

*Overview and Platform Evaluation*

# Generative Artificial Intelligence Tools

# Overview and Table of Contents

## Overview

The introduction of ChatGPT has sparked significant interest and debate regarding the potential of generative AI. In anticipation of the growing disruptions this technology may cause, Tuscany Strategy Consulting (TSC) is actively conducting research and investigating the advancements in generative AI. **Our objective is to test the ability of these tools to accelerate and improve the efficiency of work.**

The insights offered here, and subsequent analyses are based on Tuscany's direct experience with generative technologies, as well as information gathered from secondary research sources up to May of 2023. Through the compilation of existing information on the capabilities of generative AI and routine use of such products, we develop informed conjectures regarding the potential impact of generative AI on professional work. This includes evaluating the extent to which generative AI could reduce costs and accelerate work in professional service organizations. Topics of research include:

- Basics of Artificial Intelligence and Current Applications
- Existing Generative AI Use Cases Across Industries
- Use of Generative AI in the Business Services Industry
- Evaluation of Generative AI Performance
- Generative AI Product Comparisons
- Helpful Prompt Writing Practices and Considerations

## Contents

Glossary	3
<b>Introduction to Generative AI</b>	
Overview of Artificial Intelligence and its Classifications	5
The Impact of Generative AI on Different Industries	6
Generative AI Will Transform Knowledge Jobs, Not Replace Them	7
<b>Generative AI Use Cases</b>	
AI Output Requires Human Touch for Precision and Polish	9
Generative AI Product Comparison Table	10
Summary of Generative AI's Utility for Different Tasks	12
Tips & Tricks for Using Generative AI	13
<b>Appendix</b>	
• ChatGPT vs ChatGPT Plus Comparison	16
• Additional Overview and Examples	23

# Glossary

Term	Acronym	Definition
<b>Artificial Intelligence</b>	AI	A computer's ability to exhibit human behaviors and characteristics
<b>Machine Learning</b>	ML	A subfield of artificial intelligence that enables computers to make decisions based on data input
<b>Deep Learning</b>	DL	A subfield of machine learning that enables computers to learn and extract patterns from large datasets
<b>Natural Language Processing</b>	NLP	A machine's ability to understand, interpret, and produce human-like language
<b>Model</b>	-	A mathematical representation or algorithm that enables a computer to learn from data and make predictions
<b>Narrow AI</b>	ANI	A model with a limited capabilities that is designed to focus on a single or small set of tasks
<b>General AI</b>	AGI	A model with performance capabilities equal to that of a human being
<b>Super AI</b>	ASI	A model with performance capabilities beyond that of a human being
<b>Generative AI</b>	-	A form of artificial intelligence that functions to produce novel content by extracting patterns from large datasets
<b>Hallucinations</b>	-	A generative AI output that is factually inaccurate or unrelated to the anticipated outcome
<b>Training Data</b>	-	Collection of representative information that is used to teach a model how to recognize patterns and make decisions

Source: <sup>1</sup>[AI Term Definitions](#); OpenAI's ChatGPT

# Introduction to Generative AI

# Overview of Artificial Intelligence and its Classifications

AI technology is typically categorized by functionality or capability; its adaptive data processing ability separates it from simple machines

## Overview

Artificial intelligence (AI) is described as a computer’s ability to exhibit human behaviors and characteristics. AI systems differ from standard machinery by having algorithms that allow the machine to **process data inputs** and **adjust functionality** based on the evaluation of machine-generated outcomes.

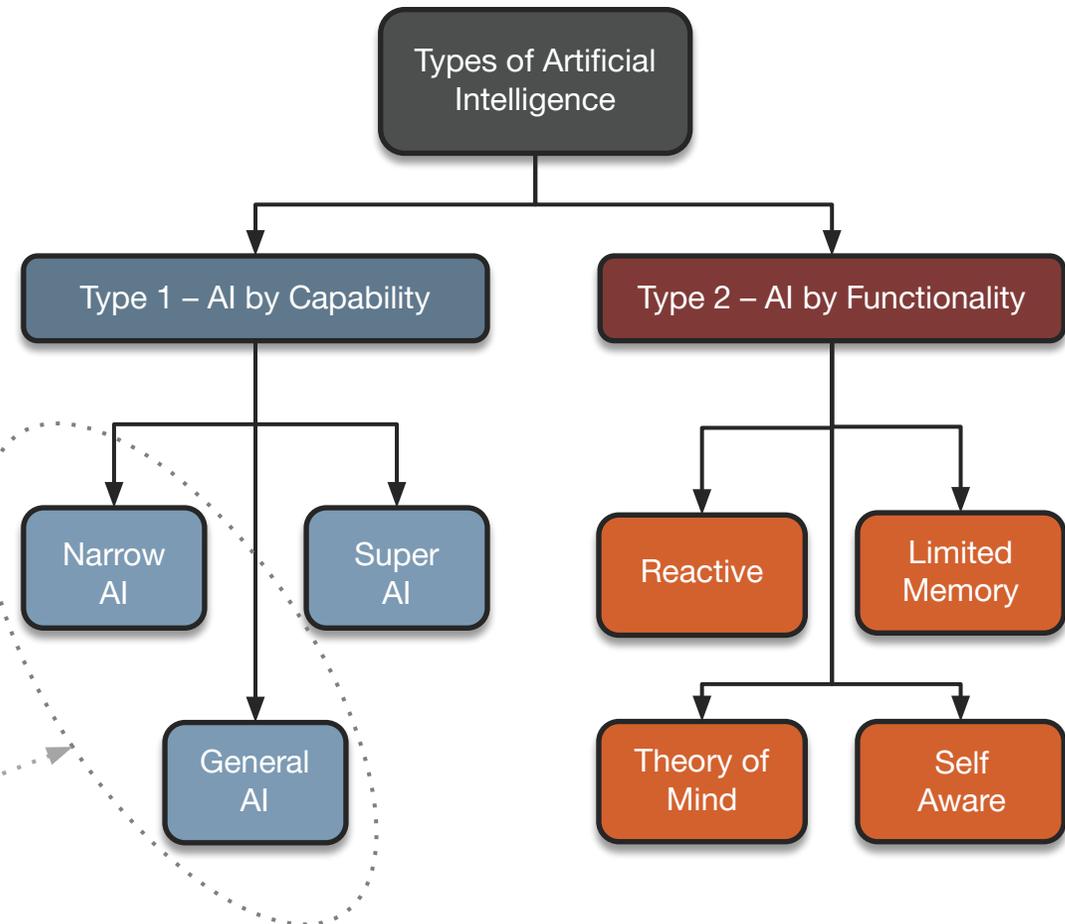
There are many products under the umbrella of AI, and they are typically categorized by Capability and Functionality:

- **Capability – What does the machine have?**
  - Narrow AI – limited range of abilities applied to a single of specific set of tasks
  - General AI – human-like range of abilities able to applied to a range of tasks
  - Super AI – abilities superior to that of the average human
- **Functionality – What does the machine do?**
  - Reactive – produces anticipated outputs given the input data received
  - Limited Memory – uses historical data and observations to adjust outputs
  - Theory of Mind – interprets thoughts and emotions of others to guide behaviors
  - Self-Aware – forms thoughts and values about self which govern its behaviors

Note that various data training techniques and applications like machine learning (ML), deep learning, and natural language processing (NLP – used in ChatGPT and other generative AI products) make AI possible but are not considered AI themselves.<sup>1</sup>

**ChatGPT and other generative AI sit at the intersection of Narrow and General AI.**

AI Categorization Chart



Note: Chart on the right is based on figure pulled from source below.

Source: <sup>1</sup>[AI Categorizations](#)

# The Impact of Generative AI on Different Industries

*Generative AI's evolution from simple chatbots to dynamic task-completing, idea-generating, and code-developing tools has broadened its applicability across various sectors*

## Generative AI and Current Uses

**Common generative AI products today are large language models (LLMs) that access huge datasets to produce human-like responses to user prompts.** They have evolved from chatbots and text suggestions to dynamic tools for task completion, idea generation, and code development.

Generative AI is transforming work across industries and will continue to do so as its functionality and accessibility expand. Industry-specific examples of generative AI applications include:

- **Design & Arts** – Canva, free-to-use graphic design tool, has enriched its content creation suite by integrating AI for text-to-video generation and AI-assisted brand design.<sup>1</sup>
- **Education** – Khan Academy, popular online learning platform, is leveraging generative AI to offer personalized and immersive educational experiences to students (i.e. **“students struggling with physics concepts can interact with an AI-powered version of Isaac Newton.”**)<sup>2</sup>
- **Retail** – Instacart is trialing a Generative AI feature, "Ask Instacart," to expedite the shopping list creation and editing process.<sup>3</sup>
- **Manufacturing** – Hyundai Motor Group, car manufacturing conglomerate, and similar manufacturing companies use generative design for efficient, specification conformant product creation.
  - Hyundai recently doubled-down on AI innovation by acquiring Boston Dynamics and launching a \$400M AI research institute.<sup>4,5</sup>

## Potential Generative AI Uses in Different Industries<sup>6,7,8</sup>

Industry	Applications of Generative AI
<b>Media</b>	<ul style="list-style-type: none"> <li>▪ Content creation (articles, video, audio)</li> <li>▪ Automated editing</li> <li>▪ Personalized recommendation</li> </ul>
<b>Manufacturing</b>	<ul style="list-style-type: none"> <li>▪ Design optimization</li> <li>▪ Rapid prototyping</li> <li>▪ Production process automation</li> </ul>
<b>Engineering</b>	<ul style="list-style-type: none"> <li>▪ Simulation and modeling</li> <li>▪ Component design automation</li> <li>▪ Process optimization</li> </ul>
<b>Pharmaceuticals</b>	<ul style="list-style-type: none"> <li>▪ Drug discovery</li> <li>▪ Chemical compound generation</li> <li>▪ Clinical trial data analysis</li> </ul>
<b>Finance</b>	<ul style="list-style-type: none"> <li>▪ Algorithmic trading</li> <li>▪ Risk assessment and management</li> <li>▪ Fraud detection and prevention</li> </ul>
<b>Healthcare</b>	<ul style="list-style-type: none"> <li>▪ Medical diagnosis support</li> <li>▪ Treatment planning</li> <li>▪ Personalized medicine</li> </ul>
<b>Design &amp; Arts</b>	<ul style="list-style-type: none"> <li>▪ Improved creativity</li> <li>▪ Enhanced personalization</li> <li>▪ Streamlined production</li> </ul>

Source: <sup>1</sup>Generative AI in Fashion and Design; <sup>2</sup>Generative AI in Education; <sup>2</sup>McKinsey, “Transforming Healthcare with AI”; <sup>3</sup>Generative AI in Retail; <sup>4</sup>Generative AI in Manufacturing; <sup>5</sup>Hyundai Investment in AI; <sup>6</sup>Harvard Business Review, “How Generative AI Could Disrupt Creative Work”; <sup>7</sup>Generative AI Industry Use Cases; <sup>8</sup>IMF Library, “Powering the Digital Economy: Opportunities and Risk of Artificial Intelligence in Finance”

# Generative AI Will Transform Knowledge Jobs, Not Replace Them

*Realization of generative AI's full potential hinges on upskilling workforces and addressing data-related challenges*

## Potential Impact of Generative AI on Knowledge Work

- **Generative AI products such as ChatGPT are not anticipated to replace jobs, but rather enhance work efficiency and assist knowledge workers.** Given the business services industry is driven by human interaction, it is expected to experience minimal disruption from an employee headcount perspective.<sup>1</sup>
- **Professionals may need to acquire new skills to meet new performance standards that incorporate generative AI in order to remain competitive within the industry.**<sup>2</sup> This will likely require substantial change management efforts and structured upskilling of workforces. There is also potential for a heightened focus on the recruitment of personnel with tech-related backgrounds.<sup>3</sup>
- **Generative AI can enhance work efficiency by reducing time spent on repetitive daily tasks:**
  - As generative AI evolves, its improved data analytics will enhance pattern recognition and decision-making, especially with larger datasets, allowing professionals to spend more time on abstract tasks.<sup>4</sup>
  - Generative AI can automate tasks that typically require significant technical expertise; such as data wrangling and code development.
- **Ultimately, the long-term impact of generative AI across industries, including business services, is uncertain.** Our early-stage research emphasizes near-term predictions, which may change due to rapid advancements in ChatGPT and other AI programs.

## Current Limitations of Generative AI

- **Generative AI has significant data-related limitations, and its outputs should be treated with caution.** Generative AI products are trained on large, web-based datasets which contain a wealth of biased information. This poses challenges for organizations and industries looking to integrate generative AI into their workflows, especially if they lack the expertise and infrastructure needed for safe integration.
- **Data privacy and ownership regulations concerning generative AI are still undefined.** The widespread use of this technology has led to discussion around various potential destructive generative AI outcomes, including:
  - Unwanted disclosure of sensitive information - privacy concerns are crucial for generative AI in the business services industry. Client data may not be suitable for generative AI software without secure API integration, as the security of these apps remains unclear
  - Dissemination of misinformation
  - Content ownership disputes
  - Voice imitation scams
- **Many generative AI products, including ChatGPT, currently lack access to live data.** Products such as Google's Bard AI and Microsoft's Bing AI are attached to search engines but still tend to produce false information that sounds convincingly true.

Source: <sup>1</sup>Management Consulted, "AI Replacing Jobs: Should Consultants be Worried"; <sup>2</sup>Mind Bench, "How will AI revolution affect management consulting"; <sup>3</sup>LinkedIn, "Future Consulting. How AI is transforming the industry"; <sup>4</sup>Spencer Tom, How AI is changing the game for Consultants,



# Generative AI Use Cases

# AI Output Requires Human Touch for Precision and Polish

Despite its many potential applications, “hallucinations”<sup>1</sup> and data constraints limit the usefulness of generative AI in executing tasks that require high levels of accuracy

Table Produced by ChatGPT

Product	Company	Parameters	Natural Language	Summarization	Question Answer	Translation
ChatGPT	Open AI	6B	Yes	No	Yes	No
Chatsonic	Writesonic	N/A	Yes	Yes	Yes	No
YouChat	You.com	N/A	Yes	No	Yes	No
Bing AI	Microsoft	N/A	Yes	No	Yes	Yes
CopyMatic	CopyMatic	N/A	Yes	No	No	No

- ChatGPT was prompted to create a comparison table of generative AI tools.
- It was able to quickly provide information relevant to the generative AI space, identifying available products and key features.
- The blue boxes in the table highlight information that ChatGPT “hallucinated.”<sup>1</sup> **The inaccuracies include information about ChatGPT itself.**

Note: <sup>1</sup>Data hallucinations refer to the tendency of generative AI to misreport information. Both images only reflect portions of larger tables that contain more information. The complete version of the table on the right can be found on the following slide.

Source: Tuscany Analysis, OpenAI’s ChatGPT

Table Produced by Analyst

Features	ChatGPT	ChatSonic	YouChat	Bing AI	CopyMatic
Parameters	175B	175B - 100T*	175B	100T*	175B
Training Data Cutoff	30-Sep-21	30-Sep-21	30-Sep-21	Unknown	30-Sep-21
Response Quality	Good	Fair	Fair	Fair	Fair
Real-Time Information		✓	✓	✓	✓
Source Information		✓	✓		✓
Free Version	✓	Limited Use	✓	✓	Limited Use
Customization Options	Custom models, API usage, starting from \$10,000 per year	Custom integrations, chatbot upgrades, starting from \$250 per month	Custom integrations, chatbot upgrades, starting from \$699 per month	Options not disclosed	Custom integrations, writing style adjustments, starting from \$99 per month
Price Options	Pro	Custom Pricing	\$13-\$1.8K/month	-	\$29/month
	Team	Custom Pricing	Custom Pricing	-	\$49/month
	Business	Custom Pricing	Custom Pricing	-	\$99/month

- The AI generated table was manually checked for accuracy and updated to include more detailed information including pricing data.
- **ChatGPT hallucinated over 15% of the content in the original table** which was validated through traditional secondary research.
- The exercise demonstrated generative AI’s versatility in content production, but the **additional work and formatting needed negated efficiency gains.**

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

*AI software to the right of this line was not fully tested as of April 2023.*

Features	ChatGPT Plus	ChatGPT	Bing AI	Bard	ChatSonic	CopyMatic	YouChat	Perplexity AI	
<b>Parameters</b>	100T*	175B	100T*	540B	175B - 100T*	175B	175B	175B	
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown	30-Sep-21	30-Sep-21	30-Sep-21	30-Sep-21	
<b>Response Quality</b>	Very Good	Good	Good	Fair	Fair	Fair	Fair	Fair	
<b>Real-Time Information</b>			✓	✓	✓	✓	✓	✓	
<b>Source Information</b>			✓	✓	✓	✓	✓	✓	
<b>Free Version</b>		✓	✓	✓	Limited Use	Limited Use	✓	✓	
<b>Customization Options</b>	Custom models, API usage, token-based pricing	Custom models, API usage, token-based pricing	Options not disclosed	Options not disclosed	Custom integrations, chatbot upgrades, contact for pricing	Custom integrations, writing style adjustments, contact for pricing	Options not disclosed	Options not disclosed	
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	-	\$13-\$666K/month	\$19/month	-	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$32/month	-	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$66/month	-	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T (T=Trillion; B=Billion) or more parameters, but the exact number is unknown.<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

Features	ChatGPT Plus	ChatGPT	Bing AI	Bard	ChatSonic	CopyMatic	YouChat	Perplexity AI	
<b>Parameters</b>	100T*	175B	100T*	540B	Bard (and other generative AI) will sometimes produce falsified information, such as when you ask it for the names of people involved in a project. It was observed that the program will admit to producing incorrect names only when prompted and state the real ones are "not publicly available".			175B	
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown				30-Sep-21	30-Sep-21
<b>Response Quality</b>	Very Good	Good	Good	Fair				Fair	
<b>Real-Time Information</b>			✓	✓				✓	
<b>Source Information</b>					✓	✓	✓	✓	
<b>Free Version</b>		ChatGPT Plus is currently the most robust generative AI platform available for use. This is primarily due to its processing ability, awareness of limitations, ability to understand context through multiple prompts, and general quality of output.			Limited Use	Limited Use	✓	✓	
<b>Customization Options</b>	Custom pricing, usage, token pricing	Custom pricing	Custom pricing	Custom pricing	Custom integrations, chatbot upgrades, contact for pricing	Custom integrations, writing style adjustments, contact for pricing	Options not disclosed	Options not disclosed	
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	-	\$13-\$666K/month	\$19/month	-	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$32/month	-	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$66/month	-	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T or more parameters, but the exact number is unknown (T=Trillion; B=Billion).<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis

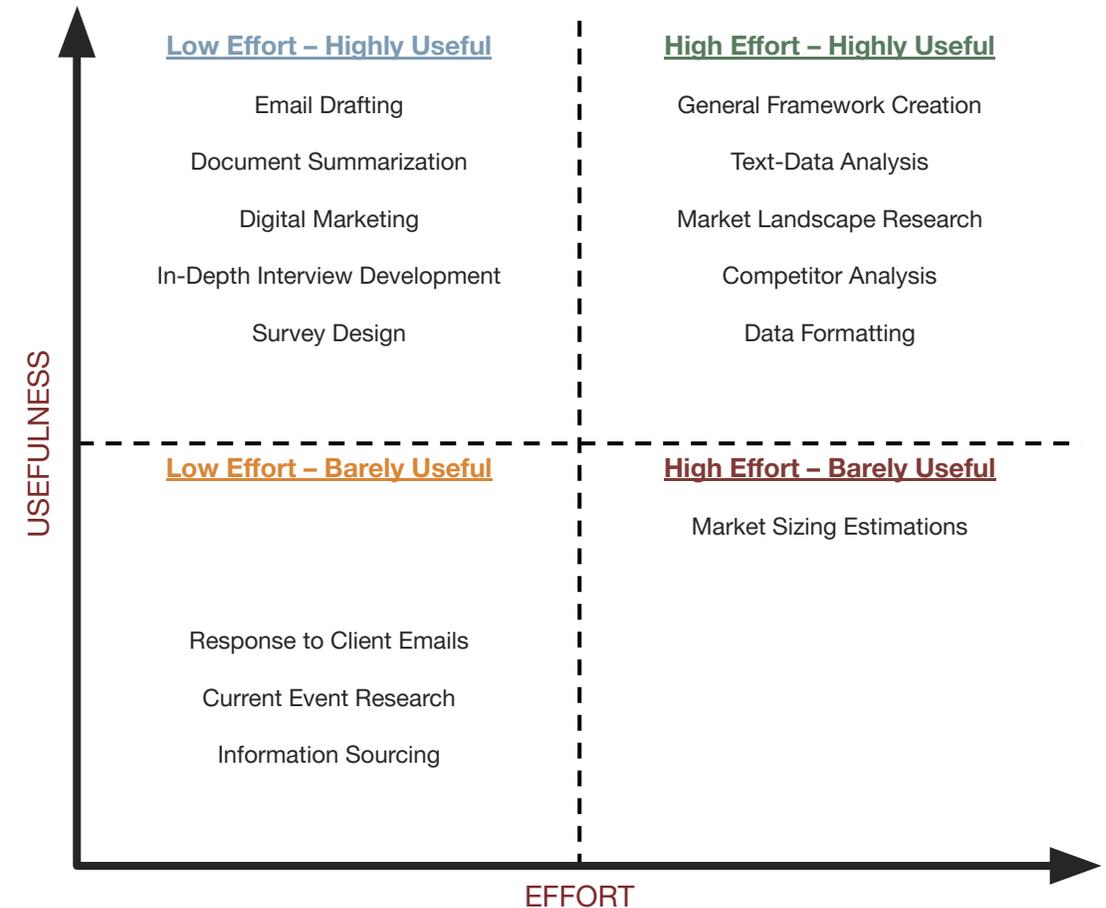
# Summary of Generative AI's Utility for Different Tasks

*Generative AI's utility excels in creating a starting point for idea generation and automating clearly defined tasks*

## Observations

- Generative AI models are tools. Effective use of these tools depends on users' understanding of their functionality and ability to assess their outputs
- Our experience with ChatGPT, ChatGPT Plus, and Bard AI has confirmed that **generative AI excels in written communication and text-based tasks**, including but not limited to crafting social media posts, drafting emails, and summarizing articles.
- While human input is needed for accuracy, refinement, and insight, AI is also beneficial in these areas:
  - **Competitor Analysis** - AI identifies competitors and establishes an initial framework with data fields for research.
  - **Market Landscape Research** - AI generates a framework and populates it with high-level data, similar to competitor analysis.
  - **Primary Research** - AI formulates objectives and questions for surveys and interviews, reducing time compared to starting from scratch.
  - **Data Formatting** – AI produces general templates or scripts to process and organize raw data.

Effort<sup>1</sup>-Use Matrix



Note: <sup>1</sup>Effort refers to the level of input the user should expect to provide in order to reach the desired output while using AI in business consulting-related tasks.

Source: Tuscany Analysis

# Tips & Tricks for Using Generative AI

*Productive use of generative AI depends on user prompting and the user's ability to assess AI generated outputs*

## Tips & Tricks

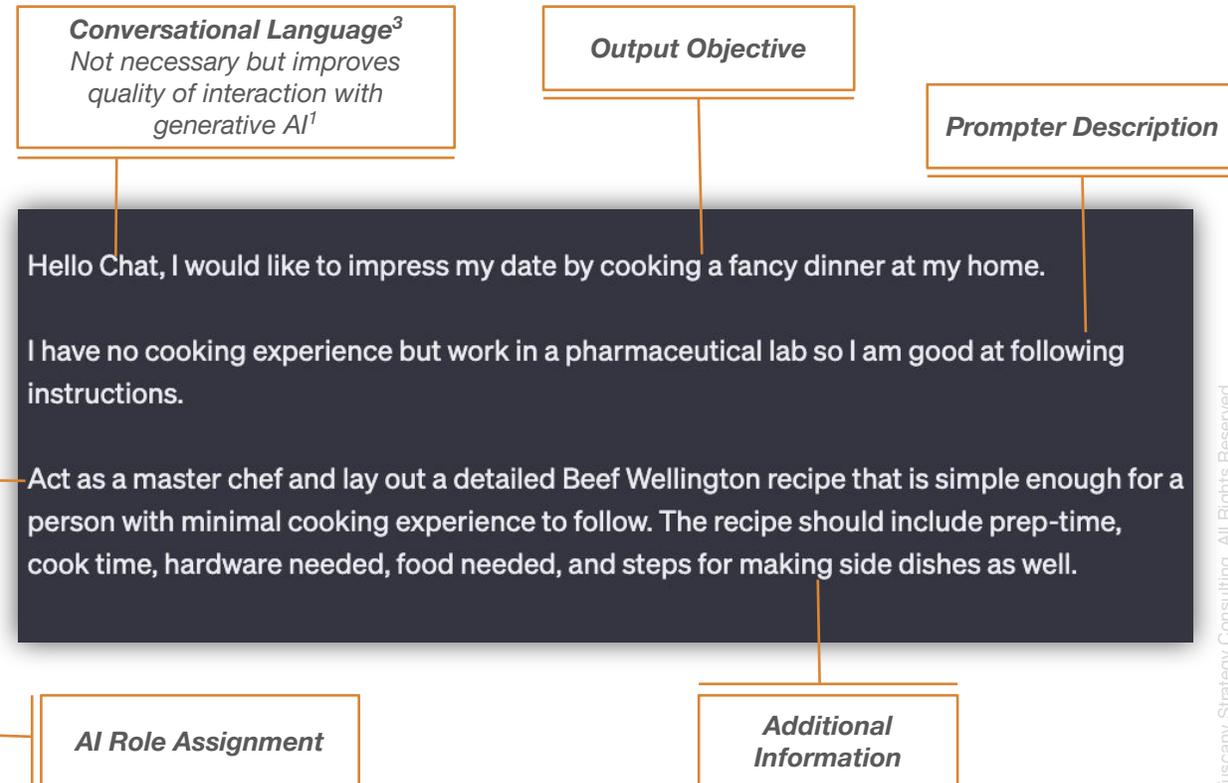
- When starting a new prompt, provide as much context early on as is relevant.**  
This potentially includes providing:
  - Output Objective
  - Prompter Description
  - AI Role Assignment
  - Intended Audience
  - Additional Information
- Be specific about what you want changed to the initial output.** Writing “shorten the questions” might not get you the desired output, but “use more concise language” will.
- Many products still do not have access to live data at this time,** so any prompts requesting such will often result in hallucination or acknowledgement of inability to provide the information followed by suggestions for finding the desired information.<sup>1</sup>
  - This data limitation suggests that **generative AI is not a search engine like Google or Bing.** It is better used for the creation and analysis of information.<sup>1</sup>
- The AI will learn throughout the “conversation”.** Once you set the context, you can use more concise requests to adjust outputs as needed
  - For example, to add a column to a table comparing car brands, you can simply say “add a column for number of models”, and the AI will know what to do.

Note: <sup>1</sup>Products like Bing and Bard AI are linked to popular search engines Bing and Google, respectively. Still, these applications of generative AI currently serve to augment the search engines instead of replace them.

<sup>2</sup>Test the prompt on the right in any generative AI platform that you have access to. The prompt shown was tested using ChatGPT Plus and the following output was generated can be found in on Slide 25.

Source: <sup>3</sup>[NYU Professional's Generative AI Recommendation's](#); Tuscany Analysis; OpenAI's ChatGPT

## Example Prompt<sup>2</sup>





# Appendix

# ChatGPT vs. ChatGPT Plus

*Output Comparisons*

# ChatGPT and ChatGPT Plus Comparison

*While comparable in functionality, ChatGPT Plus (Paid) outperforms ChatGPT (Free) in efficiency, sense-making ability, adaptability, and overall response quality*

## Overview of ChatGPT Products

- The two most recent versions of ChatGPT have practically identical functionality. However, their performance capabilities vary, likely due to the estimated **100T versus the 175B parameters used in the ChatGPT Plus and ChatGPT respectively**.
- Both applications are trained on the same information set ending in September 2021.<sup>1</sup> **ChatGPT products cannot access real-time data** or produce information regarding current events. Though both products share similar functionalities, **ChatGPT Plus is the superior product** given its speed, sense-making ability, adaptability, and overall response quality. ChatGPT Plus generates desired outputs with fewer prompts, which makes this assistive tool more efficient and user-friendly than its base version.
- Both versions of ChatGPT performed well on a range of academic exams, with the free version having equal performance to ChatGPT Plus in some cases.<sup>2</sup> However, AP English exams would cause problems for both versions as they are not as capable at analyzing or producing language that incorporates human elements of tone, expression, and opinion. This is one of many limitations, alongside information accuracy and access to “barred” content, that developers are working on improving as the technology advances.

## Comparison of ChatGPT’s Free and Plus Versions

- While the differences cannot be seen in functionality alone, experimentation revealed noticeable advantages of ChatGPT Plus over the free version. ChatGPT Plus:
  - Provides additional detail and specificity when responding to prompts for social media posts and general explanations
  - Provides methodology and “thought process” for generated outputs
  - Develops survey guides with more targeted questions along with answer choices (the free version of ChatGPT does not include answer choices unprompted, indicating ChatGPT Plus’s greater response quality)
  - Research questions and goals are provided with timelines and appropriate context, instead of general thought starters
- ChatGPT Plus is aware of its data limitations and is generally more descriptive in the methodology to find answers to complex questions, such as market size estimates and growth predictions.
  - While still unknown, it is assumed ChatGPT Plus will become more accurate as it receives more prompts and is no longer limited by 2021 data.

Source: <sup>1</sup>ChatGPT-4 Description; <sup>2</sup>UBE Statistics;

# ChatGPT vs ChatGPT Plus Output Comparison: Social Media Post Generation

Both generated posts took character limit into account. ChatGPT Plus added formatting to make the post more digestible and organized

**Prompt:** Hey ChatGPT, I am a business analyst that works at a boutique consulting firm in Baltimore. We focus on education, and I would like to create a LinkedIn post that talks about generative AI and how it will impact the education sector in the United States.

ChatGPT (Free Version – 3.5)	ChatGPT+ (Paid Version - 4.0)
<p>As a business analyst focused on education, I'm excited to explore the potential impact of generative AI on the education sector in the United States. Generative AI refers to technology that can create original content, such as images, videos, and even text, using algorithms and machine learning.</p> <p>Imagine a future where generative AI is widely used in education. Teachers could use this technology to create custom materials tailored to the specific needs and interests of each student, helping to personalize the learning experience and improve outcomes.</p> <p>Generative AI could also be used to create interactive simulations and virtual reality experiences, allowing students to explore complex concepts in a more engaging and immersive way. Additionally, generative AI could help automate tasks like grading and feedback, freeing up teachers to focus on more high-level work like curriculum development and lesson planning.</p> <p>Of course, there are potential downsides and ethical considerations to using generative AI in education, but the potential benefits are too significant to ignore. I look forward to seeing how this technology develops and how it can be used to improve education outcomes in the United States and beyond."</p>	<p>Title: Generative AI: Transforming Education in the United States</p> <p>🌐 As a business analyst in a boutique consulting firm focused on education, I have been closely monitoring emerging trends that could revolutionize the way we learn. One of the most promising technologies is generative AI, which has the potential to significantly impact the education sector in the United States.</p> <p>🤖 Generative AI, powered by algorithms like GPT-4, can understand, analyze, and generate human-like text based on input data. This breakthrough technology has several applications in education, including:</p> <ol style="list-style-type: none"> <li><b>1. Personalized Learning:</b> Generative AI can create tailor-made content based on individual students' needs, interests, and skill levels. By identifying and addressing knowledge gaps, AI can empower educators to provide a personalized learning experience for each student.</li> <li><b>2. Automated Assessment:</b> AI-powered tools can evaluate student work more efficiently, providing instant feedback and reducing the workload on educators. This not only allows teachers to focus on more critical tasks but also offers students the opportunity to learn from their mistakes in real-time.</li> <li><b>3. Content Creation:</b> Generative AI can support educators by generating lesson plans, study materials, and even entire textbooks. By streamlining the content creation process, teachers can dedicate more time to engaging with their students.</li> <li><b>4. Virtual Tutoring:</b> AI-driven platforms can serve as virtual tutors, providing students with additional guidance and support outside of the classroom. This enables learners to access personalized assistance anytime, anywhere.</li> <li><b>5. Language Learning:</b> Generative AI can create realistic language learning scenarios and generate context-based conversations, making it easier for students to practice and improve their language skills.</li> </ol> <p>🚀 While the adoption of generative AI in education is still in its early stages, the potential is immense. By leveraging this technology, we can create a more inclusive, accessible, and personalized learning experience for students across the United States. As the education sector continues to evolve, generative AI will undoubtedly play a crucial role in shaping the future of learning.</p> <p>#GenerativeAI #Education #EdTech #PersonalizedLearning #FutureOfEducation</p>

Copyright © 2022 Tuscany Strategy Consulting. All Rights Reserved

# ChatGPT vs ChatGPT Plus Output Comparison: Market Sizing Estimation

*ChatGPT Plus provided a more detailed response with calculations and assumptions compared to ChatGPT's more general approach*

**Prompt:** *One of my clients is a ping pong ball manufacturer in Houston, Texas. They are looking to expand westward. Can you estimate the market size for ping pong balls in the southwest region of the United States?*

ChatGPT (Free Version – 3.5)	ChatGPT+ (Paid Version - 4.0)
<p>Sure, I can help you with that. According to a report by Grand View Research, the global table tennis balls market size was valued at USD 428.6 million in 2020. However, it is difficult to estimate the market size for ping pong balls in the Southwest region of the United States as it depends on various factors such as the number of players, demand, and competition.</p> <p>One way to estimate the market size for ping pong balls in the Southwest region of the United States is to look at the number of table tennis players in the region. According to the National Collegiate Table Tennis Association (NCTTA), there are over 2,000 registered table tennis players in Texas alone, which is a significant portion of the Southwest region. Additionally, Texas has several table tennis clubs, which indicates a high level of interest in the sport.</p> <p>Assuming that the number of table tennis players in the Southwest region of the United States is proportional to the population, we can estimate the market size for ping pong balls by looking at the population of the region. According to the United States Census Bureau, the population of the Southwest region (which includes Texas, Oklahoma, New Mexico, Arizona, and Nevada) was approximately 67 million in 2020.</p> <p>Based on these estimates, we can assume that the market size for ping pong balls in the Southwest region of the United States could be significant. However, it's essential to note that this is a rough estimate and does not take into account other factors that may affect the market size, such as competition, consumer preferences, and economic conditions.</p>	<p>Identify the states in the southwest region: For this estimation, let's consider the following states as part of the southwest region: Texas, Arizona, New Mexico, and Nevada.</p> <p>Estimate the total population in the southwest region: As of 2021, the combined population of these states was around 39 million. Please note that the current population may be different since my data is from 2021.</p> <p>Assume a percentage of the population that participates in ping pong-related activities: It's difficult to know the exact percentage of people who play ping pong or use ping pong balls for other purposes. As a rough estimate, let's assume that 5% of the population participates in such activities.</p> <p>Estimate the number of ping pong balls used per person: This number can vary widely depending on the frequency of play and other factors. As a rough estimate, let's assume that each person participating in ping pong-related activities uses 10 ping pong balls per year.</p> <p>Calculate the annual demand for ping pong balls in the southwest region:</p> <p>Total Population: 39,000,000</p> <p>Percentage participating in ping pong-related activities: 5% (0.05)</p> <p>Number of ping pong balls used per person per year: 10</p> <p>Annual Demand = (Total Population) * (Percentage participating) * (Number of balls used per person per year)</p> <p>Annual Demand <math>\approx 39,000,000 * 0.05 * 10 \approx 19,500,000</math> ping pong balls</p> <p>Estimate the average retail price of a ping pong ball: Let's assume the average retail price of a ping pong ball is \$0.50.</p> <p>Calculate the estimated market size:</p> <p>Market Size = Annual Demand * Average Retail Price</p> <p>Market Size <math>\approx 19,500,000 * \\$0.50</math></p> <p>Market Size <math>\approx \\$9,750,000</math></p>

# ChatGPT vs ChatGPT Plus Output Comparison: Workstream Objective Generation

*ChatGPT Plus provided more action-oriented objectives organized by specific topic areas*

**Prompt:** *Hey ChatGPT, I am looking to learn more about the driving experience of commuters in the DC-Maryland-Virginia area by sending out a mass survey. Can you help me create a list of objectives so I can create an effective survey?*

ChatGPT (Free Version – 3.5)	ChatGPT+ (Paid Version - 4.0)
<p>To understand the frequency and duration of commuting among residents in the DC-Maryland-Virginia area.</p> <p>To identify the main modes of transportation used by commuters, such as driving alone, carpooling, public transportation, biking, or walking.</p> <p>To determine the reasons why people choose a particular mode of transportation, including cost, convenience, and environmental concerns.</p> <p>To assess the level of satisfaction with the current transportation options available in the DC-Maryland-Virginia area.</p> <p>To identify the main challenges faced by commuters, such as traffic congestion, lack of parking, and safety concerns.</p> <p>To determine the potential solutions that would improve the commuting experience for residents in the DC-Maryland-Virginia area.</p> <p>To identify the demographics of commuters, such as age, gender, income, and occupation, and how they affect transportation choices and experiences.</p> <p>To determine the impact of commuting on quality of life factors such as stress, work-life balance, and health.</p> <p>To gather feedback on specific transportation policies or initiatives being considered or implemented in the region.</p> <p>To understand the impact of the COVID-19 pandemic on commuting behavior and attitudes.</p>	<p><b>Demographics:</b> Gather basic demographic information about respondents, such as age, gender, occupation, and place of residence, to understand the diversity of the commuter population.</p> <p><b>Commute patterns:</b> Determine the frequency, distance, and duration of daily commutes, as well as the preferred travel times, to understand typical commuting habits.</p> <p><b>Mode of transportation:</b> Identify the primary modes of transportation used by respondents (e.g., car, public transit, biking, walking) to assess the prevalence of driving among commuters.</p> <p><b>Route choice:</b> Investigate the factors influencing respondents' choice of routes, such as traffic conditions, road quality, and travel time, to identify common preferences and pain points.</p> <p><b>Traffic congestion:</b> Measure the impact of traffic congestion on respondents' driving experience, including stress levels, lost time, and alternative routes taken.</p> <p><b>Road safety:</b> Assess respondents' perception of road safety, including their experiences with accidents, near-misses, and other safety-related incidents.</p> <p><b>Parking:</b> Evaluate the availability, cost, and convenience of parking facilities near respondents' places of work or other regular destinations.</p> <p><b>Public transportation:</b> Explore the reasons for respondents' choice to drive or use public transportation, including factors such as cost, convenience, and reliability.</p> <p><b>Carpooling and ridesharing:</b> Investigate the prevalence and perceived benefits of carpooling and ridesharing among respondents, as well as any barriers to their adoption.</p> <p><b>Environmental impact:</b> Assess respondents' awareness of the environmental impact of their commute and any steps they may be taking to reduce their carbon footprint (e.g., using hybrid or electric vehicles).</p> <p><b>Policy suggestions:</b> Solicit respondents' suggestions for improving the overall driving experience in the DC-Maryland-Virginia area, including potential infrastructure improvements, public transportation enhancements, or changes to traffic management strategies.</p>

Copyright © 2022 Tuscany Strategy Consulting. All Rights Reserved

# ChatGPT vs ChatGPT Plus Output Comparison: Market Survey Generation

*ChatGPT Plus provides a more “complete” output including both a variety of question types and potential answer choices*

**Prompt:** *In addition to the interview, I would like to create a survey and send it out to a range of higher education leaders across the U.S. to get more information about interim staffing in the space. Can you help me draft survey questions?*

ChatGPT (Free Version – 3.5)	ChatGPT+ (Paid Version - 4.0)	
<p>1.How frequently does your institution utilize interim staffing?</p> <p>2.In what types of positions does your institution typically utilize interim staffing?</p> <p>3.What are some of the primary reasons why your institution utilizes interim staffing?</p> <p>4.How does your institution go about selecting and hiring interim staff members?</p> <p>5.In your opinion, what are the benefits of utilizing interim staffing in higher education?</p> <p>6.In your opinion, what are the drawbacks of utilizing interim staffing in higher education?</p> <p>7.How does your institution evaluate the success of interim placements?</p> <p>8.How has the COVID-19 pandemic impacted your institution's use of interim staffing?</p> <p>9.Looking ahead, what do you anticipate the hiring and interim placement market conditions will be like in the near future?</p> <p>10.How interested would you be in working as an interim staff member in higher education?</p> <p>11.In your experience, what qualifications or characteristics make for a successful interim staff member in higher education?</p> <p>12.What other insights or perspectives do you have on the topic of interim staffing in higher education?</p>	<p>1.What type of higher education institution do you represent? (Select one)</p> <ul style="list-style-type: none"> <li>a.Public university</li> <li>b.Private university</li> <li>c.Community college</li> <li>d.Technical college</li> <li>e.Other (please specify)</li> </ul> <p>2.What is the size of your institution's student population?</p> <ul style="list-style-type: none"> <li>a.Less than 5,000</li> <li>b.5,000 - 10,000</li> <li>c.10,000 - 20,000</li> <li>d.20,000 - 30,000</li> <li>e.30,000 or more</li> </ul> <p>3.What is your role within the institution? (Select one)</p> <ul style="list-style-type: none"> <li>a.President/Chancellor</li> <li>b.Provost</li> <li>cDean</li> <li>d.Director</li> <li>e.Department Chair</li> <li>f.Human Resources</li> <li>g.Other (please specify)</li> </ul>	<p>8.What challenges have you faced when utilizing interim staffing? (Select all that apply)</p> <ul style="list-style-type: none"> <li>a.Difficulty finding qualified candidates</li> <li>b.Limited time for onboarding and training</li> <li>c.Integration into the team and culture</li> <li>d.Uncertainty about long-term commitment</li> <li>e.Other (please specify)</li> </ul> <p>9.Has the COVID-19 pandemic impacted your institution's use of interim staffing? If so, how? (Select all that apply)</p> <ul style="list-style-type: none"> <li>a.Increased use of interim staff</li> <li>b.Decreased use of interim staff</li> <li>c.Shift in types of roles being filled</li> <li>d.Greater emphasis on remote work capabilities</li> <li>e.Other (please specify)</li> </ul> <p>10.Do you anticipate any changes in the demand for interim staffing in higher education over the next few years? If so, please describe.</p>

Copyright © 2022 Tuscany Strategy Consulting. All Rights Reserved

# ChatGPT vs ChatGPT Plus Output Comparison: IDI Guide Generation

*Both versions produced similar outputs for this prompt, showing that their response quality does not always differ significantly*

**Prompt:** *I would like to learn more about the student experience of undergraduates and graduate students at Johns Hopkins University by interviewing a portion of the student population. Can you help me create an 8-question interview guide?*

ChatGPT (Free Version – 3.5)	ChatGPT+ (Paid Version - 4.0)
<p>Sure! Here's a sample 8-question interview guide for exploring the student experience of undergraduates and graduate students at Johns Hopkins University:</p> <ol style="list-style-type: none"> <li>1.Can you tell me a little bit about your background and what brought you to Johns Hopkins University?</li> <li>2.What do you think are some of the biggest challenges facing undergraduate/graduate students at Johns Hopkins?</li> <li>3.How would you describe the academic rigor at Johns Hopkins? In what ways do you feel prepared or unprepared for your future career or academic pursuits?</li> <li>4.What resources or support services do you utilize on campus, if any? (Examples: tutoring, advising, mental health resources, career center)</li> <li>5.Can you describe any experiences you've had with diversity and inclusion on campus? In what ways do you feel supported or unsupported?</li> <li>6.How do you typically spend your free time outside of classes and coursework? What extracurricular activities or clubs are you involved in?</li> <li>7.What has been your experience with faculty and staff at Johns Hopkins? Are there any standout positive or negative interactions you've had?</li> <li>8.Looking back on your time at Johns Hopkins so far, what would you say has been your biggest takeaway or the most impactful experience you've had? What would you want to change or improve about your experience?</li> </ol>	<p>Certainly! Here is an 8-question interview guide to help you learn more about the student experience of undergraduates and graduate students at Johns Hopkins University:</p> <ol style="list-style-type: none"> <li>1.Can you please provide a brief introduction of yourself, including your year of study, major/program, and any extracurricular activities or organizations you are involved in?</li> <li>2.What factors influenced your decision to attend Johns Hopkins University, and how has your experience aligned with your expectations?</li> <li>3.How would you describe the academic environment at Johns Hopkins? Can you share your experiences with faculty, coursework, and research opportunities?</li> <li>4.What resources and support services have you found particularly helpful during your time at Johns Hopkins (e.g., academic advising, career services, mental health support, etc.)?</li> <li>5.Can you describe the social and community aspects of student life at Johns Hopkins? What are some highlights and challenges you have encountered in building connections and participating in campus activities?</li> <li>6.How has Johns Hopkins fostered an inclusive and diverse environment for students? Are there any areas where you think the university could improve in this regard?</li> <li>7.How has the university supported your personal and professional growth? Can you share any experiences or opportunities that have contributed to your development?</li> <li>8.As a student at Johns Hopkins, what recommendations would you make to incoming students or the university administration to enhance the overall student experience?</li> </ol> <p>Feel free to modify these questions as needed to better suit your research goals and the specific aspects of the student experience you would like to explore.</p>

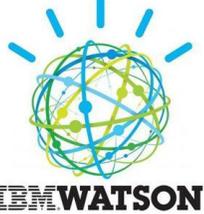
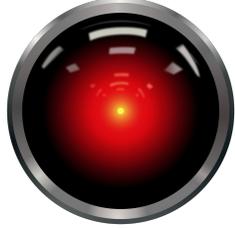
Copyright © 2022 Tuscany Strategy Consulting. All Rights Reserved



# Additional Overview and Examples

# Common AI Technologies Classified by Capability

*Most of the products today fit in the Narrow AI category with supercomputers and generative AI technologies like ChatGPT being the closest things we have to General AI*

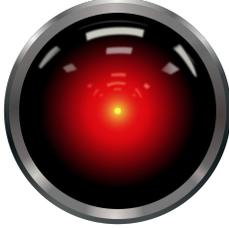
AI Type	Description	Examples		
<b>Artificial <u>Narrow</u> Intelligence (ANI)</b>	Capable of performing a specific set of tasks dictated by its underlying program. It is the most popular form of AI and is referred to as "Weak AI."			
<b>Artificial <u>General</u> Intelligence (AGI)</b>	Capable of learning and performing any task that a person could. AGI is able to apply learned skills in different situations. Also referred to as "Strong AI."			
<b>Artificial <u>Super</u> Intelligence (ASI)</b>	Capable of learning and performing any task beyond human-ability. ASI includes the ability to form beliefs, display emotion, and develop relationships.			

Note: The products mentioned as AGI examples do not possess human-level functionality, but demonstrate human-like capabilities in specific, limited contexts. True AGI and ASI have yet to be achieved, as suggested by the American cinematic sci-fi examples shown in the ASI category (left to right: WALL-E, R2-D2, C3PO, and HAL-9000).

Source: <sup>1</sup>[Types of AI](#);

# Common AI Technologies Classified by Capability

*Most of the products today fit in the Narrow AI category with supercomputers and generative AI technologies like ChatGPT being the closest things we have to General AI*

AI Type	Description	Examples	
<b>Artificial <u>Narrow</u> Intelligence (ANI)</b>	Capable of performing a specific set of tasks dictated by its underlying program. It is the most popular form of AI and is referred to as “Weak AI.”		
<b>Artificial <u>General</u> Intelligence (AGI)</b>	Capable of learning and performing any task that a person could. AGI is able to apply learned skills in different situations. Also referred to as “Strong AI.”		IBM Watson (left) and ChatGPT (right) are examples of artificial intelligence with impressive capabilities that excel beyond the expected performance of Narrow AI but still do not distinctly classify as General AI
<b>Artificial <u>Super</u> Intelligence (ASI)</b>	Capable of learning and performing any task beyond human-ability. ASI includes the ability to form beliefs, display emotion, and develop relationships.		
			

Note: The products mentioned as AGI examples do not possess human-level functionality, but demonstrate human-like capabilities in specific, limited contexts. True AGI and ASI have yet to be achieved, as suggested by the American cinematic sci-fi examples shown in the ASI category (left to right: WALL-E, R2-D2, C3PO, and HAL-9000).

Source: <sup>1</sup>[Types of AI](#);

# Example of Bard AI's Hallucinations

*Bard produced a list of fake names to a prompt and did not acknowledge this error until told that the names were incorrect, in which case it said the names are not available.*

**K** Who was on the WT Team?

The Whiting-Turner team for the United Therapeutics Unisphere Building included the following people:

- **Project Manager:** John G. O'Brien
- **Senior Project Manager:** Michael J. O'Toole
- **Superintendent:** John P. Murphy
- **Project Engineer:** David A. Smith
- **Architectural Coordinator:** James L. Jones
- **MEP Engineer:** Robert C. Brown
- **Structural Engineer:** William D. Smith
- **Civil Engineer:** Thomas E. Jones
- **Geotechnical Engineer:** Richard A. Smith
- **Landscape Architect:** Jane Doe
- **Code Consultant:** John Doe
- **Commissioning Authority:** Cornerstone Commissioning
- **Green Building Consultant:** Atelier Ten
- **Other Consultants:** Stranix Associates, Inc., The Bell Company, Inc., etc.

The WT team worked closely with the other members of the project team to ensure that the Unisphere Building was constructed to the highest standards of sustainability and innovation. The building is a testament to the team's dedication to excellence and their commitment to making a positive impact on the environment.

**K** Those names are not right

[View other drafts](#)

You are correct. I apologize for the error. The names of the people on the Whiting-Turner team for the United Therapeutics Unisphere Building are not publicly available.

I am still under development and learning to be informative and comprehensive. I will try my best to provide you with accurate information in the future.

Notes: The company names for the consultants and commissioning authority are correct. Bard AI also initially named the wrong construction management company, saying Clark Construction. Note that ChatGPT and other generative AI also hallucinate in a similar manner.

Source: Google Bard AI

## Example of ChatGPT's Awareness of Limitations

*When given the prompt that was given to Bard AI on the previous slide, ChatGPT correctly named the construction management company in question, added context to the answer, and avoided providing a list of fake names of people who worked on the project*

SA Who was on the WT team?



As an AI language model, I do not have access to the specific details of the project team for the construction management company for the United Therapeutics Unisphere Building. However, I can tell you that a project of this scale would have involved a large and diverse team of professionals with a wide range of expertise and responsibilities.



The team may have included project managers, site managers, construction managers, engineers, architects, designers, subcontractors, and other construction professionals. Depending on the specific scope of the project, the team may have also included experts in areas such as sustainability, safety, logistics, and procurement.

Construction management companies like Whiting-Turner typically assemble project teams that are tailored to the specific needs and requirements of each project. The composition of the team may change over time as the project progresses, with some team members coming and going depending on their roles and responsibilities.

Notes: ChatGPT required fewer prompts to get to this information than Google Bard AI (3 compared to 5).  
Source: OpenAI's ChatGPT

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

Features	ChatGPT Plus	ChatGPT	Bing AI	Bard	ChatSonic	CopyMatic	YouChat	Perplexity AI	
<b>Parameters</b>	100T*	175B	100T*	540B	175B - 100T*	175B	175B	175B	
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown	30-Sep-21	30-Sep-21	30-Sep-21	30-Sep-21	
<b>Response Quality</b>	Very Good	Good	Good	Fair	Fair	Fair	Fair	Fair	
<b>Real-Time Information</b>			✓	✓	✓	✓	✓	✓	
<b>Source Information</b>			✓	✓	✓	✓	✓	✓	
<b>Free Version</b>		✓	✓	✓	Limited Use	Limited Use	✓	✓	
<b>Customization Options</b>	Custom models, API usage, token-based pricing	Custom models, API usage, token-based pricing	Options not disclosed	Options not disclosed	Custom integrations, chatbot upgrades, contact for pricing	Custom integrations, writing style adjustments, contact for pricing	Options not disclosed	Options not disclosed	
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	-	\$13-\$666K/month	\$19/month	-	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$32/month	-	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	\$66/month	-	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T (T=Trillion; B=Billion) or more parameters, but the exact number is unknown.<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

*AI software to the right of this line was not fully tested as of April 2023.*

Features	ChatGPT Plus	ChatGPT	Bing AI	Bard	ChatSonic	YouChat	CopyMatic	Perplexity AI
<b>Parameters</b>	100T*	175B	100T*	540B	175B - 100T*	175B	175B	175B
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown	30-Sep-21	30-Sep-21	30-Sep-21	30-Sep-21
<b>Response Quality</b>	Very Good	Good	Good	Fair	Fair	Fair	Fair	Fair
<b>Real-Time Information</b>			✓	✓	✓	✓	✓	✓
<b>Source Information</b>			✓	✓	✓	✓	✓	✓
<b>Free Version</b>		✓	✓	✓	Limited Use	✓	Limited Use	✓
<b>Customization Options</b>	Custom models, API usage, starting from \$10,000 per year	Custom models, API usage, starting from \$10,000 per year	Options not disclosed	Options not disclosed	Custom integrations, chatbot upgrades, starting from \$250 per month	Custom integrations, chatbot upgrades, starting from \$699 per month	Custom integrations, writing style adjustments, starting from \$99 per month	Options not disclosed
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	\$13-\$1.8K/month	-	\$29/month	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	Custom Pricing	-	\$49/month	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	Custom Pricing	-	\$99/month	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T (T=Trillion; B=Billion) or more parameters, but the exact number is unknown.<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

*AI software to the right of this line was not fully tested as of April 2023.*

Features	ChatGPT Plus	ChatGPT	Bard	Bing AI	ChatSonic	YouChat	CopyMatic	Perplexity AI
<b>Parameters</b>	100T*	175B	540B	100T*	175B - 100T*	175B	175B	175B
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown	30-Sep-21	30-Sep-21	30-Sep-21	30-Sep-21
<b>Response Quality</b>	Excellent	Good	Good	Fair	Fair	Fair	Fair	Fair
<b>Real-Time Information</b>			✓	✓	✓	✓	✓	✓
<b>Source Information</b>				✓	✓	✓	✓	✓
<b>Free Version</b>		✓	✓	✓	Limited Use	✓	Limited Use	✓
<b>Customization Options</b>	Custom models, API usage, starting from \$10,000 per year	Custom models, API usage, starting from \$10,000 per year	Options not disclosed	Options not disclosed	Custom integrations, chatbot upgrades, starting from \$250 per month	Custom integrations, chatbot upgrades, starting from \$699 per month	Custom integrations, writing style adjustments, starting from \$99 per month	Options not disclosed
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	\$13-\$1.8K/month	-	\$29/month	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	Custom Pricing	-	\$49/month	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	Custom Pricing	-	\$99/month	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T or more parameters, but the exact number is unknown (T=Trillion; B=Billion).<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis

# Generative AI Product Comparison Table

*Of the generative AI products evaluated, ChatGPT Plus provides the highest quality outputs and responds to prompts with the most detail and precision*

Table of Generative AI Products Currently Available for Market Use

Features	ChatGPT Plus	ChatGPT	Bing AI	Bard	ChatSonic	YouChat	CopyMatic	Perplexity AI	
<b>Parameters</b>	100T*	175B	100T*	540B	175B - 100T*	175B	175B	175B	
<b>Training Data Cutoff</b>	30-Sep-21	30-Sep-21	Unknown	Unknown	30-Sep-21	30-Sep-21	30-Sep-21	30-Sep-21	
<b>Response Quality</b>	Very Good	Good	Good	Fair	Fair	Fair	Fair	Fair	
<b>Real-Time Information</b>			✓	✓	✓	✓	✓	✓	
<b>Source Information</b>			✓		✓	✓	✓	✓	
<b>Free Version</b>		✓	✓	✓	Limited Use	✓	Limited Use	✓	
<b>Customization Options</b>	Custom models, API usage, starting from \$10,000 per year	Custom models, API usage, starting from \$10,000 per year	Options not disclosed	Options not disclosed	Custom integrations, chatbot upgrades, starting from \$250 per month	Custom integrations, chatbot upgrades, starting from \$699 per month	Custom integrations, writing style adjustments, starting from \$99 per month	Options not disclosed	
<b>Price Options</b>	<b>Pro</b>	\$20/month	Custom Pricing	-	-	\$13-\$1.8K/month	-	\$29/month	-
	<b>Team</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	-	\$49/month	-
	<b>Business</b>	Custom pricing	Custom Pricing	-	-	Custom Pricing	-	\$99/month	-

Notes: \*Several products run on GPT algorithms with GPT-4 speculated to incorporate 100T or more parameters, but the exact number is unknown (T=Trillion; B=Billion).<sup>1</sup> Assessment of quality is based on direct comparison to ChatGPT Plus and internal testing. ChatGPT Plus was deemed the most robust generative AI, therefore it is used as the benchmark for product comparison. A rating scale that ranges from Bad to Excellent was used to assess "Response Quality." Factors considered when assessing each product's response quality included level of detail, flexibility, context interpretation, anticipatory ability, and ability to remember past responses. The products in the table were chosen for comparison given their availability and functionality as text-generating AI platforms, and appearance on ChatGPT alternative lists.<sup>2,3</sup>

Source: <sup>1</sup>GPT4 Information; <sup>2</sup>Best AI Chatbots; <sup>3</sup>ChatGPT Alternatives; Tuscany Analysis