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How Generative AI Technology Impacts Offering Strategies for Tech CEOs

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Initiatives: Corporate Development and Growth Strategy for Tech CEOs

> Generative AI is a game-changing technology. Tech CEOs must have a compelling offering strategy that looks beyond adoption of generative AI while also leveraging it for competitive advantage and being ready for a significant pivot in their business.

Overview

Key Findings

- Generative AI technology drives four distinct market approaches that tech CEOs can be a part of: foundation models (including large language models [LLMs]), applications, enabling tools and custom services.
- The market is already witnessing many startups launching new products/services, including new business models leveraging generative AI.
- Outside a few large tech companies and startups in the field, most technology providers have only incremental plans yet in this potentially vast disruptive arena.

Recommendations

- Invest in developing your own offering or partner with LLM providers leveraging their API services by first identifying which, if any, of the four generative AI market approaches best suit you.
- Do not limit your approach to only Q&A-type use cases (addressed by applications such as ChatGPT). Brainstorm with your teams to determine the opportunities (and risks) by evaluating the business viability of the new offering/feature leveraging generative AI.
- Envision your offerings 18 to 24 months hence by looking beyond today's business, products and services and be ready to pivot immediately to your new product/service propositions and business model.

Analysis

The past year has seen a proliferation of offerings, such as Midjourney, DALL-E, Microsoft Copilot, Amazon CodeWhisperer, Jasper, Rytr and ChatGPT, that show the remarkable abilities of generative AI. These solutions, enabled by LLMs (a class of foundation models), were a big step change in what computers can do. While these models show the power of generative AI, their use extends into many aspects of technology products and services.

Generative AI is still in its infancy and prone to many errors and threats such as AI hallucinations and security and privacy risks, but it nevertheless provides a range of capabilities (see Innovation Insight for Generative AI) that can be applied in a variety of scenarios. Generative AI also provides glimpses into how it can upend the status quo of many technology products and services.

Generative AI today is dominated by some of the largest tech companies and a wave of new well-funded startups. There are also hundreds of small early-stage application providers that have been selling generative-enabled software for more than a year. Most enterprises and technology vendors that serve them are curious about the technology and have started adoption, but Gartner's interactions indicate that their current plans are slight and incremental. Gartner has engaged in over 3,000 conversations with clients on this topic in the last three months. So tech CEOs need to not only plan to adopt this technology, but also prepare to seize opportunities or to invest to avoid disruption.

Gartner expects four major market approaches to take shape within six to 12 months (see Figure 1). Currently, text-based LLMs are more popular, and enterprise uptake for text-based LLMs is high compared with code, image or other modalities of LLMs. The four major market approaches discussed below apply to other modalities of LLMs as well.

Figure 1: Expected Generative AI Market Approaches Within Six to 12 Months

Expected Generative AI Market Approaches Within Six to 12 Months

1 Foundation Models			2 Applications		3 Enabling Tools	
Foundation Models	Fine-Tuned Models	Domain Models	Embedded Applications	Native Applications	Build Tools	Use Tools
A121 Labs, Alibaba, Amazon Web Services (AWS), Anthropic, Baidu, BigScience, Google, Meta, Microsoft, OpenAI, Stability AI	AWS, Databricks, Hugging Face, U.C. Berkeley	Bloomberg, IBM, Microsoft, MyWave.ai, OpenAI, Stanford University	Adobe, Google, Microsoft	Function Specific: Cogram, Jasper, Lavender, Notion, Rytr, Tome Vertical Specific: Harvey AI (Legal)	IBM, NVIDIA, SambaNova Systems	Fiddler AI, LangChain, LlamaIndex, Weaviate
4 Custom Services						
Custom service offerings that involve one or more of these areas and may integrate other systems and technologies.						

Source: Gartner
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Generative AI Market Approaches

Table 1 summarizes the various expected categories of generative AI market approaches that will be established in the near term. This table also provides a view into expected client adoption behaviors, the potential that each market approach presents to tech CEOs, and the actions they should take.

Table 1: Generative AI Market Approaches

(Enlarged table in Appendix)

Category	Subcategory	Expected Client Adoption	Potential for Tech CEOs	Suggested Actions
Foundation models — Core services that power generative AI	**Foundation models**	Broad and deep adoption; enterprises use these to build unique solutions that protect confidential data based on fine-tuned proprietary data.	Many open-source foundation models offer approaches to inexpensively create LLMs with good performance and accuracy. Watch this space.	Leverage through APIs or partnerships.
	Fine-tuned models			
	Domain models			
Applications — Wide array of point niche solutions that satisfy a functional, vertical or other business purpose using generative AI.	**Embedded applications** — Enterprise software that is embedded with generative AI model APIs	Wide array of point solutions to pick from due to their proliferation. These could be horizontal- or function-specific (such as marketing, HR or contact center) or vertical-specific (such as healthcare, or securities). Such apps will gradually become pervasive in clients.	High potential; leverage as part of offerings or for complementary partnerships.	Seek generative AI app providers in your domain that are candidates for leveraging or partnering with or invest in creating your own niche solution based on generative-AI apps.
	Native applications — Applications that have generative AI as their core proposition			
Enabling tools	**Build tools**: Build, test, tune and deploy generative AI solutions	Adoption of such enabling tools inevitably increases with proliferation of solutions based on generative-AI.	High potential; build such solutions or leverage them as part of your product or internal process.	Identify the ecosystem of such enabling tools and associated vendors including the open source ecosystem. Get hands-on training of resources using such tools.
	Use tools: Facilitate the use of the generated output			
Custom services — Specific implementations for specific needs using generative AI technologies		Large enterprises may have a very specific use.	Low in volume but possibly long-term high-value projects.	Mostly applicable for consulting and IT and business process service providers but also for other technology providers that should mine service opportunities through niche offerings. Tech CEOs of service provider organizations should start hiring skills and prebuild frameworks, templates, etc.

Source: Gartner (July 2023)

Foundations Models

Foundation models (a large subset of them are language-based and referred to as LLMs) are the backbone of many generative AI solutions, including ChatGPT. They are mostly available as cloud-based services from the likes of Amazon Bedrock, Anthropic, Cohere, Google, Hugging Face, Microsoft, Meta and OpenAI. But there are on-premises deployments as well; for example, Hugging Face transformers enable deployment of BERT, GPT-2 and RoBERTa on-premises. Many others can be deployed on-premises to allay customer concerns about control and privacy. Meanwhile, Stable Diffusion, which supports text to image, is an example of a foundation model for image generation using text prompts.

The landscape of providers here includes big tech giants, venture capital (VC)-funded startups and open-source organizations. Providers in this category have either proprietary platforms or an open-source-based approach. Many open-source foundation models offer approaches to inexpensively create LLMs with good performance and accuracy. Tech CEOs must closely monitor this space for potential leverage through APIs or through partnerships to embed such foundation models in their product.

This category has three subcategories:

- **Foundation models:** Foundation models are trained on a broad set of unlabeled data that can be used for different tasks, with additional fine-tuning. They are called foundation models because of their critical importance and applicability to a wide variety of downstream use cases due to large-scale pretraining of the models. Examples: A121 Labs' Jurassic-1, Alibaba's M6, AWS's Amazon Titan, Baidu's ERNIE, BigScience's BLOOM, Google's BERT and LaMDA, Meta's LLaMA, OpenAI's GPT-4 (see Quick Answer: What Is GPT-4?) and Stability AI's StableLM.
- **Fine-tuned models:** In this class of models, the upper layers of a foundation model are pretrained and fine-tuned for customized features and outputs. Examples: Databricks' Dolly 2.0, Meta's RoBERTa and U.C. Berkeley's Vicuna.
- **Domain models:** These models are trained with data in the source domain to match the target domain, where the data is scarce. The idea is to domain-train the model through feature engineering and tweaking the data. Examples: Bloomberg's BloombergGPT (finance), IBM's MoLFormer-XL (molecular structures), MyWave.ai (airlines), and OpenAI's Codex (code generation).

Implications for Tech CEOs

For most tech CEOs, foundation models are a source of innovation to leverage in their products and services, to enhance and augment existing features and functionalities, and/or to offer as an entirely new capability in their products and services. Developing their own foundation model and monetizing it will not be an option for most tech CEOs due to the significant investment required to build such models and the specialized nature of their development and use. For a limited set of well-funded tech CEOs that have proprietary data with high internal or industry value, there is an opportunity to create fine-tuned, domain-specific models that can be used for embedded applications (see the next section). As costs come down using open-source LLMs, fine-tuning will become more appealing to tech CEOs. Gartner sees the potential evolution of a robust market around domain-specific foundation models.

Applications

This will be one of the biggest categories, with a multitude of narrowly focused providers for generative-AI-leveraged products and services from startup and established technology providers. This category will likely have a lot of overlap with niche solutions provided by many different providers focusing on, for example, certain geographies, verticals and functions.

Generative AI apps have two broad subcategories:

- **Embedded applications:** These are enterprise software applications with embedded generative AI capabilities, such as Microsoft Teams embedded with a ChatGPT API. This will likely be a big category, where many software application providers will have generative AI embedded within the applications in their portfolios. Large enterprises use applications from the major application suite vendors, such as Microsoft, Oracle, Salesforce and SAP, as well as applications from a few midsize providers. Both types of provider will soon include new versions of their software with generative AI that enhances the capabilities of their applications in meaningful ways. For example:
  - Adobe's Firefly helps in image generation using text prompts, enhancing the core functionality as well as user experience of Adobe software in illustration and graphic design.
  - Microsoft will shortly launch its OpenAI-enhanced Office 365 suite.
  - Google has launched DocGPT, a Google Docs AI assistant (in beta testing at the time of writing this report), enhancing the user experience significantly.

- **Native applications:** These are SaaS-based apps that have generative AI as their core proposition. Examples: Jasper, Rytr and Writesonic for content creation; Cogram, Notion and Supernormal for workforce productivity; Algolia, Glean and Sana for knowledge management; Exscientia and Insilico Medicine for biotech; Harvey AI for legal; Microsoft (Copilot) for code generation; Midjourney for image generation; Lavender for sales email coaching; and Tome for creative writing.

Implications for Tech CEOs

Embedded applications and native applications are opportunities for tech CEOs to leverage one or more underlying generative AI services enabled by foundation models. In the embedded application category, the opportunity is to use generative AI embedded in applications thereby enhancing application functionality resulting in a more compelling and/or enhanced proposition. In the native applications category, an opportunity awaits those tech CEOs that want to develop new applications based on using generative AI services as a core. Such endeavors will result in an entirely new product proposition yielding new revenue streams.

Both these generative AI market categories will provide a rich source of innovation to enhance products with new or better features and/or to expand into adjacent areas. This market is rife with new entrants, and new techniques and will be subject to turbulence for a few years to come.

Note that both these areas can also give rise to new competitive threats from other tech providers that leverage generative AI to offer a better value proposition or a radically different one.

Enabling Tools

This category comprises a variety of tools that facilitate building effective generative AI solutions and also those tools needed to leverage those solutions effectively. As with applications, some enabling tools are generative-AI-specific, and some are more general-purpose AI tools with embedded generative AI capabilities.

- **Build tools:** These tools are needed to create a generative AI solution. They include tools that enable creating the model, training the model, preparing the data, performing tests and other services that may be required to get the generative AI solution ready. In addition, developers rely heavily on open-source tools and libraries. Examples: IBM's watsonx.ai (a development tool for generative AI solutions), NVIDIA's AI Enterprise solution for building and deploying solutions, and SambaNova Systems' platform to build solutions.

- **Use tools:** Tools in this area are used when generative AI solutions are applied to real-world scenarios — the "inference" phase of AI use. These tools help leverage generative AI solutions as part of other applications or embedded applications or extend the use of generative AI through APIs or other means. Services provided by these tools include the ability to provide a workflow for business tasks that will leverage generative AI solutions, and the ability to fetch and integrate other data sources (such as the web, internal file stores and other databases). We are in the early stages of use of generative AI — many tools are in early stages, and open-source solutions are common. Examples: Fiddler AI for model observability, LangChain for providing a workflow across foundation models and other software, LlamaIndex for using external data with foundation models, and Weaviate for storing data.

Implications for Tech CEOs

In the software world, we know that, historically, tool providers can grow their business rapidly and have great revenue expansion potential. Extrapolating from historical patterns, a generative AI tool market presents a great revenue opportunity. Tools play a very important role for generative AI across all phases of its development and use. It is vital for tech CEOs to understand tools that help realize the potential of generative AI, both in development and in real-world use. Tech CEOs who currently provide tools in other areas of AI technology should consider if they can extend into either of these tool areas.

Usage of such tools can make deployment of generative AI easy, seamless and user-friendly for your customers. For example, if use of generative AI requires augmenting initially with data from other sources, you may have to leverage a vector database as part of the flow to store the data before querying the generative AI model that you use.

The "use" tools for generative AI are in the early stages of evolution and will involve significant evolution and churn. Nevertheless, careful application of such tools can help accelerate and amplify your use of generative AI.

Custom Services

This category primarily comprises services from firms offering strategic advice, business consulting, system integration, software development and similar services. They will offer these to enterprises and other technology companies.

The scope of such services span all areas of the generative AI market. They vary from services that are deeply technical and cutting-edge for tech providers, to services for very risk-averse enterprises.

Enterprises are likely to use a variety of ways to adopt generative AI. Custom projects can involve many other categories highlighted above. Among them, embedded and native applications are likely to be embraced more by enterprises in the initial period. As the market expands in enterprises, projects are likely to expand in scope, cost and investment required.

Examples:

- Services to help enterprises or other tech providers fine-tune models and test them.
- Services to help turn in-house enterprise applications into generative AI embedded applications.
- Business consulting services to help enterprises determine what new native applications can be built for a compelling ROI.
- Services to help with industry-specific project needs, such as using generative AI in drug discovery for a pharmaceutical company, in oil field exploration for an energy company, and in large and deep simulation projects for astronomical research agencies.
- Services to modernize legacy applications using new code generation capabilities of generative AI.

Implications for Tech CEOs

This market is most suitable for IT services providers or the service arm of software companies. While the temptation will be to leverage existing software development approaches or frameworks, care must be taken to ensure that you do justice to leverage the potential of generative AI. Since the scope of generative AI is vast and demands new skills and approaches, tech CEOs will need to strengthen the skills of their teams or hire such specialized skills.

Tech CEOs must also invest in new accelerators, frameworks and approaches that are reusable. Open-source communities (such as Hugging Face) and academia play a key role in generative AI. Tech CEOs offering custom services must keep an eye on these groups so that their offerings are up to date as this space is likely to evolve quite rapidly.

Opportunities and Implications to Tech CEOs: What Should You Do?

Use generative AI market categories to identify the opportunities best suited to your strengths in this fast-growing market.

Depending on your current business and financial situation, assess the four categories and their likely fit to your business. All these categories are currently being established and will be crystalized quite rapidly; therefore, act now to determine which are your prime areas. Mobilize funding immediately if you are developing your own generative AI technology (foundation-model-based) addressing a very specific problem or use case as that may require heavy investments from a resource standpoint (both skills and compute infrastructure).

Pivot immediately with your new product/service propositions and business model.

After you determine which category has the best business fit and growth potential for you, it's time to pivot. This could mean a new business model, new products and services, or augmented capabilities and functionalities of your existing products and services.

Evidence

This research was informed by data gleaned from Gartner client interactions.

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Innovation Insight for Generative AI

Top Strategic Technology Trends for 2022: Generative AI

Predicts 2022: Generative AI Is Poised to Revolutionize Digital Product

Development Emerging Tech: Venture Capital Growth Insights for Generative AI

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Source: Gartner (July 2023)

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