

Generative AI Bible

The ultimate guide
to genAI disruption



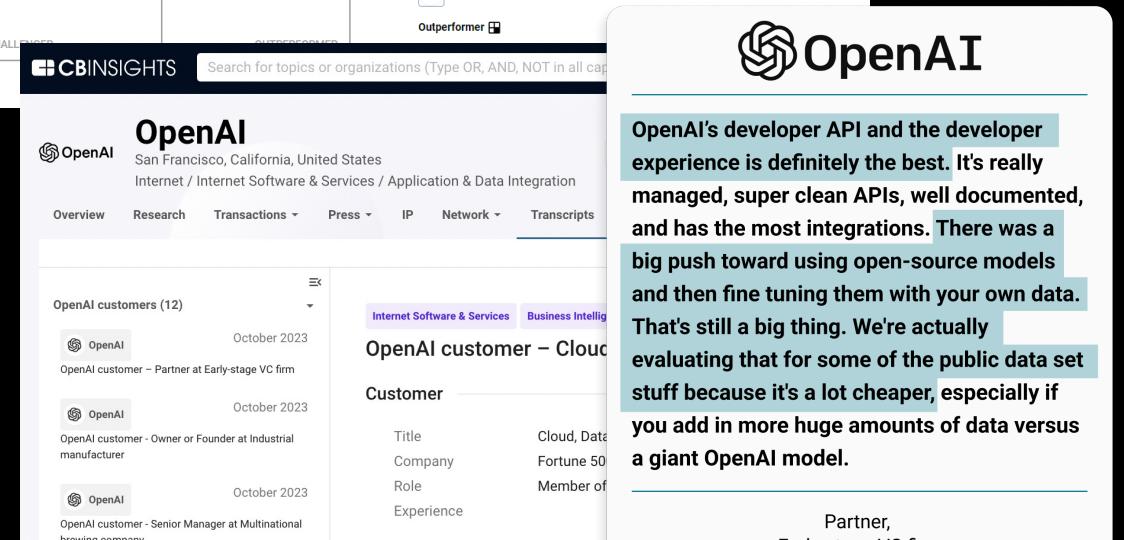
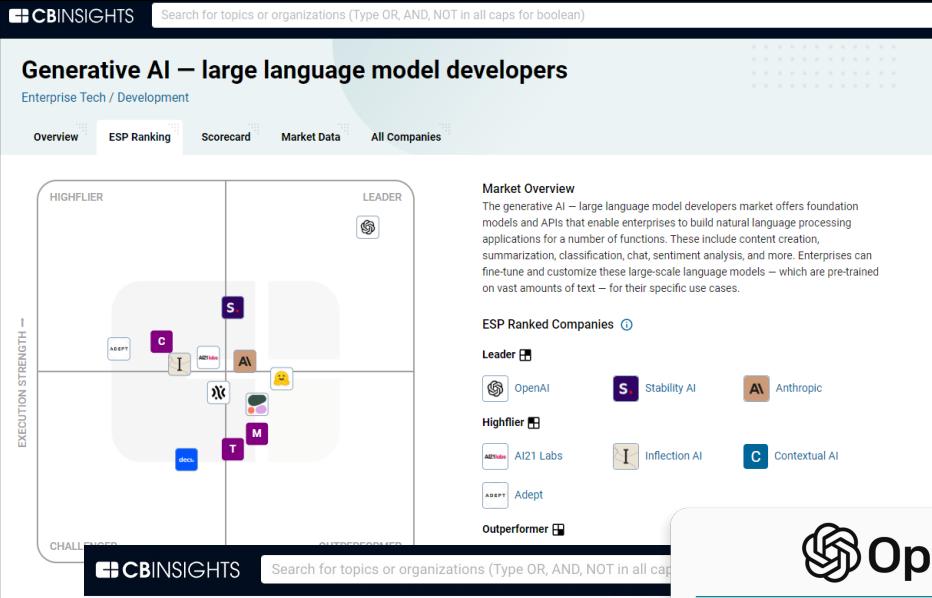
Pablo Xavier via BuzzFeed News

Unleash the generative AI revolution

Dive into a treasure trove of generative AI companies, investors, and market insights. Elevate your decisions with exclusive software buyer interviews to understand product pricing, CSAT, and post-deployment experience.

CB Insights – Your Gateway to Generative AI

Sign up for access



Generative AI is a theme CB Insights covered before the hype. **We've consistently been ahead of the curve**



And we're staying ahead today – so you can too

2023

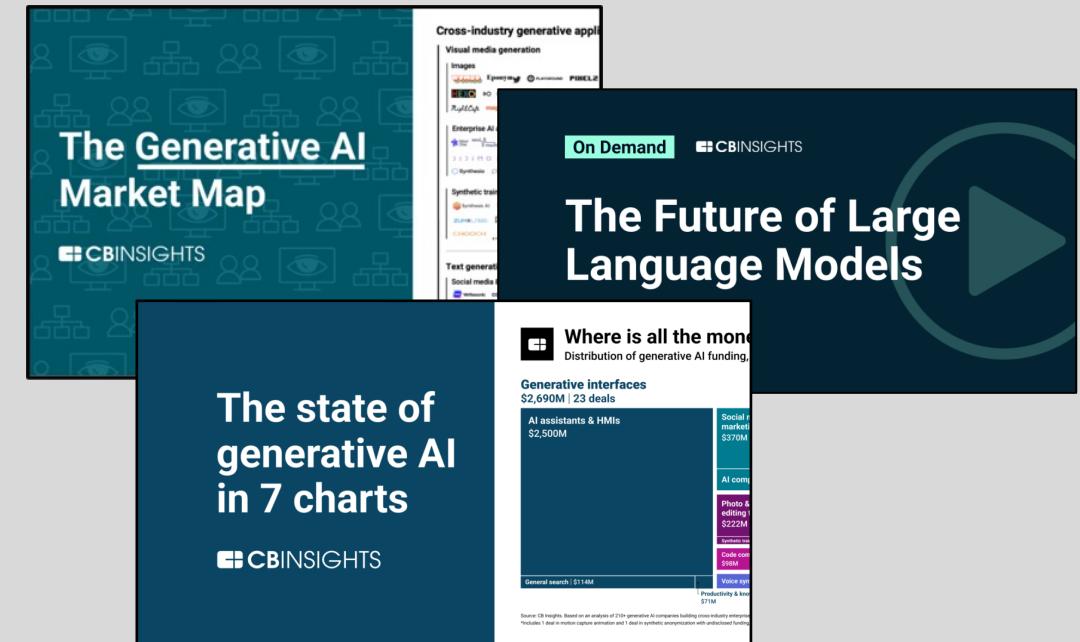
Understand 25+ generative AI markets

Large language model developers
Customer support operations
Text generation
Protein & drug design
Voice synthesis & cloning
+ more

Discover 400+ genAI vendors

Tracked in our analyst-curated
Expert Collection

Stay on top of the landscape with research & transcripts



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The generative AI boom



ERNEST HEMINGWAY, *THE SUN ALSO RISES*

“How did you **go bankrupt?**”

ERNEST HEMINGWAY, THE SUN ALSO RISES

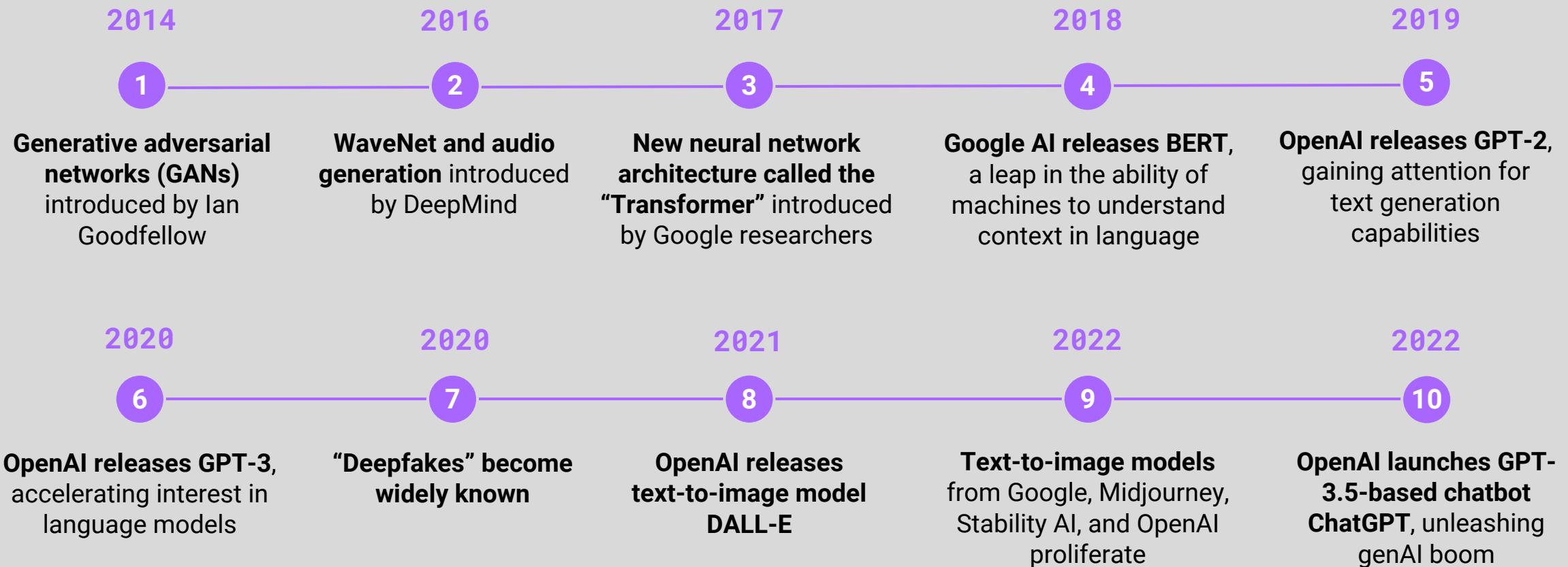
“Two ways...
Gradually and then **suddenly**”

2014

Gradually

Generative AI has been in the works for years

How did we get here? A recent timeline of select events in the development of generative AI



*Generative AI is artificial intelligence that can generate new content (text, code, images, audio, etc.).



GANs tap into the idea of “AI versus AI” – advancing image generation dramatically



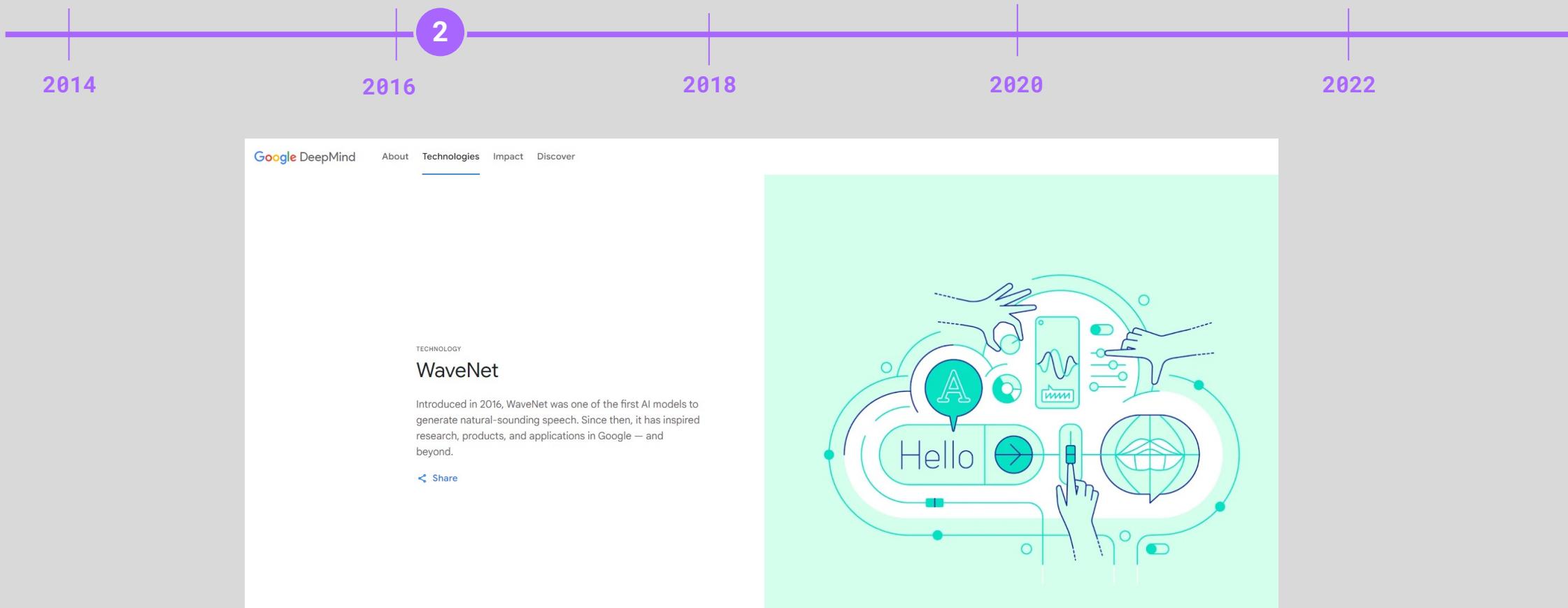
Images from 2018 paper where DeepMind researchers trained GANs on a large-scale dataset to create “BigGANs”

Image source: Large Scale GAN Training for High Fidelity Natural Image Synthesis

*“AI versus AI”: A breakthrough where two neural networks try to outsmart each other, creating and refining synthetic outputs.



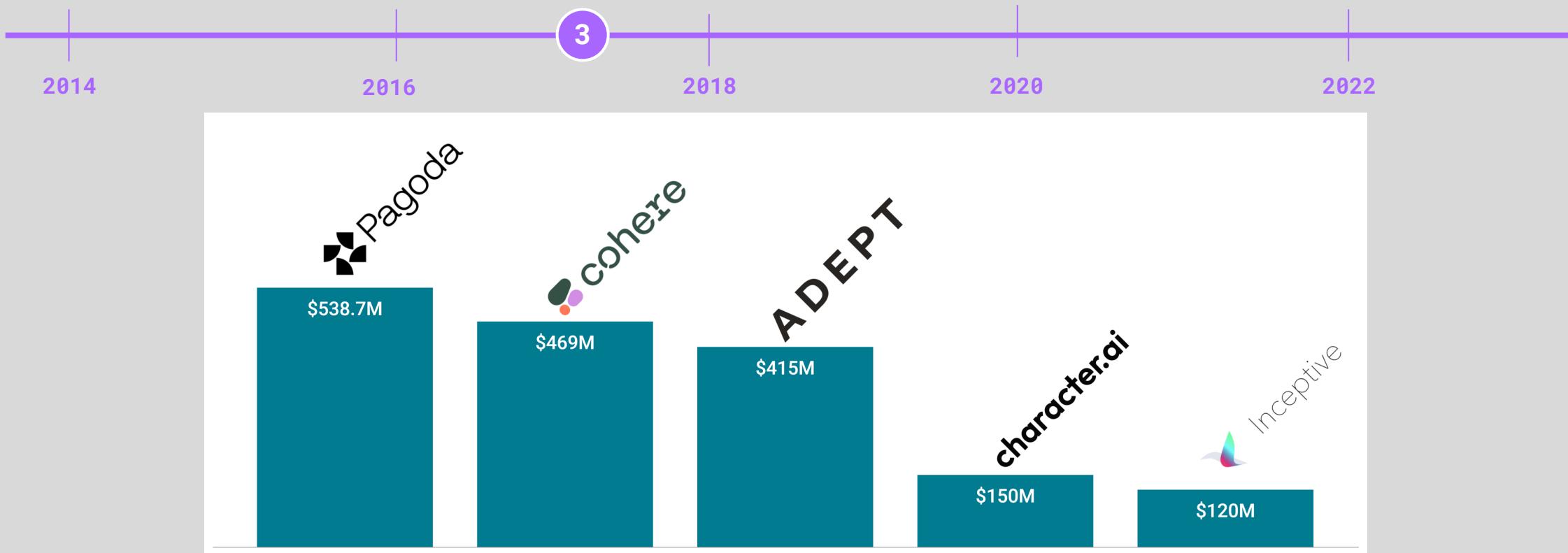
WaveNet produces synthetic audio, showcasing the potential of generative models beyond images





The Transformer architecture can better understand and generate human language, paving the way for further R&D

6 authors of the seminal research paper have gone on to raise \$1.7B across 5 AI companies*



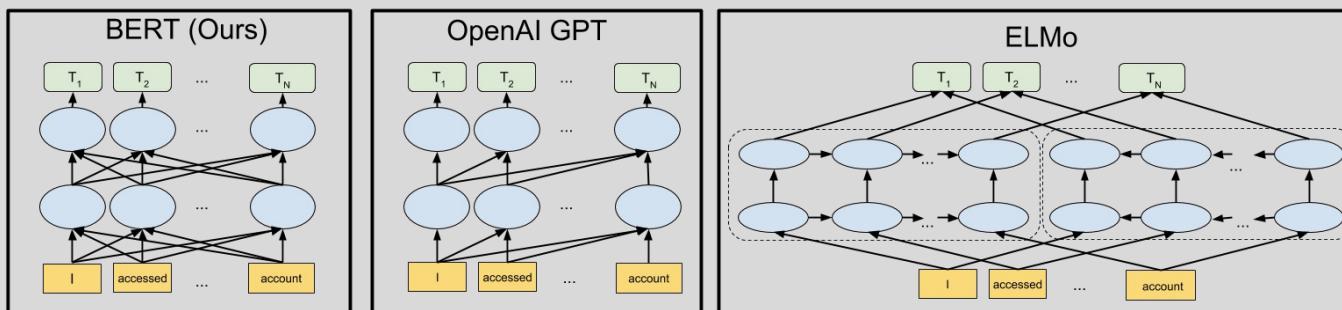


Google AI releases BERT, a leap in the ability of machines to understand context in language



Input: The man went to the [MASK]₁ . He bought a [MASK]₂ of milk .
Labels: [MASK]₁ = store; [MASK]₂ = gallon

The AI language model predicts a word based on not only the preceding words, but also the succeeding ones (bidirectional understanding of context).



BERT is deeply bidirectional, OpenAI GPT is unidirectional, and ELMo is shallowly bidirectional.



OpenAI incorporates the Transformer architecture into its language models



We've obtained state-of-the-art results on a suite of diverse language tasks with a scalable, task-agnostic system, which we're also releasing. Our approach is a combination of two existing ideas: transformers and unsupervised pre-training. These results provide a convincing example that pairing supervised learning methods with unsupervised pre-training works very well; this is an idea that many have explored in the past, and we hope our result motivates further research into applying this idea on larger and more diverse datasets.

GPT-1 – June 2018

Our model, called GPT-2 (a successor to GPT), was trained simply to predict the next word in 40GB of Internet text. Due to our concerns about malicious applications of the technology, we are not releasing the trained model. As an experiment in responsible disclosure, we are instead releasing a much smaller model for researchers to experiment with, as well as a technical paper.

GPT-2 is a large transformer-based language model with 1.5 billion parameters, trained on a dataset^A of 8 million web pages. GPT-2 is trained with a simple objective: predict the next word, given all of the previous words within some text. The diversity of the dataset causes this simple goal to contain naturally occurring demonstrations of many tasks across diverse domains. GPT-2 is a direct scale-up of GPT, with more than 10X the parameters and trained on more than 10X the amount of data.

GPT-2 – February 2019



OpenAI's GPT-3 is a major leap forward, showcasing ability to generate code, jokes, and more



The image displays two news articles side-by-side, both dated November 2020, illustrating the widespread impact of GPT-3.

The New York Times Article:
Title: *Meet GPT-3. It Has Learned to Code (and Blog and Argue).*
Text: The latest natural-language system generates tweets, pens poetry, summarizes emails, answers trivia questions, translates languages and even writes its own computer programs.

MIT Technology Review Article:
Title: **ARTIFICIAL INTELLIGENCE**
OpenAI's new language generator GPT-3 is shockingly good—and completely mindless
Text: The AI is the largest language model ever created and can generate amazing human-like text on demand but won't bring us closer to true intelligence.



Deepfakes go mainstream, highlighting power and pitfalls of video generation



Image source: YouTube, TikTok via ABC

*Deepfakes refer to synthetic media where a person in an existing image or video is replaced with someone else's likeness using neural networks.



GPT-3 is the foundation for DALL-E, which can generate images from text descriptions



Text Prompt **an armchair in the shape of an avocado....**

AI Generated images

The AI has generated five different versions of an armchair shaped like a halved avocado. The first four are green with yellow or light green interiors, while the fifth is green with an orange interior. They all have simple, modern-style legs.

Edit prompt or view more images ↓

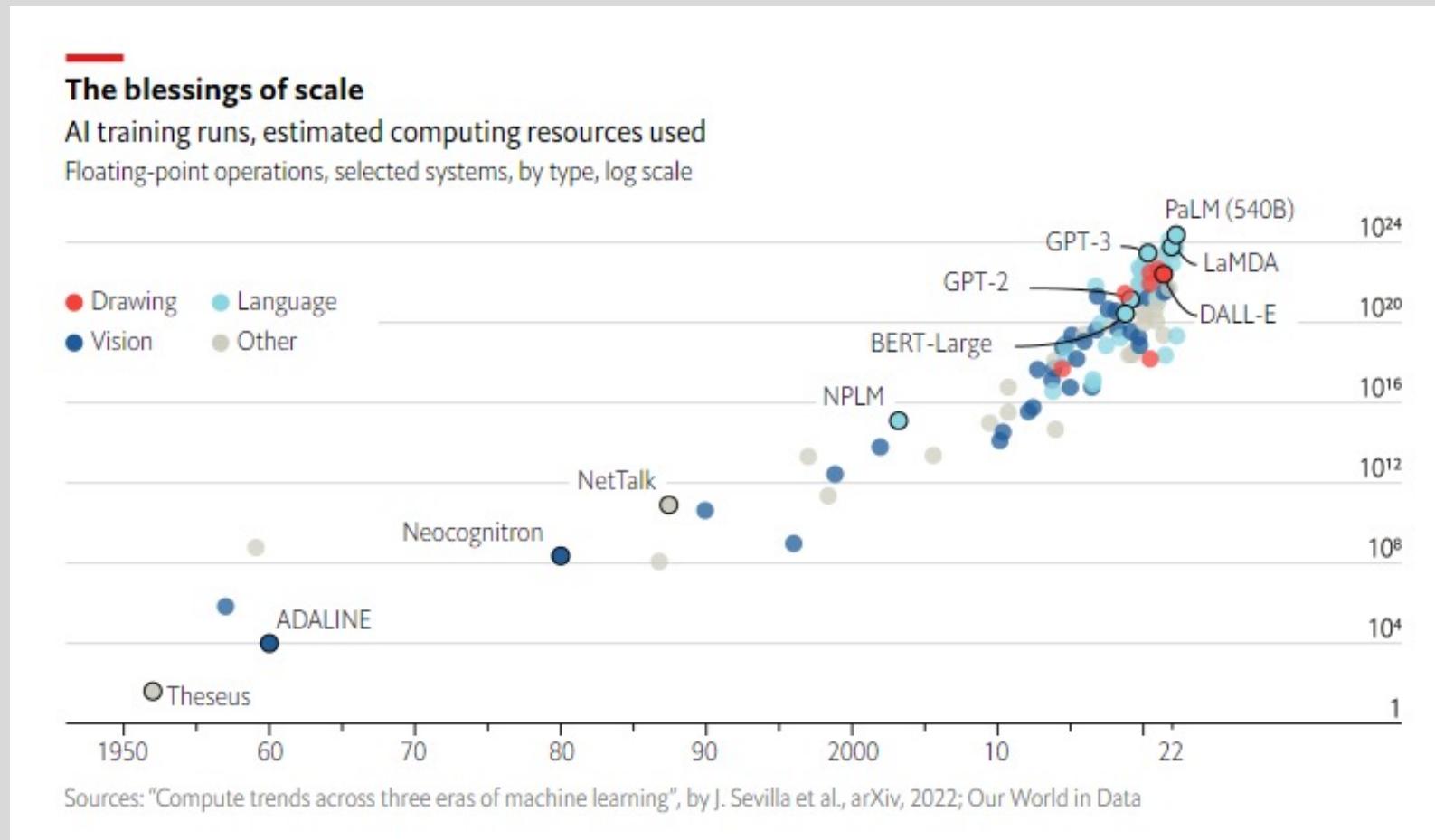
2022

Then suddenly

GenAI goes from experiment to everywhere



Models get bigger...

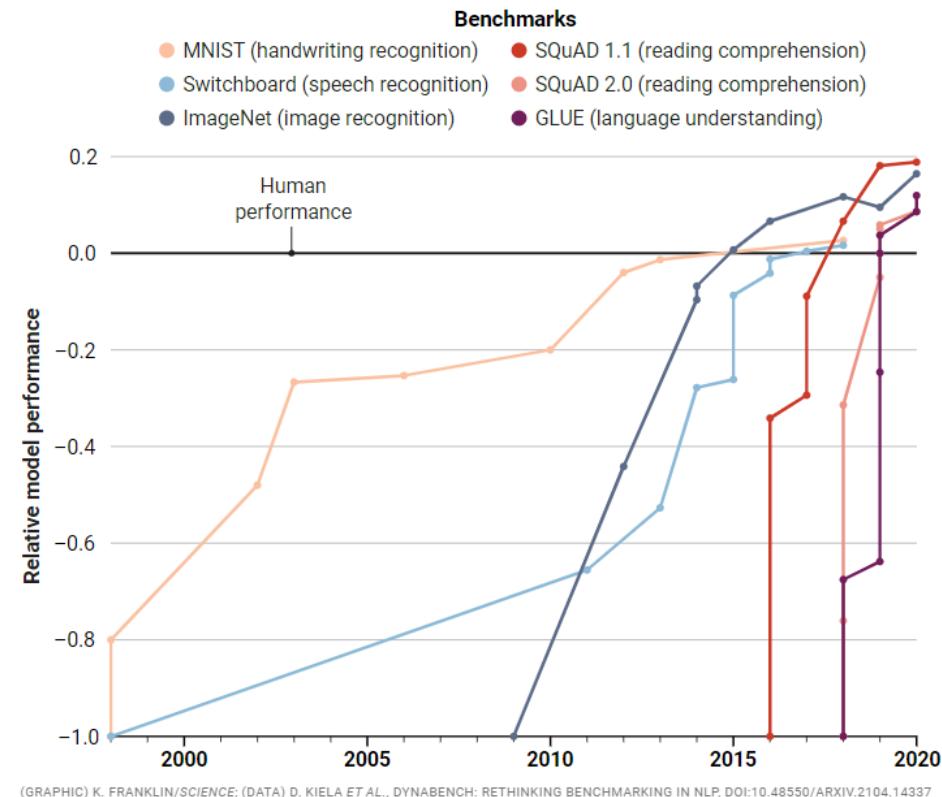




...and better, beating human performance benchmarks

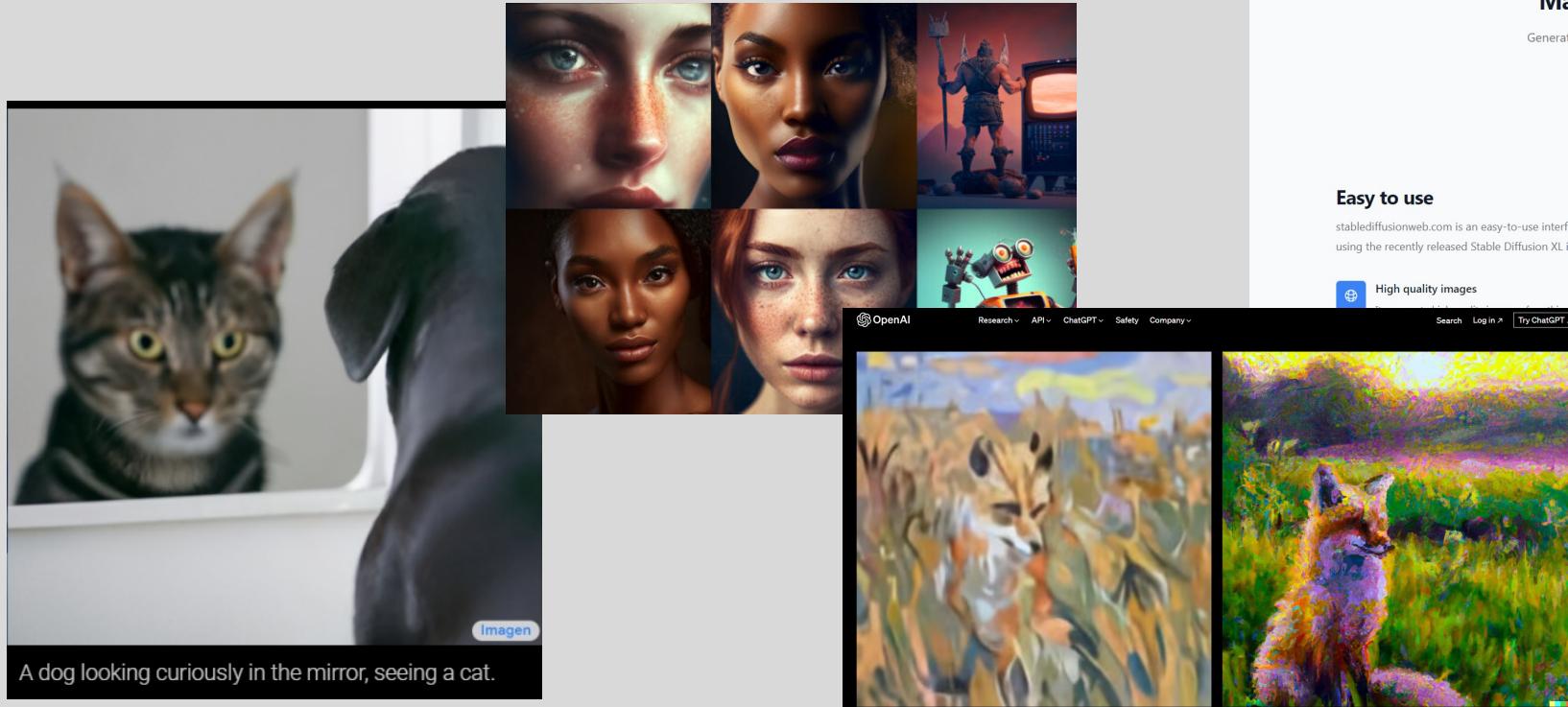
Quick learners

The speed at which artificial intelligence models master benchmarks and surpass human baselines is accelerating. But they often fall short in the real world.





Text-to-image generators take the internet by storm

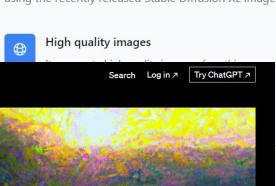


Making your dreams come true

Generate amazing AI Art images from text using Stable Diffusion XL.

Easy to use

stablediffusionweb.com is an easy-to-use interface for creating images using the recently released Stable Diffusion XL Image generation model.



High quality images

Search Log In Try ChatGPT an imagine in seconds–

model and get results

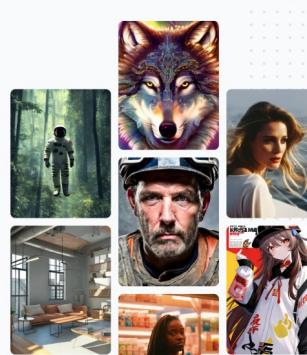


Image source: Imagen (Google), Midjourney, DALL-E 1 vs. DALL-E 2 (OpenAI), Stable Diffusion



Generative AI startups raise major funding to fuel growth

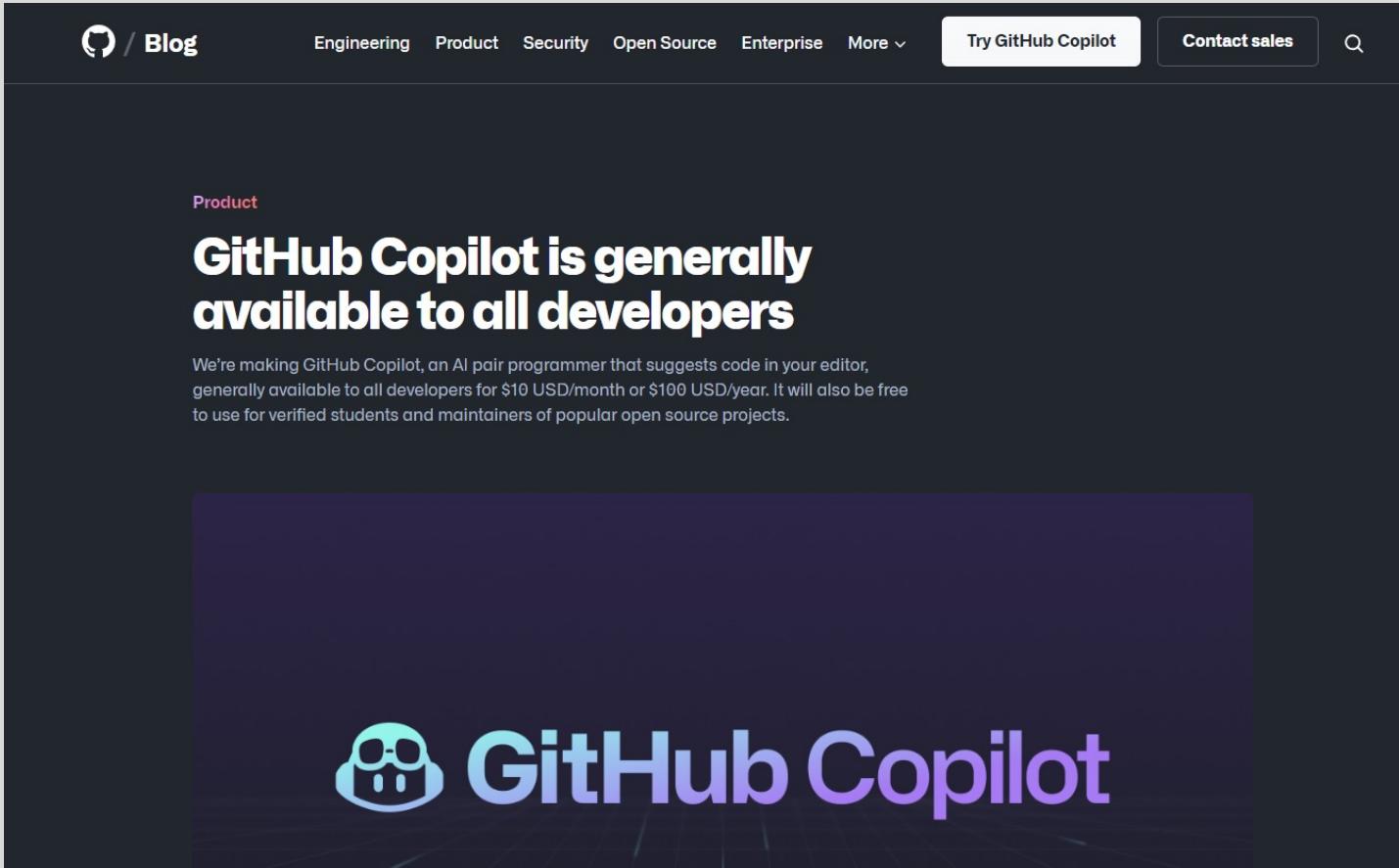
Deals worth \$100M+ to generative AI startups in 2022

8 Deals | \$1.49B Total Deal Amount

<input type="checkbox"/> Companies	▼	Investment S...	▼	Deal Size	▼	Deal Date	▼	URL	▼	Round Investors	▼
<input type="checkbox"/>  Anthropic		Series B		\$580.00M	04/29/2022			anthropic.com		Alameda Research, Caroline Ellison, ...	
<input type="checkbox"/>  Inflection AI		Series A		\$225.00M	05/13/2022			inflection.ai		Demis Hassabis, ...	
<input type="checkbox"/>  Cohere		Series B		\$159.00M	02/16/2022			cohere.com		Index Ventures, Radical Ventures, Section 3C ...	
<input type="checkbox"/>  Hugging Face		Series C		\$100.00M	05/09/2022			huggingface.co		AIX Ventures, Addition, Betaworks Ventures ...	
<input type="checkbox"/>  Glean		Series C		\$100.00M	05/18/2022			glean.com		General Catalyst, ...	
<input type="checkbox"/>  Jasper		Series A		\$125.00M	10/17/2022			jasper.ai		Bessemer Venture Partners, Coatue, ...	
<input type="checkbox"/>  InstaDeep		Series B		\$100.00M	01/25/2022			instadeep.com		Alpha Intelligence Capital, BioNTech, ...	
<input type="checkbox"/>  Stability AI		Seed VC		\$101.00M	10/05/2022			stability.ai		Coatue, Lightspeed Venture Partners, ...	



AI coding assistant GitHub Copilot becomes widely available

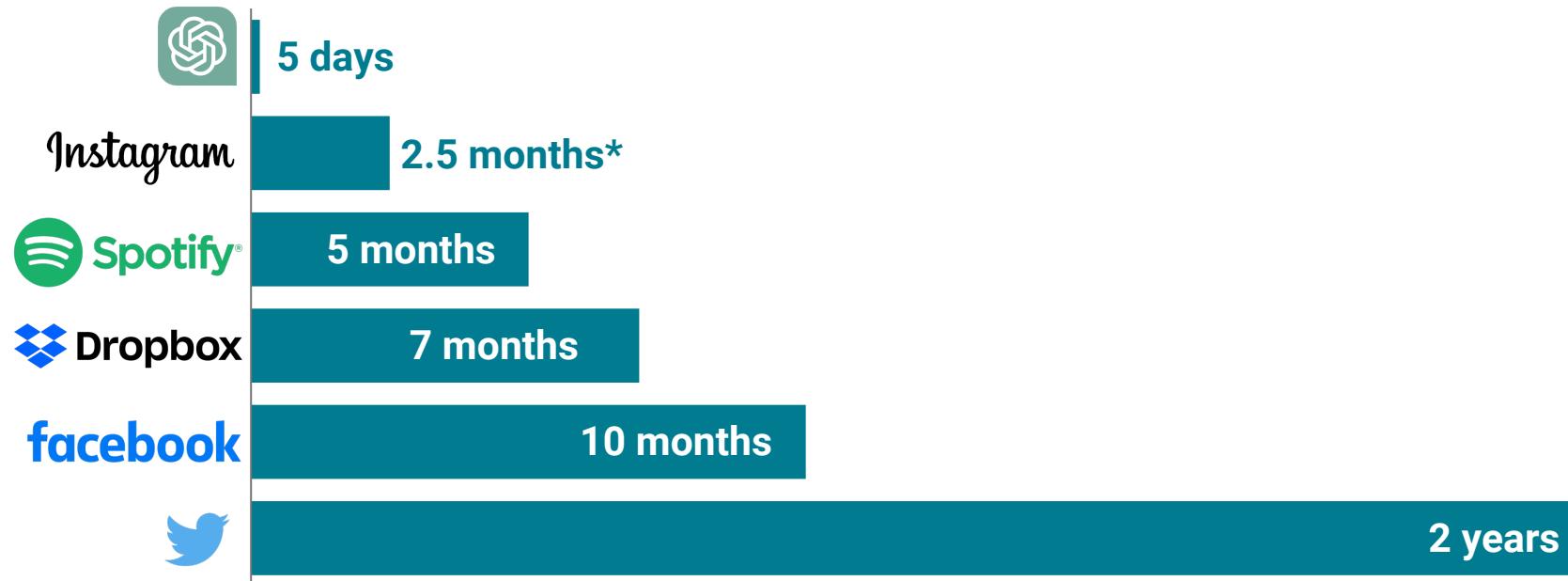


The screenshot shows a dark-themed web page for GitHub Copilot. At the top, there's a navigation bar with links for Engineering, Product, Security, Open Source, Enterprise, More, Try GitHub Copilot, Contact sales, and a search icon. Below the navigation, the word "Product" is written in small red text. The main headline reads "GitHub Copilot is generally available to all developers". A subtext explains the pricing: "We're making GitHub Copilot, an AI pair programmer that suggests code in your editor, generally available to all developers for \$10 USD/month or \$100 USD/year. It will also be free to use for verified students and maintainers of popular open source projects." At the bottom of the page, the GitHub logo is followed by the text "GitHub Copilot".



ChatGPT goes viral, getting to 1M users in 5 days and 100M in 2 months – unleashing genAI boom

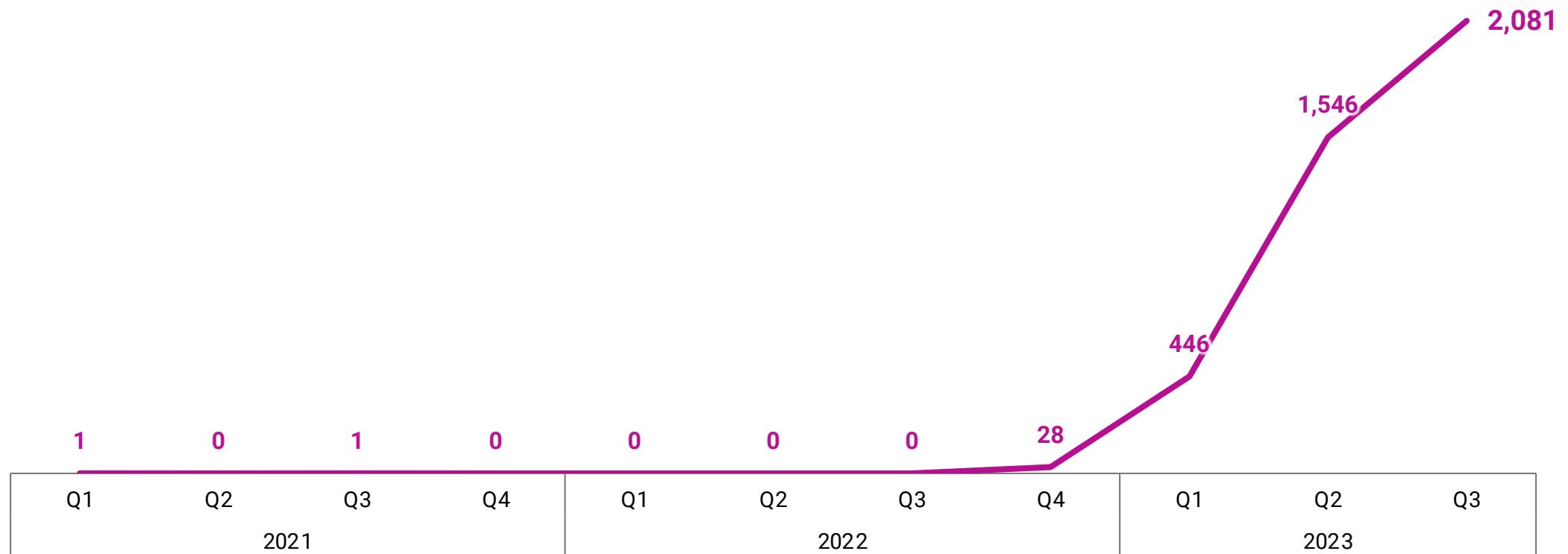
Time to 1M users for select platforms/apps from launch





Almost overnight, exec interest in generative AI skyrockets and companies feel pressured to react

Earnings call mentions of “generative AI” (as of 9/30/2023)

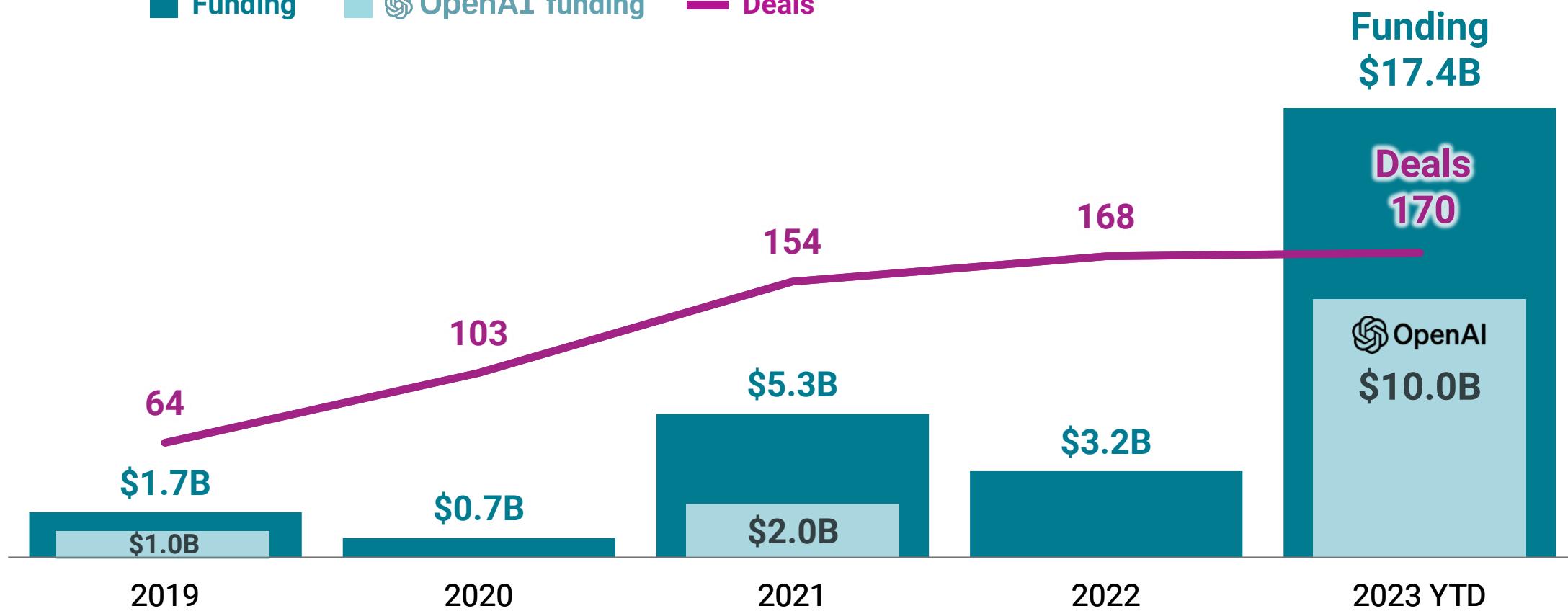




Microsoft invests \$10B into ChatGPT-maker OpenAI in Q1'23, propelling genAI funding to new heights

Disclosed equity funding & deals to generative AI companies (as of 9/30/2023)

■ Funding ■ OpenAI funding — Deals





Microsoft debuts AI-powered Bing, running on a new OpenAI large language model (LLM)

The screenshot shows the Microsoft Bing search interface. At the top, there is a navigation bar with the Microsoft logo, a search bar labeled "SEARCH", and a "CHAT" button. Below the search bar, a blue message bubble contains the user's query: "I am planning a trip for our anniversary in September. What are some places we can go that are within a 3 hour flight from London Heathrow?". A response message bubble follows, starting with "Congratulations on your anniversary! 🎉 There are many places you can go that are within a 3 hour flight from London Heathrow. Here are some suggestions based on your preferences and the best destinations in Europe in September [4](#) [5](#) [6](#):". The response then lists three travel suggestions:

- If you like **beaches** and **sunshine**, you can fly to **Malaga** in Spain [1](#), which has a pleasant climate, a lively culture, and a beautiful coastline. You can enjoy the sandy beaches, the historic monuments, and the delicious tapas. Malaga is also a great base to explore other nearby attractions, such as Granada, Seville, and Cordoba.
- If you like **mountains** and **lakes**, you can fly to **Annecy** in France [4](#), which is a charming alpine town near the Swiss border. Annecy is known as the "Venice of France" because of its canals and bridges. You can admire the stunning scenery, visit the medieval castle, and try some local cheese and wine. Annecy is also close to Geneva, Chamonix, and Lyon, if you want to see more of the region.
- If you like **art** and **history**, you can fly to **Florence** in Italy [6](#), which is the birthplace of the Renaissance and a UNESCO World Heritage Site. Florence is a treasure trove of artistic and architectural masterpieces, such as the Duomo, the Uffizi Gallery, and the Ponte Vecchio. You can also explore the Tuscan countryside, taste the famous gelato, and shop for leather goods.

At the bottom of the interface, there is a blue "Feedback" button and a "Ask me anything..." input field with a microphone icon.

Image source: Microsoft *A large language model is a deep learning algorithm that analyzes and produces text by learning from extensive language data.



Meta introduces Llama, an open-source language model

The screenshot shows a blog post from the Meta Research website. The header features the Meta logo and the word "Research". The main title is "Introducing LLaMA: A foundational, 65-billion-parameter large language model", dated February 24, 2023. Below the title, there is a large image placeholder. At the bottom of the post, there is an "UPDATE" section with the text: "We just launched Llama 2 - for more information on the latest see our blog post on Llama 2." and a descriptive paragraph about the LLaMA model.

∞ Meta

Research

Introducing LLaMA: A foundational, 65-billion-parameter large language model

February 24, 2023

UPDATE: We just launched Llama 2 - for more information on the latest see our blog post on Llama 2.

As part of Meta's commitment to open science, today we are publicly releasing LLaMA (Large Language Model Meta AI), a state-of-the-art foundational large language model designed to help researchers advance



Google sounds alarm bells and releases Bard chatbot

Alphabet

On the AI side, it is a really exciting time. I think we've been investing for a while, and it's clear that the market is ready... **Obviously, we need to make sure we're iterating in public, these models will keep getting better, so the field is fast changing.** The serving costs will need to be improved.

So I view it as very, very early days, **but we are committed to...actually bringing direct LLM experiences in Search,** making APIs available for developers and enterprises and learn from there and iterate like we've always done.

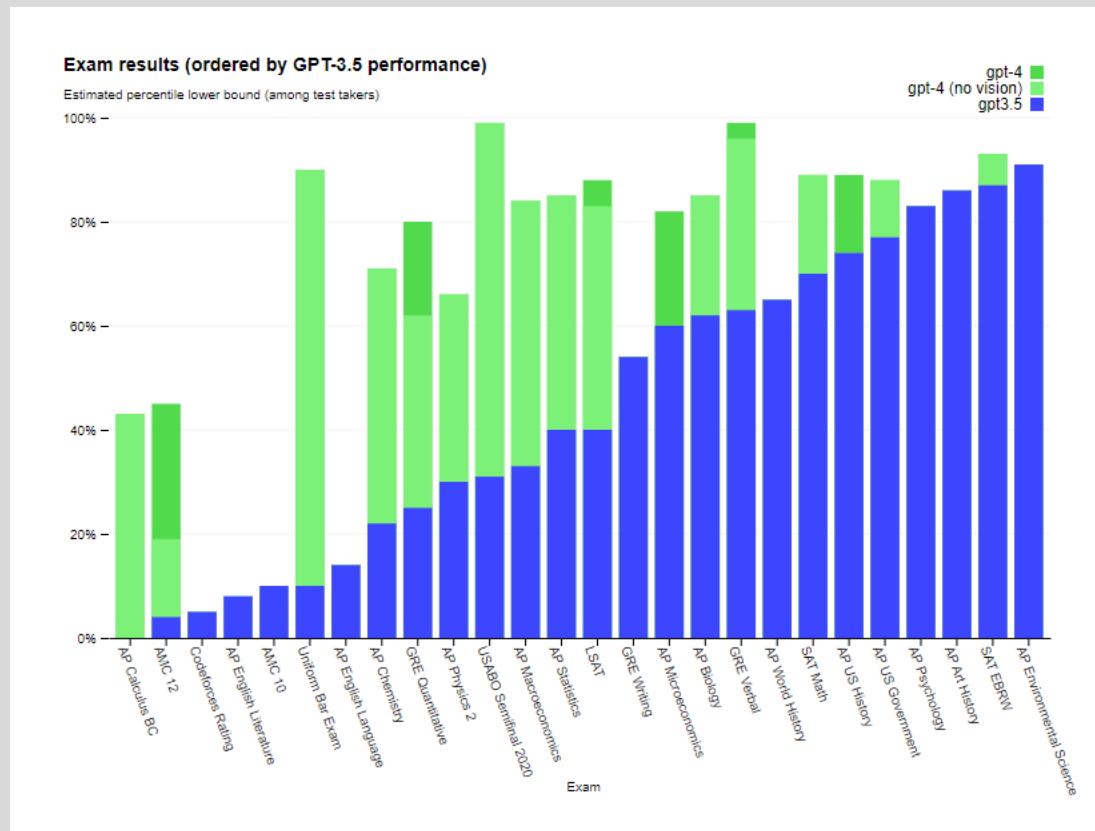
Alphabet CEO Sundar Pichai
Q1'23 earnings call

A screenshot of the Google Bard AI chatbot interface. A user asks, "what new discoveries from the James Webb Space Telescope can I tell my 9 year old about?" Bard responds with a bulleted list: "In 2023, The JWST spotted a number of galaxies nicknamed “green peas.” They were given this name because they are small, round, and green, like peas.", "The telescope captured images of galaxies that are over 13 billion years old. This means that the light from these galaxies has been traveling for over 13 billion years to reach us.", and "JWST took the very first pictures of a planet outside of our own solar system. These distant worlds are called “exoplanets.” Exo means “from outside.”". Below the response, it says, "These discoveries can spark a child's imagination about the infinite wonders of the universe." At the bottom of the card are social sharing icons for Facebook, Twitter, LinkedIn, and a "Check it" button.

Use Bard to simplify complex topics, like explaining new discoveries from NASA's James Webb Space Telescope to a 9-year-old.



GPT-4 becomes OpenAI's most powerful model yet, crushing human exams





Reddit, after providing years of free training data for AI systems, plans to charge for access to its content

r/reddit • 6 mo. ago
KeyserSosa

An Update Regarding Reddit's API

Updates

Greetings all you redditors, developers, mods, and more!

I'm joining you today to share some updates to Reddit's Data API. I can sense your eagerness so here's a TL;DR (though I *highly* encourage you to please read this post in its entirety).

TL;DR:

- We are updating our terms for developer tools and services, including our Developer Terms, Data API Terms, Reddit Embeds Terms, and Ads API Terms, and are updating links to these terms in our User Agreement.
- These updates should not impact moderation bots and extensions we know our moderators and communities rely on.
- To further ensure minimal impact of updates to our Data API, we are continuing to build new moderator tools (while also maintaining existing tools).
- We are additionally investing in our developer community and improving support for Reddit apps and bots via Reddit's Developer Platform.
- Finally, we are introducing premium access for third parties who require additional capabilities, higher usage limits, and broader usage rights.

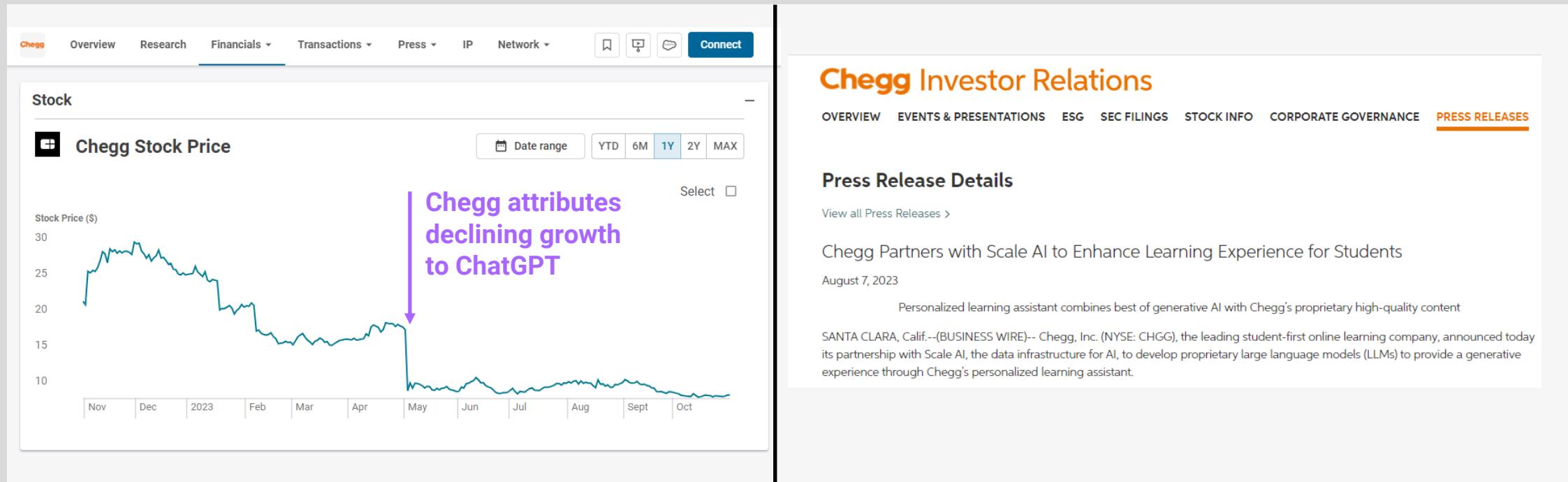
And now, some background

Since we first launched our Data API in 2008, we've seen thousands of fantastic applications built: tools to make moderation easier, utilities that help users stay up to date on their favorite topics, or (my personal favorite) this thing that helps convert helpful figures into useless ones. Our APIs have also provided third parties with access to data to build user utilities, research, games, and mod bots.

However, expansive access to data has impact, and as a platform with one of the largest corpora of human-to-human conversations online, spanning the past 18 years, we have an obligation to our communities to be responsible stewards of this content.



Chegg blames ChatGPT for declining revenue, sees its share price tank, and, in response, pivots to build LLMs

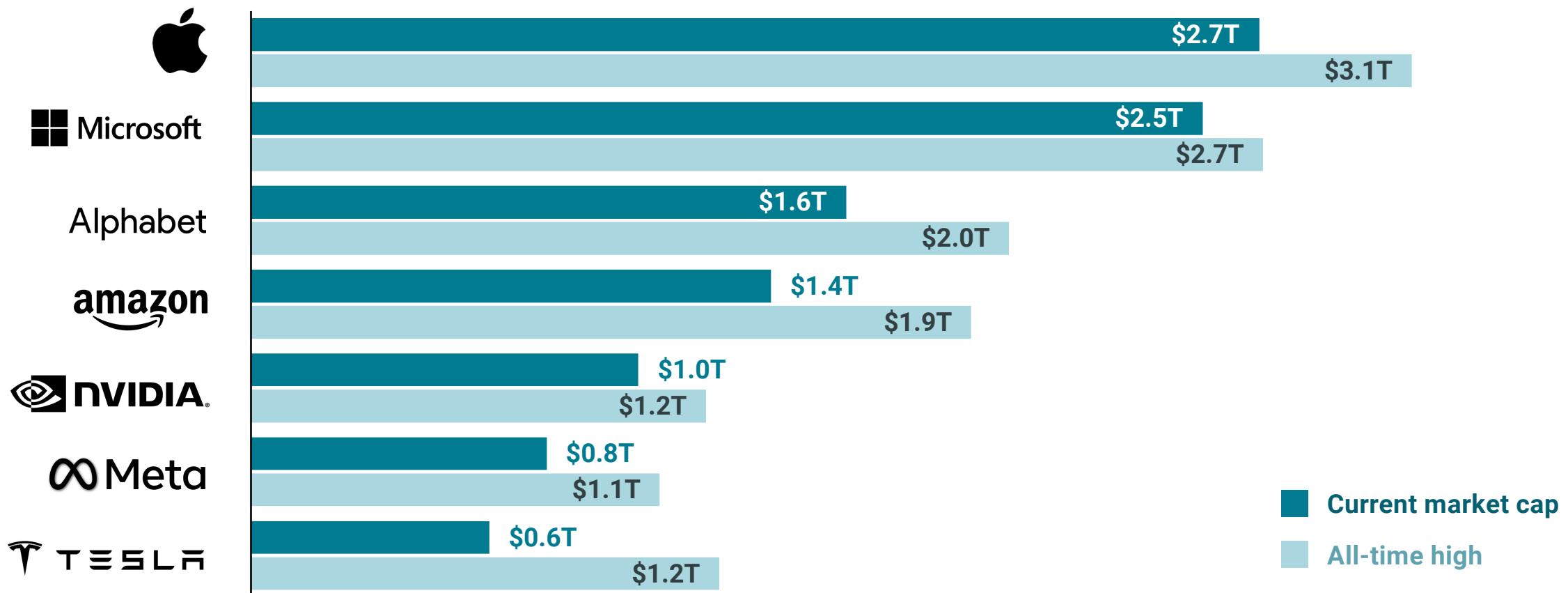


Source: CB Insights – [Chegg company profile](#), Chegg



Nvidia enters the \$1T market cap club as demand for GPUs used in genAI sends its revenue soaring

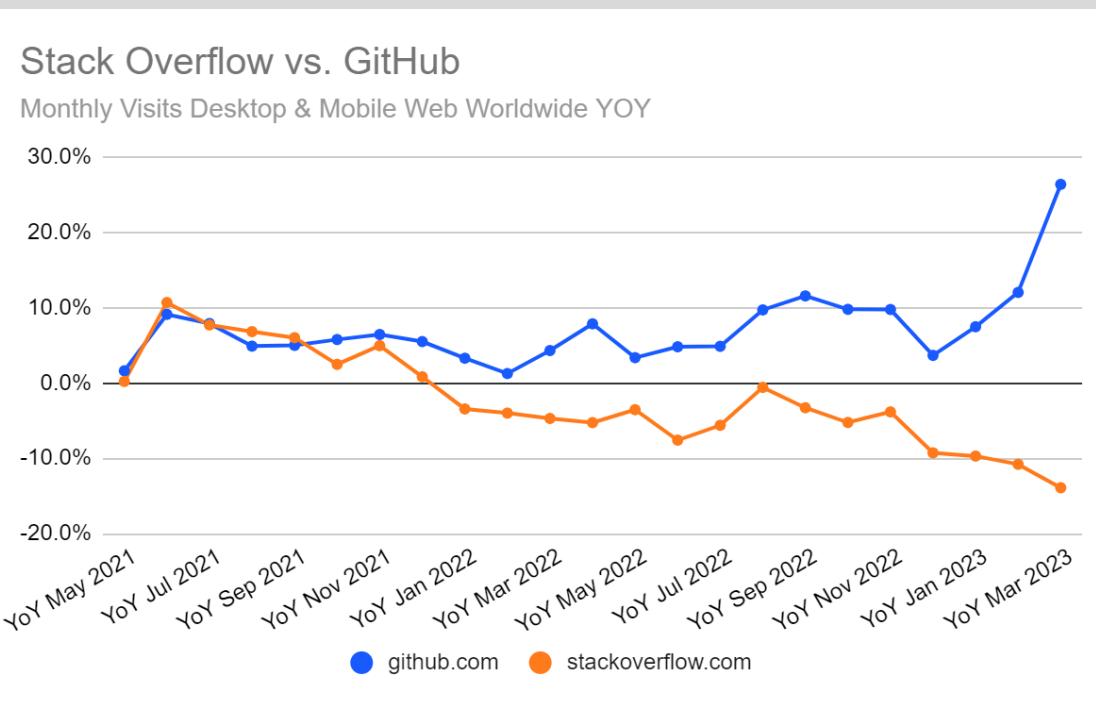
US companies to reach \$1T+ market cap (as of 10/30/2023)



*GPUs = graphics processing units, which are used to run intensive AI applications.



Stack Overflow sees declining traffic and lays off employees amid AI coding boom



LABOR / POLICY / ARTIFICIAL INTELLIGENCE

Stack Overflow lays off over 100 people as the AI coding boom continues

/ Stack Overflow has laid off 28 percent of its staff over a year after doubling its employee base in a massive hiring push.

By Wes Davis, a weekend editor who covers the latest in tech and entertainment. He has written news, reviews, and more as a tech journalist since 2020. Oct 16, 2023, 10:25 AM EDT | □ 17 Comments / 17 New

[Twitter](#) [Facebook](#) [Email](#)

Stack Overflow cuts 28 percent of its staff. Image: Stack Overflow



Even Apple scrambles as it works on its own LLM called Ajax and is on course to spend \$1B a year on genAI push

Bloomberg

Technology | AI

Apple Tests 'Apple GPT,' Develops Generative AI Tools to Catch OpenAI

- Company builds large language models and internal chatbot
- Executives haven't decided how to release tools to consumers



If you take a step back, we view AI and machine learning as core fundamental technologies that are integral to virtually every product that we build...And of course, we've been doing research across a wide range of AI technologies, including generative AI, for years. We're going to continue investing and innovating and responsibly advancing our products with these technologies with the goal of enriching people's lives...And as you know, we tend to announce things as they come to market, and that's our MO, and I'd like to stick to that.

Apple CEO Tim Cook
Q3'23 earnings call

And now suddenly is accelerating

Ambitious & flush with cash, young companies and big tech players are all rushing into this next platform shift



Hundreds of startups pile into genAI

Funding soars as
investors flock

Big tech is all in and
ready to fight

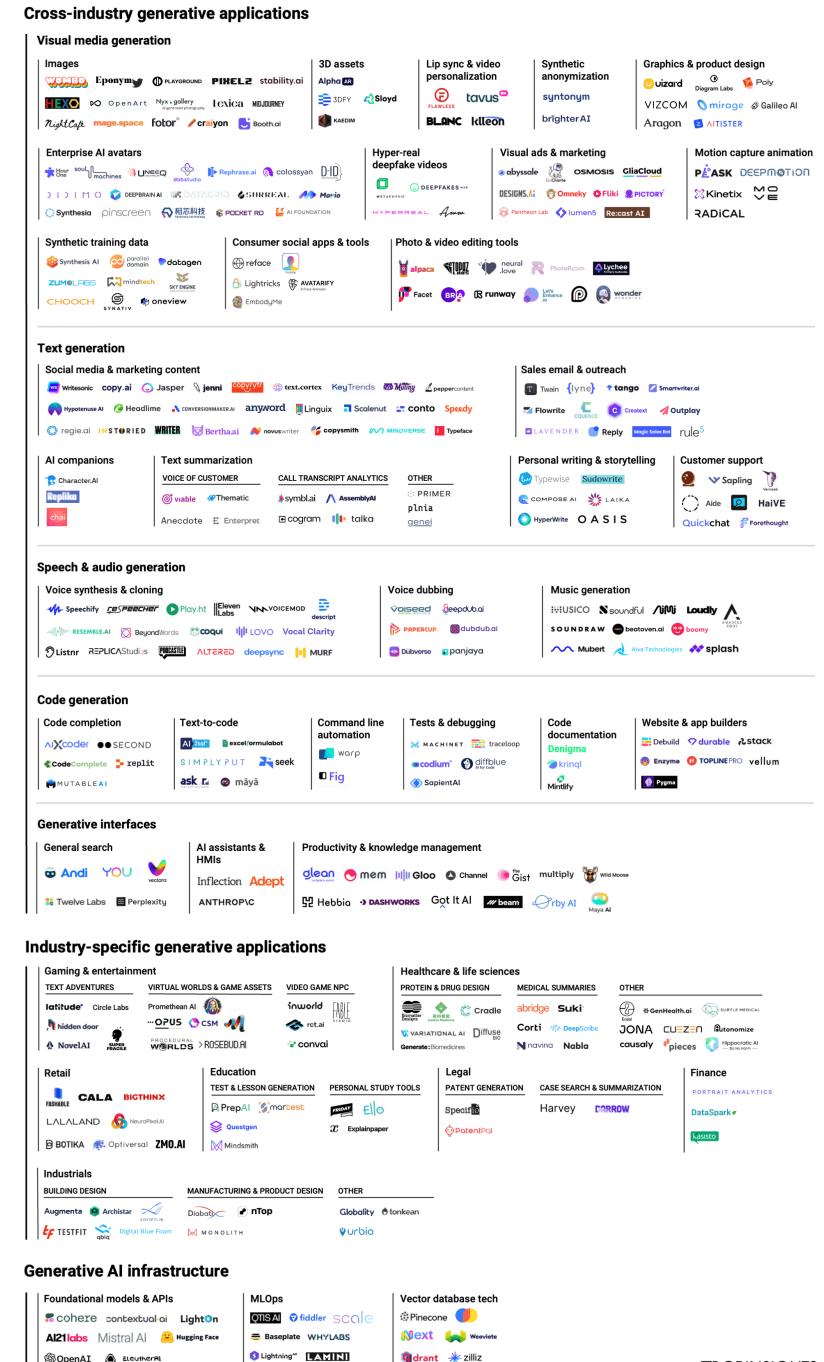


Commercial genAI applications are proliferating

Generative AI Market Map

Explore the full map

Source: CB Insights - [Generative AI Market Map](#)





300+ vendors have emerged across:

- **Cross-industry generative applications**
(visual media, text generation, code generation, etc.)
- **Industry-specific generative applications**
(healthcare, finance, etc.)
- **Generative AI infrastructure**
(foundational models, vector databases, etc.)

Source: CB Insights – [Generative AI Market Map](#)

Cross-industry generative applications

Visual media generation



Enterprise AI avatars



Synthetic training data



Consumer social apps & tools



Photo & video editing tools



Text generation



AI companions



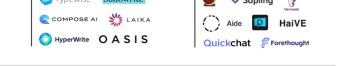
Speech & audio generation



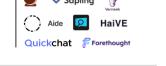
Sales email & outreach



Personal writing & storytelling



Customer support



Code generation



Generative interfaces



Industry-specific generative applications



Generative AI infrastructure



Hundreds of startups pile
into genAI

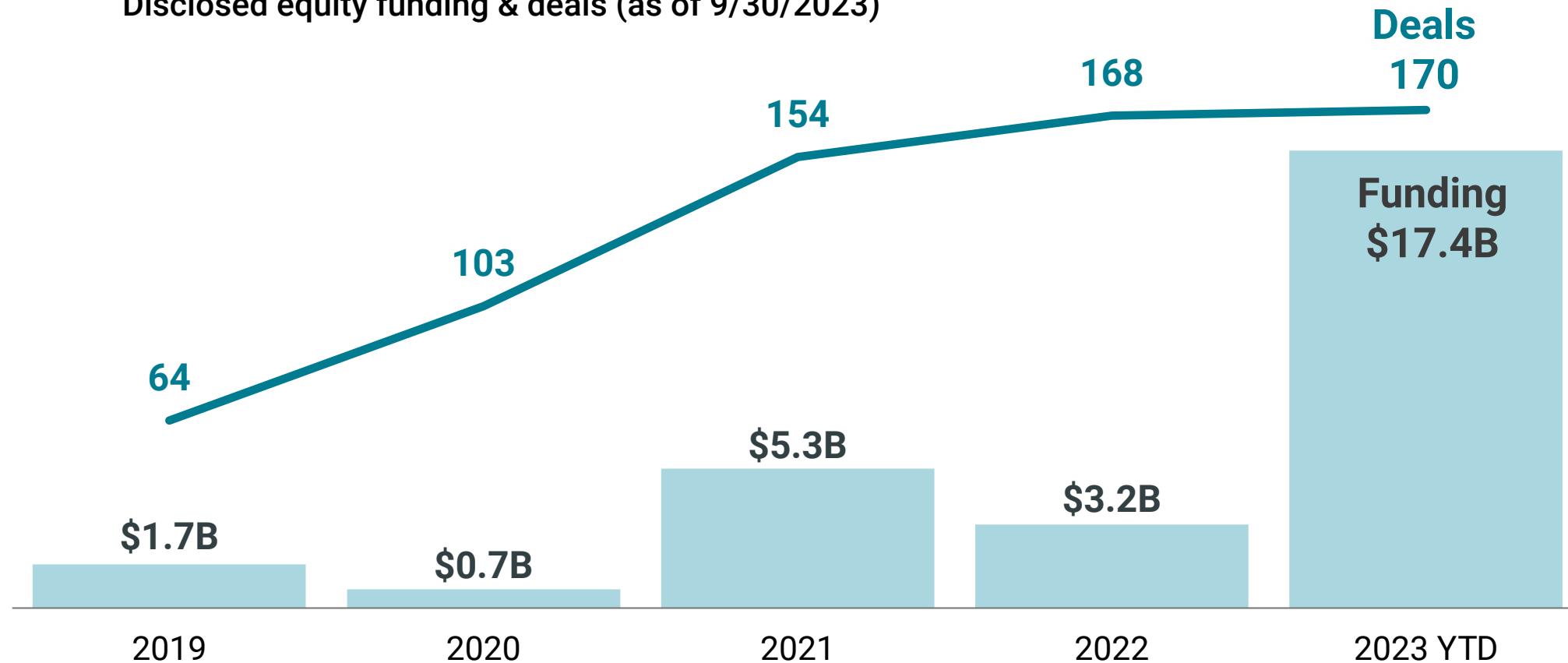
Big tech is all in and
ready to fight

**Funding soars as
investors flock**



As investors look to ride the generative AI wave, funding soars in 2023

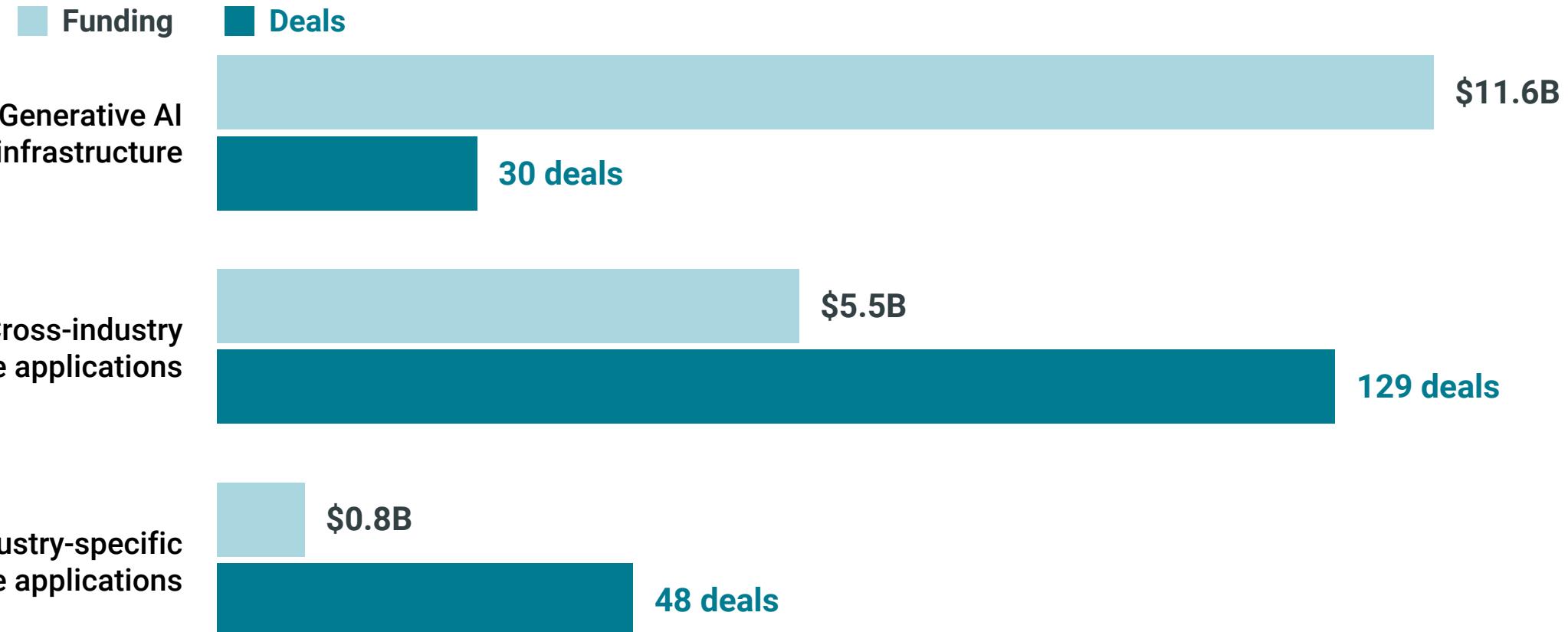
Disclosed equity funding & deals (as of 9/30/2023)





Generative AI infrastructure attracts the bulk of funding, due to the capital-intensive nature of developing LLMs

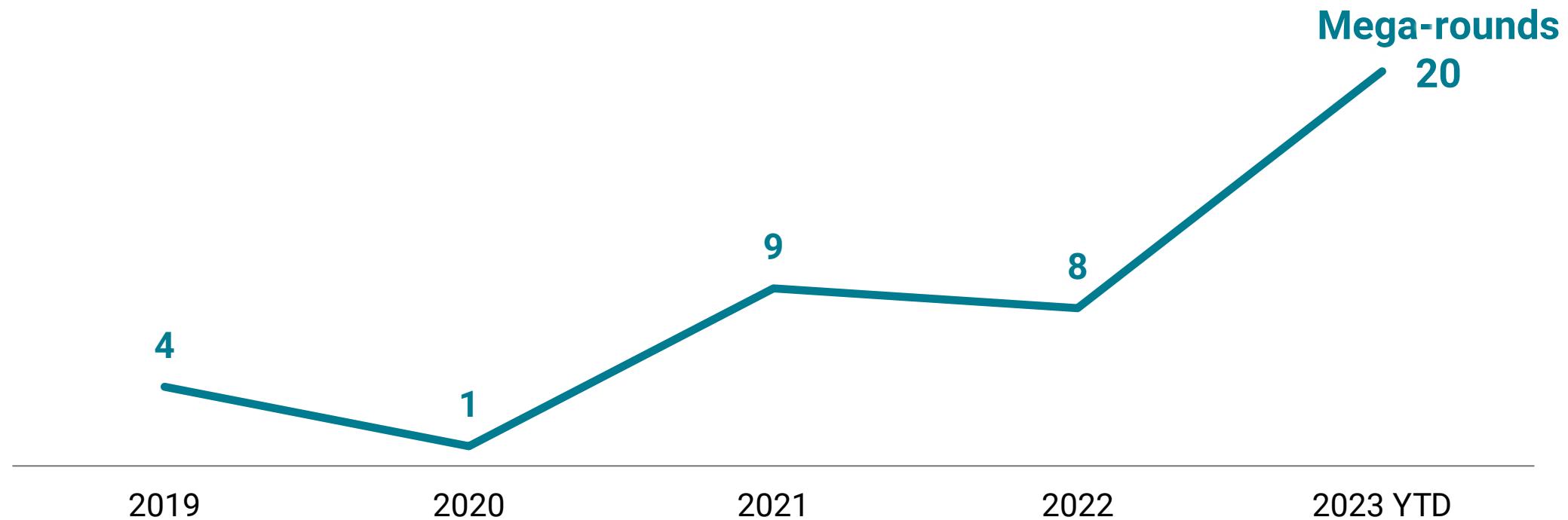
Disclosed equity funding & deals to generative AI categories, from Q4'22 to Q3'23





A record number of \$100M+ mega-rounds drive funding surge, with money primarily going to infrastructure layer

Disclosed \$100M+ genAI equity deals (as of 9/30/2023)

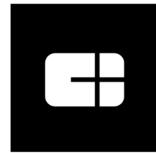




Alongside big deals, generative AI is minting unicorns left and right

New unicorns (\$1B+ valuation), Q1'23 – Q3'23

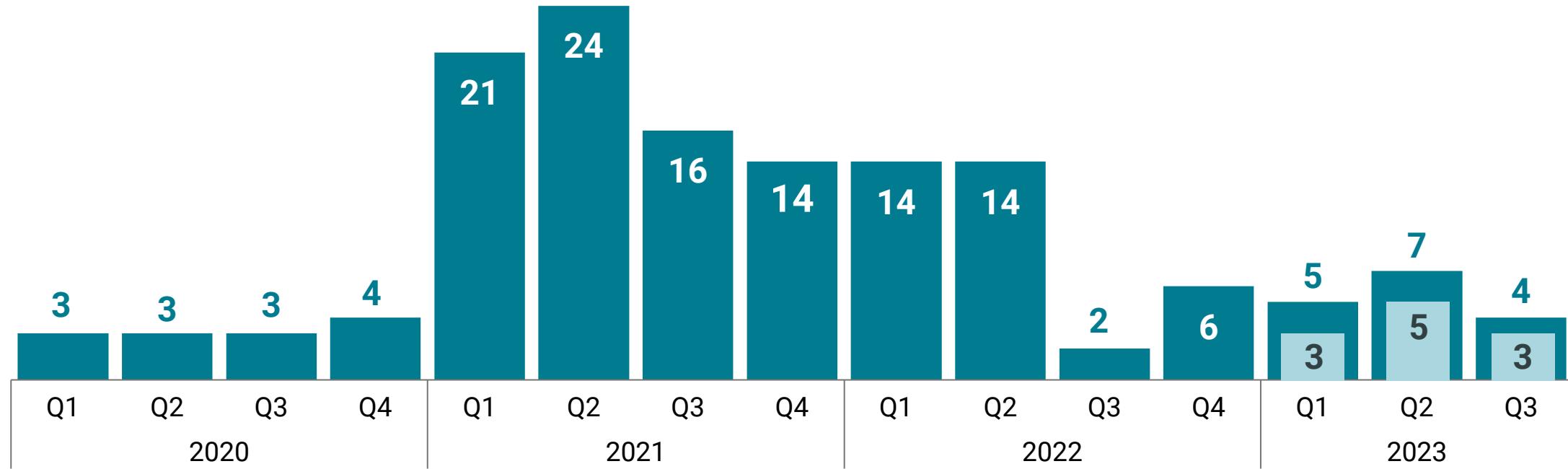
Company	Valuation	Country
1 ANTHROPIC	\$4.4B	United States
2 cohore	\$2.2B	Canada
3 runway	\$1.5B	United States
4 AI21labs	\$1.4B	Israel
5 replit	\$1.2B	United States
6 A D E P T	\$1.0B	United States
6 Character.AI	\$1.0B	United States
6 synthesia	\$1.0B	United Kingdom
6 Typeface	\$1.0B	United States
6 imbue	\$1.0B	United States
6 ZHIPU·AI	\$1.0B	China



Out of the 16 new AI unicorns in 2023 so far, 11 are genAI companies

New AI unicorns (\$1B+ valuation)

■ AI unicorns ■ 2023 genAI unicorns





Biggest M&A deal of 2023 lands in infrastructure, but the rest of M&A reflects push at the industry/application level

Generative AI M&A exits, Q1'23 – Q3'23

Company	Round	Valuation	Acquirer	GenAI Focus Area	Country
¹ MosaicML		\$1.3B	Databricks	Infrastructure	United States
² InstaDeep		\$125M	BioNTech	Healthcare & life sciences	United Kingdom
³ Casetext		\$650M	Thomson Reuters	Legal	United States
⁴ Light Year AI		\$234M	Meituan	Infrastructure	China
⁵ Valence		\$47M	Recursion	Healthcare & life sciences	Canada
Neeva		N/A	Snowflake	Enterprise tech	United States
Thankful		N/A	Gladly	Enterprise tech	United States
Fig		N/A	Amazon Web Services	Enterprise tech	United States
Codiga		N/A	Datadog	Enterprise tech	United States



The US is poised to own the genAI boom: 2x more deals in the US than the rest of the world combined

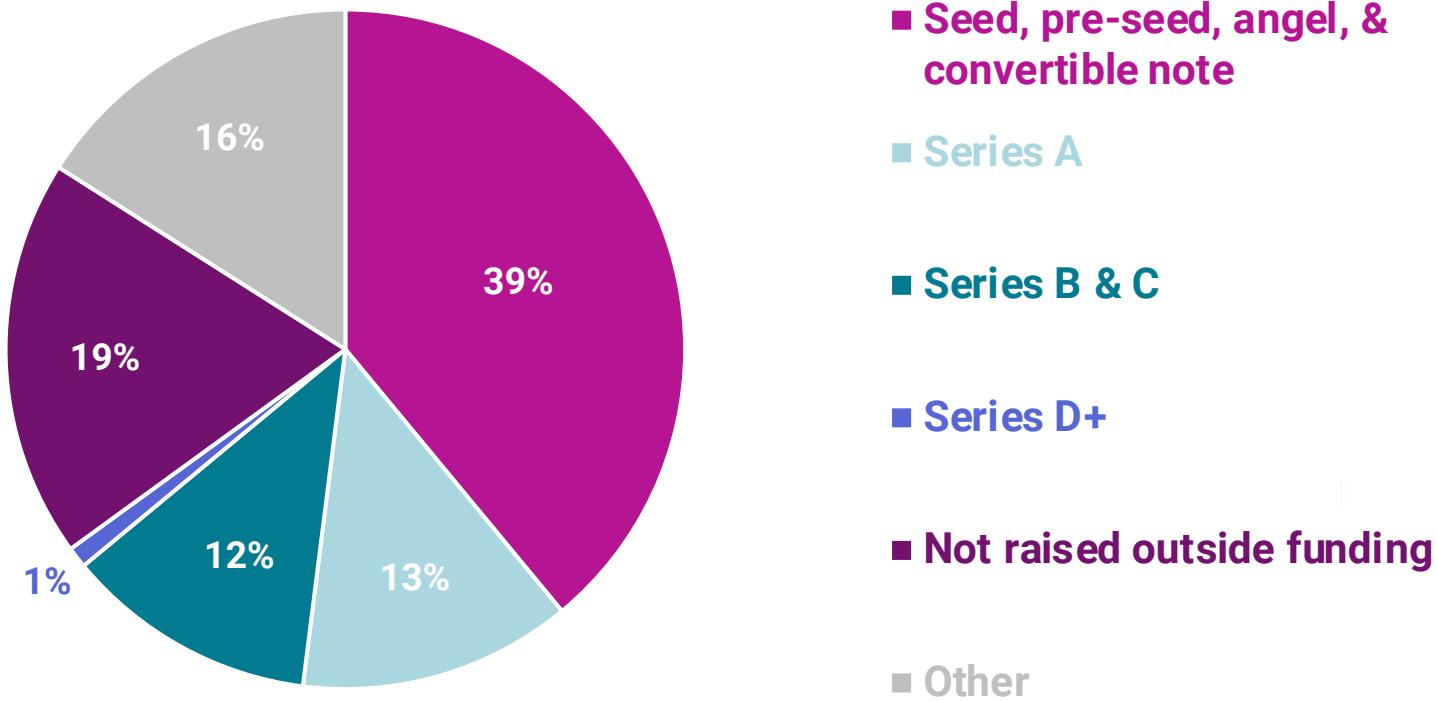
Disclosed generative AI equity deals to startups by company HQ, Q4'22 – Q3'23





But it's still early days for genAI startups – 71% are early-stage or haven't raised any funding

Percent of companies by latest disclosed round (as of 9/30/2023)



Source: CB Insights – [The state of generative AI in 7 charts](#)

*Other includes non-equity funding rounds and equity rounds not tied to specific stage of investment.

Hundreds of startups pile
into genAI

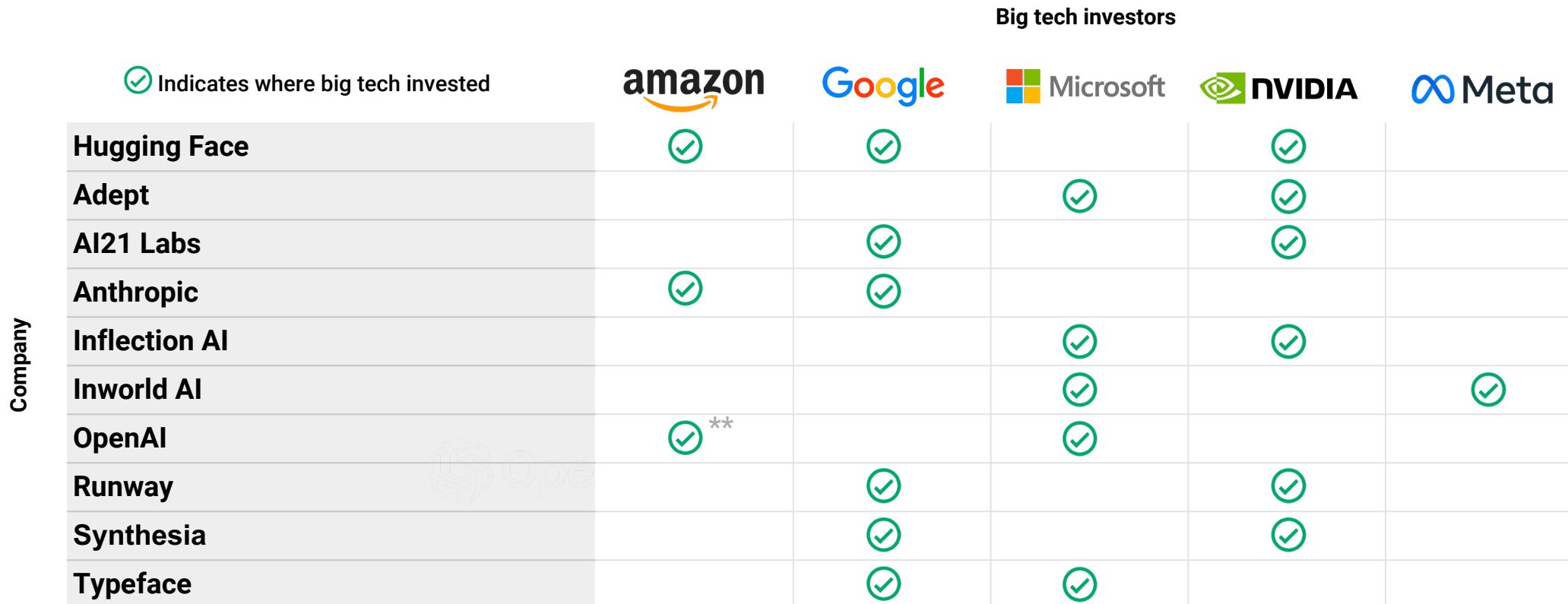
Funding soars as investors
flock

**Big tech is all in and
ready to fight**



Generative AI is a new battleground for big tech, with overlapping alliances and commitments into the billions

Generative AI companies with two or more big tech investors (as of 9/30/2023)



Source: CB Insights *Includes investments from M12 and Google Ventures

**AWS



Big tech backs every top deal in 2023 so far, with other CVCs & corporates joining the action

Top generative AI equity deals, Q1'23 – Q3'23

Company	Round Amount	Round Date	Round Valuation	Big Tech Investors	Other Select Investors	Country
1 OpenAI	\$10.0B	Corporate Minority - III 2023-01-23	N/A	Microsoft		United States
2 Inflection AI	\$1.3B	Series B 2023-06-29	\$4.0B	Microsoft, Nvidia	Gates Frontier	United States
3 Anthropic	\$1.25B	Corporate Minority - V 2023-09-25	N/A	Amazon		United States
4 Anthropic	\$450M	Series C 2023-05-23	\$4.1B	Google	Menlo Ventures, SK telecom ventures, Salesforce Ventures, Zoom Ventures	United States
5 Anthropic	\$400M	Corporate Minority 2023-02-03	\$4.1B	Google		United States
6 Adept	\$350M	Series B 2023-03-14	\$1.0B	Microsoft, Nvidia	General Catalyst, Spark Capital, Atlassian Ventures, Workday Ventures, Greylock Partners	United States
7 Generate Biomedicines	\$273M	Series C 2023-09-14	N/A	NVentures	Abu Dhabi Investment Authority, Amgen, Fidelity Investments, Flagship Pioneering, MAPS Capital	United States
8 Cohere	\$270M	Series B 2023-05-02	\$2.2B	Nvidia	Inovia Capital, Index Ventures, Oracle, Salesforce Ventures, SentinelOne	Canada
9 Hugging Face	\$235M	Series D 2023-08-23	\$4.5B	Amazon, Google Ventures, NVentures	Salesforce Ventures, AMD, IBM Ventures, Intel Capital, Qualcomm Ventures	France
10 Imbue	\$200M	Series B 2023-09-07	\$1.0B	Nvidia	Astera Institute	United States

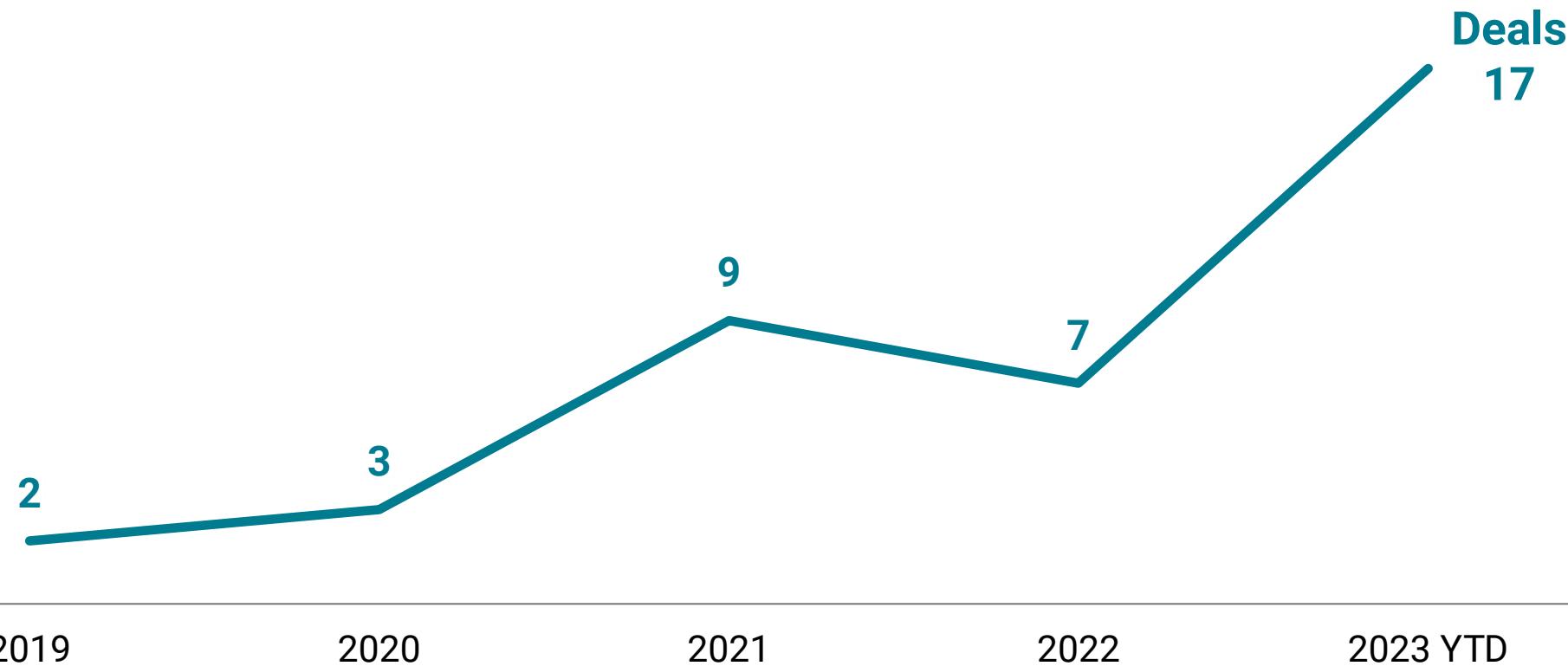
Source: CB Insights – [Advanced Search – Deals](#)

*Big tech includes Amazon, Apple, Microsoft, Meta, Google, and Nvidia



Nvidia increases its investment activity dramatically...

Equity deals backed by Nvidia (as of 10/25/2023)





...becoming the most active investor in generative AI

Top generative AI investors by company count, Q1'23 – Q3'23

Investor	Company Count	Investor Group	Country
1 Nvidia	9	Corp	United States
2 SV Angel	7	Angel	United States
3 Salesforce Ventures	6	CVC	United States
3 Index Ventures	6	VC	United States
3 Andreessen Horowitz	6	VC	United States
6 GV (Google Ventures)	5	CVC	United States
7 Microsoft	4	Corp	United States
7 Sequoia Capital	4	VC	United States
7 Lightspeed Venture Partners	4	VC	United States



The dominant chipmaker is cashing in on the genAI computing boom, backing startups using its chips...

Nvidia-backed equity deals to generative AI companies (as of 9/30/2023)

Inflection AI builds the largest AI cluster in the world

Palo Alto, CA, June 29th, 2023 – Inflection AI today announced that the company has raised \$1.3 billion in a fresh round of funding led by Microsoft, Reid Hoffman, Bill Gates, Eric Schmidt, and new investor NVIDIA. The new funding brings the total raised by the company to \$1.525 billion.

Along with its partners CoreWeave and NVIDIA, Inflection AI is building the largest AI cluster in the world comprising 22,000 NVIDIA H100 Tensor

Core GPUs. In just over a year, Inflection AI has developed one of the most sophisticated large language models in the market to enable people to interact with Pi, your Personal AI (pi.ai), in the most simple, natural way and receive fast, relevant and helpful information and advice.

10 Deals \$2.92B Total Deal Amount				
Companies	Investment Stage	Deal Size	Deal Date	
Inflection AI	Series B	\$1,300.00M	06/29/2023	
Adept	Series B	\$350.00M	03/14/2023	
Generate Biomedicines	Series C	\$273.00M	09/14/2023	
Cohere	Series C	\$270.00M	05/02/2023	
Hugging Face	Series D	\$235.00M	08/23/2023	
AI21 Labs	Series C	\$155.00M	08/30/2023	
Runway	Series C - II	\$141.00M	05/04/2023	
Aleph Alpha	Series B	\$108.91M	06/30/2023	
Synthesia	Series C	\$90.00M	06/13/2023	
MindsDB	Series A - III		08/08/2023	



...as demand for Nvidia GPUs far exceeds supply



If you're trying to do the training of the models, then having the **absolute latest, greatest GPU, the H100 from Nvidia right now, there's a lot of constraint in getting those chips.**

CEO Matthew Prince,
Q3'23 earnings call



Kingsoft Cloud

There is [a] significant bottleneck in terms of Nvidia's GPU chips...in short, the demand far exceeds the supply in the market. And that is not the situation for us as one company, it is a general situation for the industry...We had originally expected the revenue from AI to be shown in our financials in the third quarter and that is likely to be delayed due to the shortage of supply of GPU servers through the fourth quarter or even the first quarter of 2024.

CEO Tao Zou
Q3'23 earnings call



Microsoft steps up its genAI investment activity beyond its \$13B invested in OpenAI...

Microsoft-backed equity deals to generative AI companies (as of 9/30/2023)

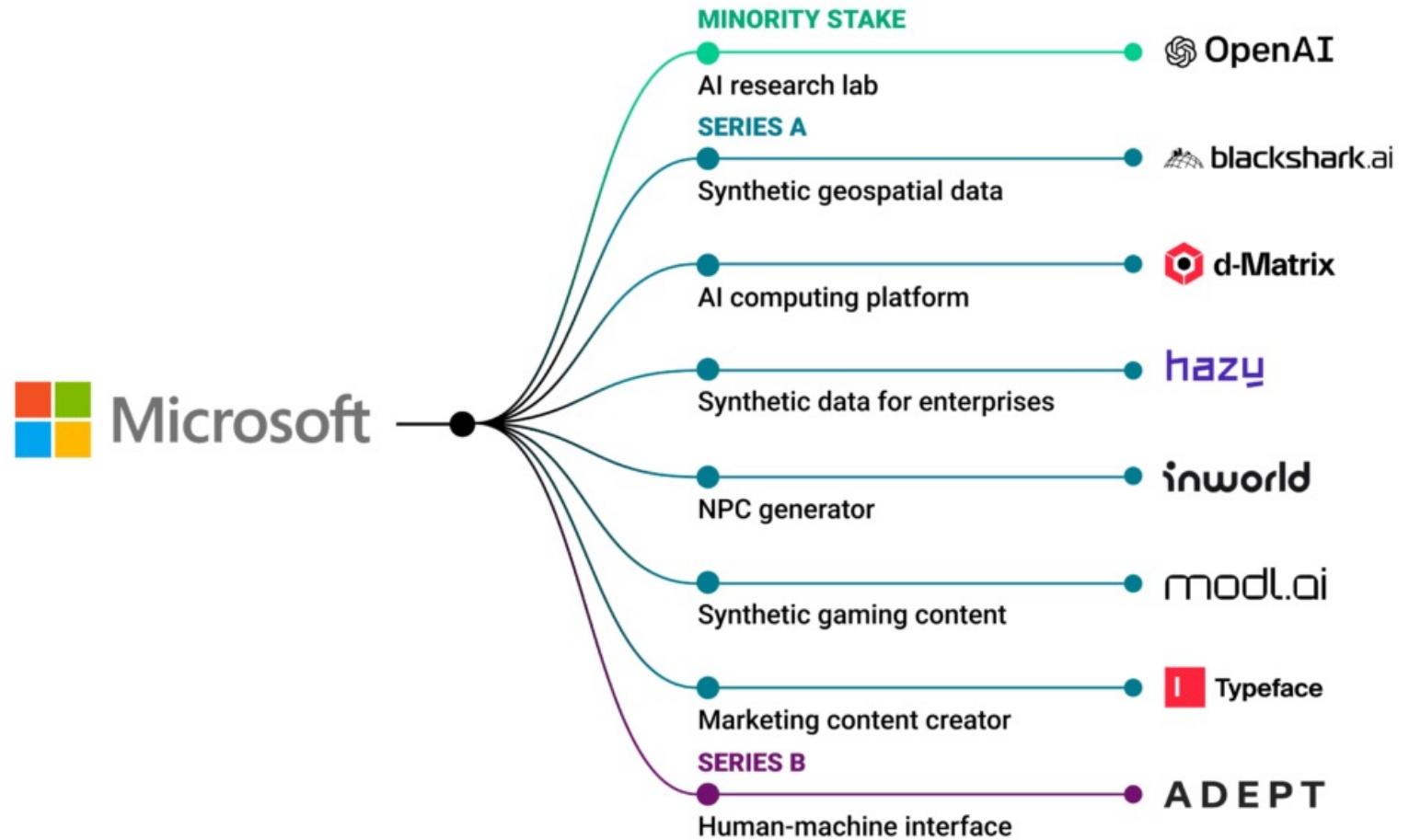
13 Deals \$15.35B Total Deal Amount							
<input type="checkbox"/> Companies	▼	Investment Stage	▼	Deal Size	▼	Deal Date	⬇️
<input type="checkbox"/> D-Matrix	D	Series B		\$110.00M		09/06/2023	
<input type="checkbox"/> Inworld AI		Series A - II		\$50.00M		08/02/2023	
<input type="checkbox"/> Typeface	I	Series B		\$140.00M		06/29/2023	
<input type="checkbox"/> Inflection AI		Series B		\$1,300.00M		06/29/2023	
<input type="checkbox"/> Adept	ADEPT	Series B		\$350.00M		03/14/2023	
<input type="checkbox"/> Typeface	I	Series A		\$65.00M		02/27/2023	
<input type="checkbox"/> OpenAI		Corporate Minority - III		\$10,000.00M		01/23/2023	
<input type="checkbox"/> Inworld AI		Series A		\$50.00M		07/20/2022	
<input type="checkbox"/> Inflection AI		Series A		\$225.00M		05/13/2022	
<input type="checkbox"/> D-Matrix	D	Series A		\$44.00M		04/20/2022	
<input type="checkbox"/> Blackshark.ai		Series A		\$20.00M		11/10/2021	
<input type="checkbox"/> OpenAI		Corporate Minority - II		\$2,000.00M		01/01/2021	
<input type="checkbox"/> OpenAI		Corporate Minority		\$1,000.00M		07/22/2019	

Source: CB Insights – [Advanced Search - Deals](#) *Includes deals backed by Microsoft's venture arm M12



...betting that generative AI could tip the competitive scales in its favor for decades to come

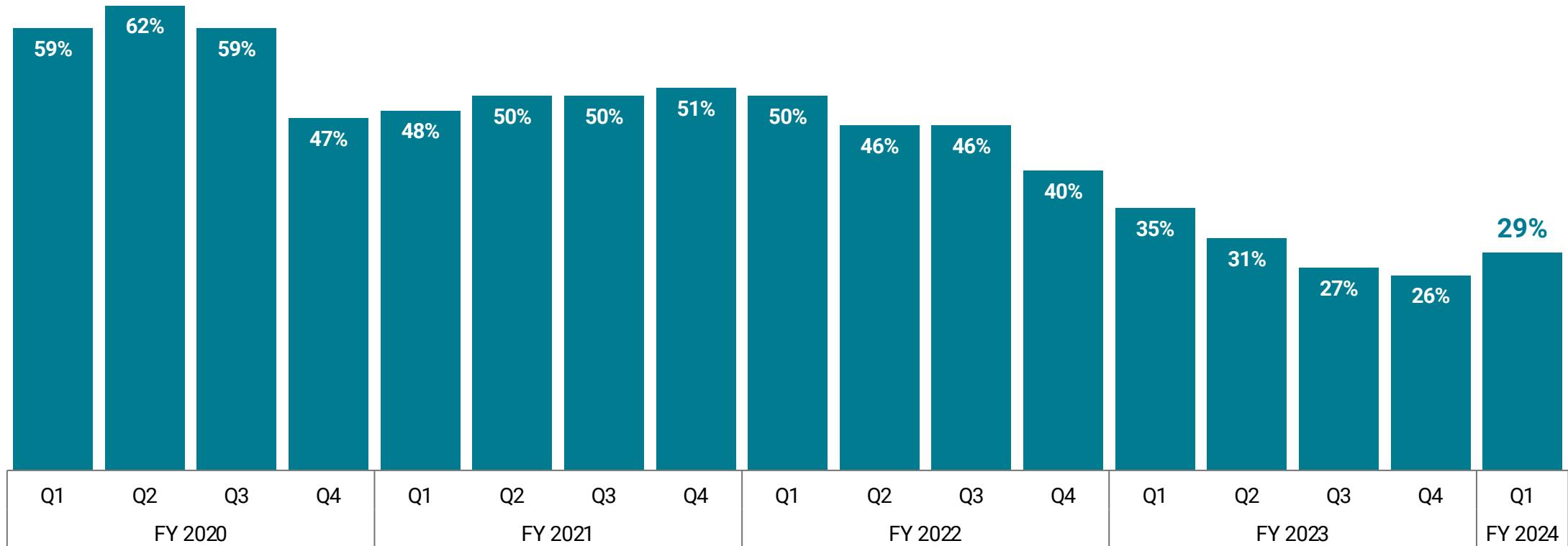
Microsoft Investment Thesis Map – Generative AI





Microsoft's investments in genAI help reverse slowing Azure growth and contribute to 3 percentage point bump

Azure and other cloud services revenue growth (year-over-year) by quarter





Alongside its Bard chatbot, Google puts billions toward internal AI research & a range of AI startups

Google-backed equity deals to generative AI startups (as of 10/27/2023)

20 Deals \$2.64B Total Deal Amount					
	Companies	Investment Stage	Deal Size	Deal Date	Round Investors
	Anthropic	Corporate Minority - VI	\$500.00M	10/27/2023	Google
	Writer	Series B	\$100.00M	09/18/2023	Accenture Ventures, Aspect Ventures, ...
	AI21 Labs	Series C	\$155.00M	08/30/2023	Amnon Shashua, Google, ...
	Hugging Face	Series D	\$235.00M	08/23/2023	AMD Ventures, Amazon, Google Ventures, ...
	Speedy	Seed VC	\$2.50M	07/07/2023	Google Ventures, Y Combinator
	Typeface	Series B	\$140.00M	06/29/2023	Google Ventures, Lightspeed Venture Partner...
	Warp	Series B	\$50.00M	06/22/2023	BoxGroup, Dylan Field, Google Ventures, ...
	Synthesia	Series C	\$90.00M	06/13/2023	Accel, Alex Wang, Amjad Masad, ...
	Anthropic	Series C	\$450.00M	05/23/2023	Brighter Capital, GoldenArc Capital, Google, ...
	Runway	Series C - II	\$141.00M	05/04/2023	Google, NVIDIA, Salesforce Ventures
	Typeface	Series A	\$65.00M	02/27/2023	Google Ventures, Lightspeed Venture Partner...
	Anthropic	Corporate Minority	\$400.00M	02/03/2023	Google
	InstaDeep	Series B	\$100.00M	01/25/2022	Alpha Intelligence Capital, BioNTech, ...
	Synthesia	Series B	\$50.00M	12/08/2021	Google Ventures, ...
	Writer	Series A	\$21.00M	11/16/2021	Alex MacCaw, Ankur Nagpal, Austin Rief, ...
	Snorkel AI	Series C	\$85.00M	08/09/2021	Addition, BlackRock, Google Ventures, ...
	Snorkel AI	Series B	\$35.00M	04/07/2021	BlackRock, Google Ventures, Greylock Partne...
	Snorkel AI	Series A	\$12.00M	07/14/2020	Google Ventures, Greylock Partners, In-Q-Tel

Source: CB Insights – [Advanced Search - Deals](#) *Includes investments by Google, Google Ventures, and Gradient Ventures



Amazon and Google commit billions to LLM developer Anthropic in battle with OpenAI-backer Microsoft

CB INSIGHTS Search for topics or organizations (Type OR, AND, NOT in all caps for boolean)

ANTHROPIC Overview Research Transactions Press Network Transcripts Connect

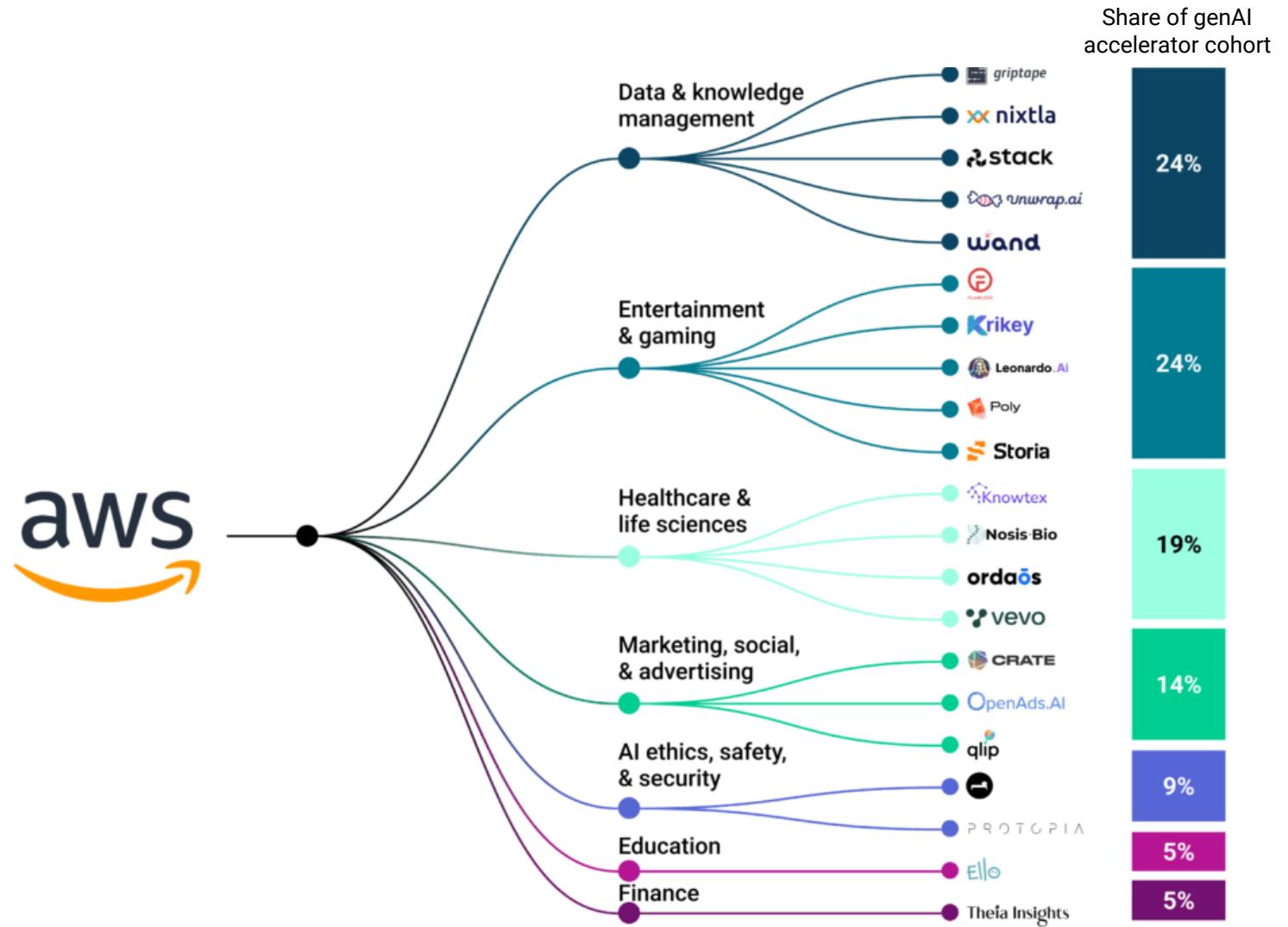
Date	Round	Amount	Investors	Valuation	Sources
10/27/2023	Corporate Minority - VI	\$500M	Google	3	
9/25/2023	Corporate Minority - V	\$1,250M	Amazon	9	
8/14/2023	Corporate Minority - IV	\$100M	SK Telecom	3	
8/7/2023	Unattributed VC		LG Technology Ventures	1	
7/19/2023	Corporate Minority - II		SAP	4	
5/23/2023	Series C	\$450M	Spark Capital (Lead), Brighter Capital, and 9 more	\$4,100M	9
2/3/2023	Corporate Minority	\$400M	Google	\$4,100M	23
1/1/2023	Seed VC		Pioneer Fund		
4/29/2022	Series B	\$580M	Sam Bankman-Fried (Lead), Alameda Research, and 5 more	7	
6/1/2021	Series A	\$124M	Dustin Moskovitz, Eric Schmidt, and 3 more	\$516.62M	4

Source: CB Insights – [Anthropic company profile - funding](#)



Amazon launches \$100M generative AI accelerator, looking to feed its cloud computing business

AWS Generative AI
Accelerator Investment
Thesis Map



So where is genAI headed?

Generative AI will soon be impossible to ignore as disruptive applications spread

-
1. Race to dominate genAI infrastructure
 2. Cross-industry applications face pressure from large players
 3. Opportunity in vertical genAI



1. Race to dominate genAI infrastructure

No clear winner yet in foundational models

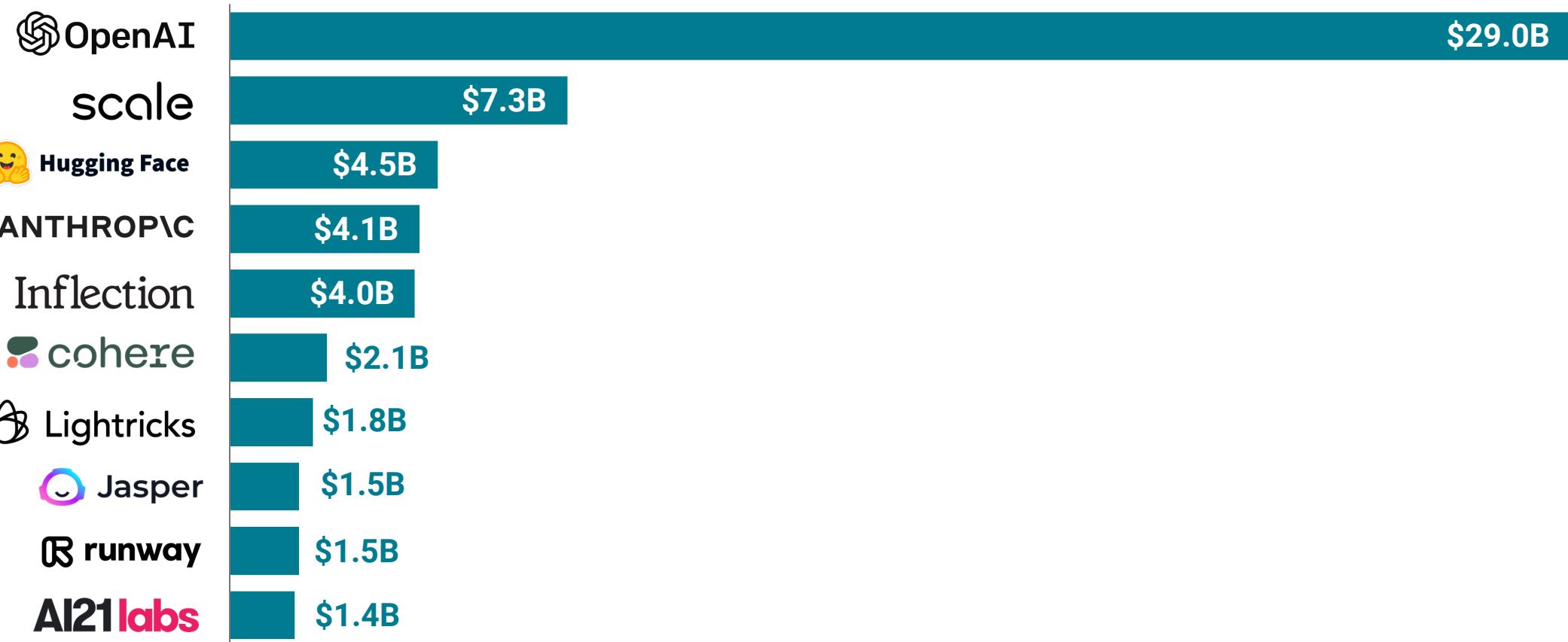
Open-source AI movement gains steam

LLM infrastructure market grows rapidly



Highest-valued genAI unicorns compete primarily at the infrastructure layer

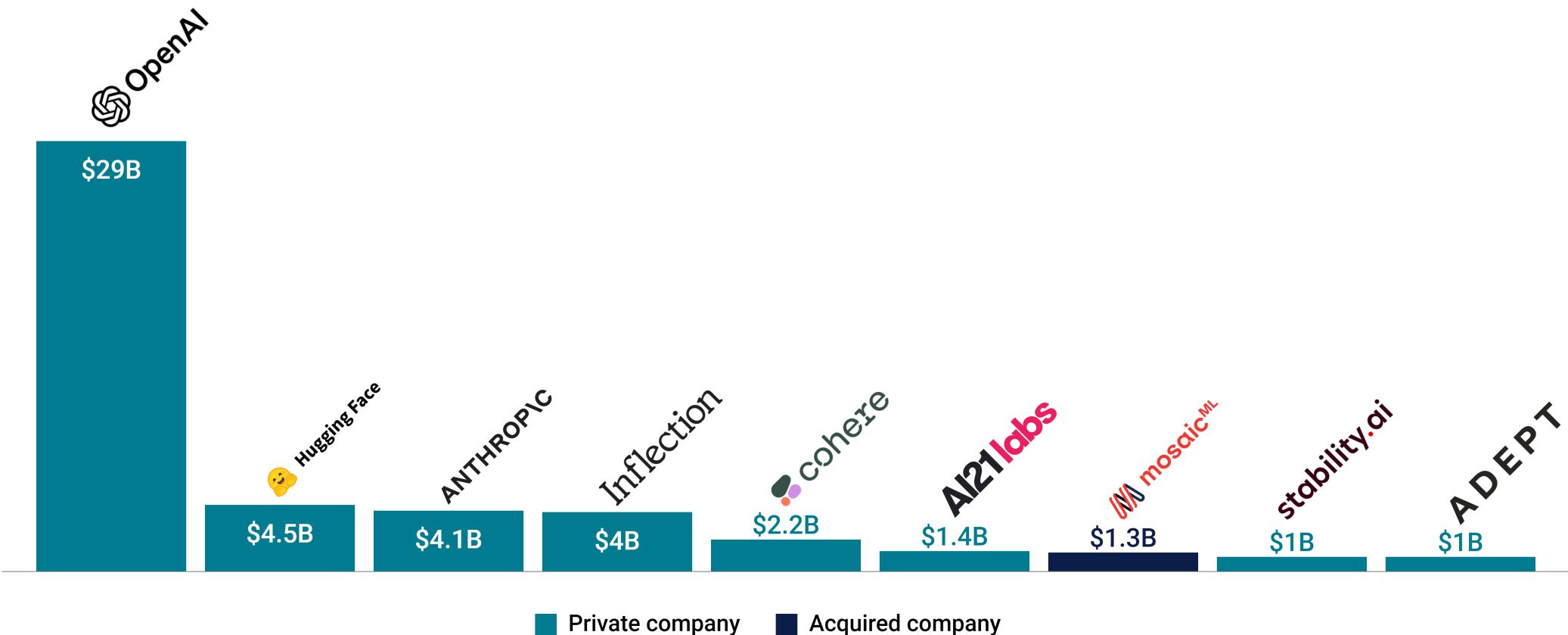
Most highly valued private generative AI companies (as of 09/30/2023)





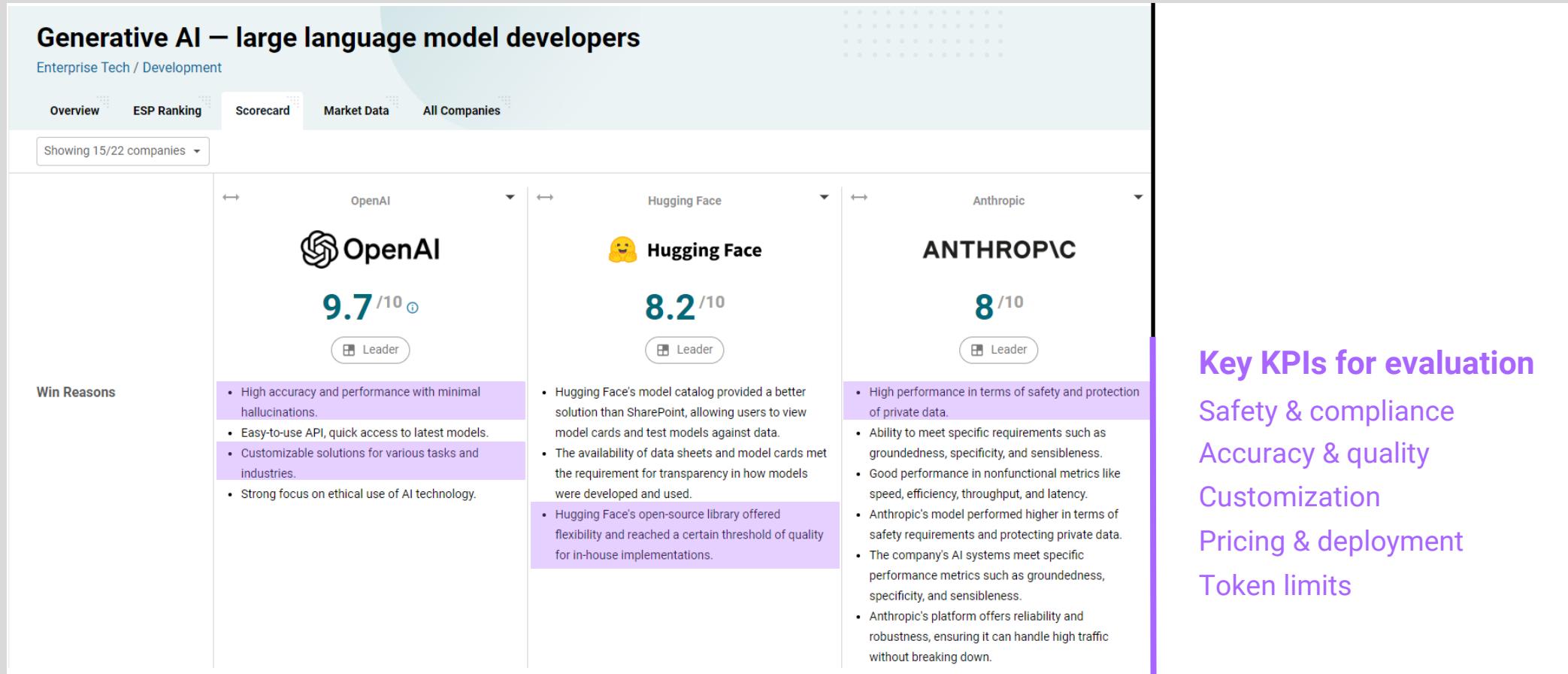
4 LLM developers – Anthropic, Cohere, AI21 Labs, and Adept – join the unicorn club in 2023

Leading LLM developers by valuation (as of 09/30/2023)





While OpenAI has clear lead, vendors are competing on multiple fronts to become the go-to model developer



Source: CB Insights - [Generative AI – large language model developers market report - scorecard](#)



Executive interest in AI has surged



Enterprise demand for AI and accelerated computing is strong.

We are seeing momentum in verticals such as automotive, financial services, healthcare, and telecom, where **AI and accelerated computing are quickly becoming integral to customers' innovation roadmaps and competitive positioning.**

CFO Colette Kress
Q2'23 earnings call



Enterprises are spending millions with LLM developers...

Annual spend ranges displayed

AI21labs  \$100K - \$500K

ANTHROP\IC  \$20K - \$2M

cohere  \$25K - \$300K

 **Hugging Face**  \$50K - \$100K

 **mosaic^{ML}**  \$15K - \$800K

 **OpenAI**  \$40K - \$5M



...but reducing costs & time to train are key priorities



Mosaic ML offers what's called programmatic optimization, which is not so much on the hardware side of things, but rather on the algorithmic side. **Can you find ways of optimizing the time it takes to get to a certain performance bar?** I think that's really what drove us to evaluate MosaicML. In fact, it was pretty much the main tool out there right now that offers this. I don't think there's any other tool that really has this programmatic optimization layer.

Senior Manager, Data Science,
\$1B+ valuation technology company



One of the things that we're really trying to do is reduce the cost for a lot of our large language models and training...What we liked about Mosaic was it is a lot less expensive in terms of the training models... Right now, I would project, just based on our usage, I think the initial spend was \$15,000 per annum. I would expect next year to probably be \$200,000, \$250,000. We're a very large organization and there's been a lot of interest in MosaicML.

Vice President, Innovation,
Fortune Global 500 company



Safety & compliance will be in focus for enterprise customers



Science & Engineering | Unknown | June 2023 | 21 min read

Cohere customer – Sr. Research Engineer at Fortune Global 500 company

Customer	Purchase details		
Title	Sr. Research Engineer	Purchase date	Q2 2022
Company	Fortune Global 500 company	Purchase amount	\$300k/year
Role	Key decision maker	Implementation time	2 months
Experience		CSAT score	6
		Intent to renew	

Summary

- Customer needed to lower cognitive burden of service & operations unit.
- Utilized Cohere for text-based search queries, GPT-4, & Med plugin.
- Compliant with GDPR, HIPAA, EMA, & CA Data Protection.
- Recalls info from previous times & answers multi-part questions.
- Paid for higher level of support & nuanced conversations.

“

Cohere's API is ready to use...Where the convers when you talk about co-tuning to use case.



Business Intelligence, Analytics & Performance Mgmt | Internet Software & Services | June 2023 | 13 min read

Anthropic customer – Senior Manager, Data Science at \$1B+ valuation technology company

Customer	Purchase details		
Title	Senior Manager, Data Science	Purchase date	Q1 2023
Company	\$1B+ valuation technology company	Purchase amount	\$50k/year
Role	Member of decision making team / committee	Implementation time	
Experience		CSAT score	6
		Intent to renew	80%

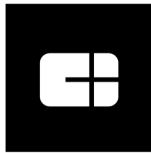
Summary

- Customer sought model-as-a-service platform
- Evaluated OpenAI, Cohere, AI21 Labs, Hugging Face
- Selected Anthropic for safety, performance, customizability
- Paid 50k/mo for OpenAI, 6k/mo for Anthropic
- Integrates into customer's Slack workflow

“

We most likely will be continuing to renew [our spending on Anthropic] until we see clear usage patterns from our user side that shows that it's too much, the cost of maintaining and integrating Anthropic outweighs the revenue that we make from using the Anthropic model.

– Senior Manager, Data Science



Concern around AI risks puts responsible AI solutions in the spotlight

These tools help enterprises build and deploy AI in an ethical and legal manner

The responsible AI market map

Training data curation



Data anonymization & de-identification



Version control & experiment tracking



Synthetic training data generation

Tabular



Media



Federated learning platforms



AI auditing & governance



Foundation models



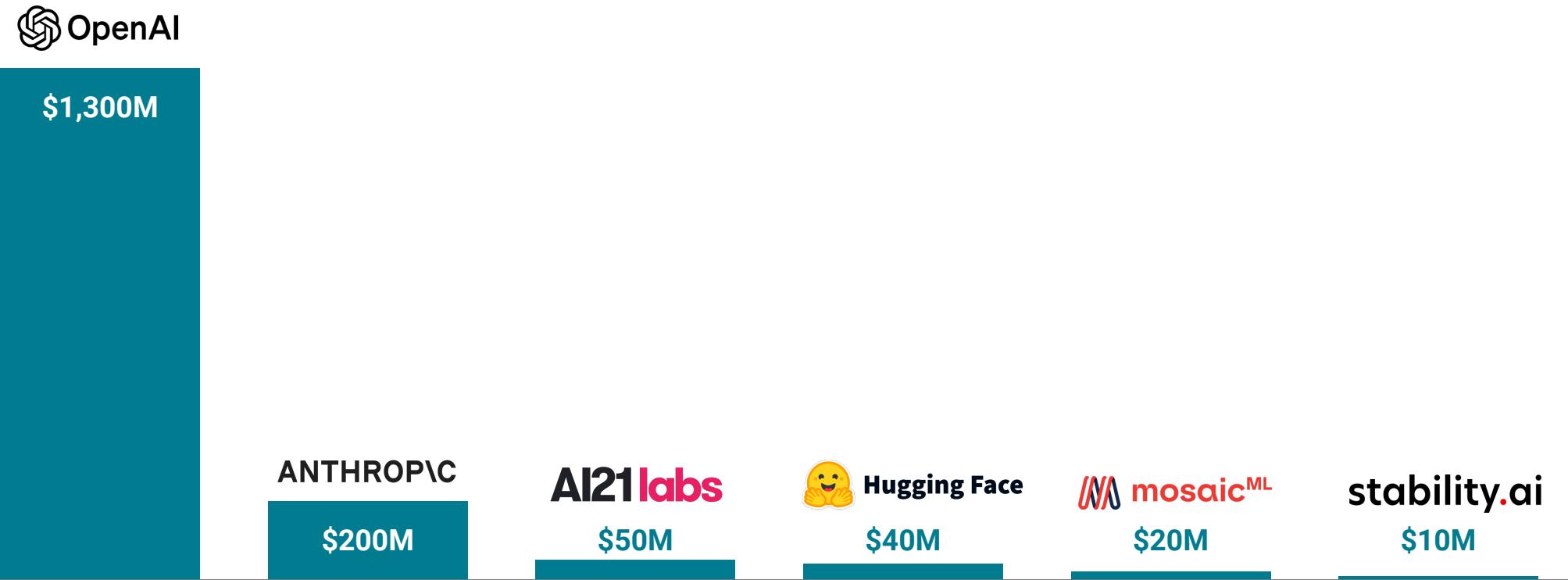
Model validation & monitoring





As LLM developers burn through cash, focus will shift to customer adoption – and revenue

Latest disclosed or whisper revenue (as of 10/18/2023)

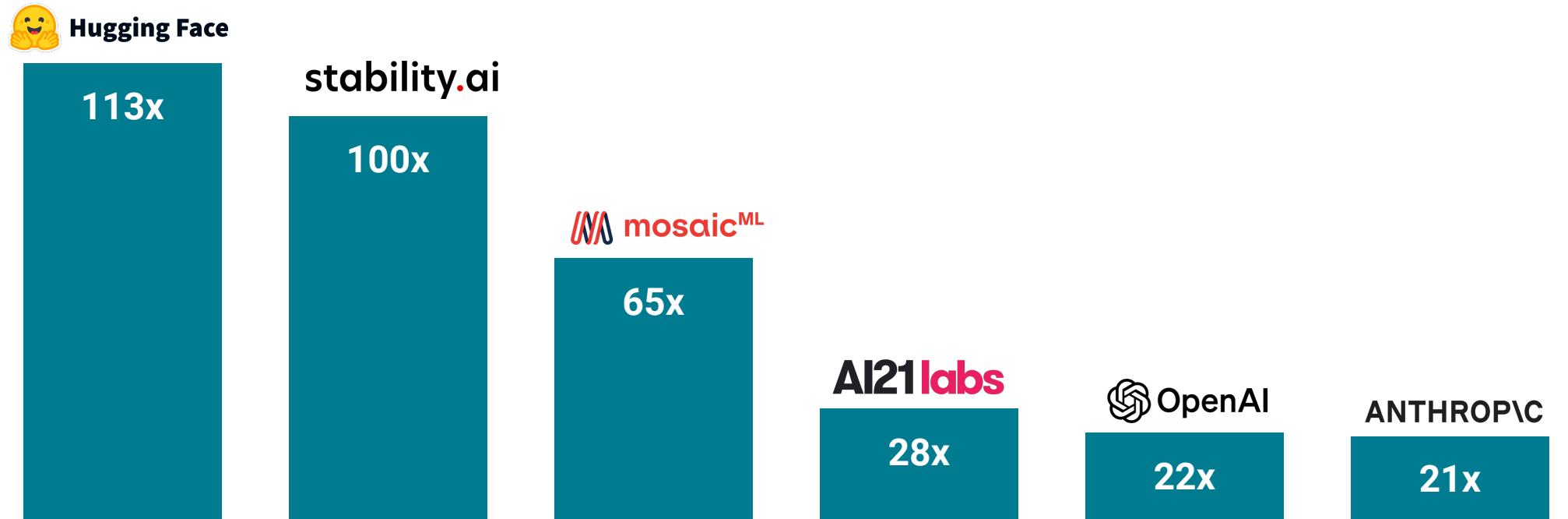


Source: CB Insights – Figures represent the latest disclosed revenue (based on company discussion or media sources). All revenues are full-year 2023 ARR projections, except for MosaicML (reported ARR at time of acquisition in June 2023).



Companies need to grow into big valuations and will come under pressure to build real business models

Revenue multiples (as of 10/18/2023)



Source: CB Insights – Figures represent the latest disclosed valuation divided by revenue (based on company discussion or media sources). All revenues are full-year 2023 ARR projections, except for MosaicML (reported ARR at time of acquisition in June 2023).



There's no winner yet in foundational models

ANTHROPIC

Strengths, I would say, the ethical considerations of privacy and bias, fairness...their model outperformed the other models, including GPT-3 and ChatGPT...**In terms of weaknesses, the specificity of the model output and the interestingness of the model output...** I think that other weakness also was in terms of speed and efficiency, like latency, and once you ask a question, how long does it take to fully respond.

Senior Manager of Data Science,
Model-as-a-service platform

AI21labs

We were considering obviously OpenAI, Cohere, Anthropic, and deepset...**To be honest, the reason that we actually chose AI21 is because the interface is super easy to use for non-tech people...**I actually tested Cohere pretty extensively...I think that their models are really strong and also for some of the creative work, I thought they were doing slightly even better than even OpenAI when it comes to creative stuff, like ad copy and marketing related tasks.

Head of AI,
\$100M+ funded technology startup

OpenAI

The first two things that came to my mind is, of course, OpenAI is still the market leader. That gives us the sense of comfort and we are confident on this market-leading product...On the flip side of the open-source platforms that I just mentioned, the **Hugging Face and the Llama 2, we don't have much faith and information about how they are going to deal with our data.** **That's the key to the enterprise world.** If we are not certain, then I would rather pass my roles to OpenAI.

Cloud, Data & AI Lead,
Fortune 500 company

1. Race to dominate genAI infrastructure

No clear winner yet in foundational models

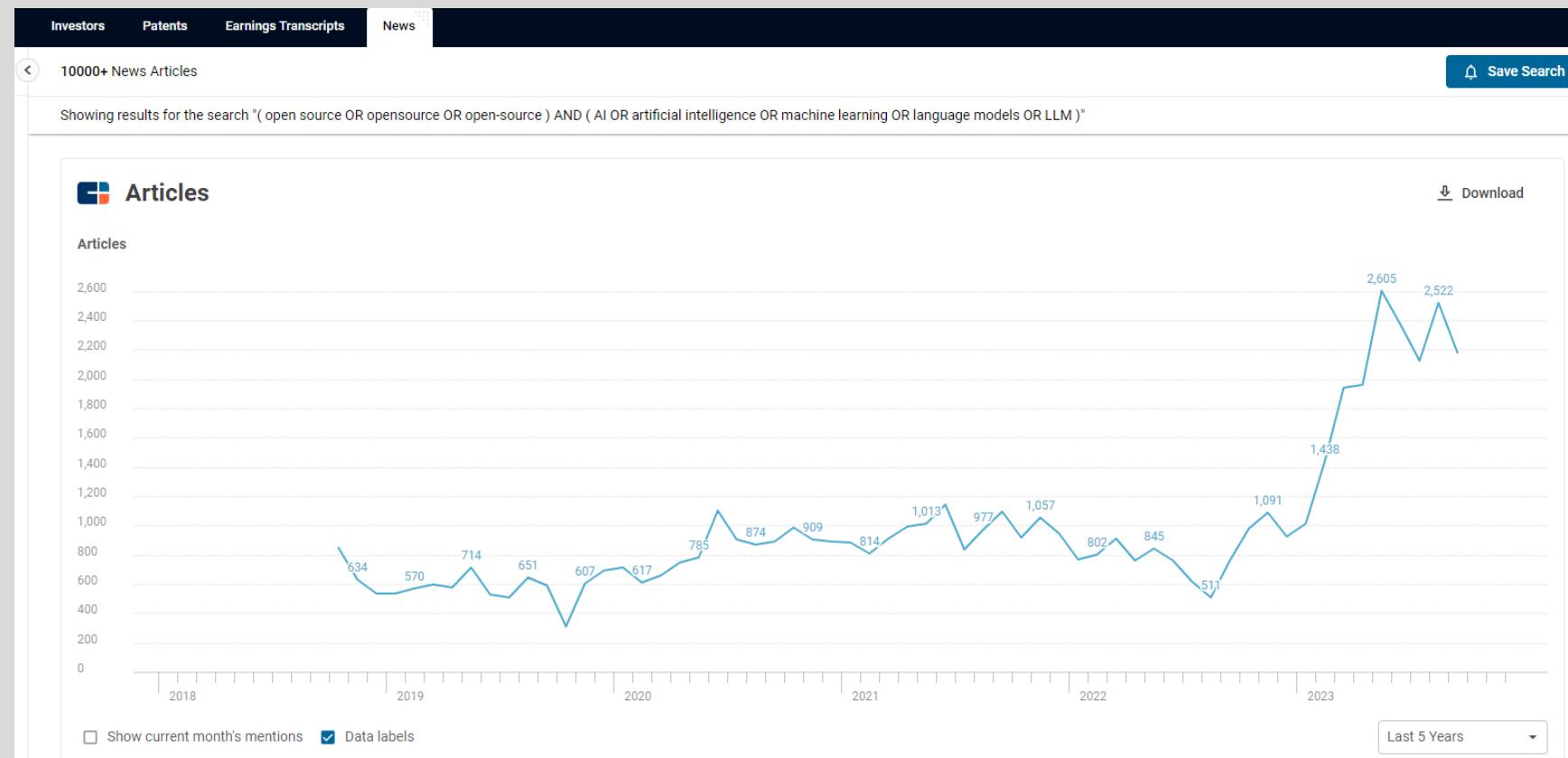
LLM infrastructure market grows rapidly

Open-source AI movement gains steam



Need for AI model transparency and rapid innovation is fueling the open-source AI movement

News mentions of open-source AI and related terms (as of 9/30/2023)



Source: CB Insights – [Advanced Search - News mentions](#)

*The open-source approach to AI development is focused on making source code available for public use and allowing a community of developers to contribute to improving software.



Meta is leveling the playing field with its open-source LLM, Llama 2



Notably, we recently announced a collaboration with Meta on Llama 2-based AI implementations on flagship smartphones and PCs that will enable developers to create new and exciting genAI applications using the AI capabilities of Snapdragon platforms beginning in 2024.

Qualcomm CEO Cristiano Amon
Q3'23 earnings call



Azure AI is ushering in new born-in-the-cloud, AI-first workloads with the **best selection of frontier and open models, including Meta's recent announcements supporting Llama on Azure and Windows,** as well as OpenAI.

Microsoft CEO Satya Nadella
Q3'23 earnings call



AI is the flavor of the day. And thanks to ChatGPT's great launch, everyone has discovered this potential. We can expect new changes by the day in the tech world. Just take yesterday, Meta's launch **of Llama 2, which will be available on Azure free of charge, including for commercial purposes.**

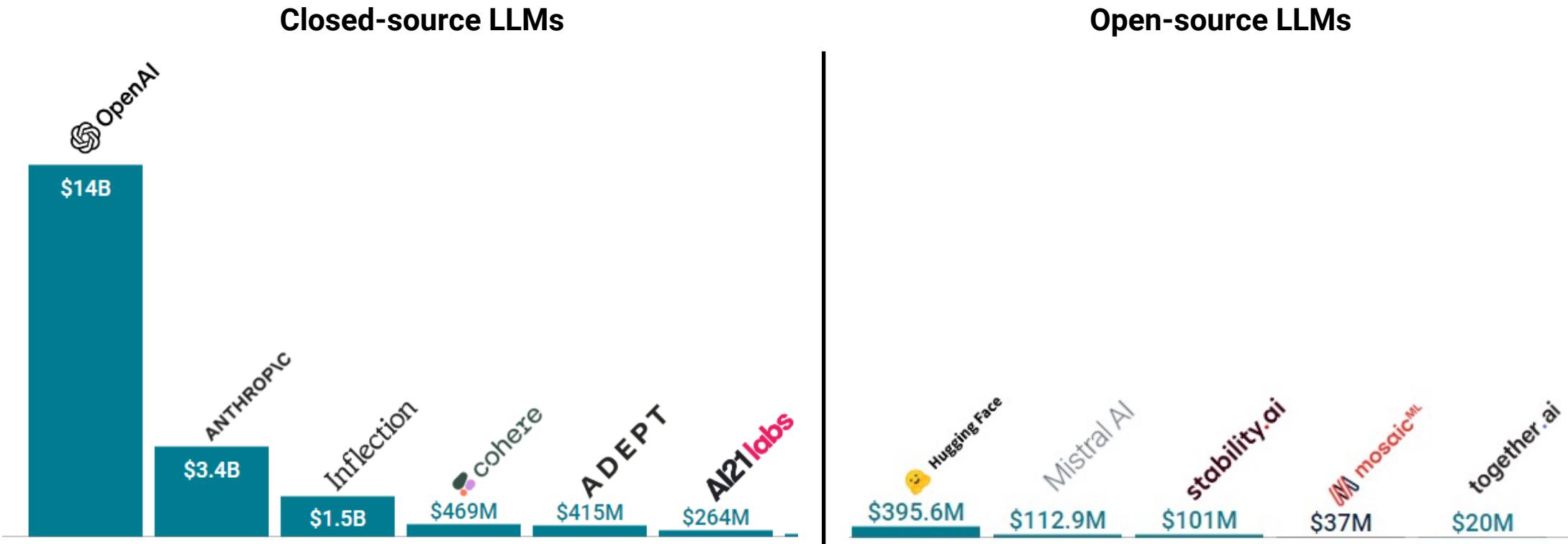
Publicis CEO Arthur Sadoun
Q3'23 earnings call



The private market is split into open vs. closed

Disclosed equity funding to LLM developers (as of 10/27/2023)

■ Private company ■ Acquired company



*Some developers may offer open-source versions of their models but keep their core models proprietary

*Excludes open-source developers that have not raised equity funding



OpenAI customers highlight potential cost-savings, customizability benefits of open-source models – though OpenAI has the edge on performance & support



OpenAI's developer API and the developer experience is definitely the best. It's really managed, super clean APIs, well-documented, and has the most integrations. There was a big push toward using open-source models and then fine-tuning them with your own data. That's still a big thing. We're actually evaluating that for some of the public data set stuff because it's a lot cheaper, especially if you add in more huge amounts of data versus a giant OpenAI model.

Partner, Early-stage VC firm

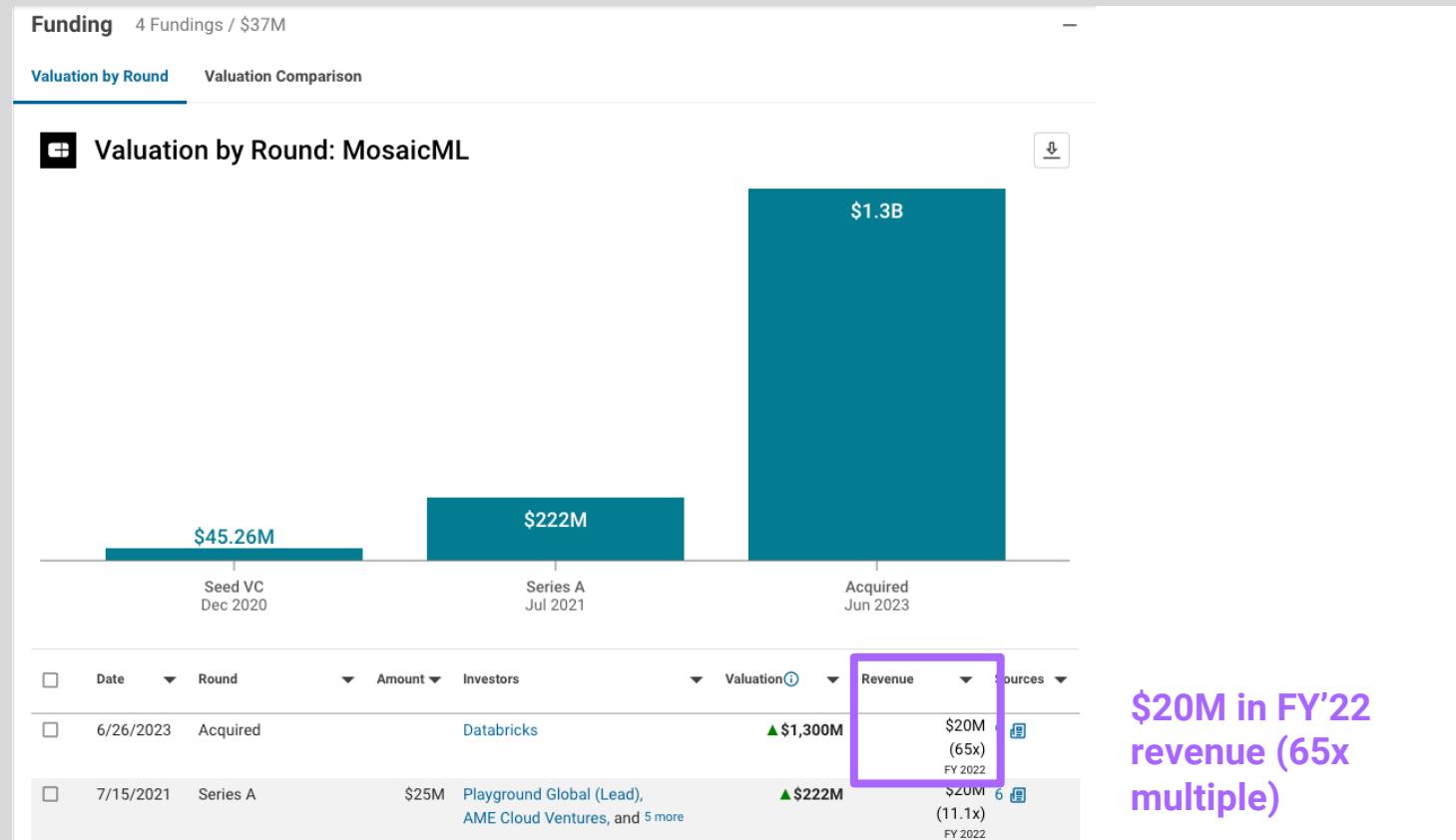


Meta's invention... it may be cheaper than the OpenAI [model] because it's open-source. Then we believe the performance of the Hugging Face and also the Llama 2 is also comparable to the OpenAI [model]. Maybe just a little bit weaker than that, but maybe the overall...ROI is quite a good deal.

VP, Machine Learning, Fortune 500 company



Databricks pays \$1.3B for MosaicML, which makes AI development tools and has its own open-source model, in June 2023

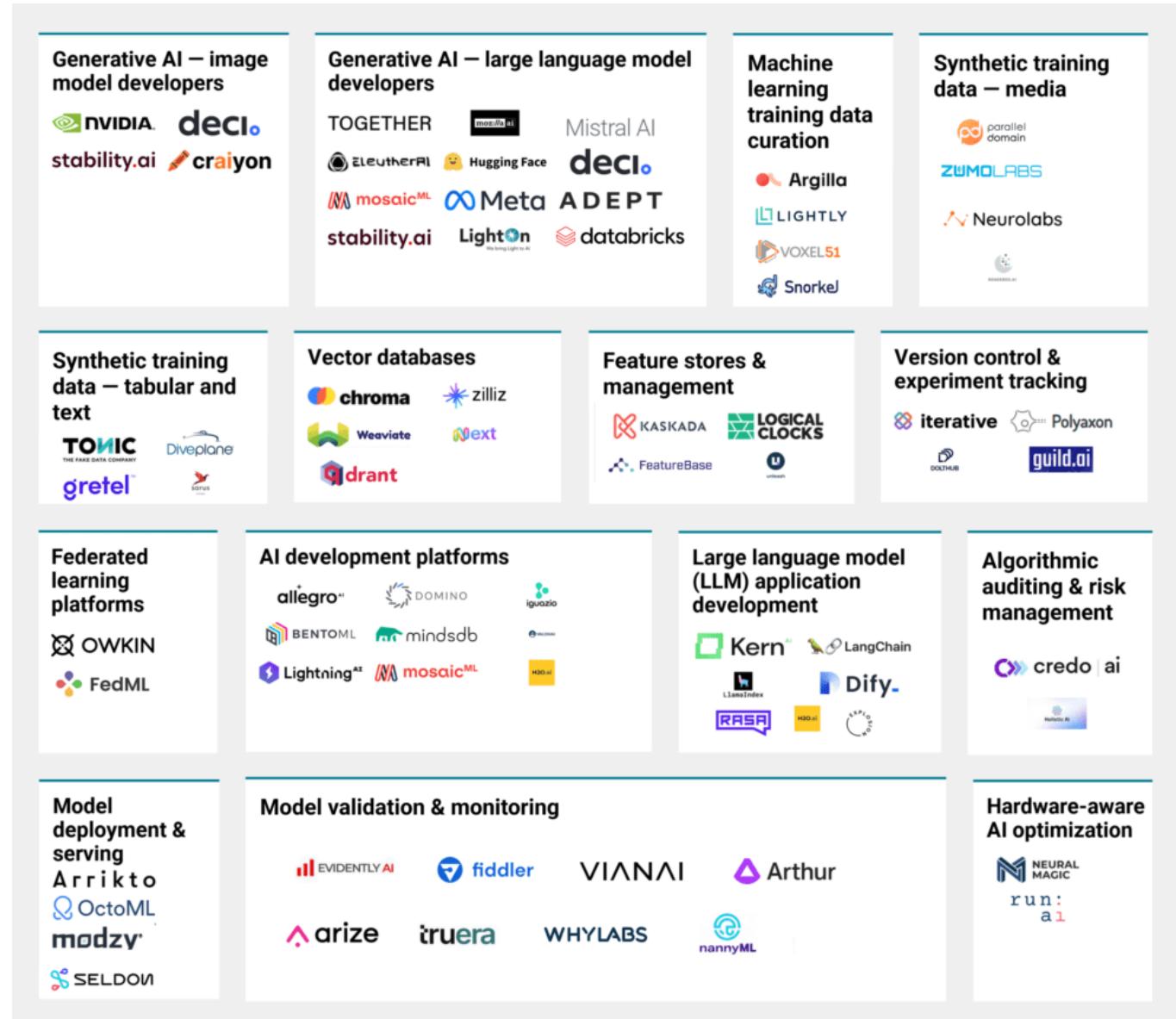


Source: CB Insights - [Databricks acquired Mosaic ML for \\$1.3B. How do the valuations of other generative AI companies compare?](#)



Growing number of vendors are developing open-source tools to help enterprises build and deploy AI projects

Open-source AI development market map



1. Race to dominate genAI infrastructure

No clear winner yet in foundational models

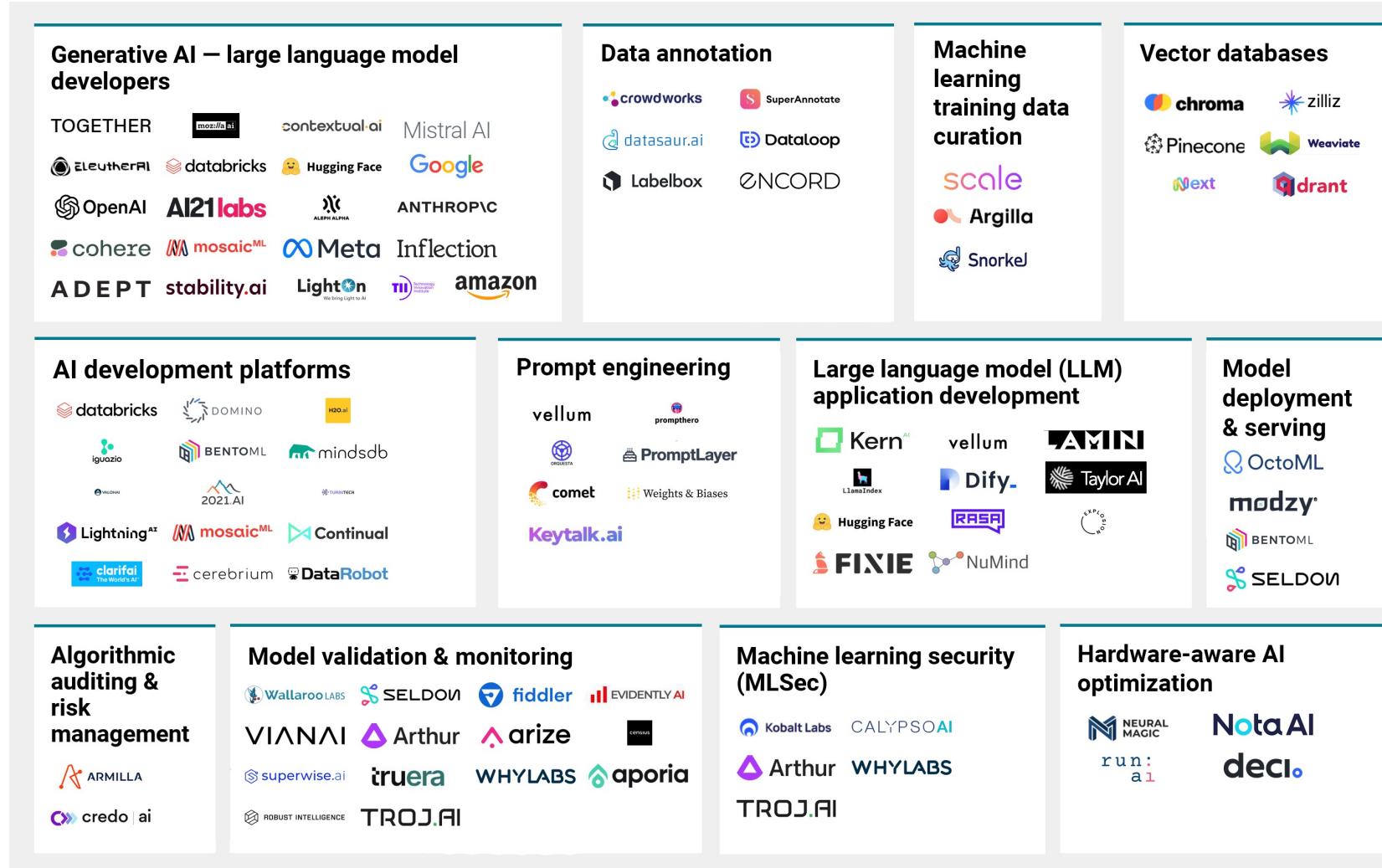
Open-source AI movement gains steam

LLM infrastructure market grows rapidly



Tech vendors supporting LLM operations are gaining traction with enterprises

LLMops market map



Source: CB Insights – [The large language model operations \(LLMops\) market map](#)

*LLMops refers to the end-to-end workflow that organizations employ to build, fine-tune, and deploy LLMs into production.



Execs are buying infrastructure tools for better training data, observing performance of models, and more



We had, basically, messy data and we needed a better way of providing, of doing better training data for generative content... We have a lot of machine learning models that are fueling us here. In both cases, it was the desire to have, basically, a higher level of data hygiene in our training data.

Chief Product Officer, IT company



fiddler

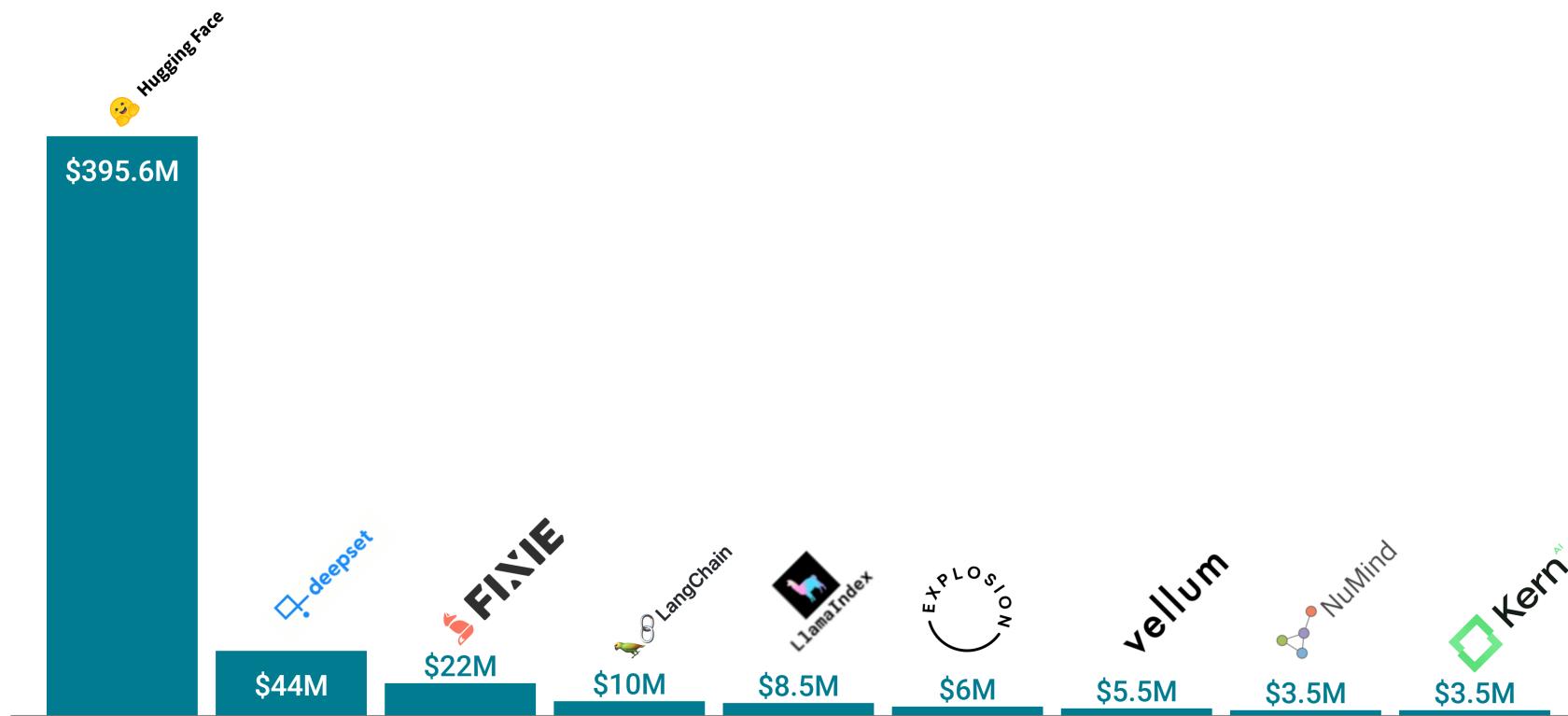
I led a small data science team that created a lot of models in production. As we scaled, our observability of our machine learning models in production was limited, and we felt blind to issues or ways to improve the model once in production. We tried to build a solution in-house, which showed the difficulty of the challenge.

Senior Manager, \$10M+ funded data analytics platform



New vendors are emerging for LLM fine-tuning & customization

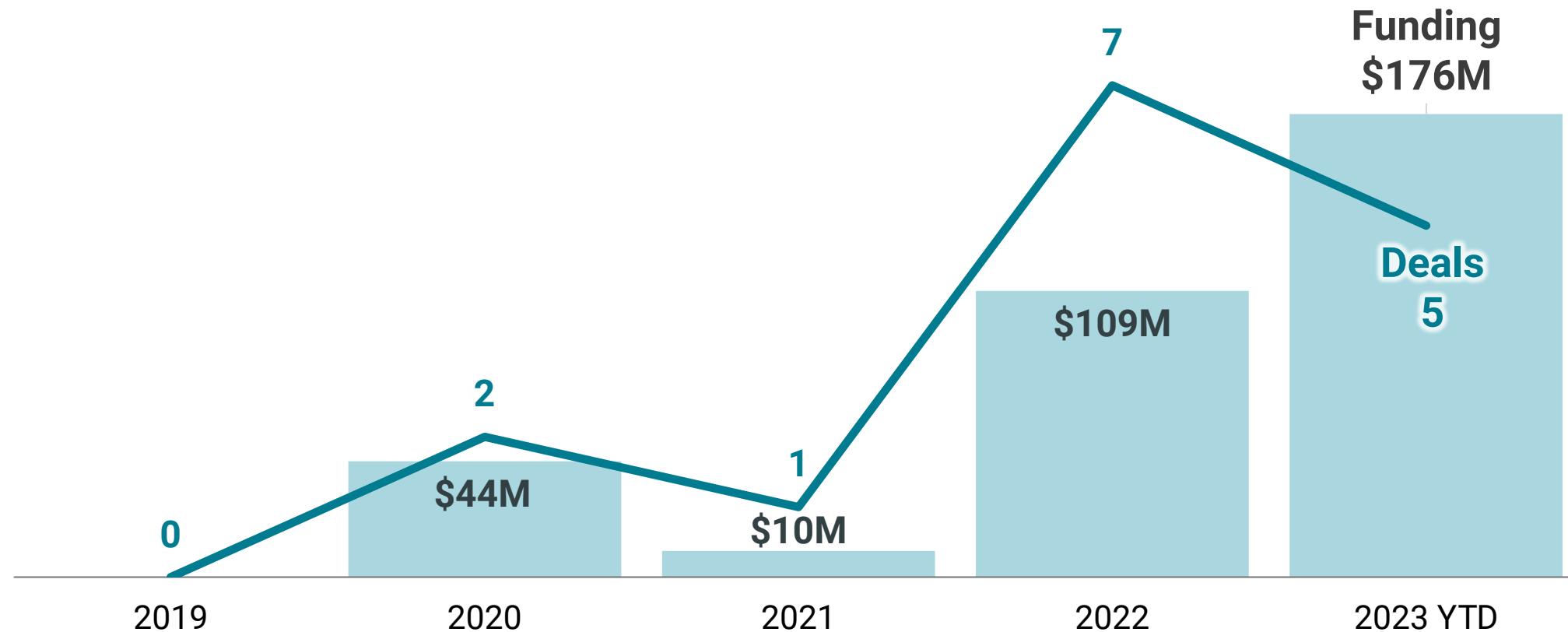
Leading LLM application development vendors by disclosed equity funding (as of 10/30/2023)





Vector database startups, which make data more accessible for AI systems, raise record funding amid LLM boom

Disclosed equity funding and deals (as of 9/30/2023)



Source: CB Insights – [Vector database market report](#)

*Vector databases provide enterprises with an easy way to store, search, and index unstructured data.

2. Cross-industry applications face pressure from large players



Execs are demanding their tech vendors keep up with genAI advances and opportunities

Sourcegraph

From a technical perspective, I think this wave of ChatGPT and OpenAI large language models is going to open up a lot of opportunities for Sourcegraph

because they already have a lot of the code and can say, "We'll take a customized model, throw in your code, and give you super good suggestions for your developers." So I think that's an area that is super interesting. **And again, they have to compete with GitHub, which already has Copilot.**

VP, Technology at Publicly traded e-commerce company

SLASHNEXT

SlashNext is working on a generative AI-based solution, which means it will generate its own kind of phishing and malware and it will train the software to automatically be aware of any new kind of threats arriving in the market. So even if tomorrow some human is creating a new kind of malware or any other software is creating some new kind of phishing or ransomware, **because SlashNext is based on AI, it is already aware of these kinds of changes and it will be able to detect them before any other software can do so. That is a differentiator from the technology perspective.**

Senior Design Engineer at Fortune 500 company

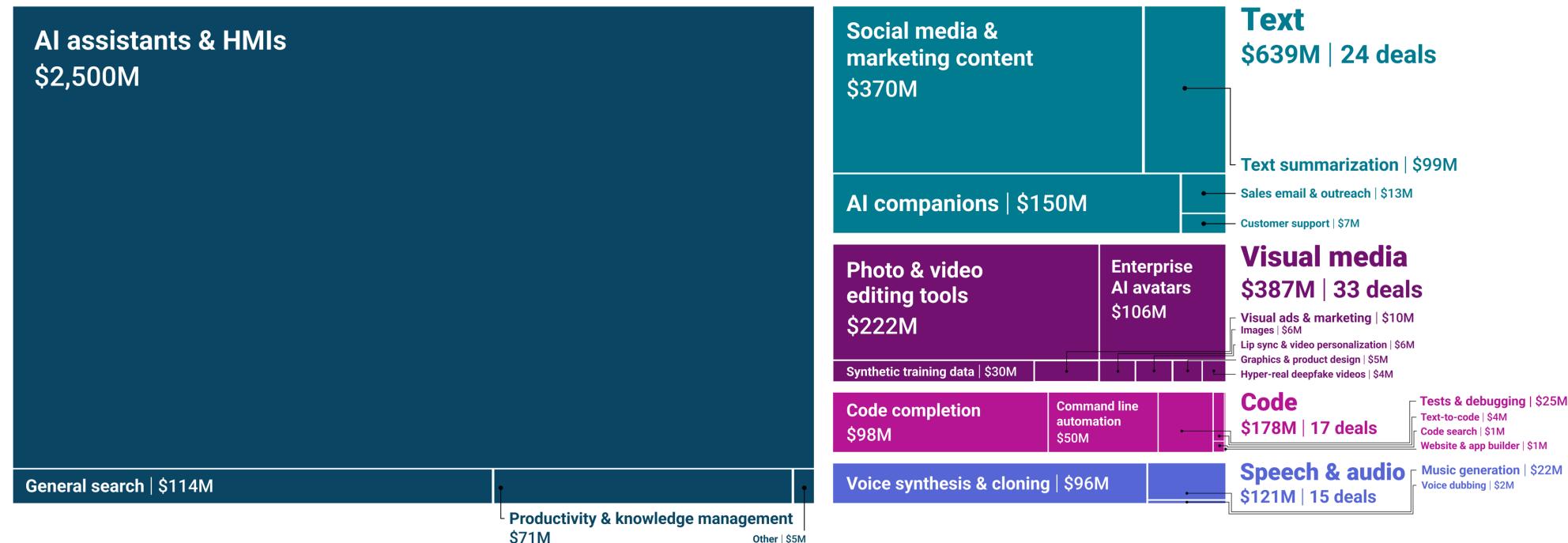


Generative interfaces, like Anthropic's AI assistant Claude, lead in funding among cross-industry tools

Distribution of generative AI funding, Q3'22 – Q2'23

Generative interfaces

\$2,690M | 23 deals



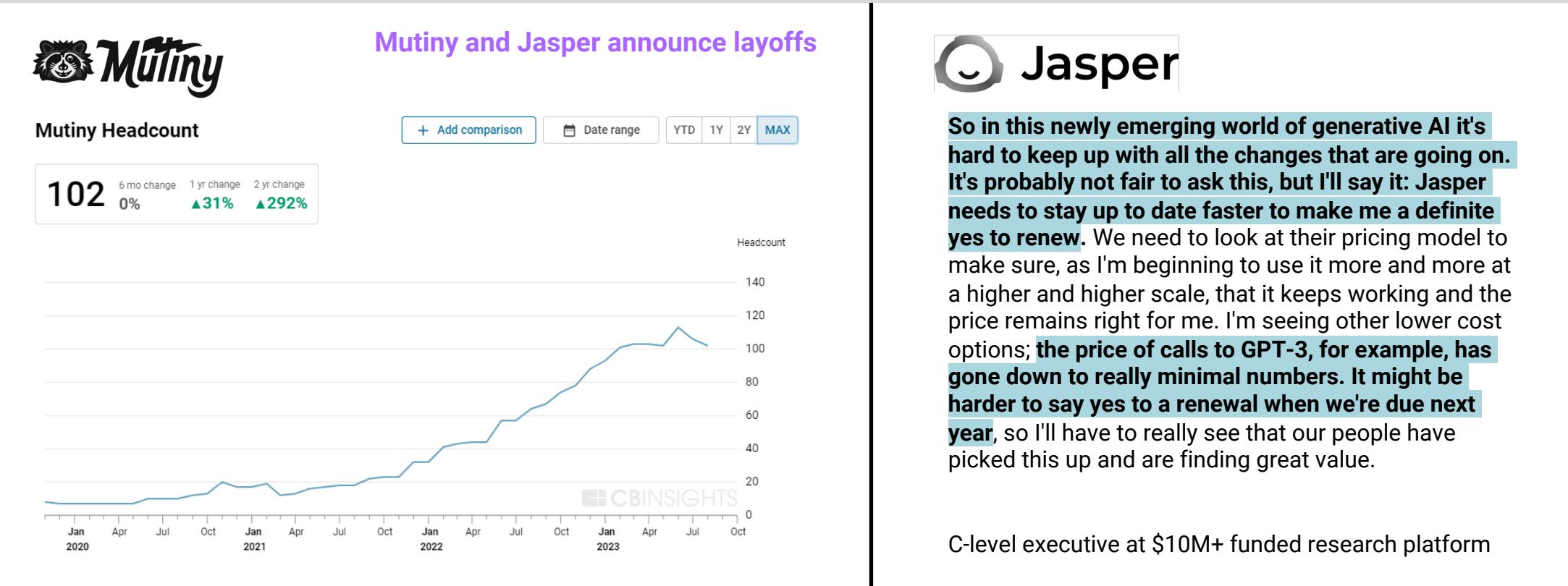
Source: CB Insights – [The state of generative AI in 7 charts](#)

*Based on an analysis of 210+ generative AI companies building cross-industry solutions; excludes deals to industry-specific companies and model developers such as OpenAI.

90



Growing competition is a threat to vendors in some cross-industry markets, like text generation & editing





Watch for vendors to scramble to build defensible moats in specialized areas

Generative AI – legal case search & summarization

Enterprise Tech / Regulatory & Legal Tech

Overview ESP Ranking Scorecard Market Data All Companies

About this market

The generative AI – legal case search & summarization market refers to the market that leverages artificial intelligence algorithms to search and summarize legal cases and documents. This legal tech market combines the power of machine learning and natural language processing to analyze vast amounts of legal data and extract relevant information. Generative AI technology enables legal professionals to streamline the process of case research by quickly identifying relevant cases and extracting key insights. It offers tools and platforms that automate the labor-intensive task of reviewing and summarizing legal documents, saving time and improving efficiency. The market is driven by the increasing volume of legal data and the need for accurate and comprehensive case analysis in the legal industry

Key features to expect:

- Use of artificial intelligence and machine learning to automate legal research tasks
- Natural language processing for legal research and document editing
- Advanced AI algorithms to uncover hidden legal violations that other tools may miss
- Centralized workflow solutions for data management, including migration, archiving, and activity monitoring
- Semantic search engine that understands meaning and concepts, not just keywords

[Compare key features by company](#)

Who buys this technology?

- Legal Operations Manager
- Chief Technology Officer (CTO)
- Chief Legal Officer (CLO)

Who does this technology serve?

- Law firms
- Legal departments of corporations
- Government agencies

Virtual medical scribes & summarization tools

Healthcare & Life Sciences / Care Delivery & Navigation Tech

Overview ESP Ranking Scorecard Market Data All Companies

About this market

The virtual medical scribes & summarization tools market is an emerging field that focuses on using technology to assist healthcare providers with medical documentation and administrative tasks. This market offers a range of solutions that use artificial intelligence and natural language processing to transcribe patient encounters, generate visit summaries, and facilitate communication between healthcare providers. By using virtual medical scribes & summarization tools, healthcare providers can reduce the time it takes to complete medical documentation, spend more time with patients, improve the accuracy and completeness of patient records, and enhance care coordination.

Key features to expect:

- Real-time speech recognition technology with high language coverage and self-supervised learning models.
- Advanced natural language processing for accurate transcription and summarization of medical notes in real-time.
- Integration with EHRs for instant documentation and recommendation of diagnoses to physicians.
- Ambient and autonomous assistants that listen to physician-patient conversations and transform salient content required for notes, orders, referrals, scheduling, etc.
- AI technology that listens to patient discussions, writes notes, compares symptoms in real time for optimal treatment guidance during medical calls.

[Compare key features by company](#)

Who buys this technology?

- Chief Medical Officer
- Director of Medical Records
- Health Information Manager

Who does this technology serve?

- Hospitals and healthcare systems
- Private medical practices
- Insurance companies

Top Vendors

Source: CB Insights – [Generative AI – legal case search & summarization](#); [Virtual medical scribes & summarization tools](#)

3. Opportunity in vertical genAI

How generative AI is going to be used to...

Industry

	Drive growth	Improve customer experience	Reduce costs & risk
Healthcare & life sciences	<ul style="list-style-type: none">Copilots for doctors automate tedious tasks & improve EHR documentationDe-noise radiology scans	<ul style="list-style-type: none">AI companions address well-being & mental healthSynthetic patient data protects patient privacy	<ul style="list-style-type: none">GenAI drug discovery & design reduces time-to-marketBiomedical NLP supports clinical decision-making
Financial services & insurance	<ul style="list-style-type: none">GenAI assistants analyze & synthesize financial data at scaleAutomated underwriting decisions	<ul style="list-style-type: none">GenAI chatbots simplify day-to-day financial tasksPersonalized interactions in insurance sales process	<ul style="list-style-type: none">Synthetic training data improves financial models & ensures compliancePattern identification in unstructured claims filings to minimize losses
Retail	<ul style="list-style-type: none">LLM-powered search improves conversion	<ul style="list-style-type: none">Smarter, more relevant searchPersonalized avatars	<ul style="list-style-type: none">GenAI automates product catalogsSynthetic humans save on model costs

3. Opportunity in vertical genAI

**Healthcare &
life sciences**

Financial services
& insurance

Retail



Health systems and pharma players are using genAI to scale everything from drug design to EHR documentation

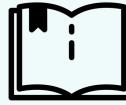


7 applications of generative AI in healthcare



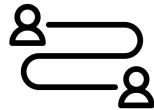
Protein & drug design

Pharma companies can use generative AI to predict molecular structures, bringing protein and drug discovery timelines down drastically.



Biomedical NLP

Generative AI can ingest biomedical literature at scale and extract, summarize, and analyze relevant information to support clinical decision-making.



Patient digital twins

Providers and researchers are using generative AI to create digital twins of patients for healthcare simulations and treatment planning.



EHR documentation

Hospitals are leveraging generative AI to document and summarize doctor-patient interactions in real time.



Wellness tech

Wellness companies are using generative AI to create soundscapes and immersive VR experiences based on real-time physiological and geolocation data.



Synthetic patient data

Generative AI can create synthetic datasets that mimic real-world patient data, protecting patient privacy while improving the scale of training data.



Radiology image enhancement

Radiologists are leaning on generative AI to reconstruct and de-noise radiology scans, lowering the need for rescans and reducing patients' exposure to radiation and heavy metals.



AI expertise is a necessity in sectors like pharma to reduce time-to-market

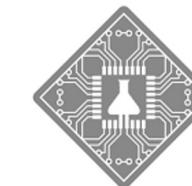
Select generative AI drug discovery & design exits in 2023



Acquired by Recursion
Pharma in May 2023



Acquired by BioNTech
in January 2023

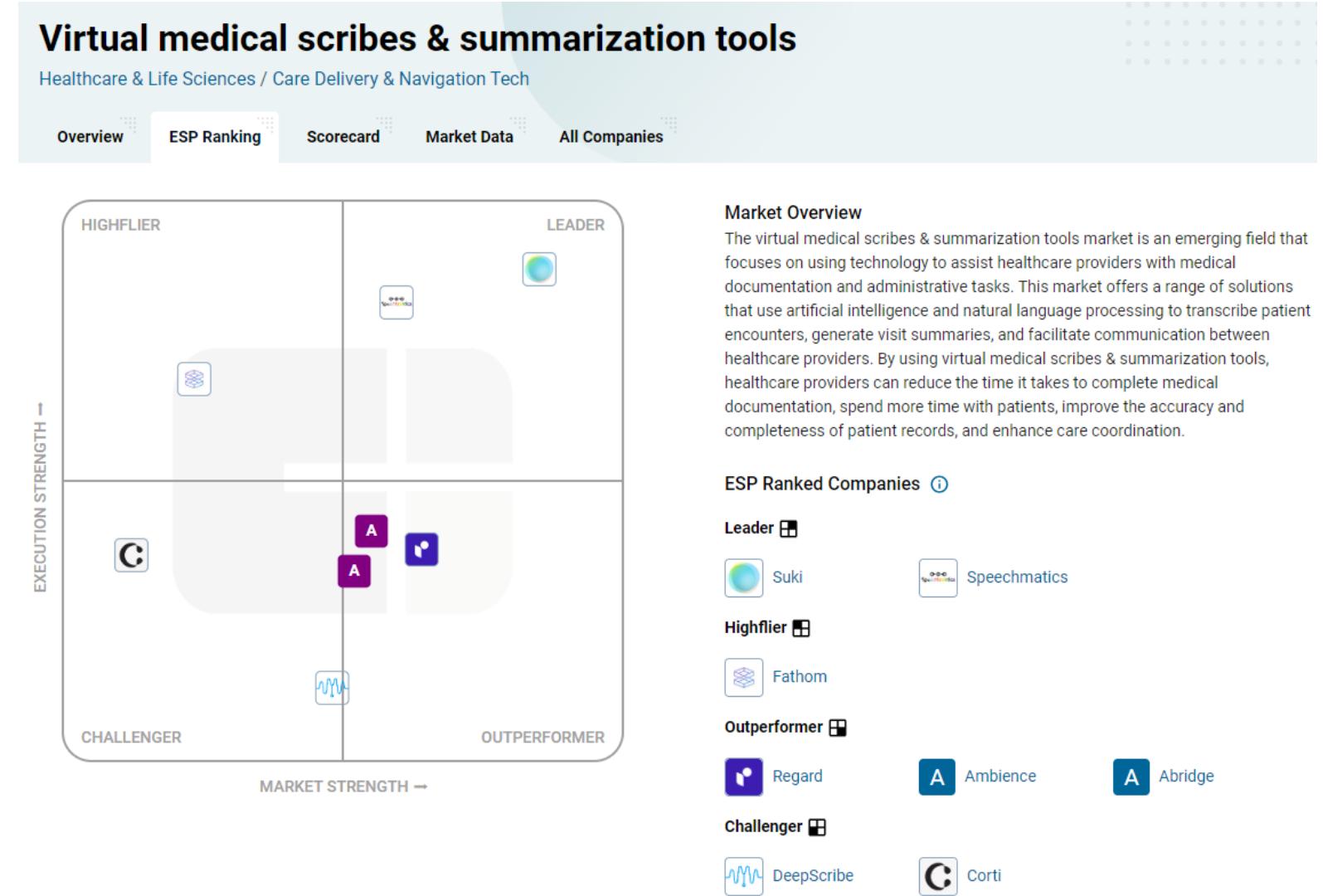


Insilico
Medicine

Filed for Hong Kong
IPO in June 2023



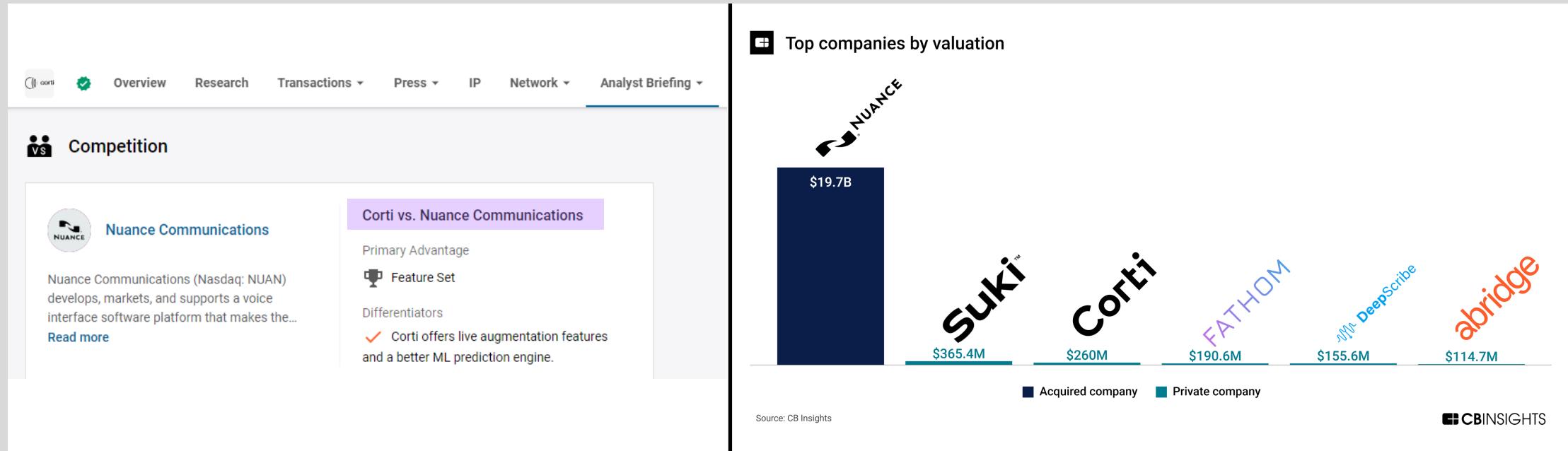
GenAI copilots for doctors automate tedious tasks like note-taking



Source: CB Insights – [Virtual scribes & summarization tools market report – ESP](#), [Generative AI copilots for doctors have raised more than \\$240M](#)



Up-and-comer Corti raises \$60M Series B in September 2023, taking on Microsoft's Nuance

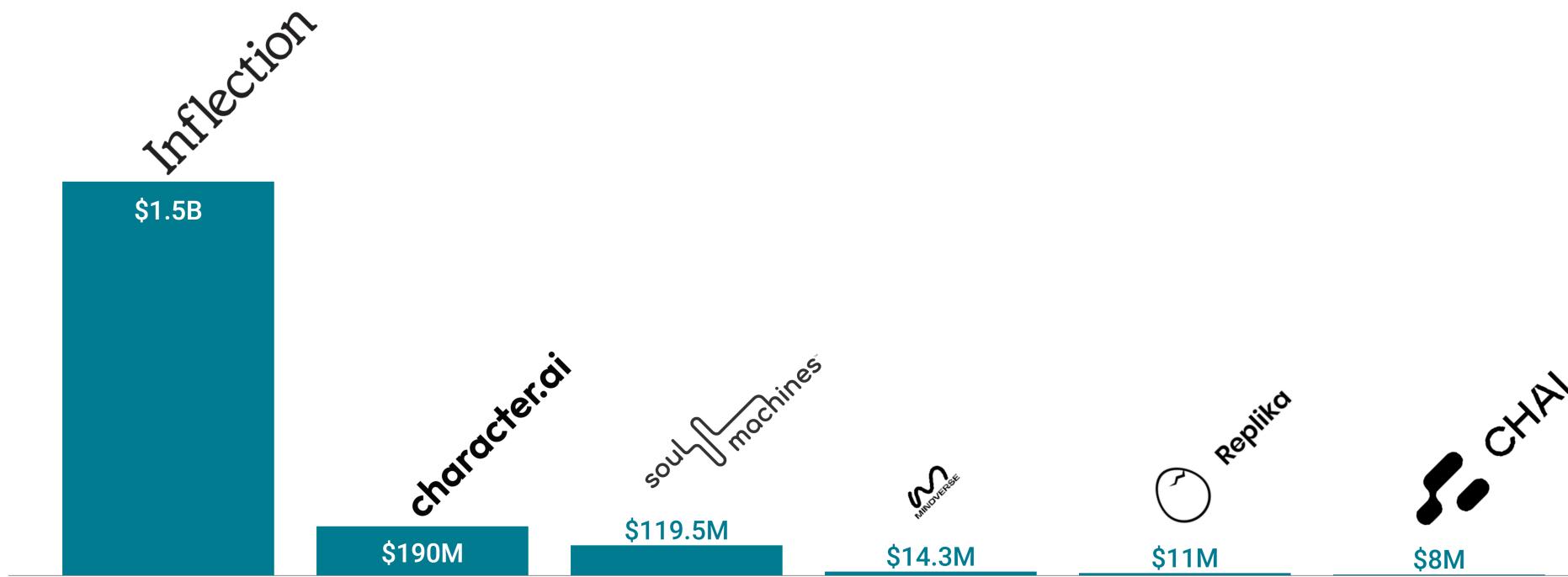


Source: CB Insights – [Corti Analyst Briefing](#); [Virtual scribes & summarization tools market report](#)



Applications to enhance well-being and mental health emerge, including AI-generated music, VR landscapes, and companions

Top-funded companies developing AI companions (as of 10/30/2023)





EHR workflows are ripe for LLM disruption, from document search to summarization to suggested diagnoses



I can potentially ask ChatGPT, hey, does this person have out of network coverage and is this person eligible for spine surgery or something like that?

Then, we are having to look at multiple documents and you don't know where to look, essentially, and you're essentially just giving the combination of all these documents as an input to ChatGPT.

VP, Machine Learning, Fortune 500 company



We have tens of thousands, if not hundreds of thousands, of patients on our devices. We have device populations in the millions... For service and operations, there's a high demand in terms of the support that they can give to a patient if they're in a trial or if they're just going about their day-to-day life on therapy, on one of these devices... So, why we were investigating these chatbots was to lower their cognitive burden so that 10:1, 5:1 ratio could be equalized.

Sr. Research Engineer, Fortune 500 company



Bundling genAI tools with existing cloud subscriptions is giving big tech companies an advantage with market reach



Advantage is with, for example, John Snow Labs, it's a very sort of clinically trained model... **It's not just trained on wiki pages or like general text.** In that sense, I think **it's much better...in terms of entity recognition and things like that.**

But the limitations, I would think, are these models are not getting trained on the volume of data anywhere as close to what ChatGPT is trained on... **It [OpenAI deployment] was pretty minimal overhead... the goal... is to essentially enable the use of ML tools that are available from the Azure subscription at the Enterprise level...**

VP, Machine Learning, Fortune 500 company



Vendors will compete to license real-world datasets to build genAI models tailored for the healthcare industry

Google

GenAI for imaging trained on X-rays and radiology reports

 NVIDIA

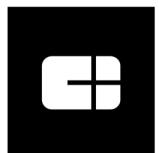
 NYU Langone Health

LLM trained on 10 years of health records and 400K patients' clinical notes

 NVIDIA

 UF Health
UNIVERSITY OF FLORIDA HEALTH

LLM trained on 2M patients' clinical notes



Privacy and data handling practices will be major issues as the market matures

Transcript

Introductions

Analyst

That totally makes sense. Where you were evaluating Cohere and possibly looking into other competitors, were there any specific requirements that you were looking into? It sounds like this is used for like a conversational chatbot, so I'm guessing maybe something along those lines, but if there were any requirements that you needed to see?

Evaluation Structure

Problem to solve

Solution Specifics

Customer

We can talk about requirements for hours on end because this is a highly regulated business, but I'll give you the top line ones. From a regulatory standpoint, there's four buckets: privacy, legal, regulatory, and security. We're working with patients. This is medical data. They're discussing a condition that they have and how they're responding to therapy, all highly privileged information. In the United States, you have HIPAA compliance that you need to keep up with. And if you're in the European Union, there's the GDPR, the General Data Privacy Regulation, as well as various European Medicines Agency's regulations. And this understanding applies to every country in the world. That's the top line bucket, just making sure that health data stays private.

Sales Experience

Pricing & Packaging

Competitors

Deployment

Post Deployment

Now, if we move on from there, go and look at it from a deployment implementation infrastructure perspective, you're going to be looking at sometimes a hospital user, sometimes a clinic user, or sometimes in-the-house user. So, you have a broad mix of users. This can lead to a deployment that is either on-prem or it could be totally cloud or it could be a hybrid of the two. For the cloud deployment, you're looking at folks that are at home. On-prem, you're



Expect healthcare-focused genAI vendors to lean into data security as a point of differentiation

CB INSIGHTS Search for topics or organizations (Type OR, AND, NOT in all caps for boolean)

Generative AI Expert Collection

Companies

Companies working on generative AI applications and infrastructure.

Showing 25 of 404 rows Clear All Filters

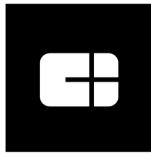
<input type="checkbox"/> Companies	URL	Description	Industry	Applications	Text	Spec...
<input type="checkbox"/> Pieces	piecestech.com	Pieces applies generative artificial intelligence (AI) ...	Healthcare & life sciences		x	
<input type="checkbox"/> Hippocratic AI	hippocraticai.com	Hippocratic AI is a generative artificial intelligence platform f...	Healthcare & life sciences		x	
<input type="checkbox"/> Endel	endel.io	Endel provides a personalized sound environment platform. It ...	Healthcare & life sciences	Behavioral health		x
<input type="checkbox"/> CueZen	cuezen.com	CueZen offers a generative AI engine for lifestyle data that ...	Healthcare & life sciences	Behavioral health	x	
<input type="checkbox"/> Causaly	causaly.com	Causaly offers an operating system for biomedical and hea...	Healthcare & life sciences	Biomedical NLP	x	
<input type="checkbox"/> Jona	jona.health	Jona builds a generative artificial intelligence (AI) based platform ...	Healthcare & life sciences	Biomedical NLP	x	
<input type="checkbox"/> Subtle Medical	subtlemedical.com	Subtle Medical provides artificial Intelligence (AI)-powered imag...	Healthcare & life sciences	Image enhancement		
<input type="checkbox"/> Abridge	abridge.com	Abridge provides artificial intelligence (AI) based solution...	Healthcare & life sciences	Medical summaries	x	
<input type="checkbox"/> Corti	corti.ai	Corti offers healthcare practitioners a voice-based ...	Healthcare & life sciences	Medical summaries	x	
<input type="checkbox"/> Suki	suki.ai	Suki is a voice-based digital assistant for doctors that lifts t...	Healthcare & life sciences	Medical summaries	x	
<input type="checkbox"/> Nabla	nabla.com	Nabla develops a machine learning-powered care platform...	Healthcare & life sciences	Medical summaries	x	
<input type="checkbox"/> DeepScribe	deepscribe.ai	DeepScribe provides an artificial intelligence (AI) powered scrib...	Healthcare & life sciences	Medical summaries	x	

3. Opportunity in vertical genAI

Healthcare &
life sciences

Retail

**Financial services
& insurance**



**In financial services,
generative AI will
automate tasks and
transform how
organizations
use financial data**



3 applications of generative AI in financial services



Conversational finance

Generative AI chatbots and voice assistants can perform financial tasks and transactions directed by customers, such as checking account balances, making payments, scheduling transfers, and even giving financial advice.



Financial analysis

Generative AI assistants can analyze financial data and information at scale through large language models to produce insights, recommended strategies, and compare against benchmarks.



Synthetic data generation

Synthetic training data produced by generative AI can inform and improve financial models and ensure compliance with data privacy regulations.



Insurers are using genAI to drive more personalized customer experiences and internal automation efforts



3 applications of generative AI in insurance



Sales & distribution

Generative AI can assist agents and customers in the sales process by synthesizing unstructured data into simple language, guiding agents and customers through a more personalized and automated experience.



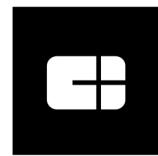
Underwriting

Generative AI can offer a more streamlined underwriting process, providing an initial summary assessment on submissions to enable automated underwriting decisions or flag for further underwriter analysis.



Claims

Generative AI can identify patterns in unstructured claims filings, enabling insurers to shift their product strategies, underwriting standards, and loss control efforts to minimize and reduce losses.



Finserv incumbents are experimenting with generative AI; prime use cases in document summarization & extraction

Back-office workflows



Investment insights



Content & marketing



Insurance claims analytics



Customer support & analytics



Software development





Generative AI will automate & enhance underwriting

CHUBB®

We are on the large language models and the potential benefit that that will ultimately bring beyond algorithmic, particularly in underwriting and claims and the ability to work — either replace work that is done or make it more accurate, or work alongside underwriters.

Chubb CEO Evan Greenberg
Q2'23 earnings call



Incumbents with access to vast financial data & resources will develop LLMs purpose-built for financial services

Bloomberg

Bloomberg is developing BloombergGPT – an LLM built for financial tasks like sentiment analysis and news classification.

JPMORGAN CHASE & CO.

JP Morgan Chase is developing IndexGPT, an AI chatbot for investment advice and selection.

INTUIT

Intuit partnered with OpenAI to develop GenOS – a genAI operating system that will power customer experiences across its product suite.



B2B fintechs developing genAI tools across compliance, document processing, and chatbots land big-name customers

Kasisto

Overview Research Transactions Press Network Analyst Briefing **Transcripts** Connect

Customers

Manulife Financial

Canadians are looking for clarity, simplicity, and value from their bank. This applies equally to the technology they use to bank...We sought the input of Canadians, user tested, prototyped and reimaged the customer banking experience to offer something you can't get anywhere else: a complete digital banking package infused with artificial intelligence that works together to help you understand and maximize your money.

Rick Lunny
president and CEO, Manulife Financial

Standard Chartered

We are taking disruptive technology and using it to design a client experience that is not just convenient and personal – it's a whole new banking experience. Looking at how quickly our clients are embracing digital, I expect our chatbot will become a popular way to connect with us anytime, anywhere.

Deniz Güven
Head, Standard Chartered

cognaize™

Cognaize's solution had better accuracy, evolution, AI and machine learning capabilities, and user interface than the other vendors we considered... **Cognaize is integral to our workflow as they provide a tool that our team uses to extract relevant data from public documents and map it to our templates.**

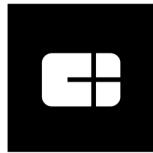
Senior Vice President, Publicly traded financial management company

3. Opportunity in vertical genAI

Healthcare &
life sciences

Financial services
& insurance

Retail



GenAI use cases in retail will cut costs and create more engaging content



6 applications of generative AI in retail



Virtual photoshoots

Brands can create AI-generated product photography or virtual fashion models to display items online.



3D product catalogs

Using generative AI to convert text or 2D images into 3D objects will enable retailers to offer interactive 3D product catalogs.



Customer service support

Generative AI will assist customer service agents in speeding up response and resolution times.



E-commerce product descriptions

Retailers can use text generation tools to write more engaging product descriptions that will convert more shoppers.



Personalized marketing content

Generative AI will allow marketing teams to scale visual content creation to target different demographics and platforms.



Virtual fashion design

Fashion designers can refine new clothing designs with tools that use generative AI to turn 2D sketches into digital renderings.



E-commerce search is getting smarter, with retailers developing search powered by ChatGPT



Recommendations, product attributes,
dietary considerations



Help choosing items based on budget,
food constraints, menu ideas



Platforms will move quickly to revamp text on product pages & automate product catalogs with genAI



Shopify Magic generates, revises, and expands product descriptions

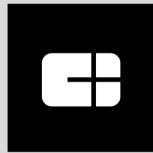


Scans customer reviews and generates a summary



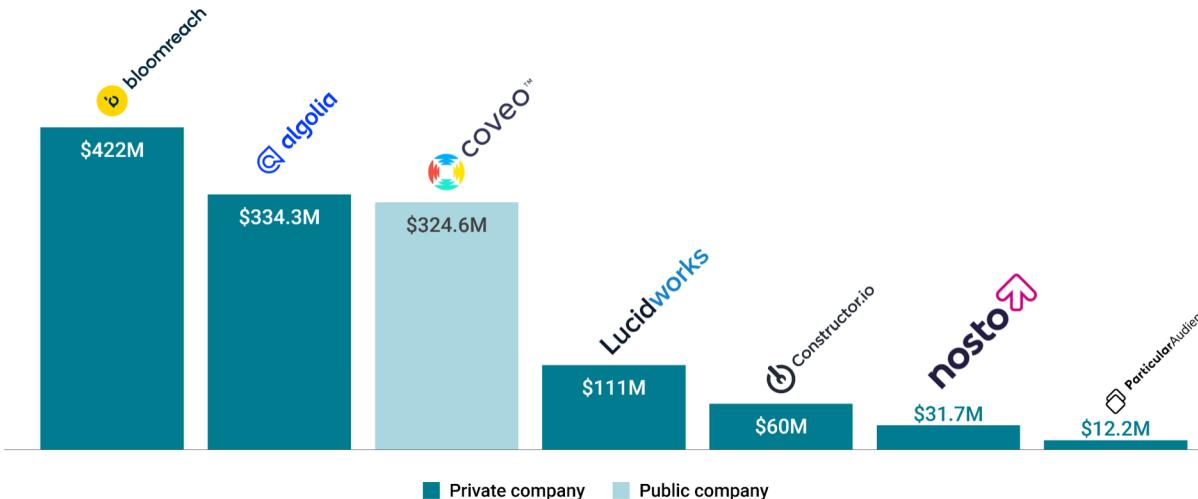
We have a custom contract with AX Semantics that contains the usage of the platform itself, as well as extended customer support. Our **contract allows us to create automated texts in nine languages for different channels, such as the product description on the web shop or the catalog, search engine optimized texts for our category sites, and also content for social media.**

Manager, Manufacturing company



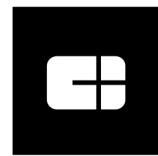
Specialized search vendors are moving fast to catch up, with a focus on relevance to drive conversion

Leading e-commerce search vendors by equity funding (as of 9/30/2023)



We ended up **rebuilding our entire catalog infrastructure using Algolia**...Visual merchandising and all the rules that come with it was a big important feature that we really wanted. ...Until I met Algolia for the first time, I **have never seen a search engine of that scale that was not Google or Bing or Yahoo operate that quickly.**

Head of Digital Product, E-commerce company



Leading brands are working with genAI vendors to create personalized avatars and diverse models at scale

	BIGTHINX	LALALAND	StyleScan®
Key Product Features	<ul style="list-style-type: none">Instant personalized digital avatars and 3D digital fashion from smartphone photos.Body scanning and fashion size matching via smartphones with only 2 photos needed.The only fully automated photo-to-3D AI powered fashion production pipeline in the world.	<ul style="list-style-type: none">The platform offers over five pose variations for each model, providing flexibility for brands to showcase their collections.Lalaland's AI generates diverse, photo-realistic fashion models of different ethnicities, ages, and sizes with customizable features.An automated workflow combines on-mannequin product shots or 3D digital garments with AI-generated model imagery, creating realistic model shots at scale in a fraction of the time required by traditional photography.	<ul style="list-style-type: none">On-model visualization technology for marketing, merchandising, and manufacturing.Significant cost and time savings for clients through faster speed-to-market and reduced waste.Realistic output that allows customers to relate and identify with a brand.



Retail-specific genAI solutions improve digital shopping operations, engagement, and conversion

3D asset creation



Alpha AR

#PTTRNS.ai

Text content generation



anyword



phrasee



WRITER



Jasper



peppercontent



contents.com



Linguix



Hypotenuse AI



copy.ai



Draft



copysmith



writesonic



Scalenut



text.cortex



neuroflash



NovusWriter



Conversionmaker.ai



Keytrends

Customer support operations



Vermeek



HIVE



Forethought

Synthetic humans & fashion design



DATA GRID



FLIX STOCK

BIGTHINX

LALALAND

CALA

ZMO.AI

StyleScan®

Voice synthesis & cloning

SoundHound

Speechmatics

AMAI

Sales & outreach

WRITER

copy.ai

Bluecore

writesonic

text.cortex

neuroflash

Blog-to-video

p-e-n-c-i-l

abyssale

GliaCloud

Fliki

E-commerce search

Lucidworks

coveo™

Constructor.io

nosto

algolia

ParticularAudience

Promising companies to watch

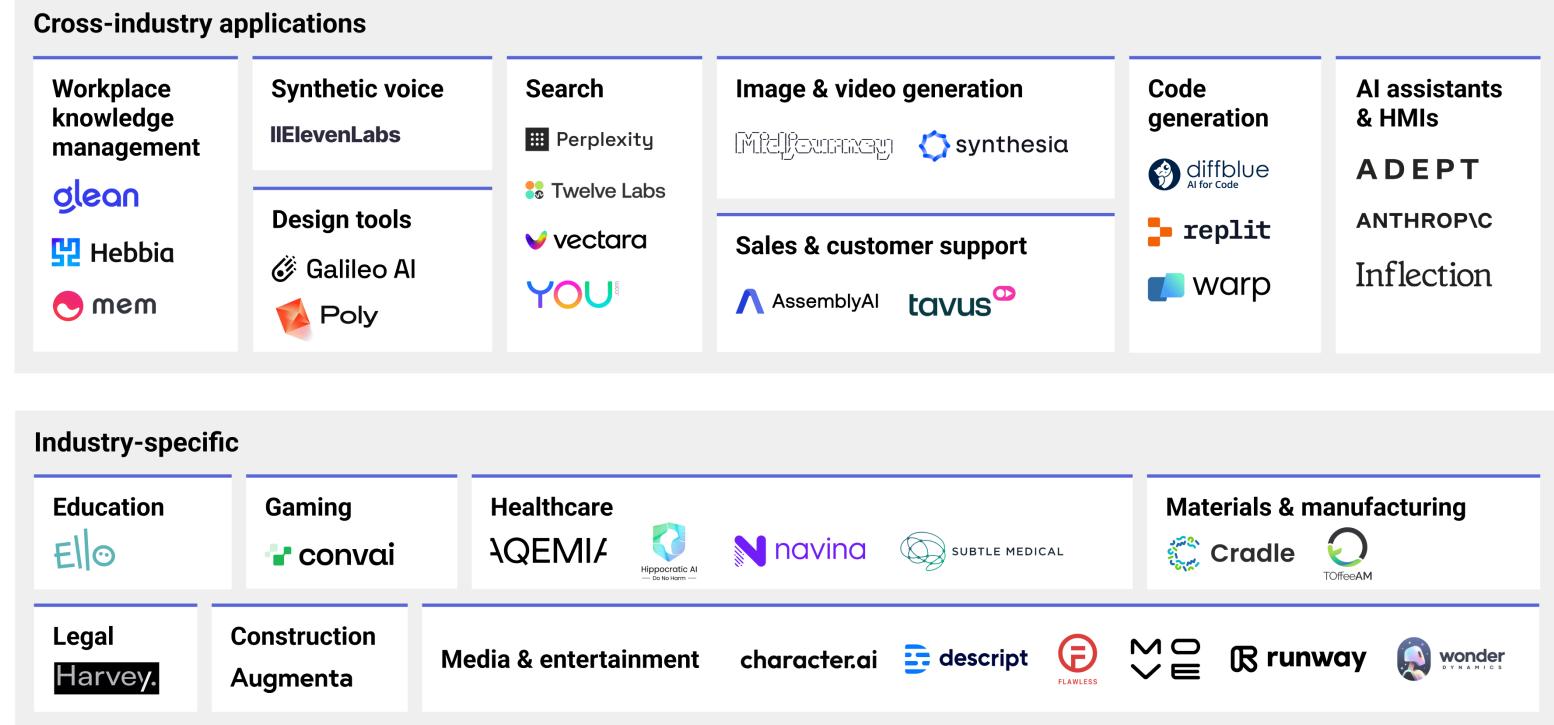
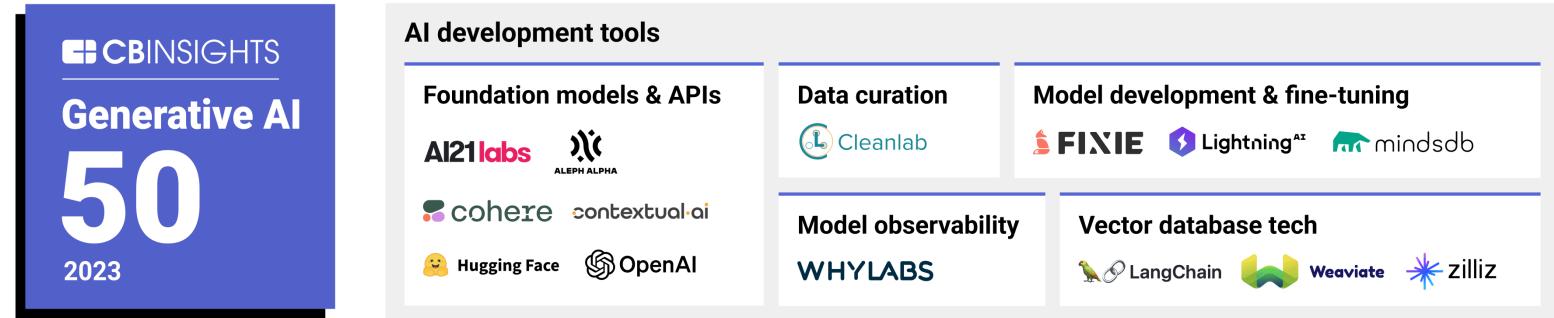




We identified the 50 most promising genAI startups

Generative AI 50

Explore the full list





CB Insights customers can find and track every generative AI company mentioned in this report using our analyst-curated Expert Collection

Explore the Collection

Companies	URL	Description	Industry	Applications	Text
OpenAI	openai.com	OpenAI is a research laboratory and artificial intelligence	Generative AI infrastructure	Model developer	
Grammarly	grammarly.com	Grammarly operates as an artificial intelligence (AI) power	Consumer social apps & tools	Writing & storytelling. Sales & customer support	
Scale	scale.com	Scale provides a data engine platform. The platform provide	Generative AI infrastructure	MLOps	
Hugging Face	huggingface.co	Hugging Face operates as an artificial intelligence (AI)	Generative AI infrastructure	Model developer	
Anthropic	anthropic.com	Anthropic provides artificial intelligence (AI) safety and	Enterprise tech	AI Assistant. Model developer.	
Inflection AI	inflection.ai	Inflection operates as an Artificial Intelligence(AI) studio which	Enterprise tech	AI assistants & HMIs	
Cohere	cohere.com	Cohere operates as a natural language processing (NLP)	Generative AI infrastructure	Model developer. API access	
Lightricks	lightricks.com	Lightricks offers artificial intelligence (AI)-based photo a	Consumer social apps & tools	Consumer social apps & tools	
Jasper	jasper.ai	Jasper operates as an artificial intelligence (AI) content creati	Enterprise tech	Social media & marketing content	
Runway	runwayml.com	Runway operates as an applied artificial intelligence (AI) resear	Enterprise tech	Photo & video editing tools	

