TRENDS REPORT

Generative AI Prompts Productivity, Imagination, And Innovation In The Enterprise

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Summary

Enterprises have the opportunity today to leverage generative AI for a range of tasks such as improving content pipelines, accelerating application and data development, and supporting better communication and collaboration. While the set of potential use-cases far outranges what is prudent and practical to build today, ignoring or downplaying the impact of these technologies will be a costly mistake.

Generative AI Promises Boundless Potential

Generative AI (sometimes called AIGC — AI generated content), refers to a rapidly-evolving and broad swath of AI-based approaches, models, and applications. At Forrester, we define generative AI as:

> A set of technologies and techniques that leverage massive corpuses of data, including large language models, to generate new content (e.g., text, video, images, audio, code). Inputs may be natural language prompts or other non-code and non-traditional inputs.

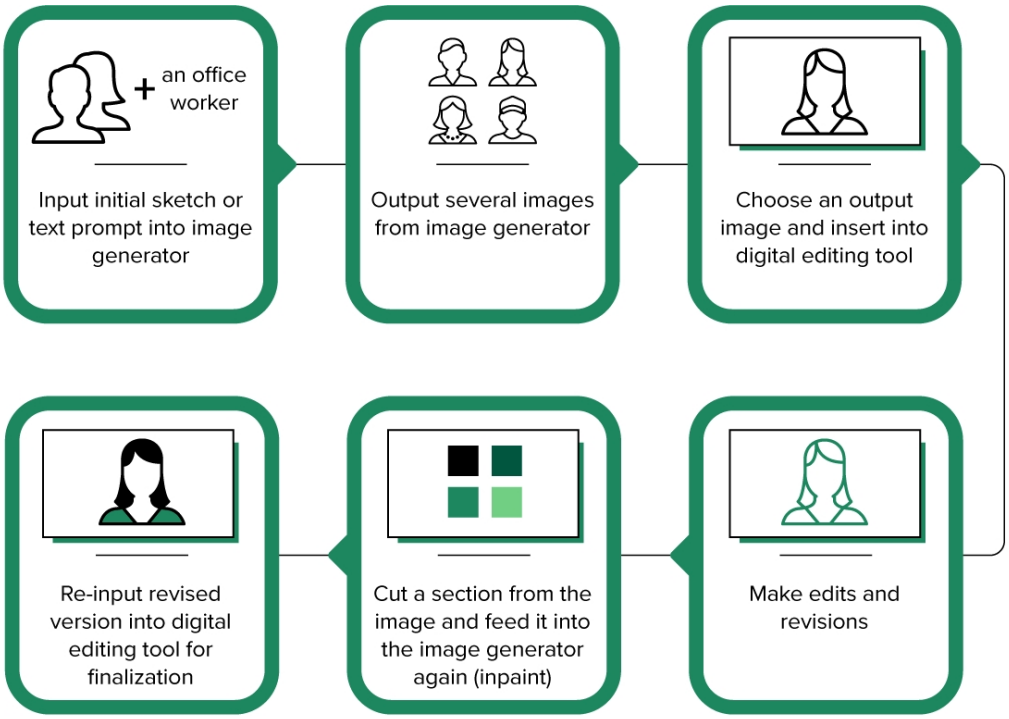
Enterprises can use generative AI to augment and enhance their existing business processes in ways that were previously impossible. Generative AI is already allowing enterprises to:

- **Expand the breadth and depth of human creative expression.** Generative AI allows for people to create images based upon a written piece of text. Text-to-image generators such as DALL-E, Midjourney, Stable Diffusion, and Imagen enable not just artists and designers, but also users without those skills to create visual content. For professional creators and enterprises, the capabilities go far beyond initial prompts and outputs (see Figure 1). There is an energetic community of digital artists who are already embedding generative AI models into their workflow, just as they folded in digital cameras and Photoshop in years past.
- **Enable production of content at scale.** Product, marketing, and other business areas demand content and experiences that are adaptive and personalized. Generative AI can support the creation of huge amounts of content with subtle or significant variations as needed. Jasper.ai, for example, enables marketers and sales teams to create content in 26 languages across a variety of commonly leveraged templates. Or in another example, Copy.ai's generative language product can be used to create personalized written content on a website based on the user's data.
- **Accelerate the speed and precision of data science practices and AI app development.** Generative AI can write code to support development processes. TuringBots, generative AI for creating code, are beginning to be adopted in the enterprise and will soon span the entire development lifecycle from requirements gathering to deployment. Generative AI helps organizations with insufficient data for training their models to produce synthetic data. Synthetic data is generated based on the real data companies already have, but does not reveal personal or sensitive information. Synthetic data is being used today in financial services,

healthcare, and other industries where the development of AI applications has been hindered by the need to maintain data privacy.

Figure 1

Enterprise Generative AI Will Have Sophisticated Workflows



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But Must Navigate A Labyrinth Of Problems

"With great power comes great responsibility." Unfortunately, generative AI can go horribly wrong and there is much we don't know yet about how generative AI models will perform at scale. Generative AI makes doing good things easier, but it makes doing bad things easier too. Enterprises investigating generative AI should keep in mind that these technologies can:

- **Generate coherent nonsense.** Large language models (LLMs) like GPT-3 can dazzle with their ability to adapt to particular writing styles or embrace the most unusual of inputs. Beyond the initial charm, the results are often sophomoric. For example, ChatGPT frequently spouts coherent nonsense when asked a straightforward math question. If there are contradicting facts within the model, the

output can be nonsensical and confusing. For example, in January 2023 an updated version of ChatGPT was released, and the model's updates led to it outputting contradictory information about who owns Twitter. Additionally, the models underlying generative AI are largely nondeterministic and can thus produce different outputs from the same input. This challenge presents significant risks for companies attempting to build customer-facing applications that leverage these models.

- **Be prone to recreating biases.** While the unprecedented scale of these models' underlying parameters is impressive, there are real risks to prioritizing data quantity over data quality. Forrester conducted a test of one of the major image generators recently, which revealed that the input "CEO" generated images of older white men; an input of "stay-at-home parent" generated only images of women; and "thug" produced only pictures of black men. One large language model, when prompted to adopt an "edgy" writing style, invoked a racial slur and joked about violence toward animals and other people. Like it or not, LLMs inherently have "values" because of the data they are using — do those values align with your company?
- **Be vulnerable to new security challenges and attacks.** Most generative AI tools put up walls to prevent the creation of content that is violent, sexual, or otherwise inappropriate. Midjourney, for example, has a list of banned words from which its image generator will not attempt to produce outputs. The problem, however, is the ease with which these safeguards can be disregarded. In the case of text generators, for example, obfuscating the nature of an input (e.g., suggesting to the AI that a fictitious film script character intends to do something nefarious, rather than the person submitting the query) will often lead the AI to generate inappropriate outputs it would otherwise prevent.
- **Suffer from trust and reliability issues.** Transparency is one of the seven trust levers of AI. At present, no tool on the market will reveal its sources. Like any other AI system, generative AI produces outputs based on predictions it makes from analyzing your inputs. There's always inherent uncertainty. The anthropomorphic outputs of these deep learning models can be disarming, so we must work extra hard to hold them to the same standards of scrutiny as any other black box AI. If generative AI is going to take a place in search and information retrieval, it will need to produce a confidence score for its outputs and make the underlying sources of its knowledge available.
- **Be vulnerable to unanswered questions around copyright and intellectual property.** As LLMs move into the mainstream, the potential for misuse increases and raises major questions for enterprises. What, for example, are the legal

ramifications of using generative AI to create content using copyrighted materials as part of the inputs? And what of the outputs, which may derive some of their characteristics from copyrighted materials, even if the inputs are fair use? Will companies face fines or other scrutiny for unintended theft of IP? What about the copyright and ownership of your likeness? Can a former employer continue to create new content using a model trained on your likeness when you worked for them? These questions must be answered before mainstream adoption of these technologies can flourish — and there are numerous legal cases afoot which could answer them.

- **Require significant cost and resource expenditure.** Any fair discussion of the value of adopting generative AI must acknowledge its considerable costs. Training and re-training models takes time and money, and the GPUs required to run these workloads remain expensive. Firms must also weigh the environmental cost of these workloads in energy expenditures and carbon emissions, especially as ESG remains a top concern for IT leaders in 2023.

Use Generative AI to Enhance — Not Replace

The potential applications of generative AI are still emerging. In the short term, enterprises using generative AI should focus on early pieces of product and process development. Companies that aren't using generative AI should start exploring use cases immediately. For now, focus on existing processes that generative AI can enhance. Tech and data execs can start using generative AI to (see Figure 2):

- **Enhance developer productivity.** TuringBots, generative AI used by software developers, are finding their way into enterprise development. Today's TuringBots support many steps of the development lifecycle. For example, coding TuringBots like GitHub Co-Pilot write code based on text prompts, which can then be fed into testing TuringBots that will identify issues and vulnerabilities in the code and perform unit testing. Mature Tester TuringBotsare already used by enterprises to automate visual testing of thousands of GUIs across browsers, mobile, and other platforms. In the future, TuringBots will allow much more complex and sophisticated software systems to be implemented by small and immature teams. An early example is the Beamable team who connected ChatGPT to their APIs and then used a natural language interaction to build a massively multiplayer online game with 3D graphics.
- **Give data scientists the power to create and communicate knowledge.** Data scientists will see many of the same benefits from generative AI as developers (particularly using TuringBots to support ModelOps and DataOps), but they will also see niche benefits. Generative AI already forms part of the synthetic data

landscape, providing a set of tools and techniques to create large sets of data or content for analytics or training ML models. Today, data scientists can use vendor tools and LLMs to create synthetic datasets of structured data, unstructured text, images, or whole 3D environments. Tomorrow we will see data scientists leverage generative AI to improve their data storytelling through AI-generated infographics.

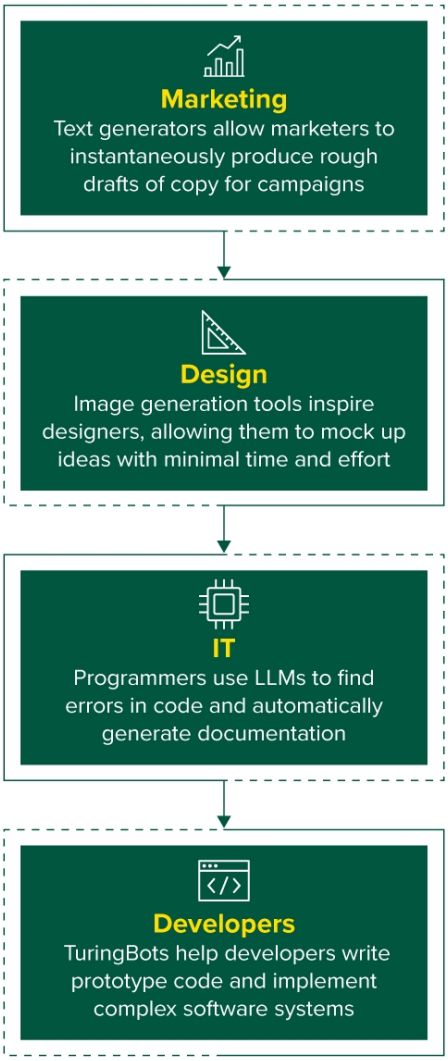
- **Accelerate visual designers' workflows, giving their teams more flexibility.** Designers and content creators are already adopting text-to-image generators as part of their creative pipeline. While many people are familiar with tools like DALL-E or Midjourney, professional creatives who use generative AI are using it as a part of their workflows to enhance the speed of iterations and ideations. In the future, these image generators, leveraging advanced capabilities like inpainting, will become embedded in most major creative design tools like Photoshop, but also 3D modelling engines like Nvidia's Omniverse (which has already launched a text-to-3D model generator), Unity, or Unreal.
- **Give marketers more creative power while automating onerous tasks.** Marketers are under tremendous pressure to generate massive sets of content that speak consistently in a brand voice that engages customers — and generative AI gives them the power to do so. Marketers like those at AdoreMe are using SaaS platform Writer's tools to generate their website product descriptions, which use brand-specific language and tone. In the future, marketers will use generative AI to quickly generate multiple content pieces from a single source, such as summarizing a white paper into a blog and then summarizing that blog into a social media post. Marketers could even use generative AI to draft full campaigns complete with text and image content — and even a few new jingle ideas with tools like Mubert.
- **Allow sales teams to be more productive, genuine, and engaging.** Sales teams have a tremendous opportunity to increase the scale and personalization of their communications to clients and prospects. Many sales teams are already leveraging generative AI to support a variety of tasks from generating outlines and ideas for contact emails to ensuring that content uses inclusive language. Developing use cases, like using generative AI to quickly develop pitch deck content or using fine-tuned LLM chatbots to train new hires on communication with customers, will enable sales teams to be even more effective in the future.
- **Scale executives who can't be everywhere at once and improve communication.** In addition to the benefits of AI-generated text that sales and marketing organizations enjoy, executives and managers can make good use of AI-generated synthetic video and audio content. Generating this content allows leaders to scale their presence and interactions without the constraints of needing

to sit down and record. For example, executives could train an avatar with HourOne.ai's platform, give it a text script, and generative AI will create a new video without the person having to sit down and record. In the future, generative AI has the potential to foster smoother and faster communication between executives and the teams that work under them. For example, text-to-image generation execs who have trouble articulating visual content beyond "I want it to look better" could show designers and marketers what they have in mind.

- **Support internal operations teams in crucial but repetitive knowledge tasks.** Internal operations and other teams with knowledge management responsibilities can use generative AI to vastly increase the intelligence of their organizations. For example, a customer of Yext is using generative AI to create natural-language employee biographies from existing enterprise data, freeing up knowledge workers to focus on core knowledge creation and curation. Down the road, generative AI could be used to automatically transcribe important meetings and create summary notes of important topics, which are then added back to the knowledge base.
- **Provide new defense opportunities for security professionals.** Security professionals will see benefits from using generative AI in hardening their systems. For example, generative AI can be used to create biometric data for penetration testing. LLMs can also be used to review and analyze the content of emails to detect potential phishing or other social-engineering attacks. Technology professionals will see generative AI self-documenting system behaviors and functionality. In the future, we expect generative AI will be used to detect and document the deficiencies of IT systems and proactively suggest resolution scenarios to security analysts.

Figure 2

Many Micro Augmentations Make Generative AI A Transformative Technology



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Begin Exploring Generative AI Today — But Don't Overestimate It

Generative AI offers massive potential boons for enterprises. While many of the interesting use cases lie down the road, today's capabilities are applicable to a wide variety of roles and workflows. Enterprises should start experimenting with generative AI today, keeping the vision and use cases limited and clearly defined. Moving too quickly towards public-facing use cases can create significant risk, and Microsoft will even reject your application to use Azure's OpenAI service if you plan to use it for open-ended user content creation. As you begin to investigate how generative AI can improve and enhance your products and services, keep in mind that you:

- **Can investigate and implement without hyperscalers or deep technical expertise.** While much of the public mindshare in generative AI has focused on the capabilities of massive tech companies like Google, Microsoft, and OpenAI, enterprise buyers and builders must recognize that the landscape is much more vast. Independent software vendors large and small are building their own product capabilities leveraging generative AI, both by developing models internally and by

leveraging capabilities from energetic open-source communities. Even for teams without any expertise in these models, a growing array of cloud-based API services is coming online to allow application developers direct access to these capabilities.

- **Prepare for generative AI to be embedded in your first- and third-party apps.** For many use cases, generative AI will be more useful as an embedded functionality than as a standalone app. Both internal development teams and external software partners will be embedding this functionality. Building a practice to understand and vet the models underlying the functionality will be crucial. While it remains to be seen what the best practices are for enterprises to define and manage their data and to fine-tune generative AI models, some aspect of generative AI functionality will enter most enterprise apps in the long term. Review your vendor's roadmap carefully for how they will handle, leverage, and allow data relevant to fine-tuning generative AI apps to be shared.
- **Can use today's generative AI capabilities to enhance workflows in low-risk scenarios.** Generative AI is very much still in its Wild West days, so it's best to proceed with caution; even OpenAI's CEO Sam Altman agrees. Internal workflow enhancements are the most appropriate use cases at the current stage of generative AI maturity. There are simply too many questions at this juncture to incorporate these technologies into critical, client-facing processes and materials. When evaluating potential use cases for generative AI, it's a best practice to always weigh worst case scenarios — in what ways could generative AI lead to harmful results, and how bad are the worst of these situations? Focus on increasing efficiencies and reducing friction rather than wholesale replacement of existing workflows.

Supplemental Material

Acknowledgments

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