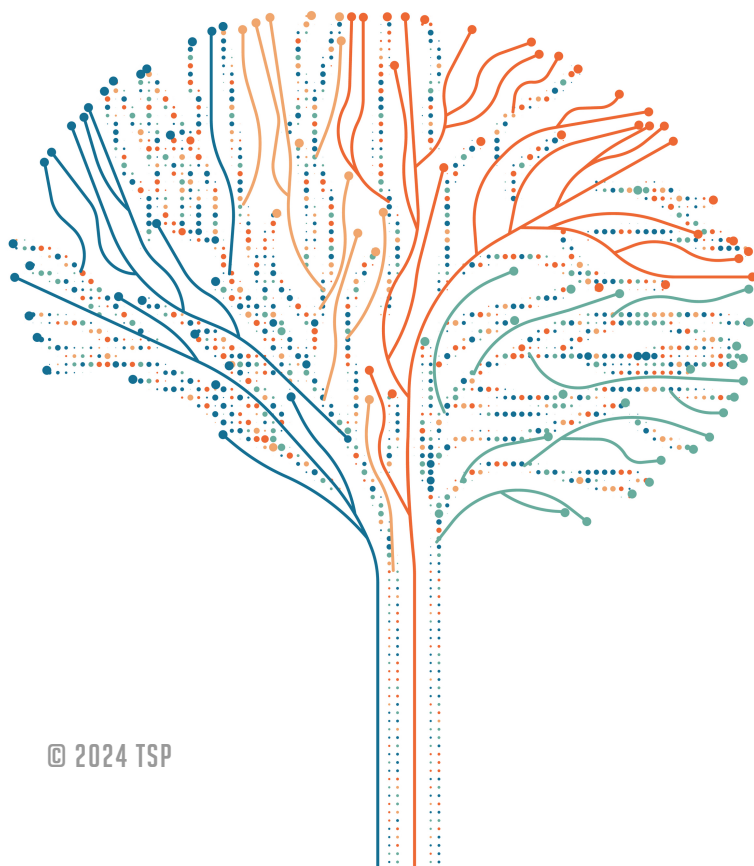
Before you can use data to help your business, you need to understand what data you have, and how your firm is using it. Assessing the firm's data governance allows you to recognize ways to access resources sooner while closing any gaps within your data ecosystem. Identifying the policies, processes, tools, and roles currently employed in current state helps identify areas that require attention and those that may serve as best practices. Prioritize the areas that need improvement and consider the impact on overall business objectives.

AI USE CASES

To effectively measure ROI, you need to identify use cases for measurement. Are the use cases well defined? Are they aligned with your understanding of the business challenges and opportunities? Are they tied to strategic business goals? Outline your expectations and how you believe AI can address the identified problems. Consider factors such as business value, AI skills required, and technological prerequisites to prioritize and select the most promising use cases. As a CTO interviewee expressed, "it's my responsibility to make sure our tech footprint is appropriate for what we're trying to do."

ORGANIZATIONAL READINESS FOR AI

To manage the potential risks and opportunities your firm must know what they are. Is there a general understanding of the complexity and challenges associated with deploying AI solutions? Is there an awareness of the risks associated with the deployment of AI? Are there specific policies in place around the use of AI and Generative AI tools? Is there a framework to ensure that information generated by AI is accurate and trustworthy? No one wants to relive Samsung's experience of engineers uploading source code to ChatGPT for debugging purposes, followed by a Samsung-wide ban on ChatGPT.



With defined priorities, the CTO can then begin to draft plans for research activities, systems, and products in need of alignment. Getting the most out of technology investments comes down to being intentional about aligning the investments with the organization's strategy.

Cutting research and technologies that don't align with the firm's strategy and goals is as important as defining priorities. Apple famously closed its investment in self-driving cars, in order to focus on Apple Intelligence. The technology portfolio should be scrutinized for proliferation and fit with company strategy and ecosystem. Identifying how many technology bets are being made, how often projects are killed, and whether the technologies being pursued are appropriate to the firm's strategy, are all critical questions. The breadth of potential Generative AI applications from coding support to visualization assistants to document critiques implies that product efforts cannot dabble in all.

Understanding the organization's goals and collaborating with stakeholders not only allows the CTO to identify technology solutions that drive business growth and enhance operational efficiency, but also supports pruning misaligned activities and investments. As an incoming CTO, cutting or closing activities, initiatives, or systems is a delicate dance.

The following prompts have helped incoming CTOs successfully Assess and Obsolete:

➤ **How soon is too soon to implement change?**

With the incoming CTO's initial investment of time and energy to gain a strong understanding of the organization's goals, and foundational relationships established, pruning misaligned activities can begin.

➤ **How will you re-task people when their projects close?**

This could be a key signaling opportunity for the incoming CTO, a chance to show their commitment to re-skilling and investing in talent growth and development in support of the organization's goals.

➤ **How will you communicate the rationale for these changes and how it supports the defined priorities?**

Emphasize being deliberate about alignment with the organization's strategy and goals. Establishing a change management plan to address potential resistance, provide training and support, and ensure a smooth transition in support of the clearly defined priorities will be necessary.

What gets closed and how it is communicated to the organization can be a powerful signal in setting the CTO's vision.

TASK 2: SET A VISION

Vision cannot be delegated. As shared by a CTO interviewee, "there is a friction between short-term and long-term [technology] strategy. It's up to the CTO to build the bridge." With deep implications for how companies navigate a world where technology is fundamentally reshaping how we work and live, establishing and effectively communicating the technology strategy and



vision is core to the role of the CTO. The vision must be short and sharp, e.g. “Machine vision will obsolete our position sensors in the next 5 years.” Vision can be focused on internal and/or external drivers including culture, customers, technological progress or profitability.



OpenAI’s CTO, Mira Murati contends that a strategy of iterative deployment supports “continuous adaptation and feedback from the real end feeding back into the technology to make it more robust”, as well as “enabling the end user to experience what the technology is capable of rather than reading about it in a press release.”³ The vision is the bridge between short-term planning and long-term strategy. Mira Murati has shared OpenAI must make incremental improvements for customers while laying the groundwork for future leaps in knowledge.

Expressing how the vision will impact the organization with supporting information such as cost of operations, risk acknowledgement, and hooks into corporate strategy will aid with buy-in. Murati has been clear that her vision of iterative deployment is strategically important to OpenAI’s mission of ensuring that artificial intelligence benefits humanity, expressing, “you could make technological progress in a vacuum without real-world contacts, but then the question is, are you actually moving in the right direction?”




The following prompts have helped incoming CTOs communicate their vision across the organization:

- Express *what could be* in the future: products, use cases, ways of working internally, new business models, etc.
- Conduct supporting trend analysis (internal, market, or technology)
- Build coalitions internally among stakeholders such as Product, Engineering, and Marketing.
- Foster external support for the vision among partners, investors, suppliers, and customers
- Create an embodiment of the vision (a prototype, analytical findings, a pilot project.)
- Plan for new deliverables to communicate the vision such as white papers, board presentations, conferences, speeches
- Identify pieces of the puzzle that exist today (projects, demonstrators, etc.) that fit the vision



³ Who is Mira Murati, OpenAI’s New Interim CEO? Steven Levy. Wired. November 17, 2023.

Given the 3 key challenges resulting from advances in AI, Task 2 Set a Vision should include:

<h2>AI DATA</h2> <p>After assessing the firm’s data governance, CTOs will have a picture of the data landscape. The vision should prescribe how data will support business goals and enable competition. Some considerations when developing your data vision include what analytics do you want to be able to run, how we will wrap existing products in data and analytics, and what data management processes and tools we will put in place.</p>	<h2>AI USE CASES</h2> <p>The vision should describe what use cases are enabled by AI : is there value in on-going monitoring, or in surfacing automated suggestions, or chatbot services embedded in product? Define the specific use cases and establish the success criteria in collaboration with key stakeholders. When setting goals and objectives for AI ROI, consider specificity, measurability, and alignment with corporate.</p>	<h2>ORGANIZATIONAL READINESS FOR AI</h2> <p>The CTO might set a vision of establishing a clear and consistent AI risk management framework. Employees are beginning to develop a sense of the risks regarding accuracy, bias, and security, and the vision should offer them a platform to manage them, as well as an understanding of how AI is likely to affect their own roles.</p>
		

Some CTOs mistakenly feel the need to ‘solve’ the technology problem(s), rather than set the vision. This trap has ensnared many CTOs, who have yet to shake off their prior roles in project execution. Just as Generative AI has emphasized that there is skill in creating the right prompts, CTOs have to express a crisp problem statement and direction such that the organization can evaluate feasibility.

TASK 3: INVEST IN THE VISION




In one organization we saw, the CTO insisted that each of their direct reports write a 2 page outline of their product's GenAI opportunities and fit with the CTO’s vision, and then have the CTO's GPT critique it before submission to the CTO for investment consideration.

The potential scope for the CTO role is expansive. The

CTO must be judicious in prioritizing investment in the vision. For the vision to be successful, leadership needs to be ready and willing to make the necessary changes. Invest in key programs, technologies, and outreach. Find key signaling opportunities in culture. Hire to shift the organization’s expertise. Build coalitions within and outside of the organization. Create technical career paths to retain key talent. Establish regular obsolescence and strategy review processes. Being deliberate about these steps helps communicate to the organization that the vision is real and not a flash in the pan.

As Teddy Bekele (CTO) shared, “even organizations that do have a solid responsible AI program in place, keeping up with the speed of development and continuously addressing new risks requires effort.” Conducting an assessment, setting a vision, and investing in that vision will help the firm find the real value in AI and avoid getting lost in the froth.

Given the 3 key challenges resulting from advances in AI, Task 3 Invest in the Vision should include:

AI DATA	AI USE CASES	ORGANIZATIONAL READINESS FOR AI
<p>By understanding the current state and establishing the vision for the future state, make informed decisions about the necessary investments, resource allocations, and the overall strategy for the organization's data and data governance practices. Assessing and aligning data is an ongoing process. The CTO can help ensure there is funding for regular reviews of data quality, and compliance with established policies.</p>	<p>Investing in a limited set of AI use cases will get the organization off the bench and into the game. It will inevitably find some winning use cases and some dead ends. The CTO can set the tone for how the organization deals with this learning process, and how long (or short) the investment horizon is.</p>	<p>Establishing good risk management capabilities will require investment in resources and expertise. Maintaining and fostering a culture of continuous learning will further the vision- the CTO has a key role to play in communicating that AI has become everyone's business.</p>
		

SCULPTING THE FROTH

Executive teams are looking to the CTO to set the tone on AI. This technology has already produced wonders, and in our view presents significant opportunities for CTOs to set firm strategy. The CTO's ability to cut through the froth and to set a clear vision on where the firm will invest is likely to be the defining technology bet for many careers. Accordingly, CTOs will be judged on their ability to muster critical mass on AI, lest the cup runneth over.

Authors

Cassie Raazi is a Consultant with TSP in Park City, UT.
Bruce G. Cameron is a Partner with TSP in Boston, MA.