

# Generative AI Bible

The ultimate guide  
to genAI disruption

 CBINSIGHTS

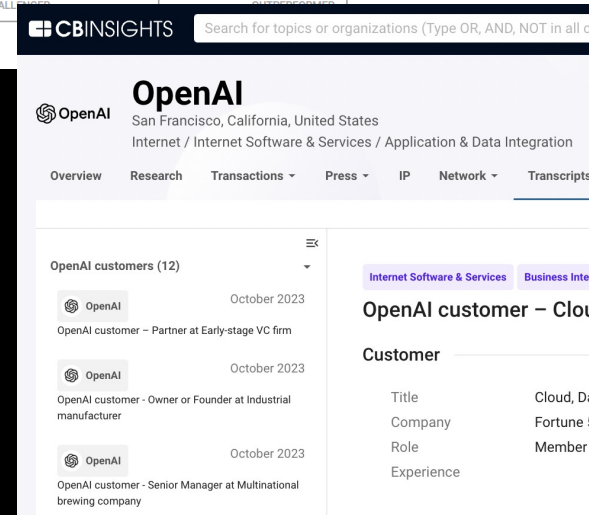
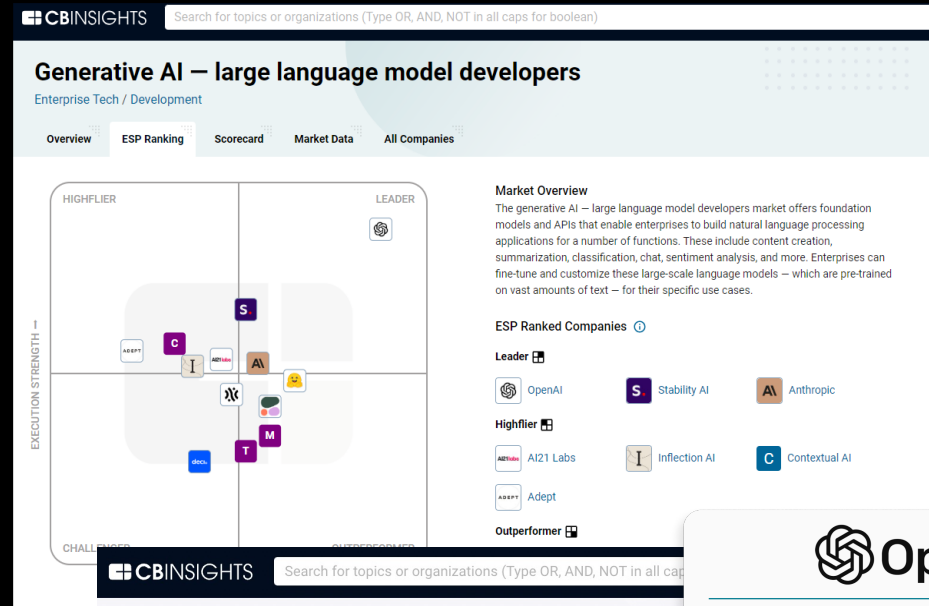


# Unleash the generative AI revolution

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

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**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

# 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

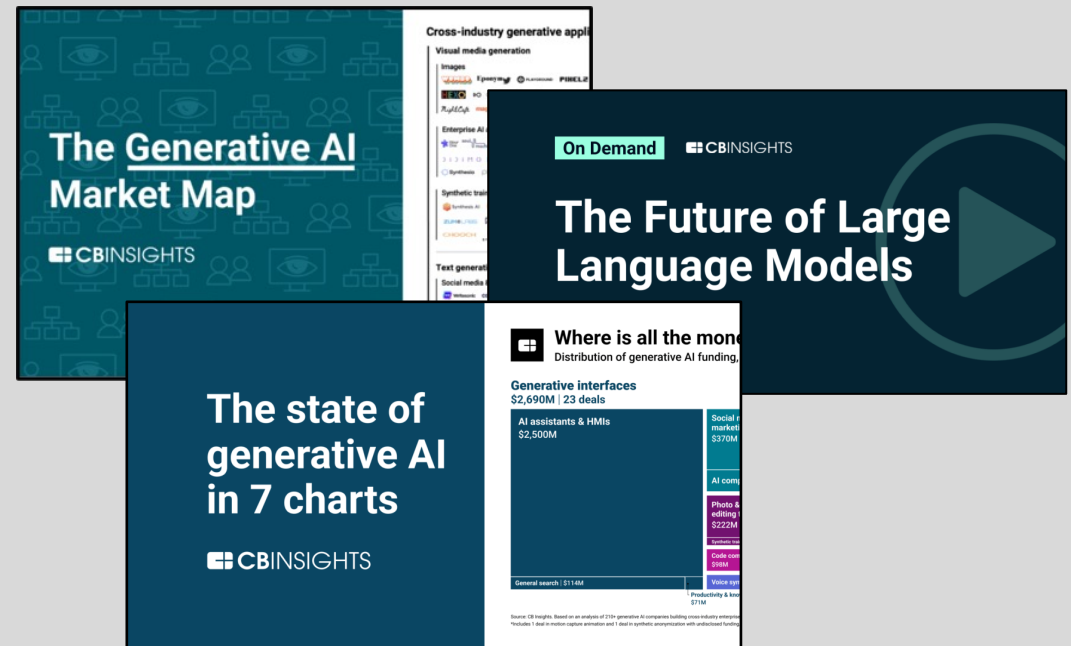
## Understand 25+ generative AI markets

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**”



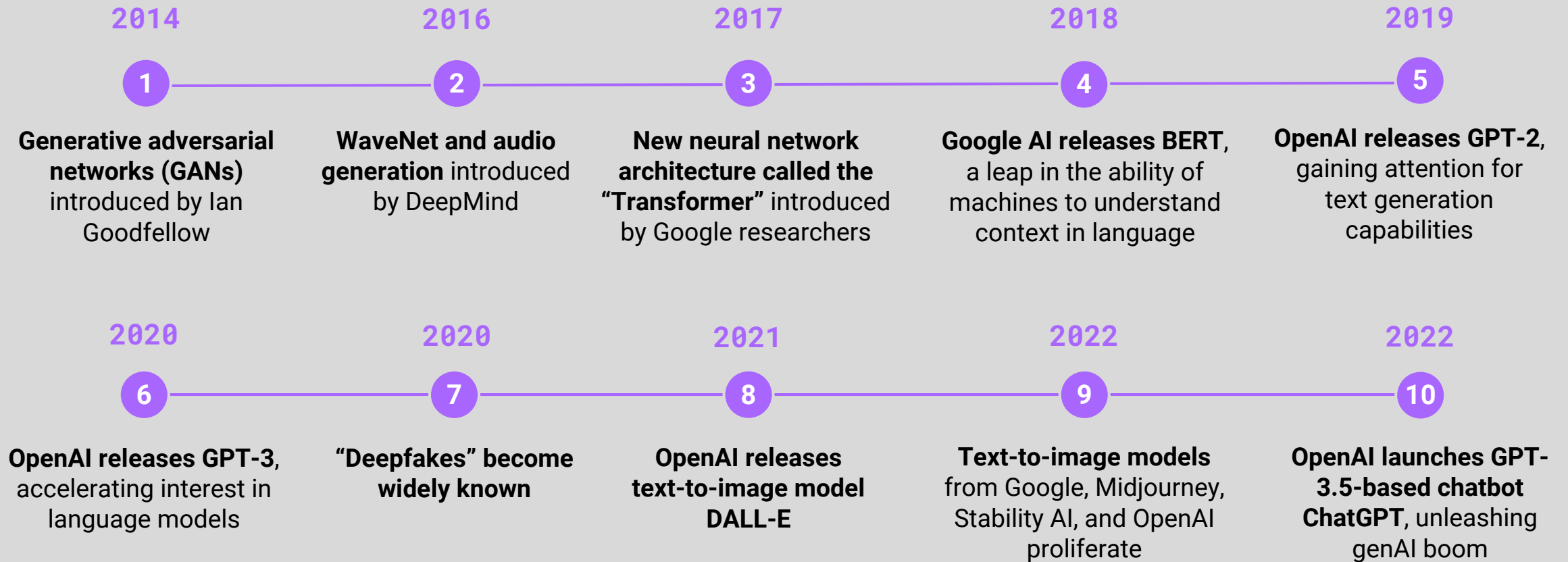
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2014

# Gradually

Generative AI has been in the works for years

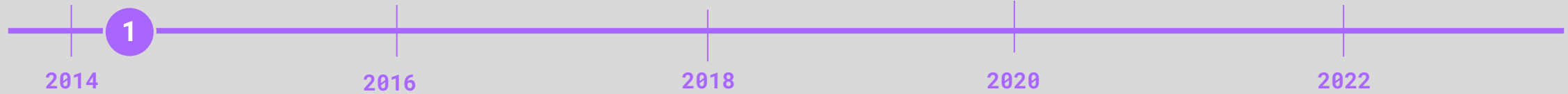
# How did we get here? A recent timeline of select events in the development of generative AI



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



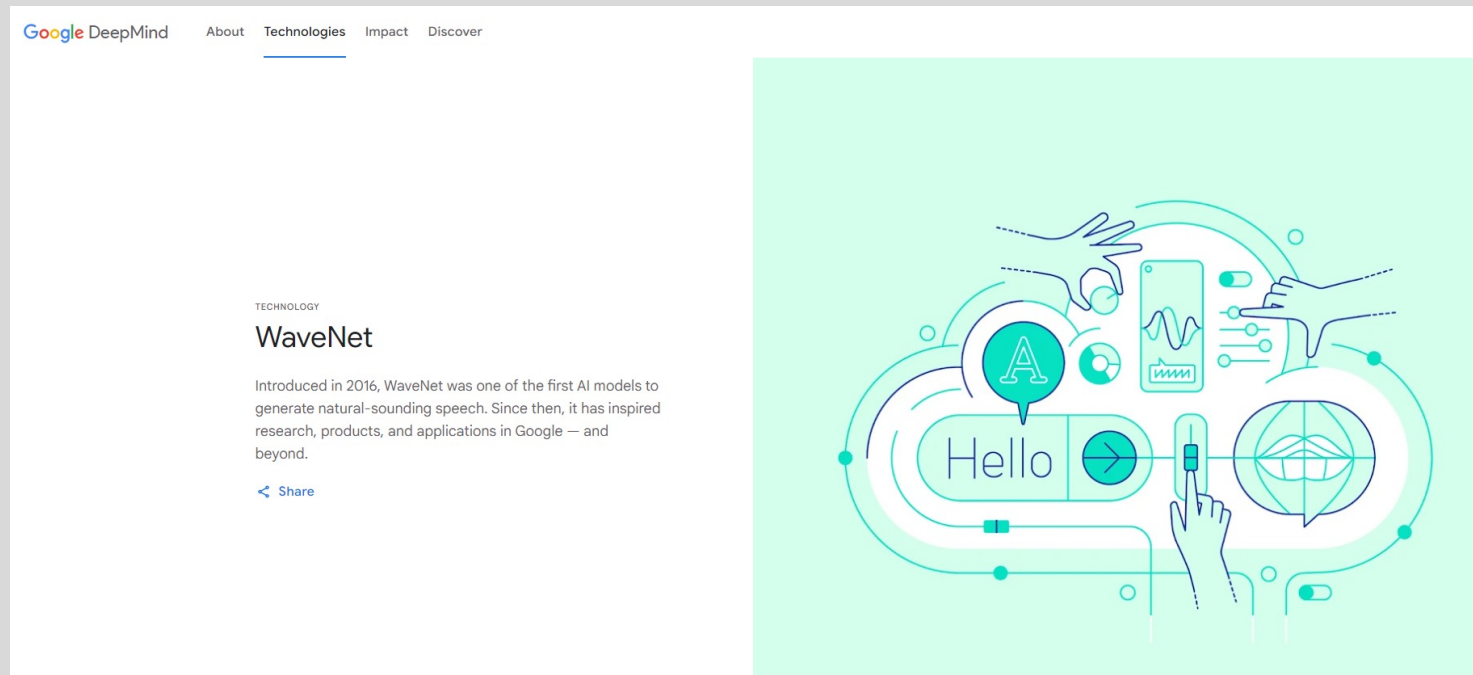
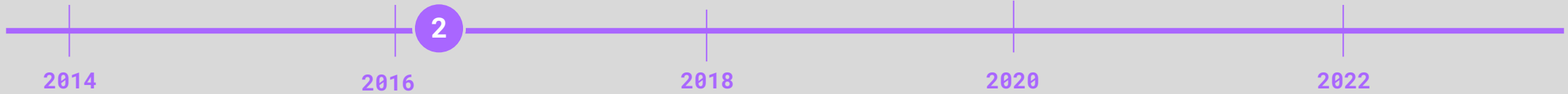
# GANs tap into the idea of “AI versus AI” – advancing image generation dramatically



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



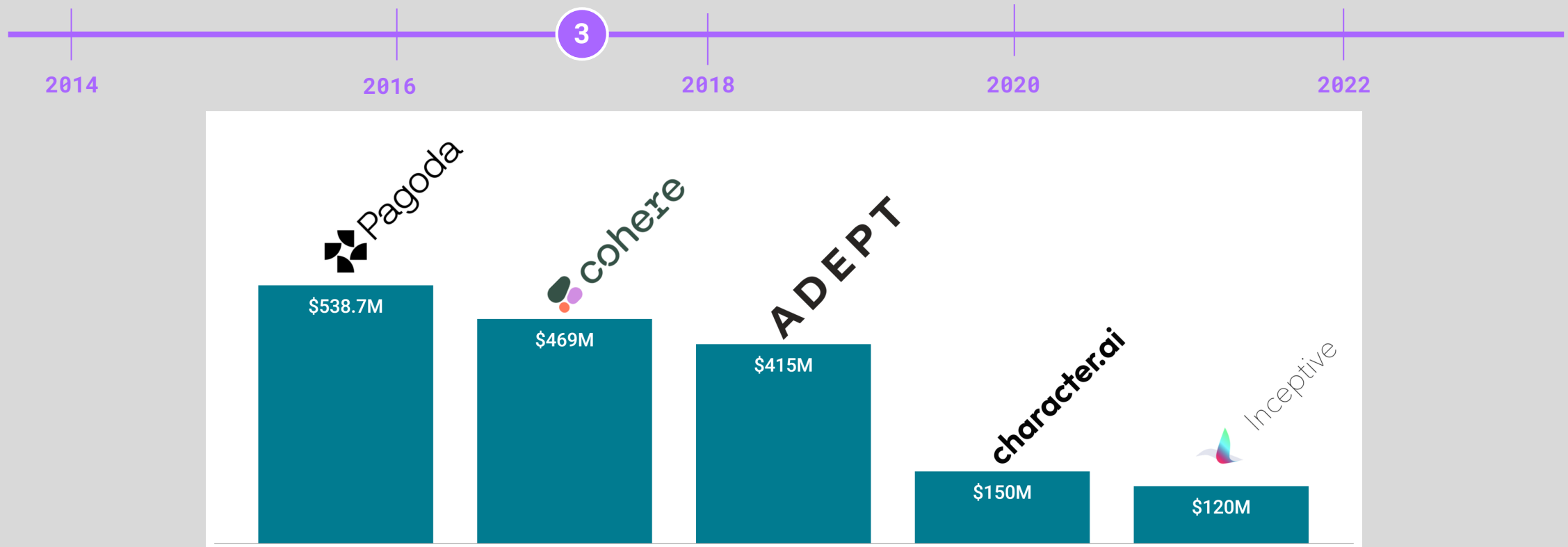
# WaveNet produces synthetic audio, showcasing the potential of generative models beyond images





# 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\*

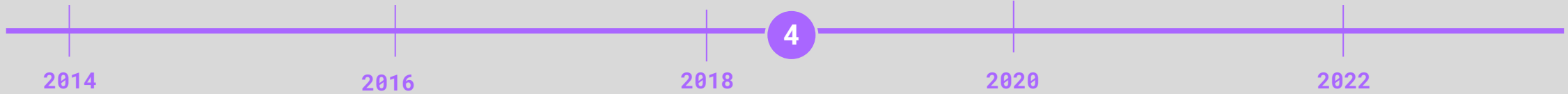


Source: CB Insights – [6 authors of a seminal research paper by Google](#)

\*As of 10/12/2023

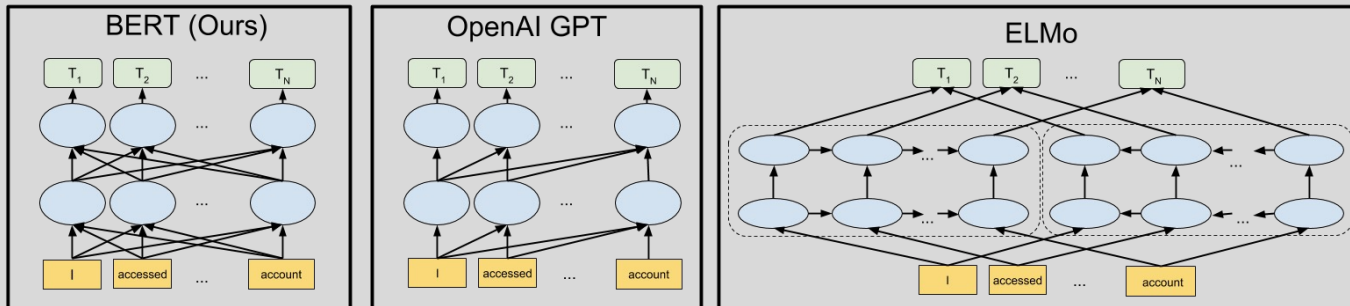


# Google AI releases BERT, a leap in the ability of machines to understand context in language



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

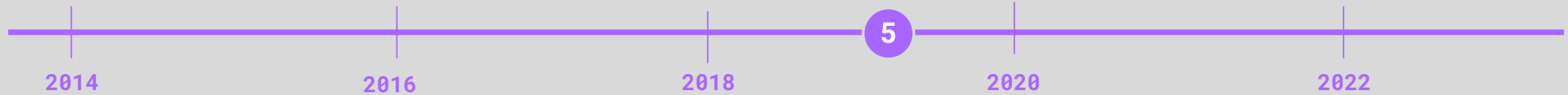
*The AI language model predicts a word based on not only the preceding words, but also the succeeding ones (bidirectional understanding of context).*



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



# OpenAI incorporates the Transformer architecture into its language models



This screenshot shows the top portion of an OpenAI blog post. The header includes the OpenAI logo and navigation links for Research, API, ChatGPT, Safety, and Company. The main text discusses state-of-the-art results on diverse language tasks using a scalable, task-agnostic system. It highlights the combination of 'transformers' and 'unsupervised pre-training' as key ideas. The text concludes by stating that pairing supervised learning methods with unsupervised pre-training works very well and motivates further research.

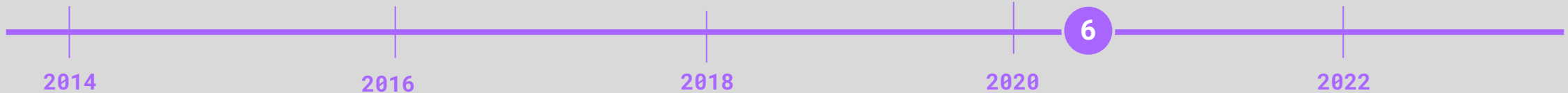
GPT-1 – June 2018

This screenshot shows the top portion of an OpenAI blog post. The header includes the OpenAI logo and navigation links for Research, API, ChatGPT, Safety, and Company. The main text describes the GPT-2 model, which was trained to predict the next word in 40GB of Internet text. It notes that due to concerns about malicious applications, the trained model is not being released. Instead, a smaller model is being released for research, along with a technical paper. The text also describes GPT-2 as a large transformer-based language model with 1.5 billion parameters, trained on 8 million web pages.

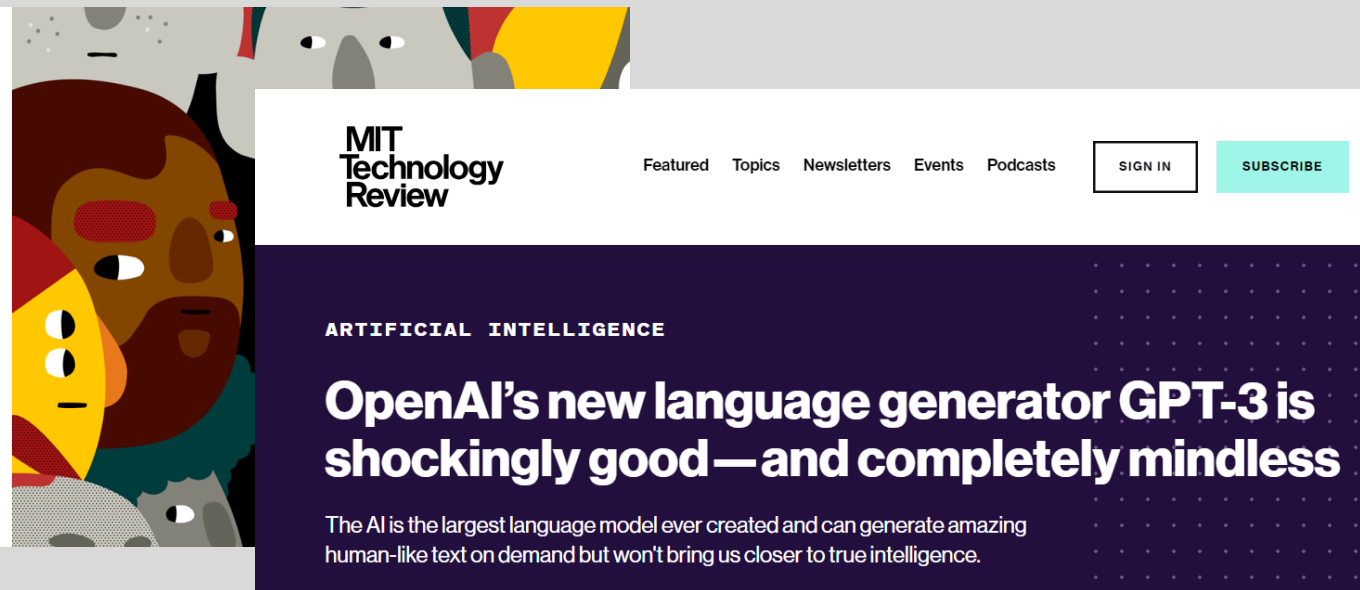
GPT-2 – February 2019



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



November 2020



July 2020





# Deepfakes go mainstream, highlighting power and pitfalls of video generation

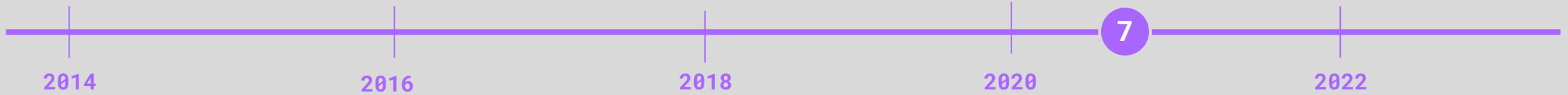
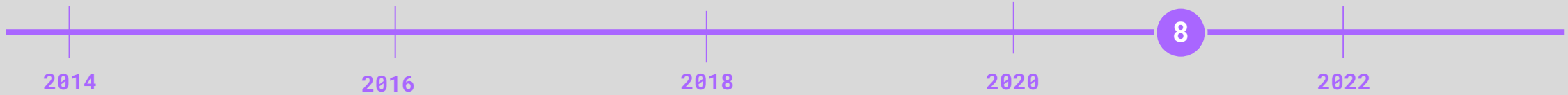


Image source: YouTube, TikTok via ABC

\*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

Five distinct AI-generated images of armchairs designed to resemble avocados. The first shows a green chair with a yellow seat. The second is a solid green chair with a light green seat. The third is a green chair with a white base and a hollowed-out avocado pit in the center. The fourth is a green chair with a textured, leaf-like surface. The fifth is a green chair with a white base and a realistic orange avocado pit in the center.

Edit prompt or view more images ↓

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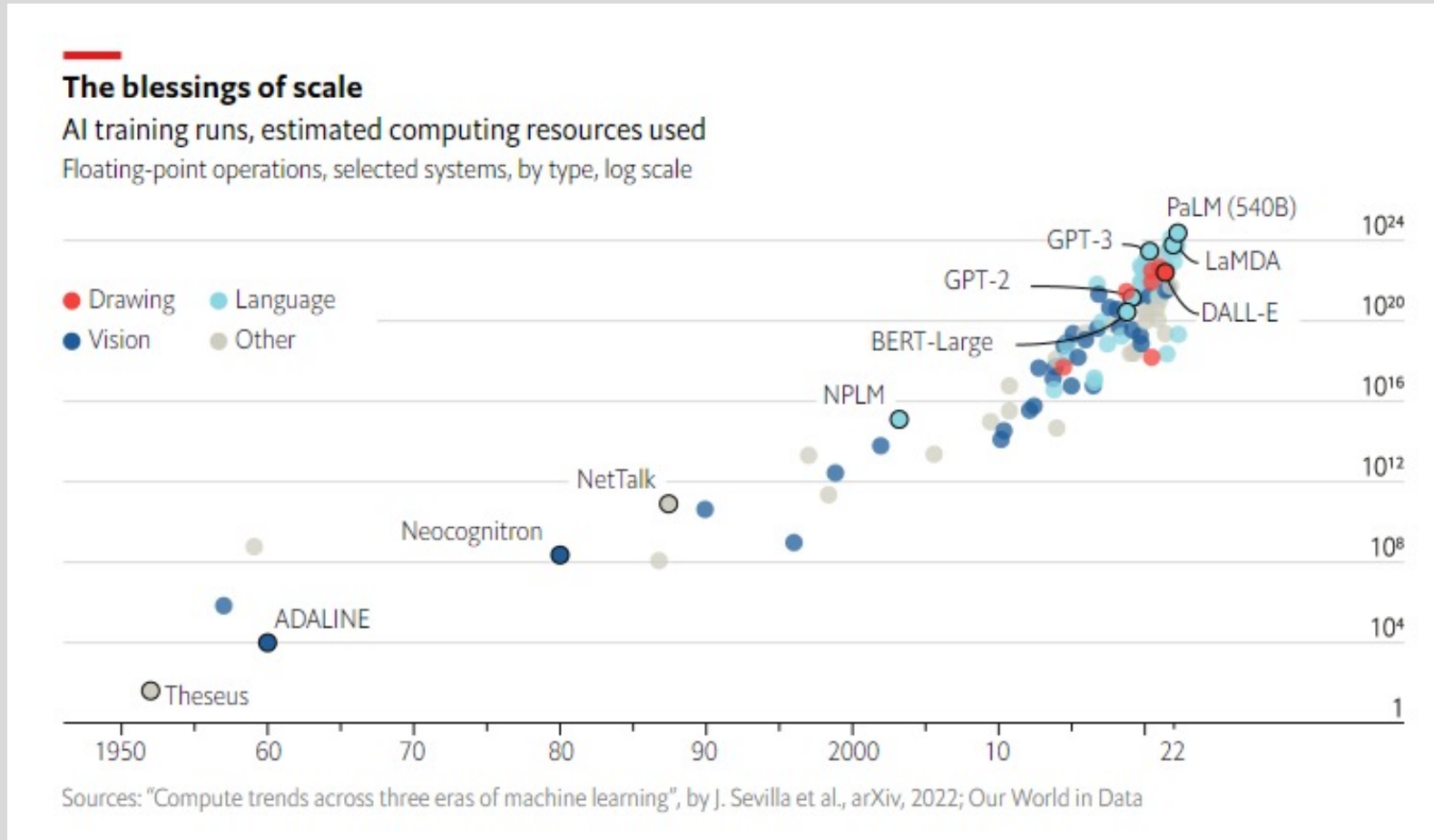
2022

# Then suddenly

GenAI goes from experiment to everywhere



# Models get bigger...

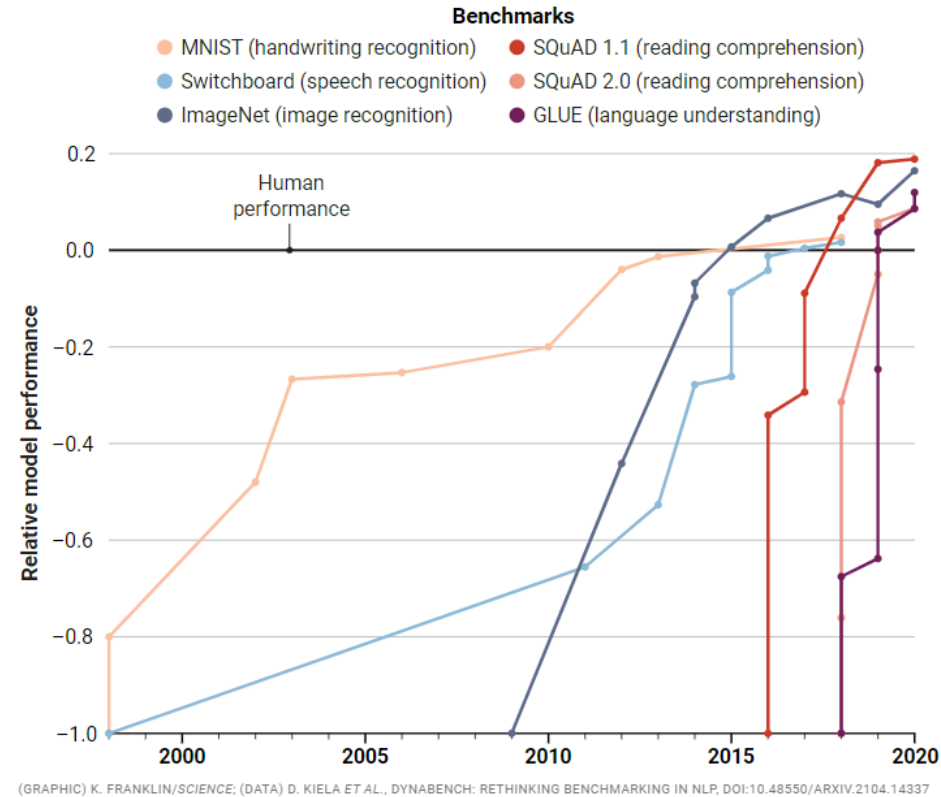




# ...and better, beating human performance benchmarks

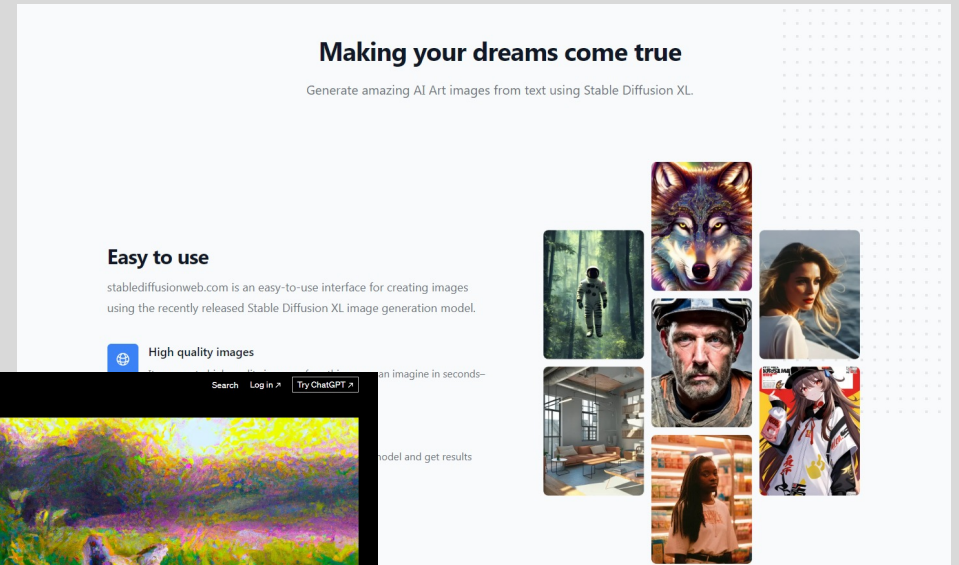
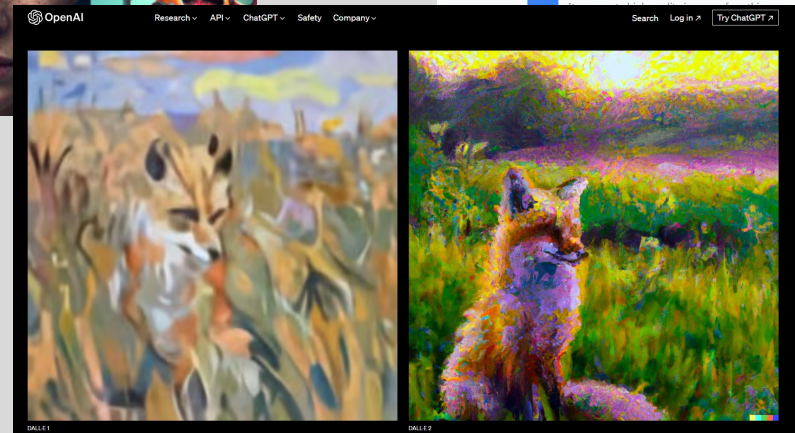
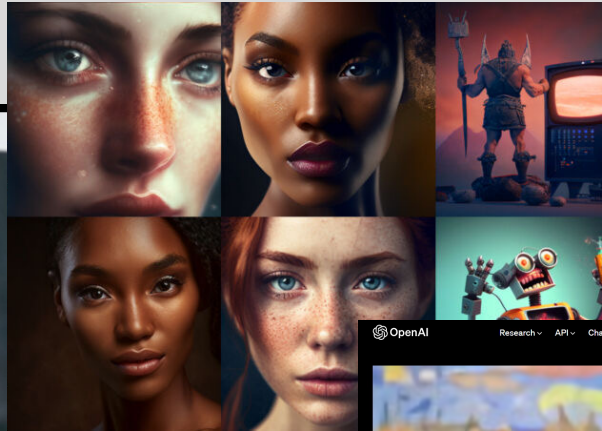
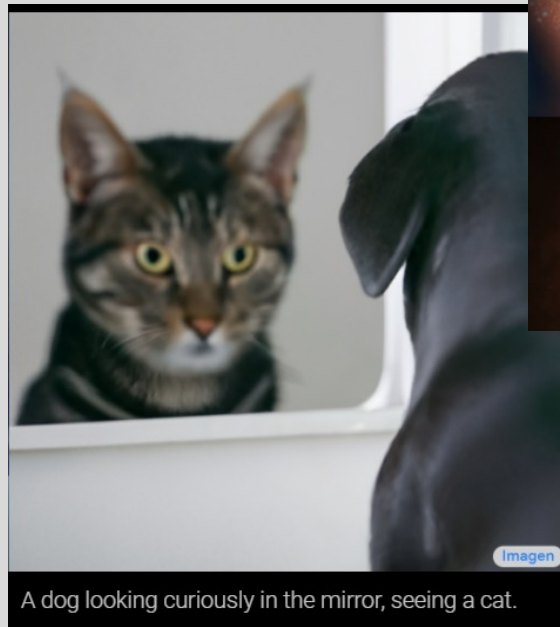
## Quick learners

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


















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



# AI coding assistant GitHub Copilot becomes widely available

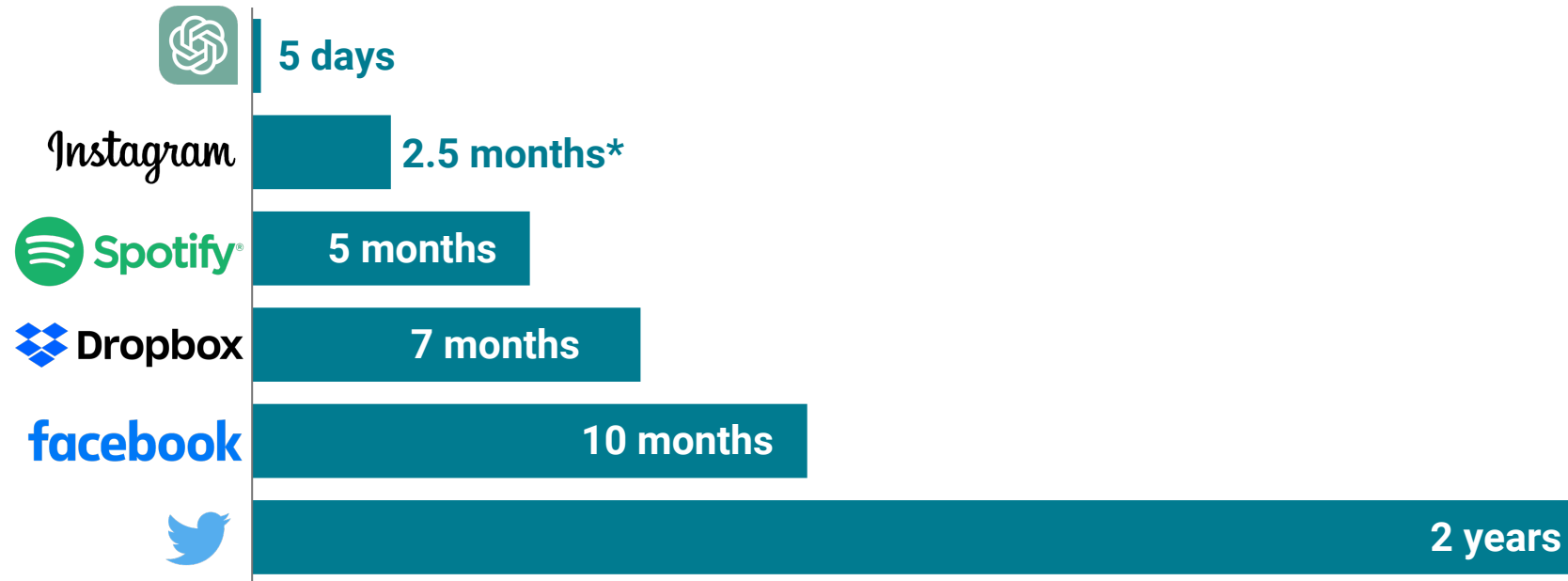






# ChatGPT goes viral, getting to 1M users in 5 days and 100M in 2 months – unleashing genAI boom

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



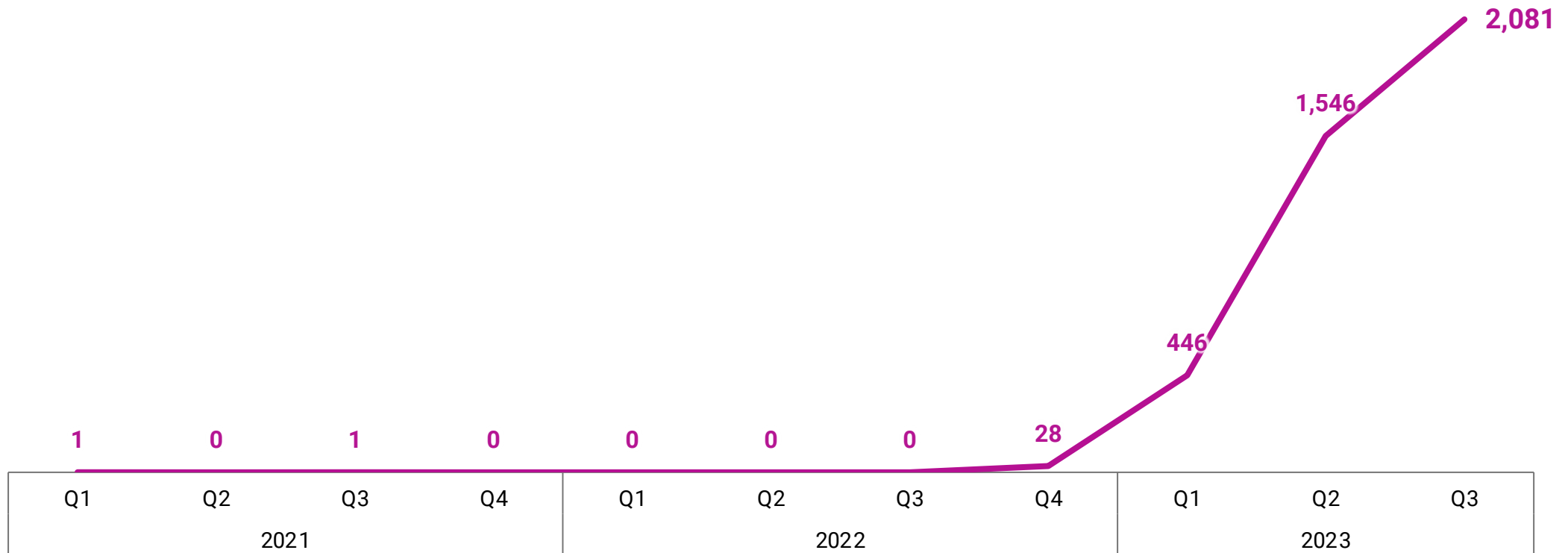
Source: Media mentions

\*App downloads



# 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)

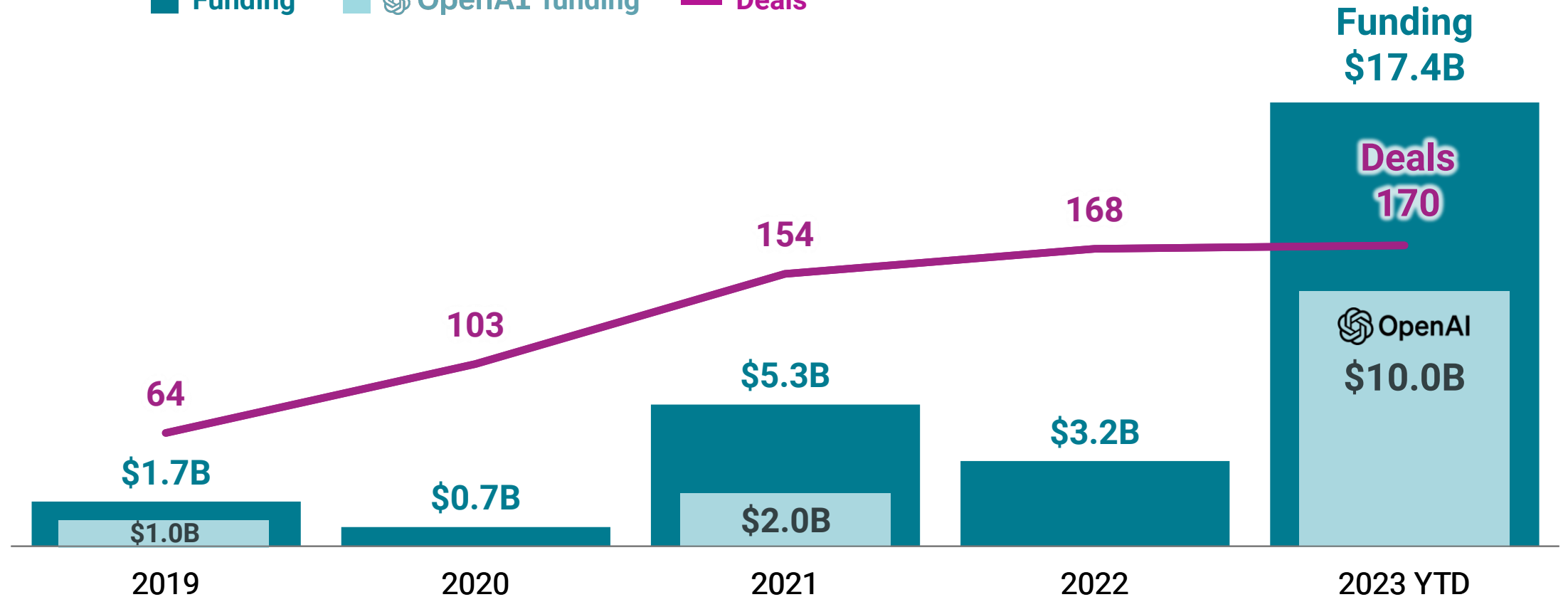




# Microsoft invests \$10B into ChatGPT-maker OpenAI in Q1'23, propelling genAI funding to new heights

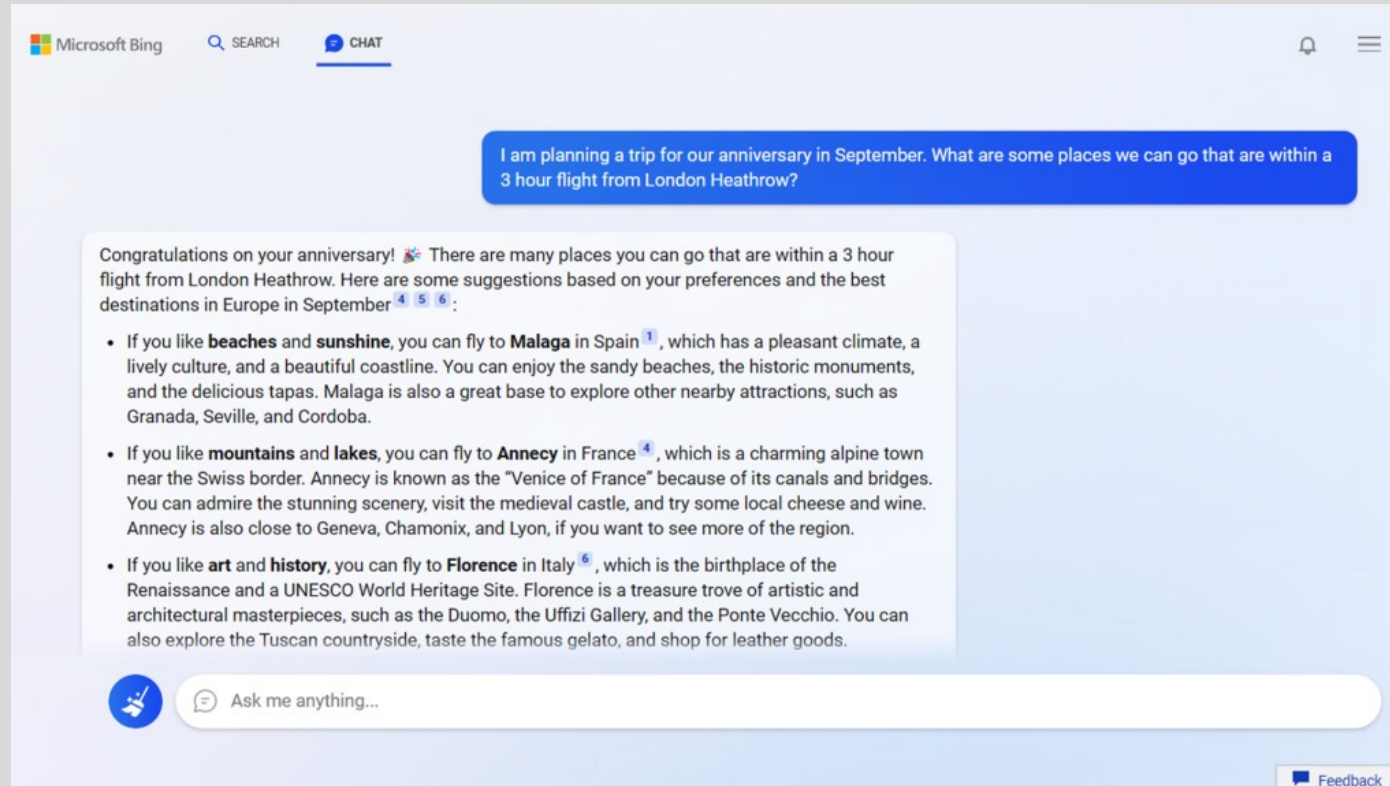
Disclosed equity funding & deals to generative AI companies (as of 9/30/2023)

■ Funding ■ OpenAI funding — Deals



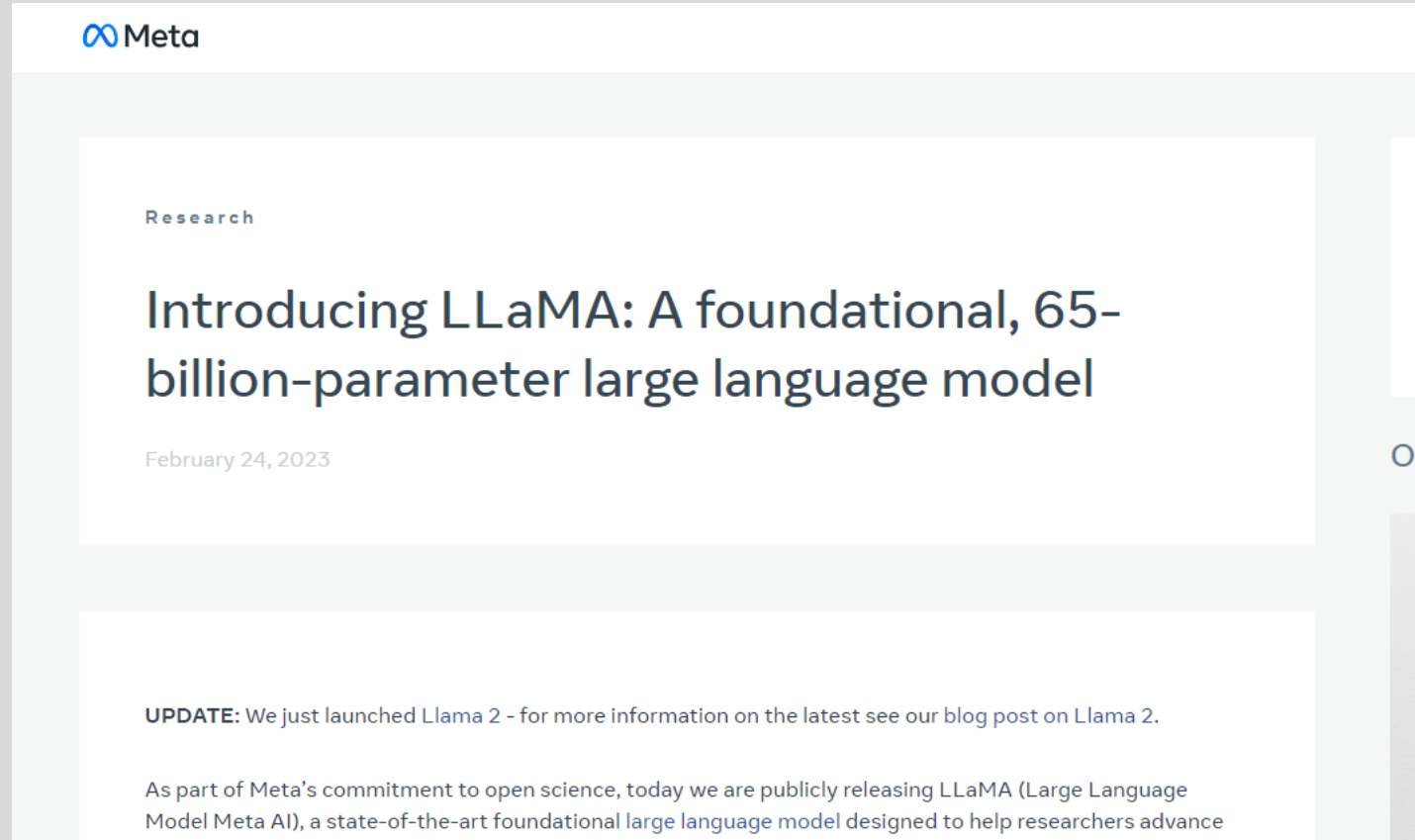


# Microsoft debuts AI-powered Bing, running on a new OpenAI large language model (LLM)





# Meta introduces Llama, an open-source language model





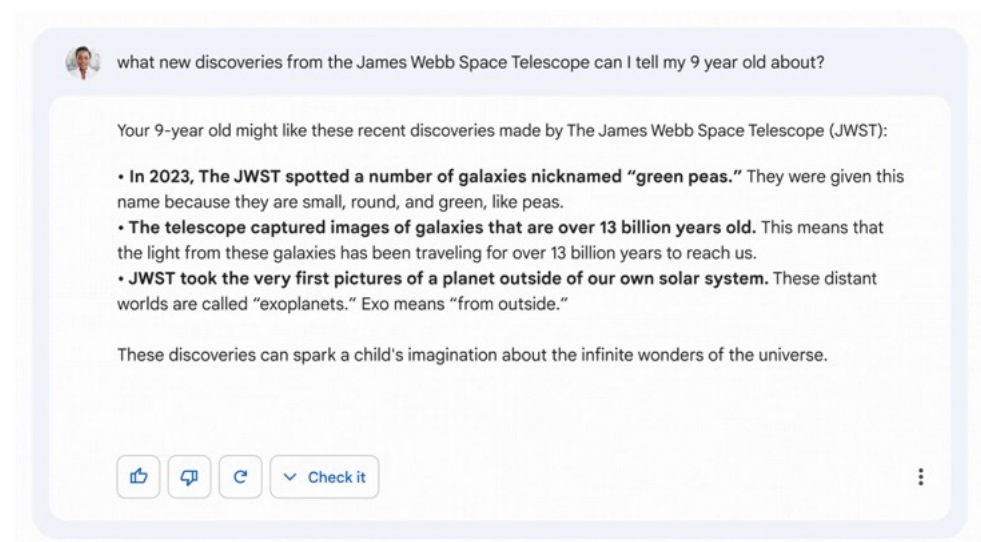
# Google sounds alarm bells and releases Bard chatbot

## Alphabet

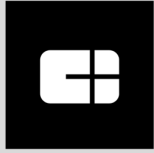
On the AI side, it is a really exciting time. I think we've been investing for a while, and it's clear that the market is ready...**Obviously, we need to make sure we're iterating in public, these models will keep getting better, so the field is fast changing.** The serving costs will need to be improved.

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.

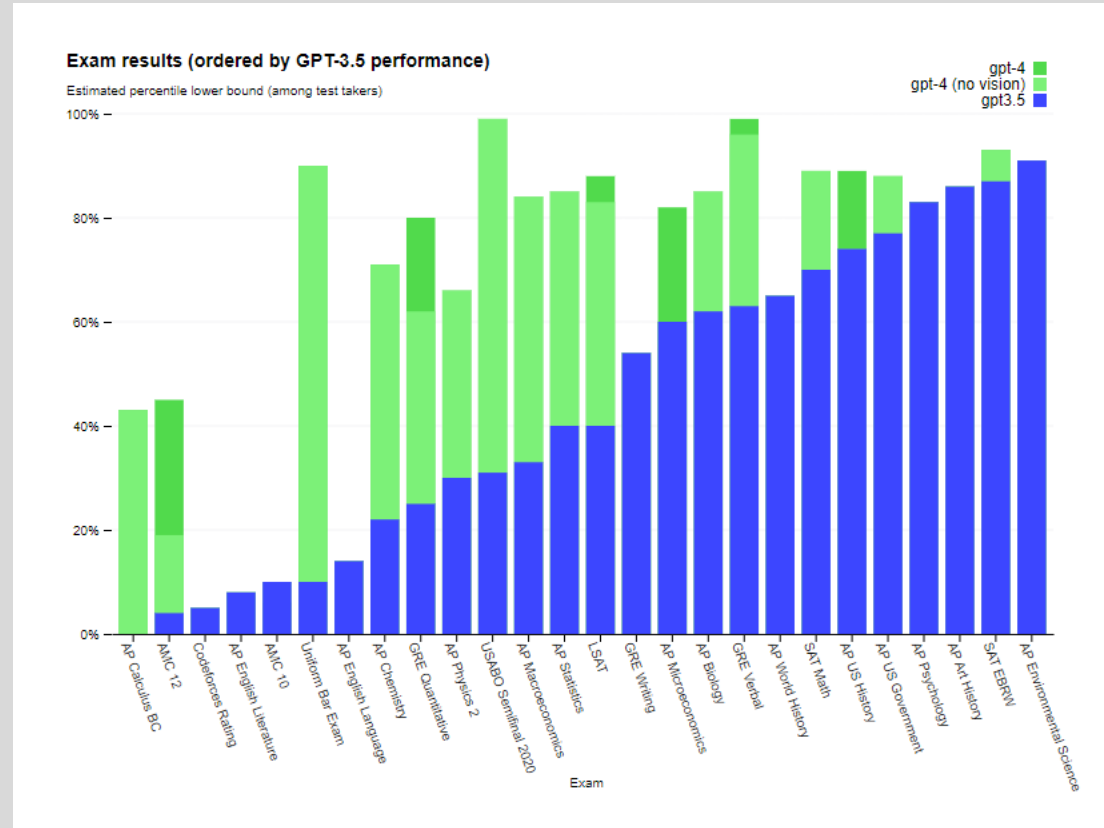
Alphabet CEO Sundar Pichai  
Q1'23 earnings call



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

The screenshot shows a Reddit post from the subreddit r/reddit, posted 6 months ago by user KeyserSosa. The post title is "An Update Regarding Reddit's API" and is categorized under "Updates". The post content includes a greeting to the community, a TL;DR section with five bullet points, and a section titled "And now, some background" which discusses the history of the Data API and the platform's obligations to its users.

**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**

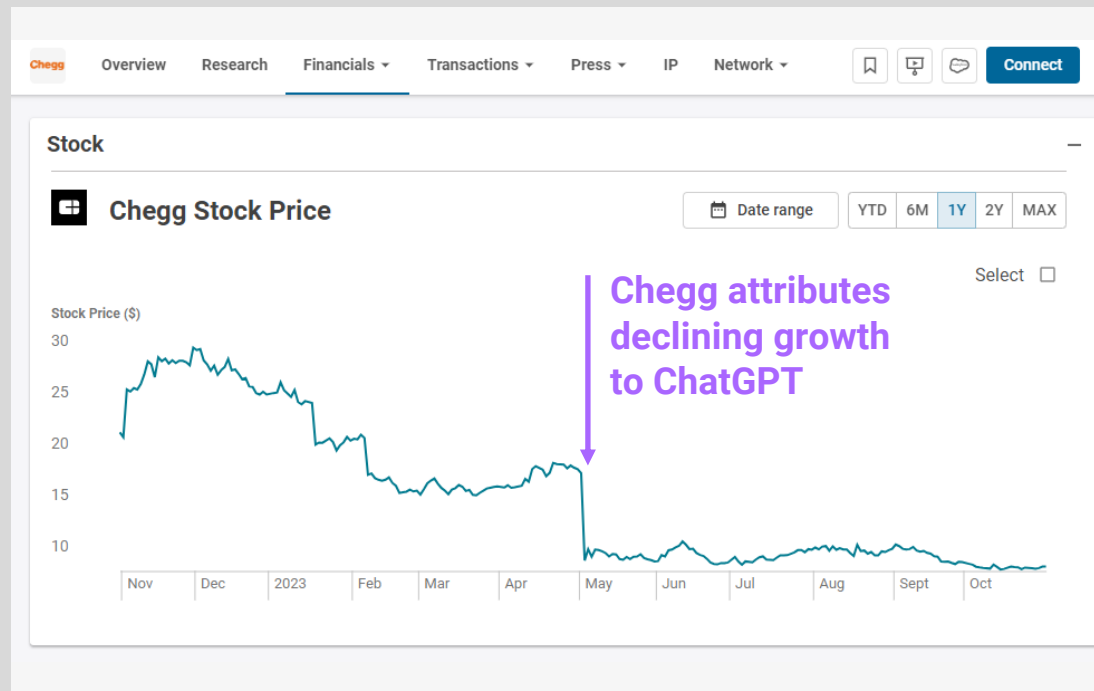
Since we first launched our Data API in 2008, we've seen thousands of fantastic applications built: tools to make moderation easier, utilities that help users stay up to date on their favorite topics, or (my personal favorite) this thing that helps convert helpful figures into useless ones. Our APIs 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



## Chegg Investor Relations

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### Press Release Details

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#### Chegg Partners with Scale AI to Enhance Learning Experience for Students

August 7, 2023

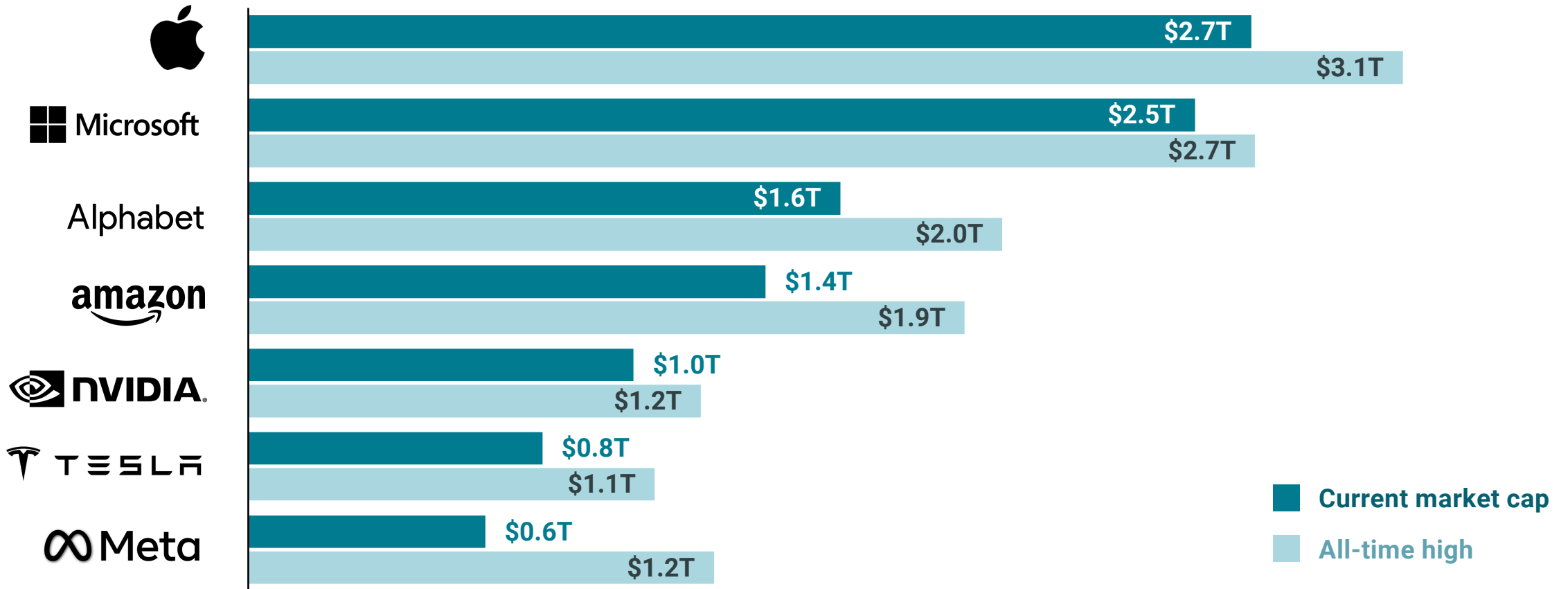
Personalized learning assistant combines best of generative AI with Chegg's proprietary high-quality content

SANTA CLARA, Calif.--(BUSINESS WIRE)-- Chegg, Inc. (NYSE: CHGG), the leading student-first online learning company, announced today its partnership with Scale AI, the data infrastructure for AI, to develop proprietary large language models (LLMs) to provide a generative experience through Chegg's personalized learning assistant.

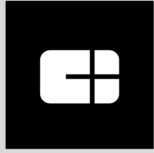


# Nvidia enters the \$1T market cap club as demand for GPUs used in genAI sends its revenue soaring

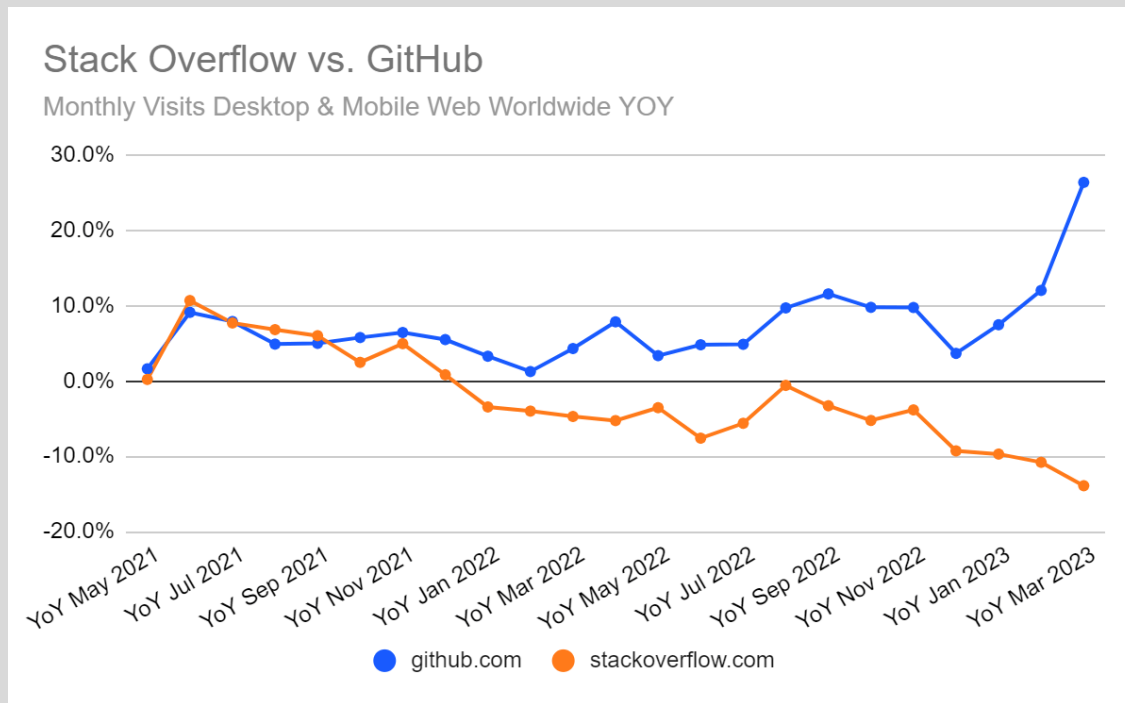
US companies to reach \$1T+ market cap (as of 10/30/2023)



\*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 [Wee 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](#)

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



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**Hundreds of startups  
pile into genAI**

Funding soars as  
investors flock

Big tech is all in and  
ready to fight



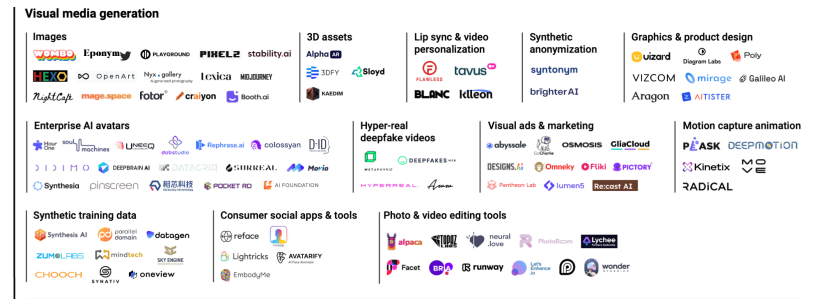
# Commercial genAI applications are proliferating

## Generative AI Market Map

Explore the full map

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

### Cross-industry generative applications



### Text generation



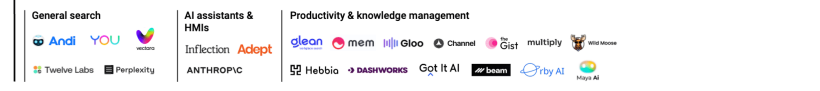
### Speech & audio generation



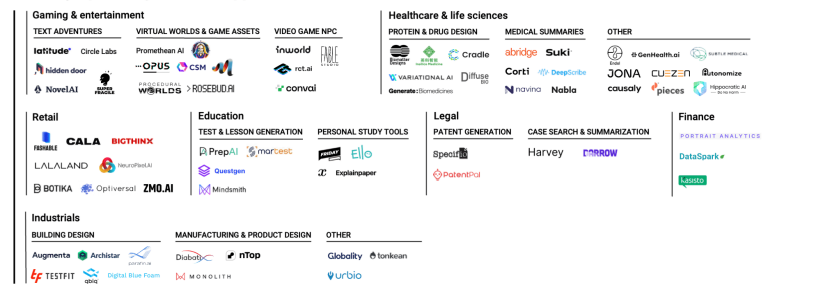
### Code generation



### Generative interfaces



### Industry-specific generative applications



### Generative AI infrastructure





# 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.)

## Cross-industry generative applications

**Visual media generation**

**Images**  
 Midjourney, OpenAI, Playground, PINELEZ, stability.ai, DALL-E 2, DALL-E 3, Leonardo AI, DeviantArt, Artbreeder, Craiyon, Midjourney, Stable Diffusion, Flux, etc.

**3D assets**  
 AlphaVantage, SDF, Sloyd, Kaedim, etc.

**Lip sync & video personalization**  
 Synthesia, HeyGen, etc.

**Synthetic anonymization**  
 BrighterAI, etc.

**Graphics & product design**  
 Uizard, Diagram Labs, Poly, Vizcom, Midjourney, Galileo AI, Aragon, etc.

**Enterprise AI avatars**  
 Synthesia, HeyGen, etc.

**Hyper-real deepfake videos**  
 DeepFakes, etc.

**Visual ads & marketing**  
 Obysolo, Osmosis, CillaCloud, etc.

**Motion capture animation**  
 DeepMotion, etc.

**Synthetic training data**  
 Synthesis AI, etc.

**Consumer social apps & tools**  
 Reface, etc.

**Photo & video editing tools**  
 Adobe, etc.

**Text generation**

**Social media & marketing content**  
 Jasper, Copy.ai, etc.

**Sales email & outreach**  
 Lavender, etc.

**AI companions**  
 Character.AI, etc.

**Text summarization**  
 etc.

**Personal writing & storytelling**  
 etc.

**Customer support**  
 etc.

**Speech & audio generation**

**Voice synthesis & cloning**  
 Eleven Labs, etc.

**Voice dubbing**  
 etc.

**Music generation**  
 etc.

**Code generation**

**Code completion**  
 GitHub Copilot, etc.

**Text-to-code**  
 etc.

**Command line automation**  
 etc.

**Tests & debugging**  
 etc.

**Code documentation**  
 etc.

**Website & app builders**  
 etc.

**Generative interfaces**

**General search**  
 etc.

**AI assistants & HMs**  
 etc.

**Productivity & knowledge management**  
 etc.

## Industry-specific generative applications

**Gaming & entertainment**

**TEXT ADVENTURES**  
 etc.

**VIRTUAL WORLDS & GAME ASSETS**  
 etc.

**VIDEO GAME NPC**  
 etc.

**Healthcare & life sciences**

**PROTEIN & DRUG DESIGN**  
 etc.

**MEDICAL SUMMARIES**  
 etc.

**OTHER**  
 etc.

**Retail**

**Education**

**Legal**

**Finance**

**Industrials**

**BUILDING DESIGN**  
 etc.

**MANUFACTURING & PRODUCT DESIGN**  
 etc.

**OTHER**  
 etc.

## Generative AI infrastructure

**Foundational models & APIs**  
 OpenAI, Anthropic, etc.

**MLOps**  
 etc.

**Vector database tech**  
 etc.

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

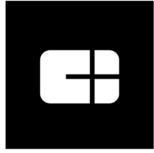


Hundreds of startups pile  
into genAI

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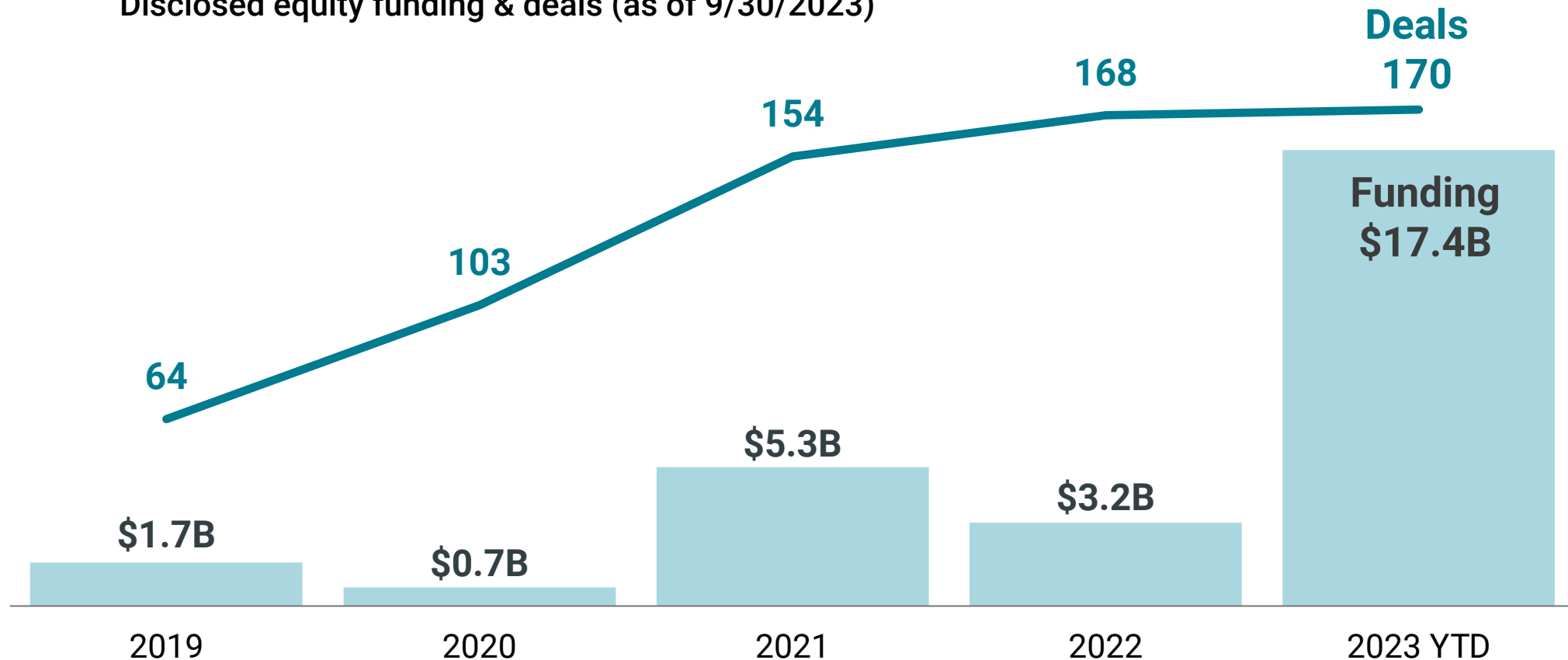
**Funding soars as  
investors flock**

Big tech is all in and  
ready to fight



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

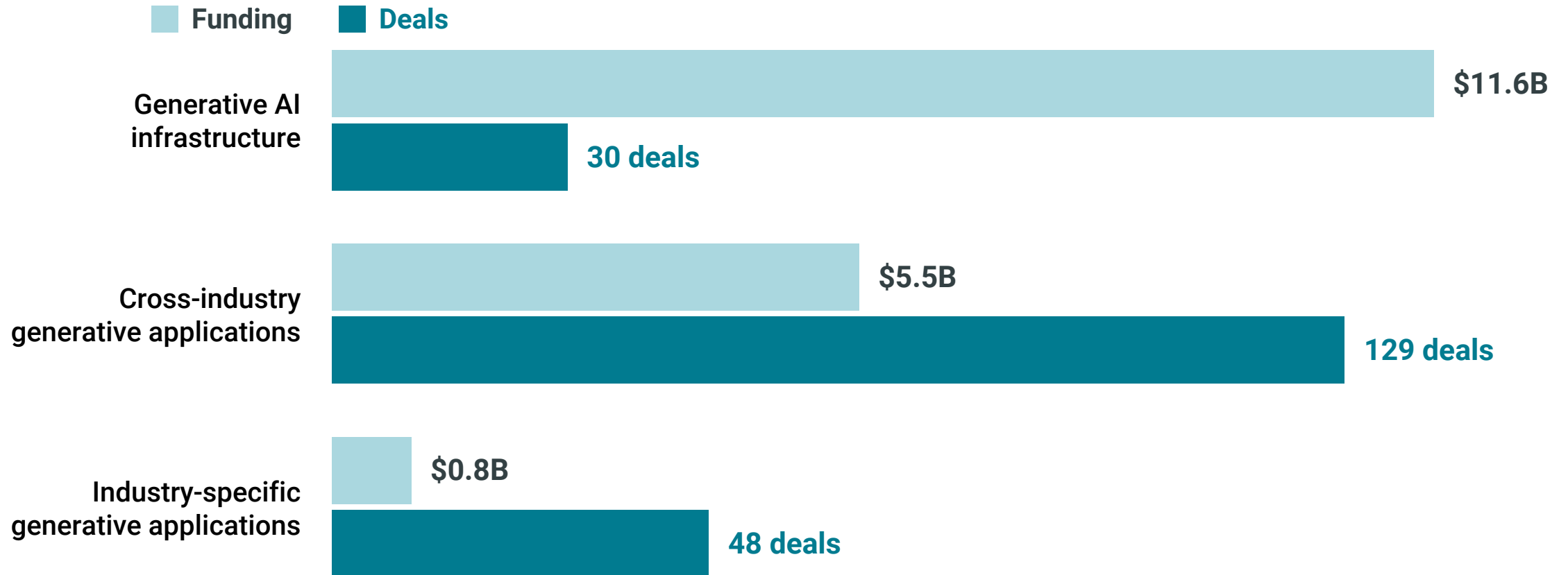
Disclosed equity funding & deals (as of 9/30/2023)





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

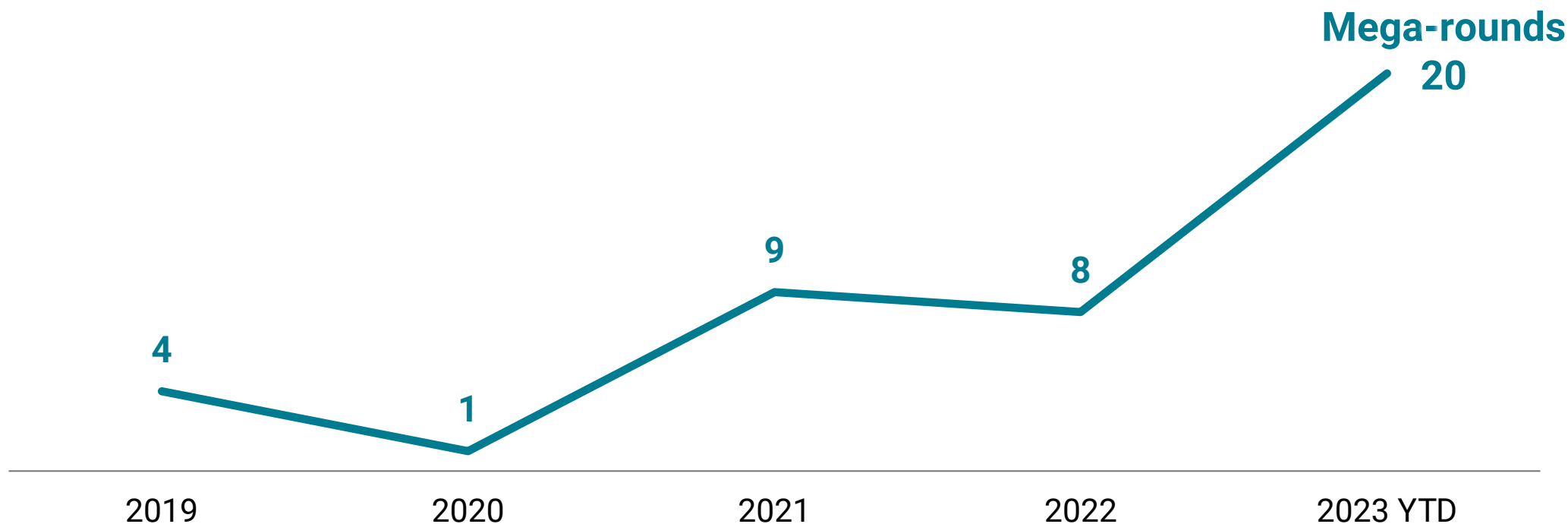
Disclosed equity funding & deals to generative AI categories, from Q4'22 to Q3'23





# 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

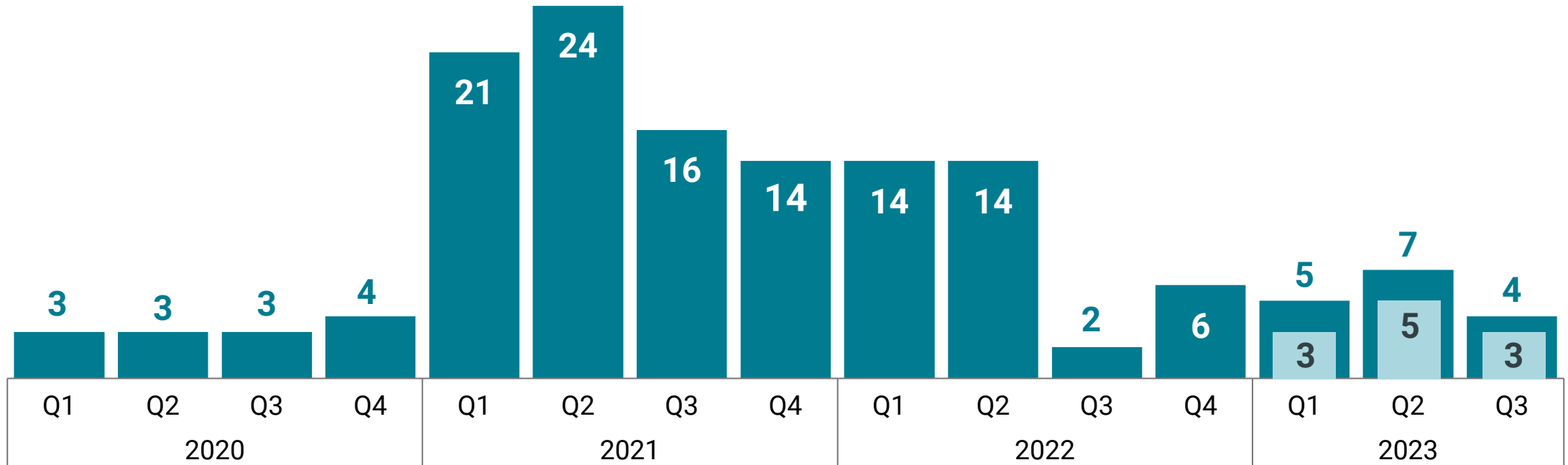
	Company	Valuation	Country
1	 ANTHROPIC	\$4.4B	 United States
2	 cohere	\$2.2B	 Canada
3	 runway	\$1.5B	 United States
4	 AI21labs	\$1.4B	 Israel
5	 replit	\$1.2B	 United States
6	 ADEPT	\$1.0B	 United States
6	 Character.AI	\$1.0B	 United States
6	 synthesia	\$1.0B	 United Kingdom
6	 Typeface	\$1.0B	 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

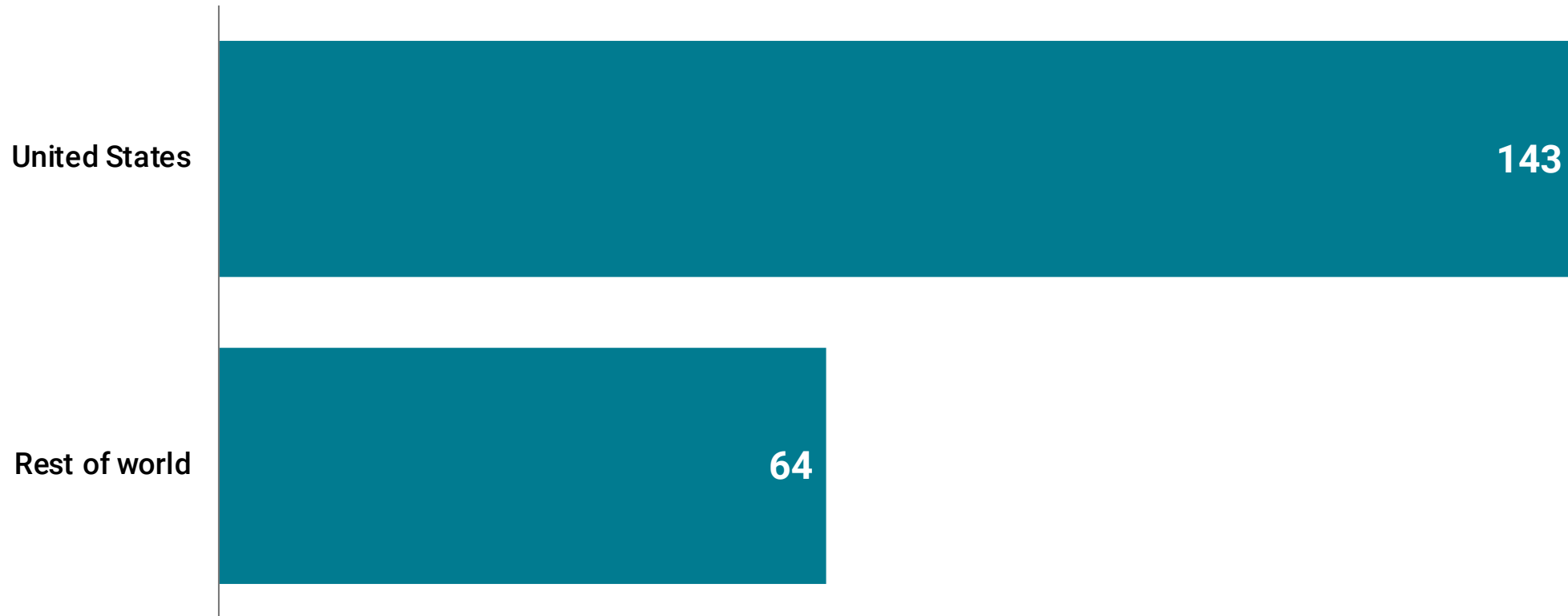
Generative AI M&A exits, Q1'23 – Q3'23

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

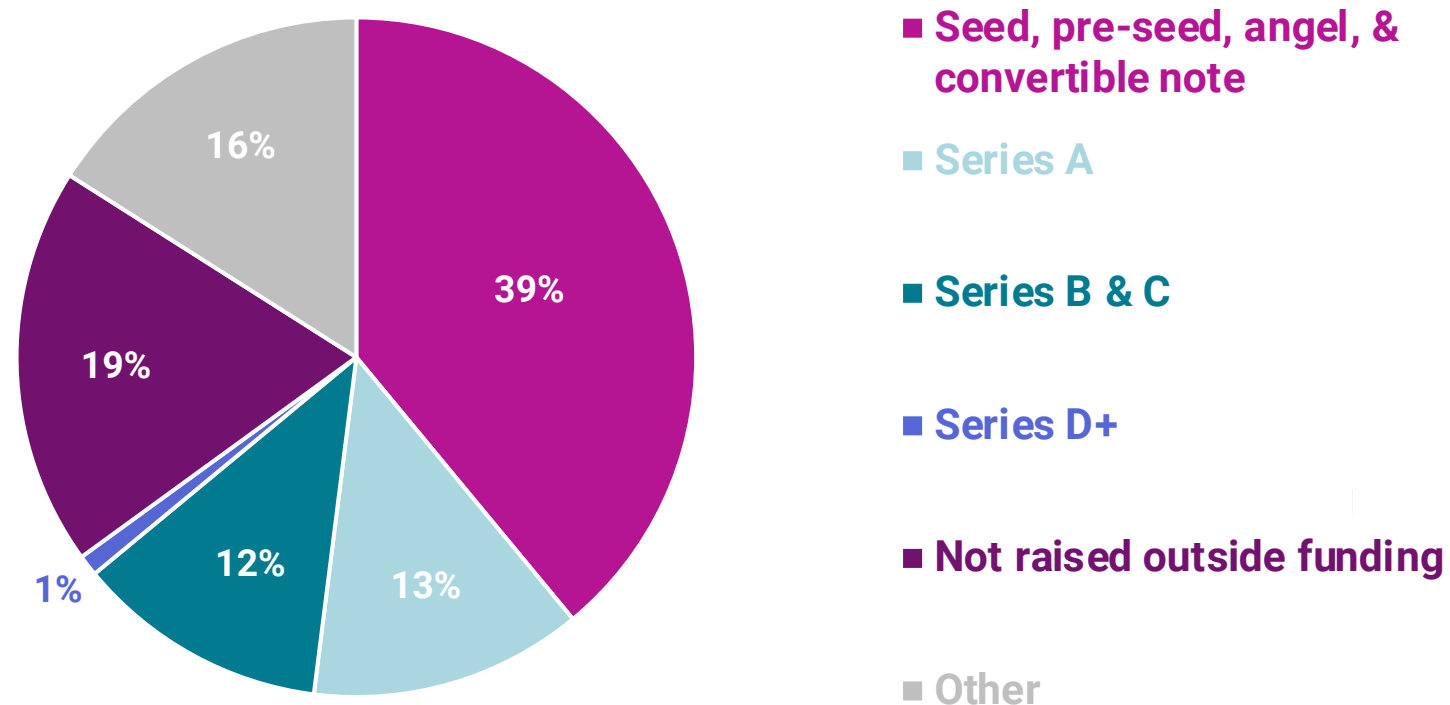






# But it's still early days for genAI startups – 71% are early-stage or haven't raised any funding

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



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)

Big tech investors

✔ Indicates where big tech invested

	amazon	Google	Microsoft	NVIDIA	Meta
Hugging Face	✔	✔		✔	
Adept			✔	✔	
AI21 Labs		✔		✔	
Anthropic	✔	✔			
Inflection AI			✔	✔	
Inworld AI			✔		✔
OpenAI	✔ **		✔		
Runway		✔		✔	
Synthesisia		✔		✔	
Typeface		✔	✔		

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

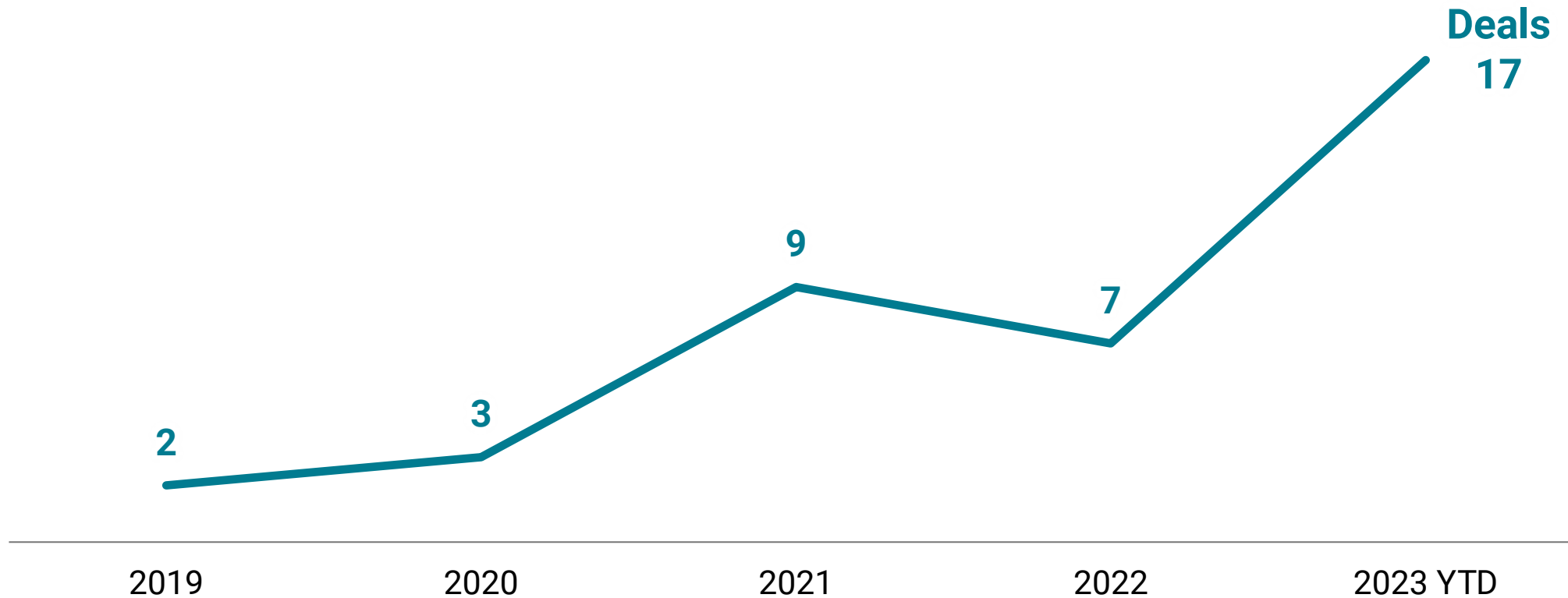
Source: CB Insights – [Advanced Search - Deals](#)

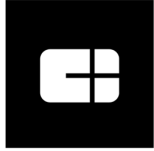
\*Big tech includes Amazon, Apple, Microsoft, Meta, Google, and Nvidia



# Nvidia increases its investment activity dramatically...

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

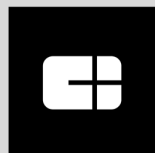




# ...becoming the most active investor in generative AI

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

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

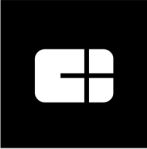
## *Inflection AI builds the largest AI cluster in the world*

**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

<input type="checkbox"/>	Companies	Investment Stage	Deal Size	Deal Date
<input type="checkbox"/>	Inflection AI	Series B	\$1,300.00M	06/29/2023
<input type="checkbox"/>	Adept	Series B	\$350.00M	03/14/2023
<input type="checkbox"/>	Generate Biomedicines	Series C	\$273.00M	09/14/2023
<input type="checkbox"/>	Cohere	Series C	\$270.00M	05/02/2023
<input type="checkbox"/>	Hugging Face	Series D	\$235.00M	08/23/2023
<input type="checkbox"/>	AI21 Labs	Series C	\$155.00M	08/30/2023
<input type="checkbox"/>	Runway	Series C - II	\$141.00M	05/04/2023
<input type="checkbox"/>	Aleph Alpha	Series B	\$108.91M	06/30/2023
<input type="checkbox"/>	Synthesia	Series C	\$90.00M	06/13/2023
<input type="checkbox"/>	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



**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)

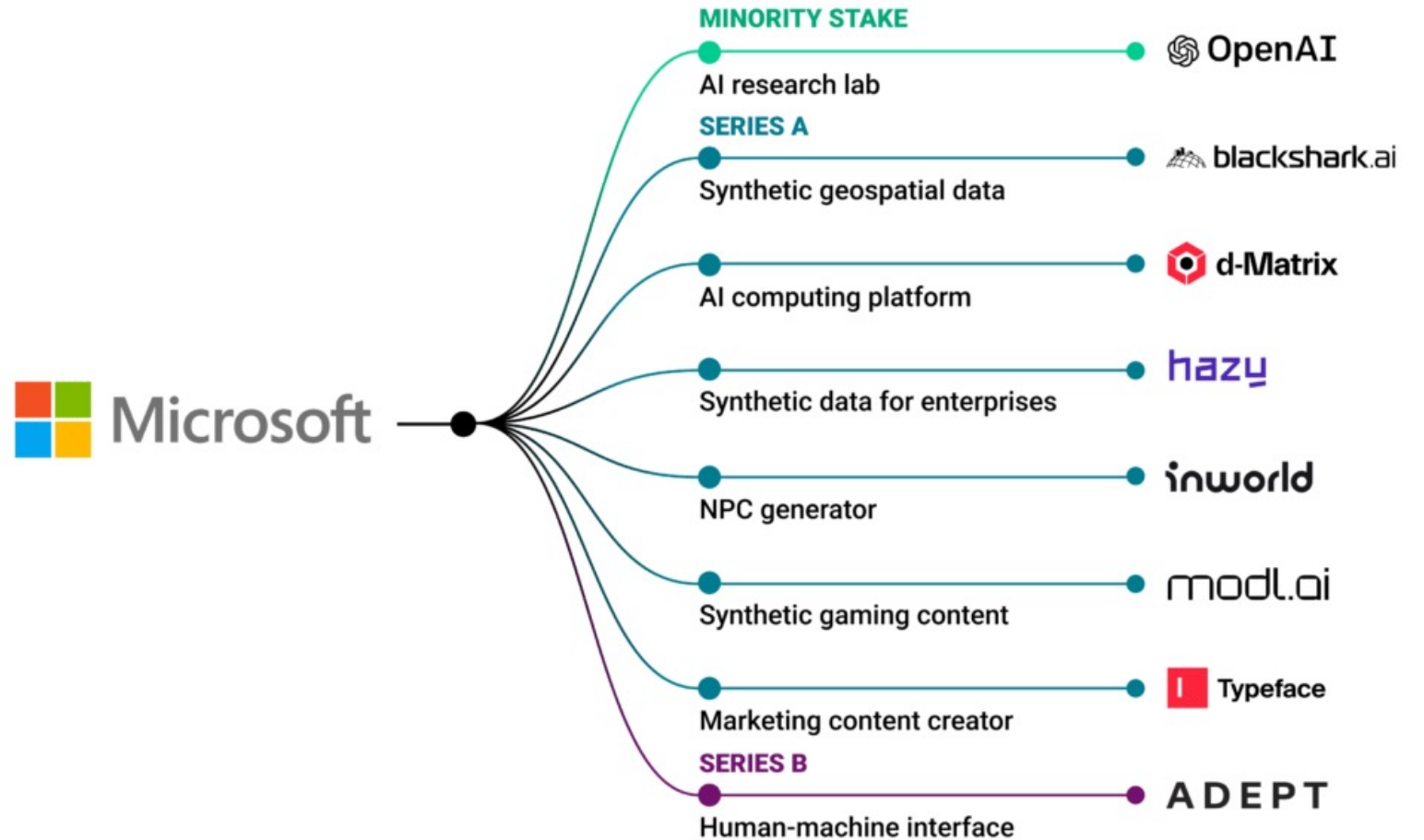
13 Deals | \$15.35B Total Deal Amount

<input type="checkbox"/> Companies	Investment Stage	Deal Size	Deal Date
<input type="checkbox"/> D-Matrix	Series B	\$110.00M	09/06/2023
<input type="checkbox"/> Inworld AI	Series A - II	\$50.00M	08/02/2023
<input type="checkbox"/> Typeface	Series B	\$140.00M	06/29/2023
<input type="checkbox"/> Inflection AI	Series B	\$1,300.00M	06/29/2023
<input type="checkbox"/> Adept	Series B	\$350.00M	03/14/2023
<input type="checkbox"/> Typeface	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	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



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

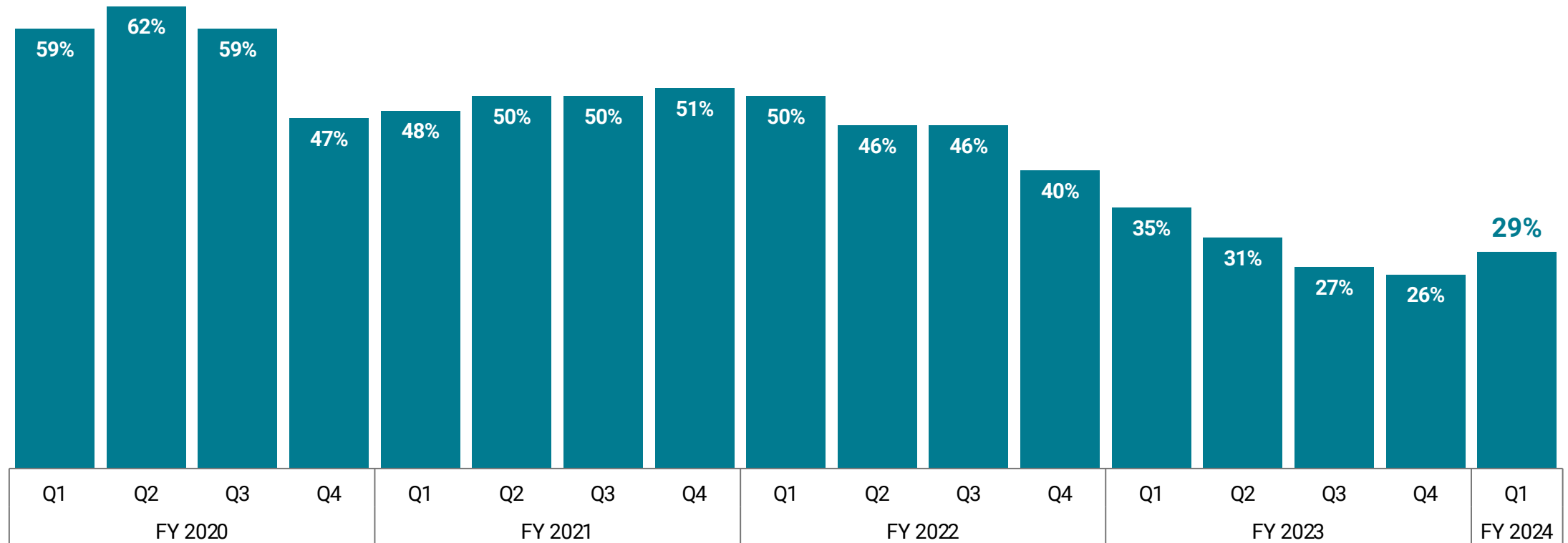
## Microsoft Investment Thesis Map – Generative AI





# 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

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



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

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

ANTHROPIC Overview Research Transactions Press Network Transcripts Connect

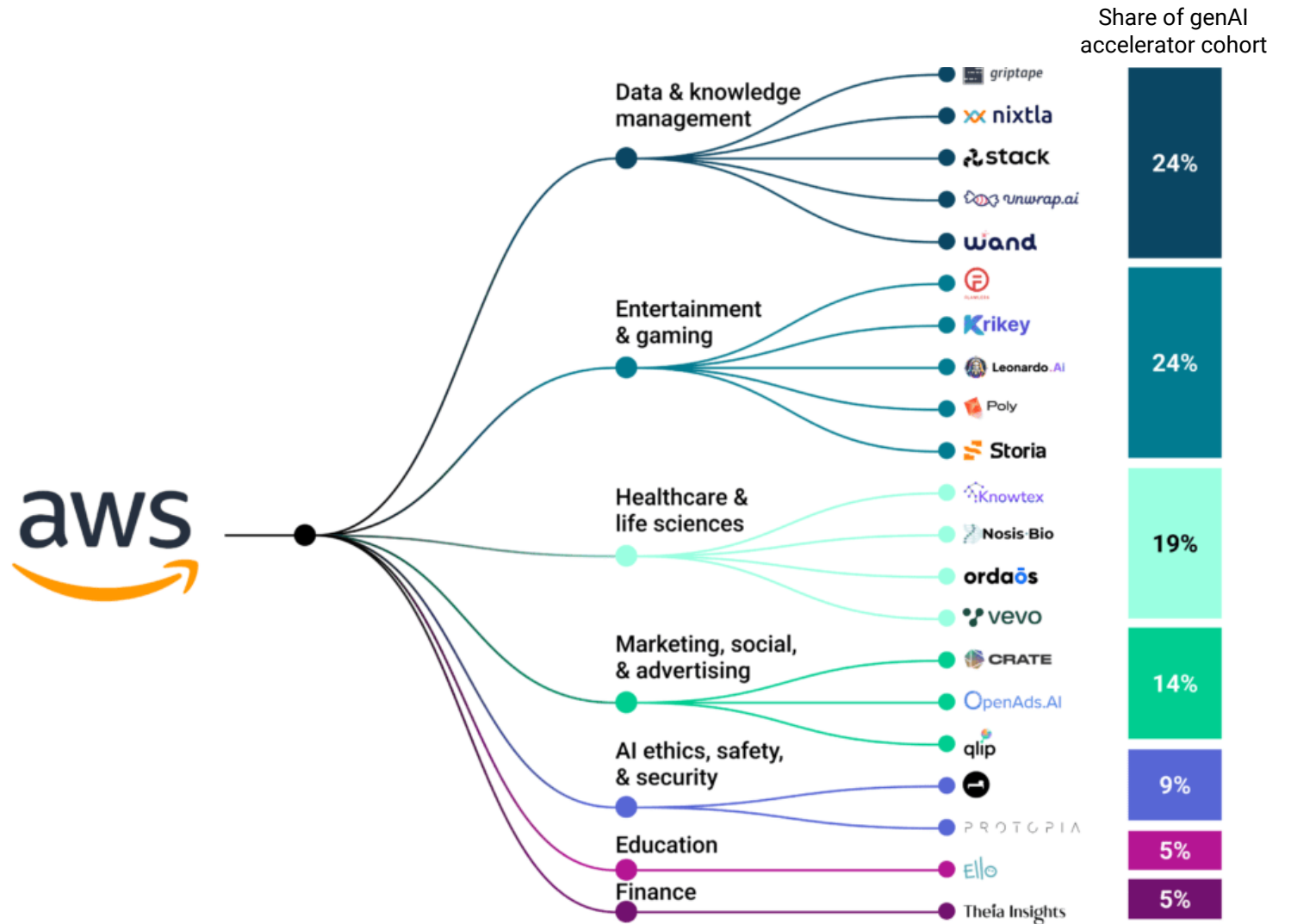
<input type="checkbox"/>	Date	Round	Amount	Investors	Valuation	Sources
<input type="checkbox"/>	10/27/2023	Corporate Minority - VI	\$500M	Google		3
<input type="checkbox"/>	9/25/2023	Corporate Minority - V	\$1,250M	Amazon		9
<input type="checkbox"/>	8/14/2023	Corporate Minority - IV	\$100M	SK Telecom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

State filing sourced



# 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

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**No clear winner yet in foundational models**

Open-source AI movement gains steam

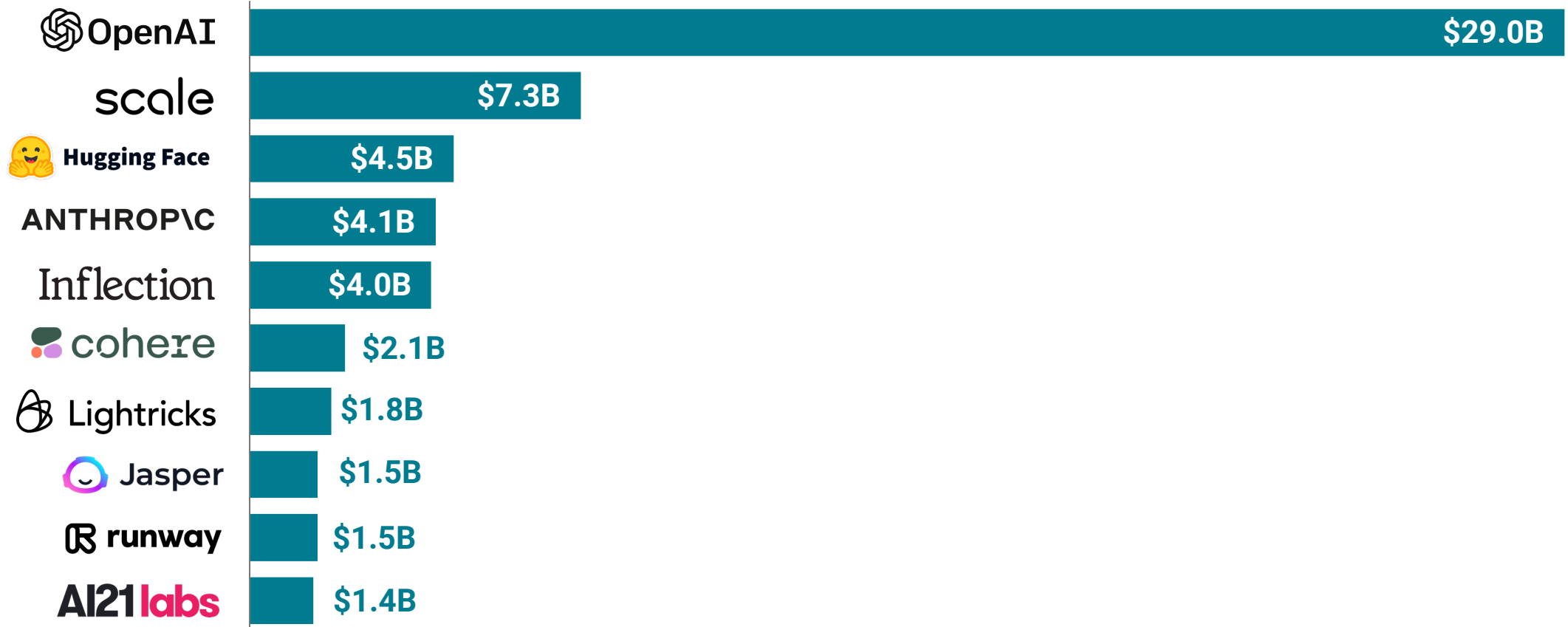
LLM infrastructure market grows rapidly





# Highest-valued genAI unicorns compete primarily at the infrastructure layer

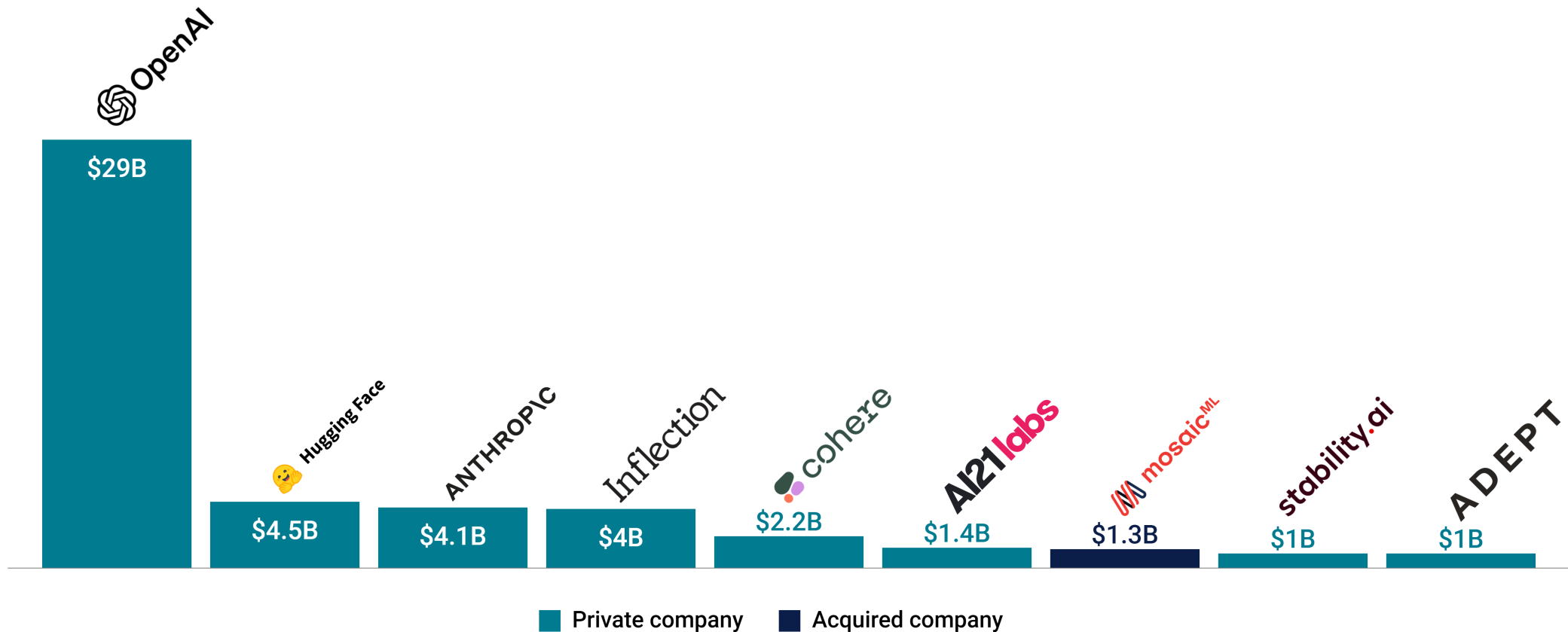
Most highly valued private generative AI companies (as of 09/30/2023)





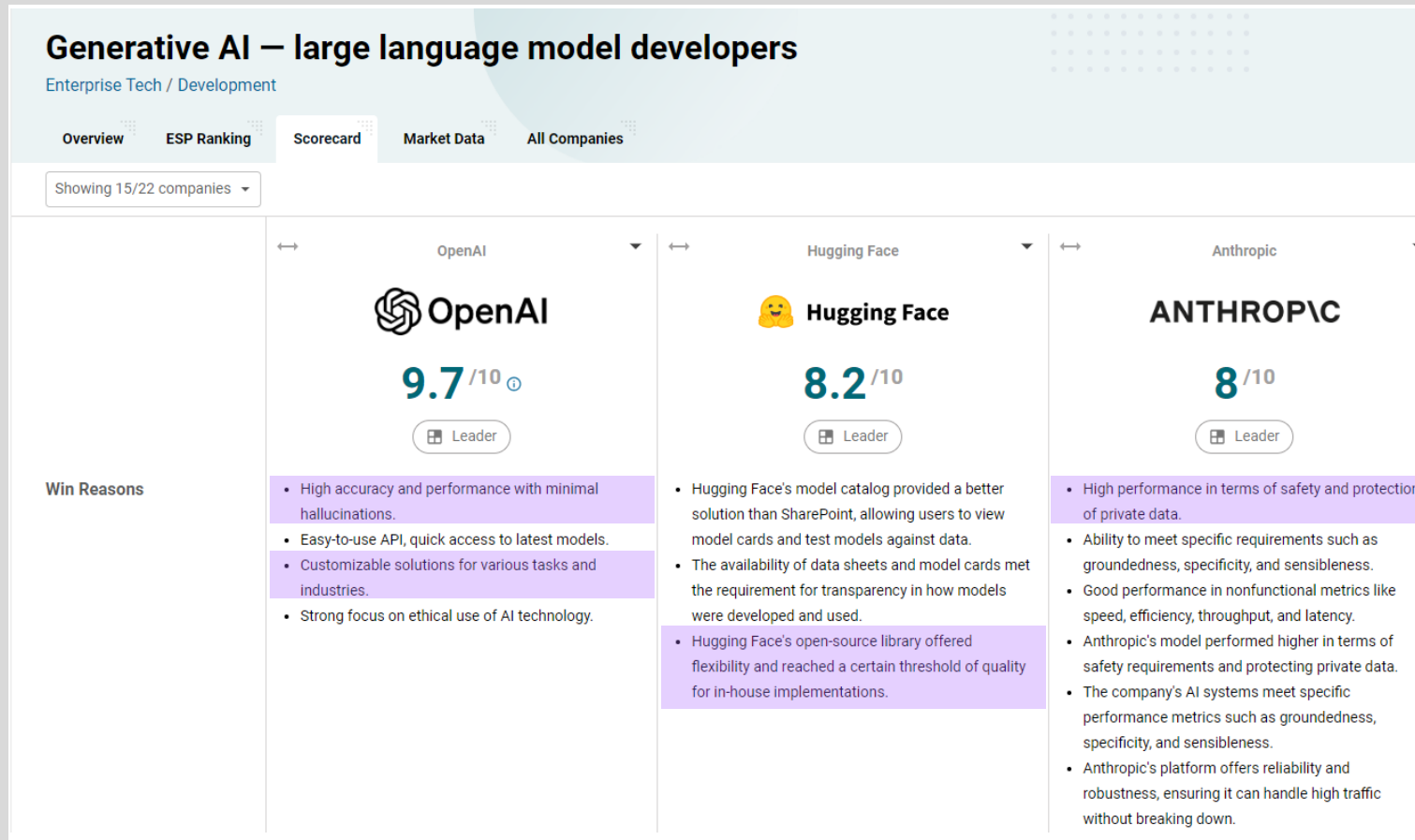
# 4 LLM developers – Anthropic, Cohere, AI21 Labs, and Adept – join the unicorn club in 2023

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



## Key KPIs for evaluation

Safety & compliance

Accuracy & quality

Customization

Pricing & deployment

Token limits



## Executive interest in AI has surged



**Enterprise demand for AI and accelerated computing is strong.**

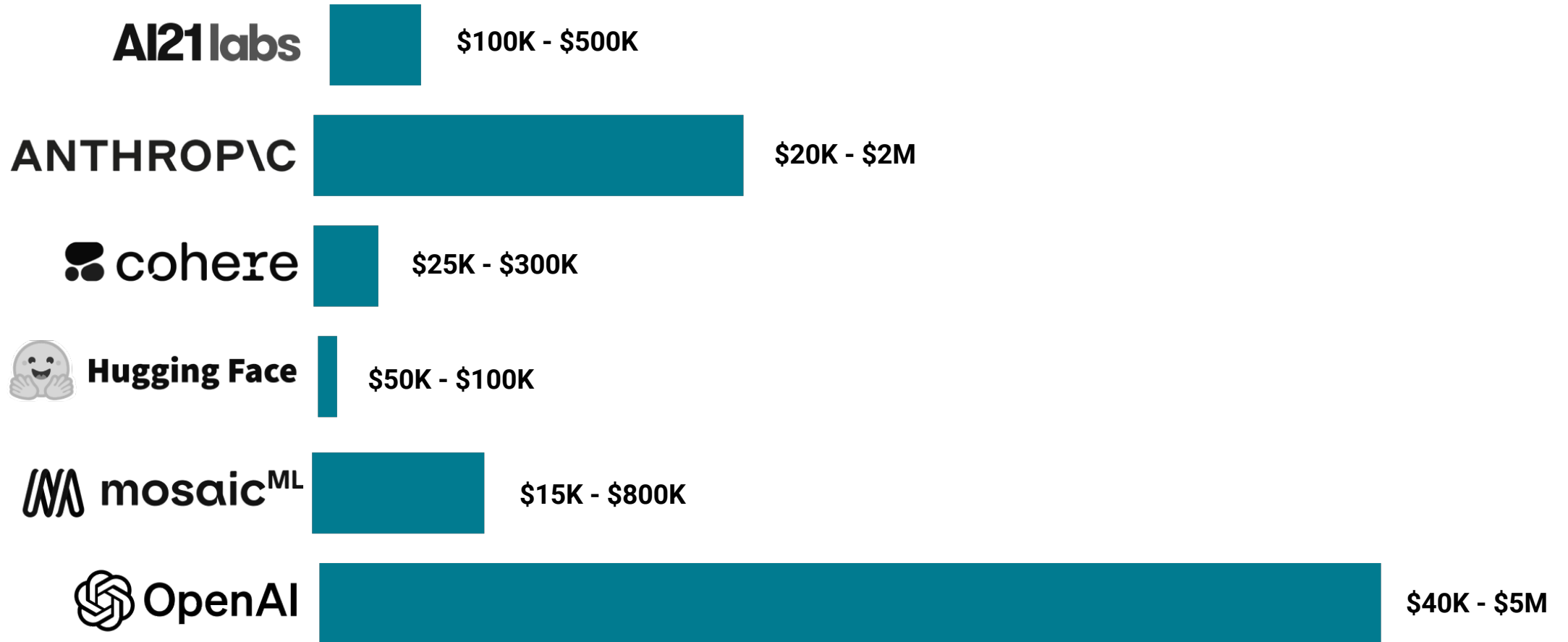
We are seeing momentum in verticals such as automotive, financial services, healthcare, and telecom, where **AI and accelerated computing are quickly becoming integral to customers' innovation roadmaps and competitive positioning.**

CFO Colette Kress  
Q2'23 earnings call



# Enterprises are spending millions with LLM developers...

Annual spend ranges displayed





## ...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 u  
shelf...Where the convers  
when you talk about co-d  
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

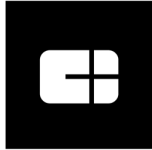
Customer		Purchase details	
Title	Senior Manager, Data Science	Purchase date	Q1 2023
Company	\$1B+ valuation technology company	Purchase amount	\$50k/year
Role	Member of decision making team / committee	Implementation time	
Experience		CSAT score	6
		Intent to renew	80%

### 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

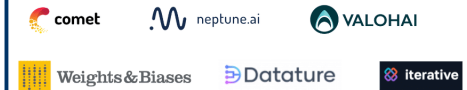
### Training data curation



### 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

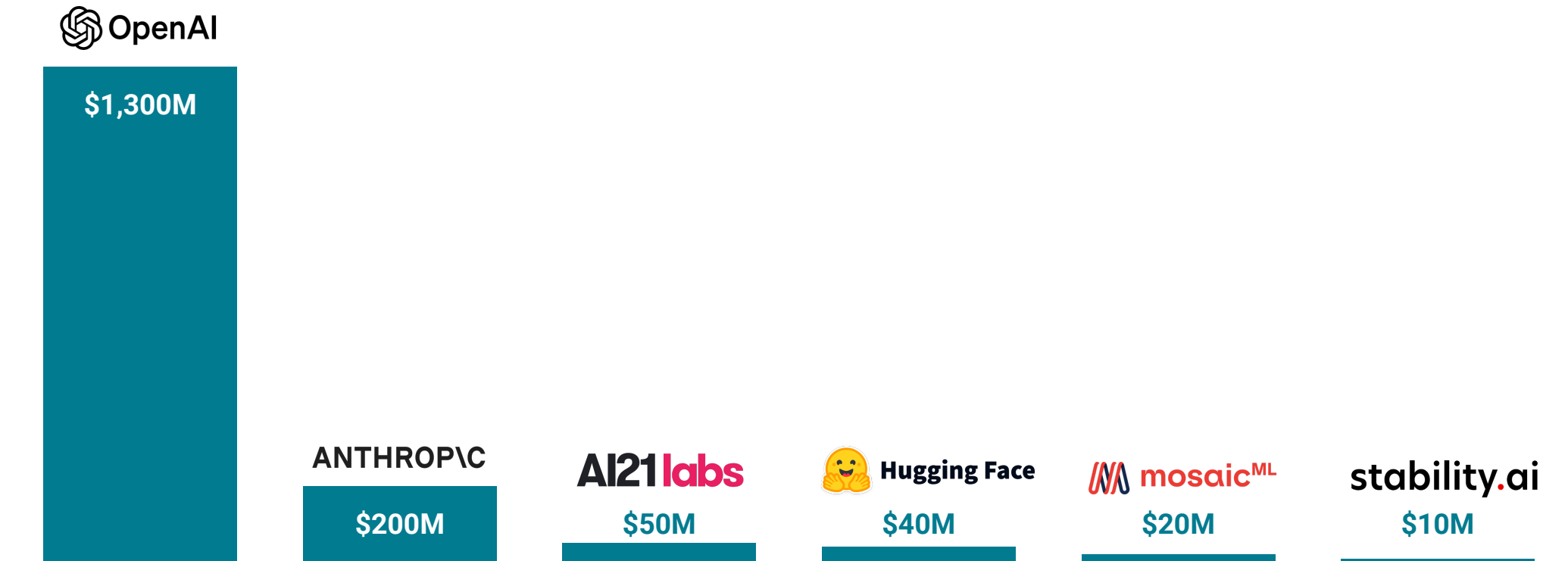




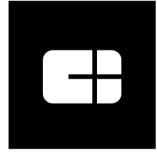


# As LLM developers burn through cash, focus will shift to customer adoption – and revenue

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

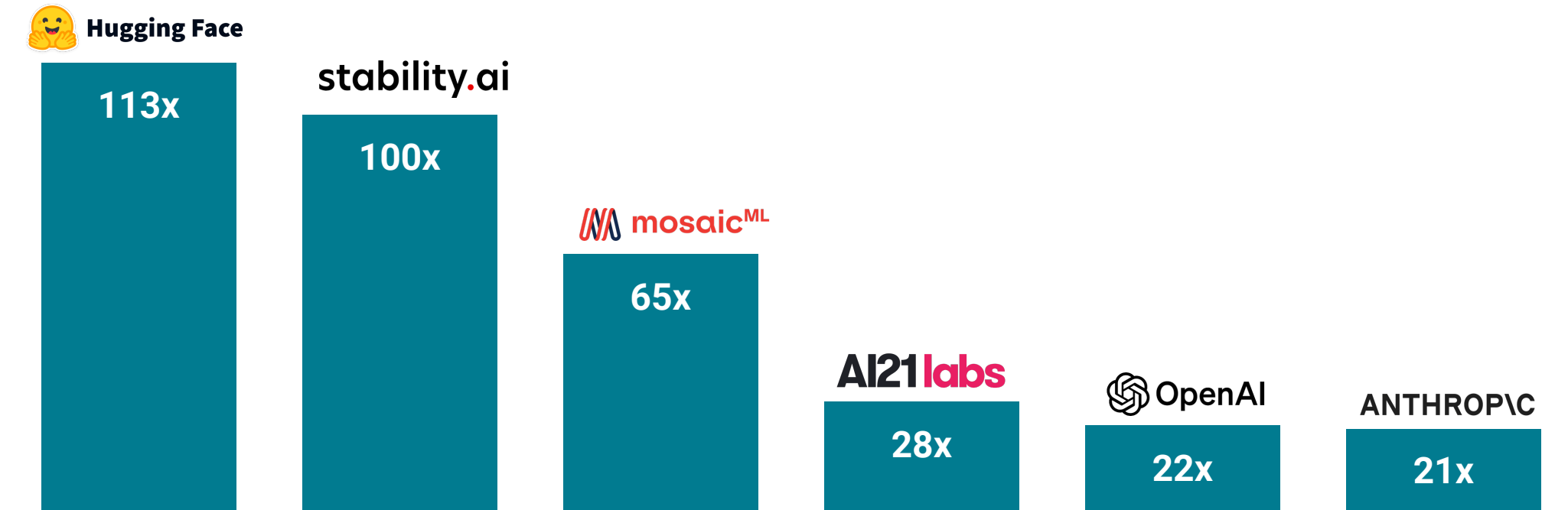


Source: CB Insights – Figures represent the latest disclosed revenue (based on company discussion or media sources). All revenues are full-year 2023 ARR projections, except for MosaicML (reported ARR at time of acquisition in June 2023).

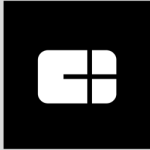


# Companies need to grow into big valuations and will come under pressure to build real business models

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

## AI21 labs

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

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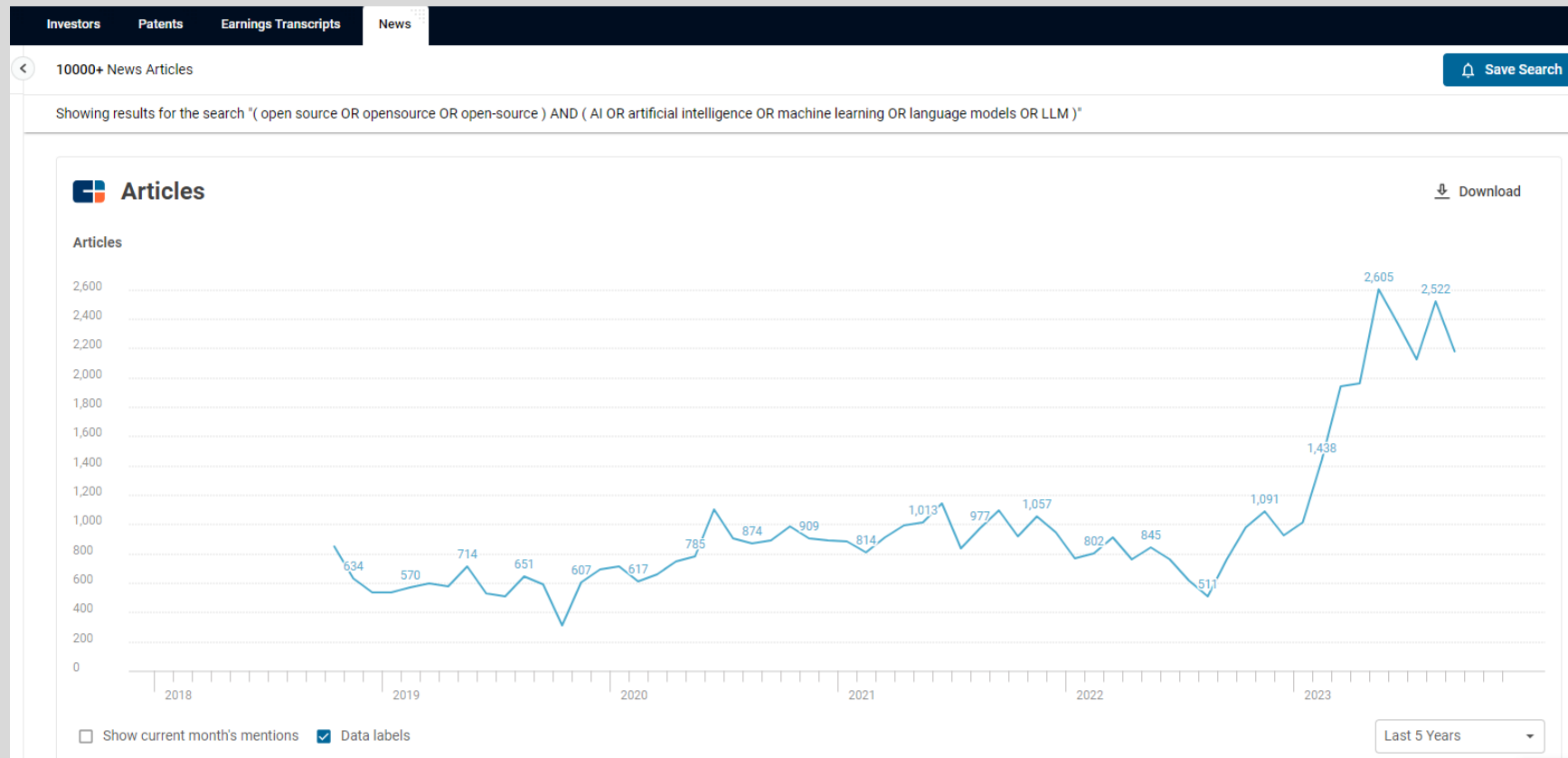
**Open-source AI movement gains steam**

LLM infrastructure market grows rapidly



# 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

## Qualcomm

**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

## Microsoft

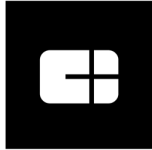
Azure AI is ushering in new born-in-the-cloud, AI-first workloads with the **best selection of frontier and open models, including Meta's recent announcements supporting Llama on Azure and Windows,** as well as OpenAI.

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



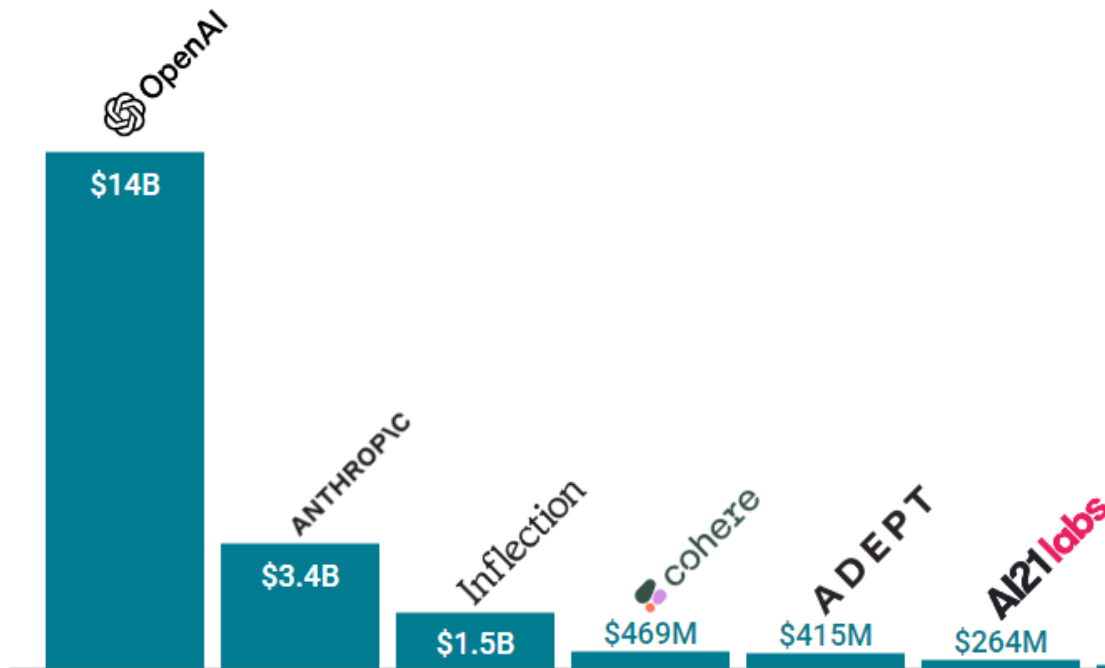
# The private market is split into open vs. closed

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

■ Private company ■ Acquired company

## Closed-source LLMs

## Open-source LLMs



*\*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



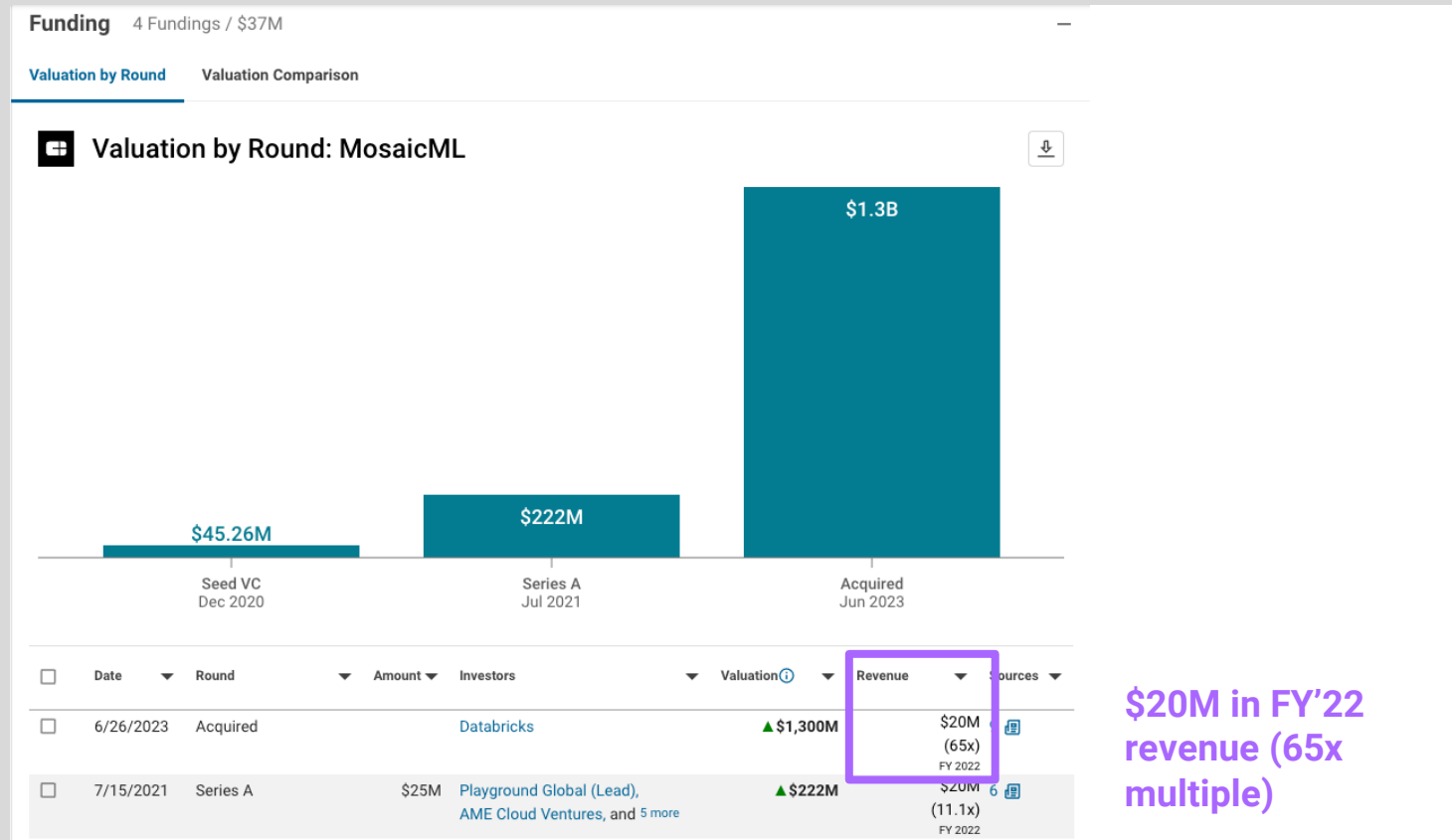
**Meta's invention... it may be cheaper than the OpenAI [model] because it's open-source.** Then we believe the performance of the Hugging Face and also the Llama 2 is also comparable to the OpenAI [model]. **Maybe just a little bit weaker than that, but maybe the overall...ROI is quite a good deal.**

VP, Machine Learning, Fortune 500 company





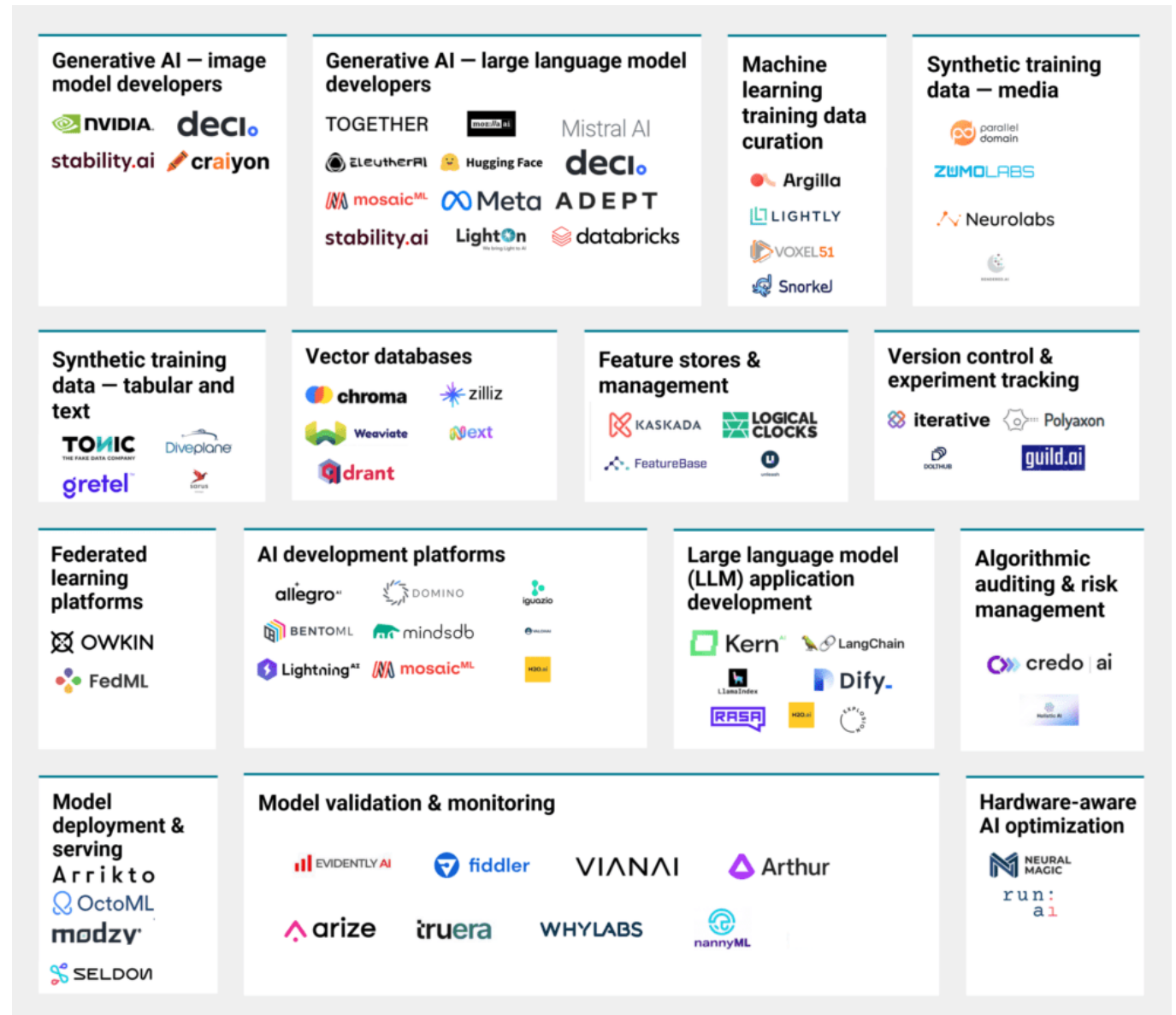
# Databricks pays \$1.3B for MosaicML, which makes AI development tools and has its own open-source model, in June 2023





# 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

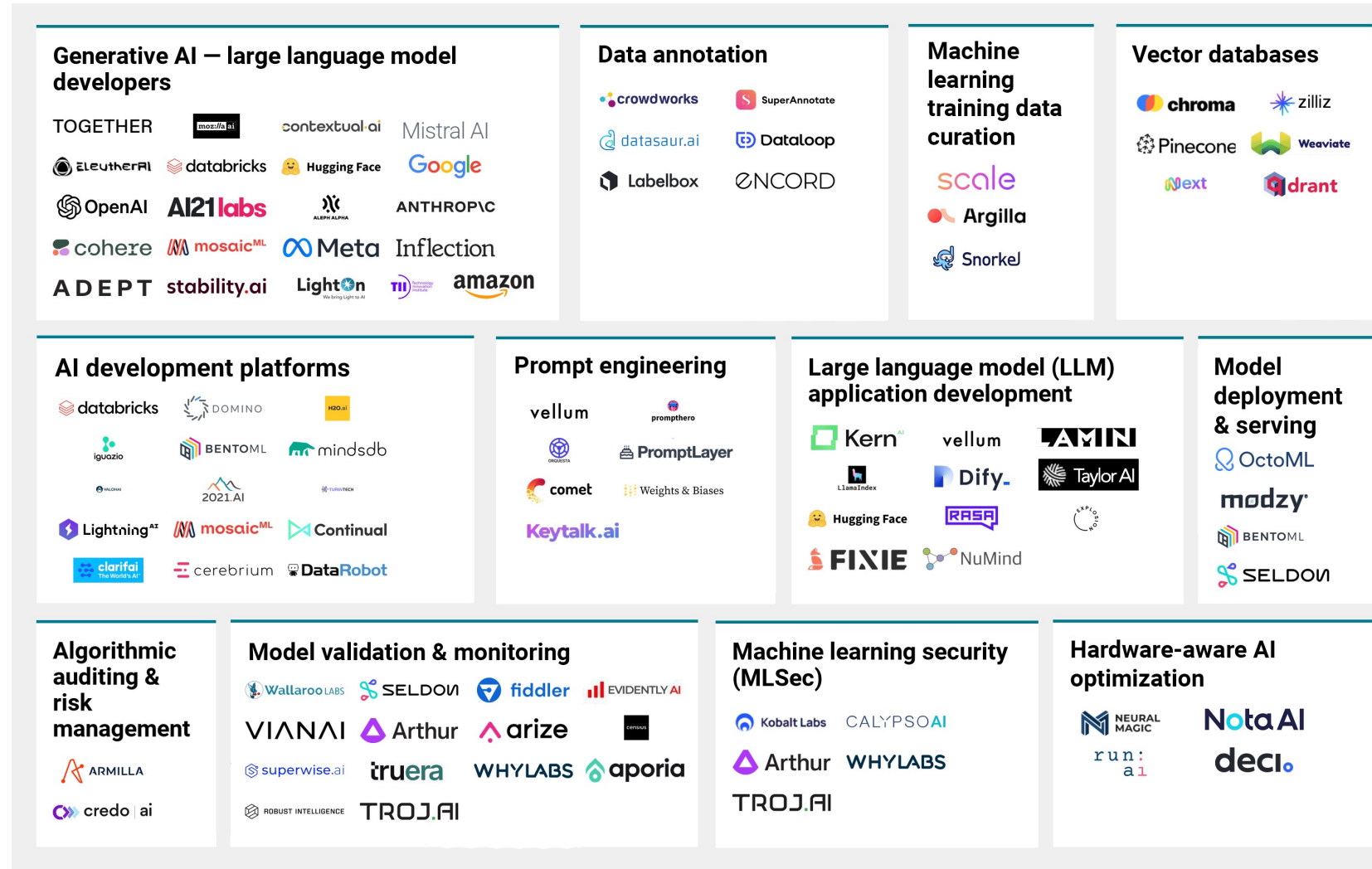
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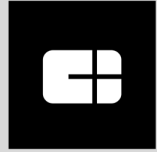
**LLM infrastructure market grows rapidly**



# Tech vendors supporting LLM operations are gaining traction with enterprises

## LLMOps market map





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



## Snorkel

**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

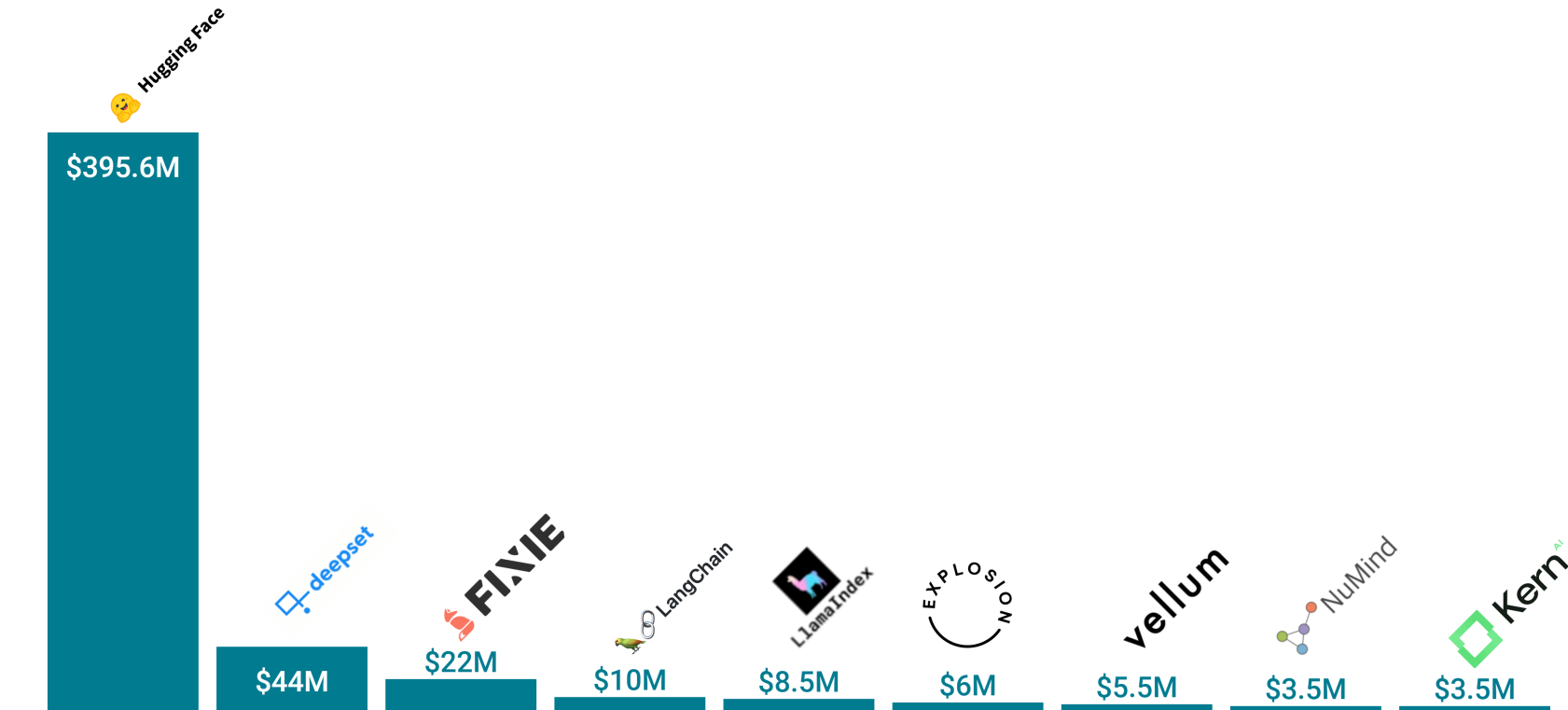
I led a small data science team that created a lot of models in production. As we scaled, our observability of our machine learning models in production was limited, and we felt blind to issues or ways to improve the model once in production. **We tried to build a solution in-house, which showed the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

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



# New vendors are emerging for LLM fine-tuning & customization

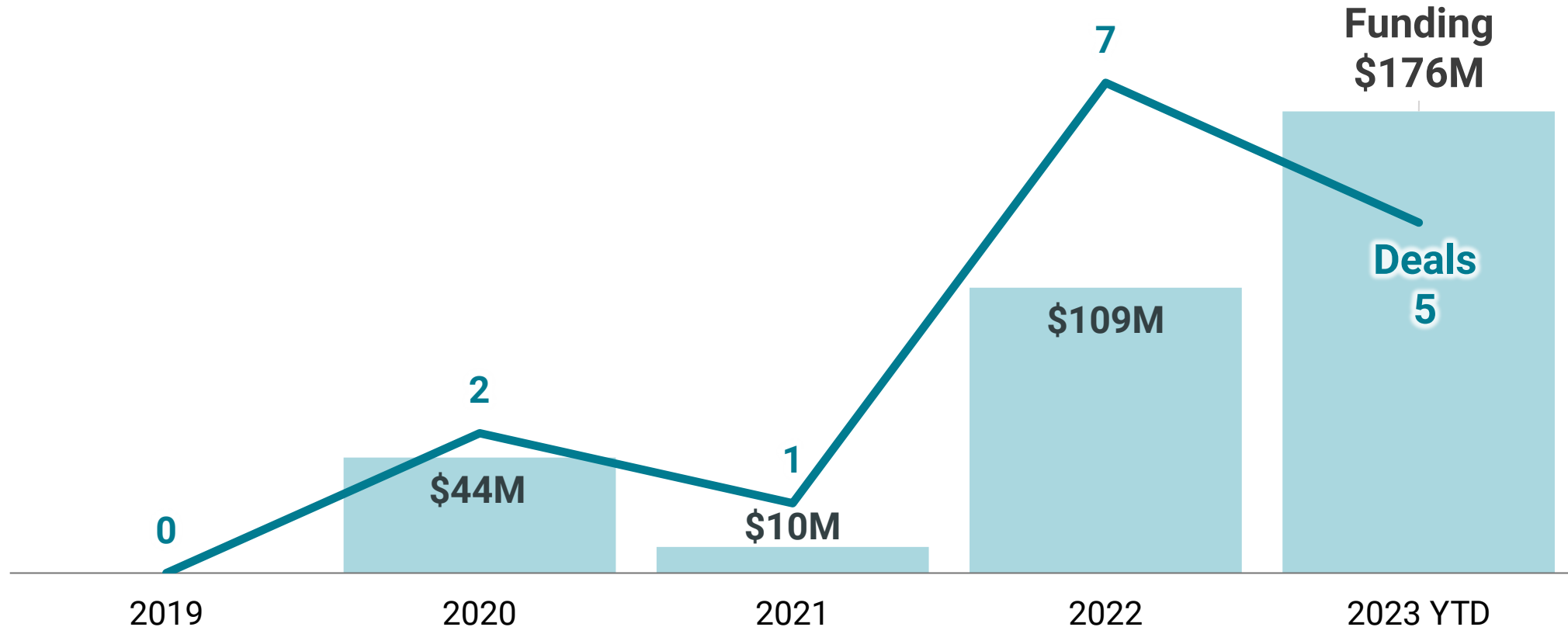
Leading LLM application development vendors by disclosed equity funding (as of 10/30/2023)





# 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 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

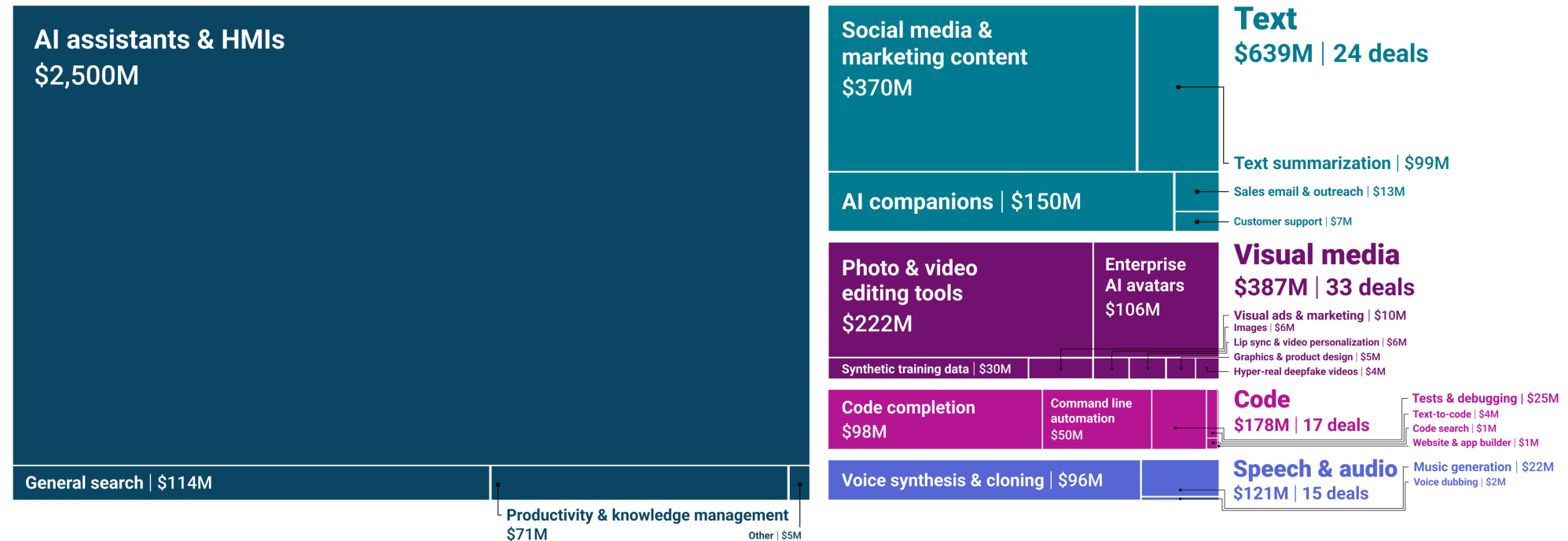


# Generative interfaces, like Anthropic's AI assistant Claude, lead in funding among cross-industry tools

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

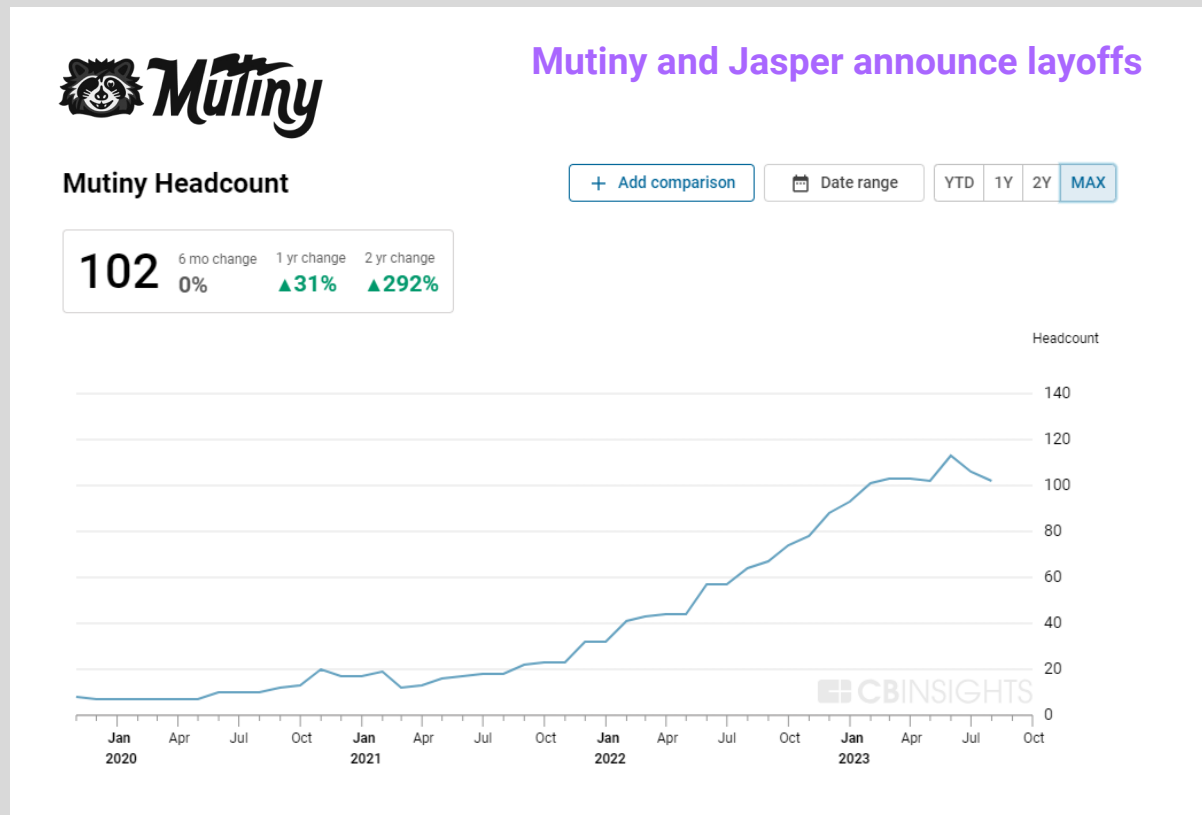
## Generative interfaces

\$2,690M | 23 deals



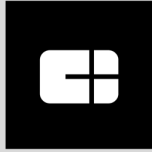


# Growing competition is a threat to vendors in some cross-industry markets, like text generation & editing



So in this newly emerging world of generative AI it's hard to keep up with all the changes that are going on. It's probably not fair to ask this, but I'll say it: Jasper needs to stay up to date faster to make me a definite yes to renew. We need to look at their pricing model to make sure, as I'm beginning to use it more and more at a higher and higher scale, that it keeps working and the price remains right for me. I'm seeing other lower cost options; the price of calls to GPT-3, for example, has gone down to really minimal numbers. It might be harder to say yes to a renewal when we're due next year, so I'll have to really see that our people have picked this up and are finding great value.

C-level executive at \$10M+ funded research platform



# 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

### Top Vendors

## 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

# 3. Opportunity in vertical genAI

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

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

Industry

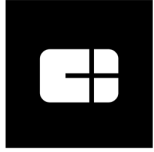
# 3. Opportunity in vertical genAI

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**Healthcare &  
life sciences**

Financial services  
& insurance

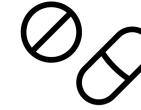
Retail



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



## 7 applications of generative AI in healthcare



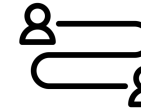
### Protein & drug design

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

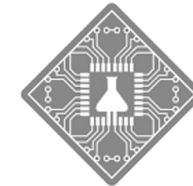
Select generative AI drug discovery & design exits in 2023



**Acquired by Recursion  
Pharma in May 2023**



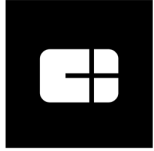
**Acquired by BioNTech  
in January 2023**



**Insilico  
Medicine**

**Filed for Hong Kong  
IPO in June 2023**





# GenAI copilots for doctors automate tedious tasks like note-taking

## Virtual medical scribes & summarization tools

Healthcare & Life Sciences / Care Delivery & Navigation Tech

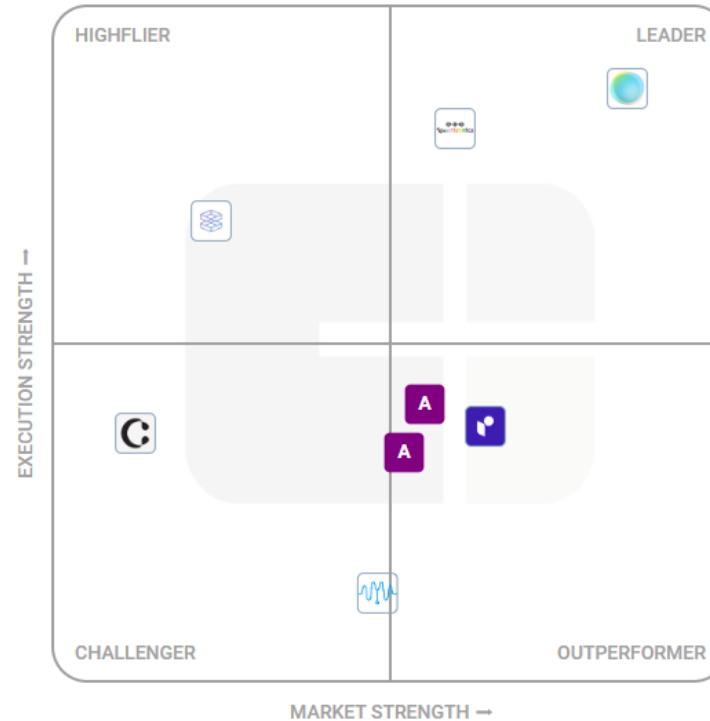
Overview

ESP Ranking

Scorecard

Market Data

All Companies



### Market Overview

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.

### ESP Ranked Companies

#### Leader



Suki



Speechmatics

#### Highflier



Fathom

#### Outperformer



Regard



Ambience



Abridge

#### Challenger



DeepScribe



Corti



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

Navigation: corti, Overview, Research, Transactions, Press, IP, Network, Analyst Briefing

## Competition

**Nuance Communications**

Nuance Communications (Nasdaq: NUAN) develops, markets, and supports a voice interface software platform that makes the...

[Read more](#)

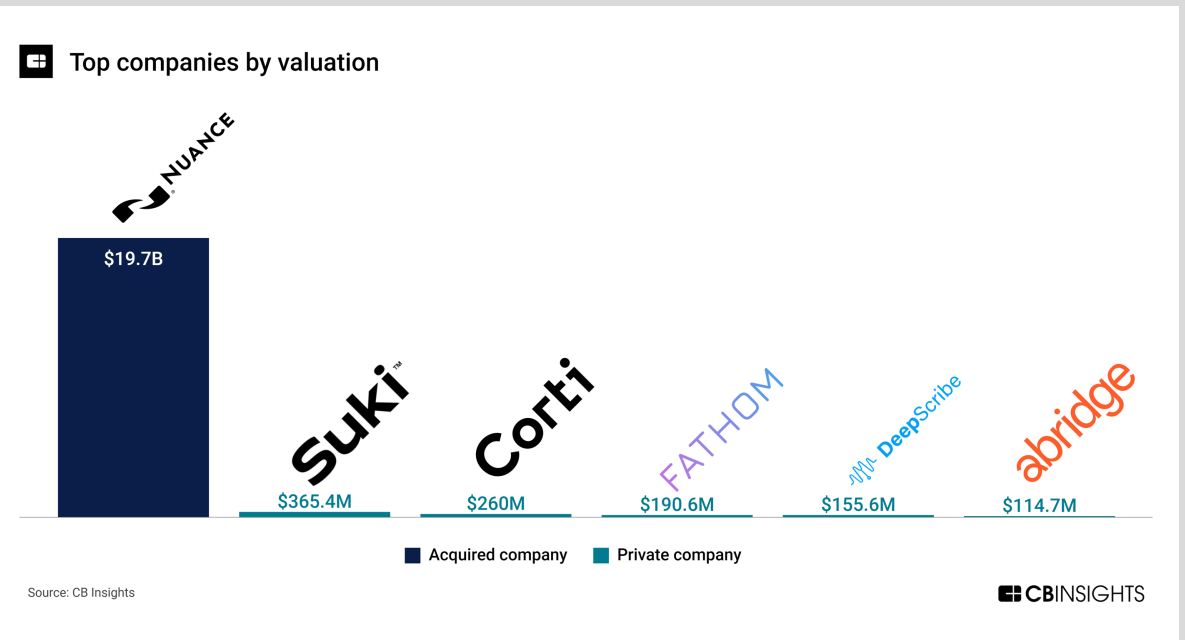
**Corti vs. Nuance Communications**

Primary Advantage

Feature Set

Differentiators

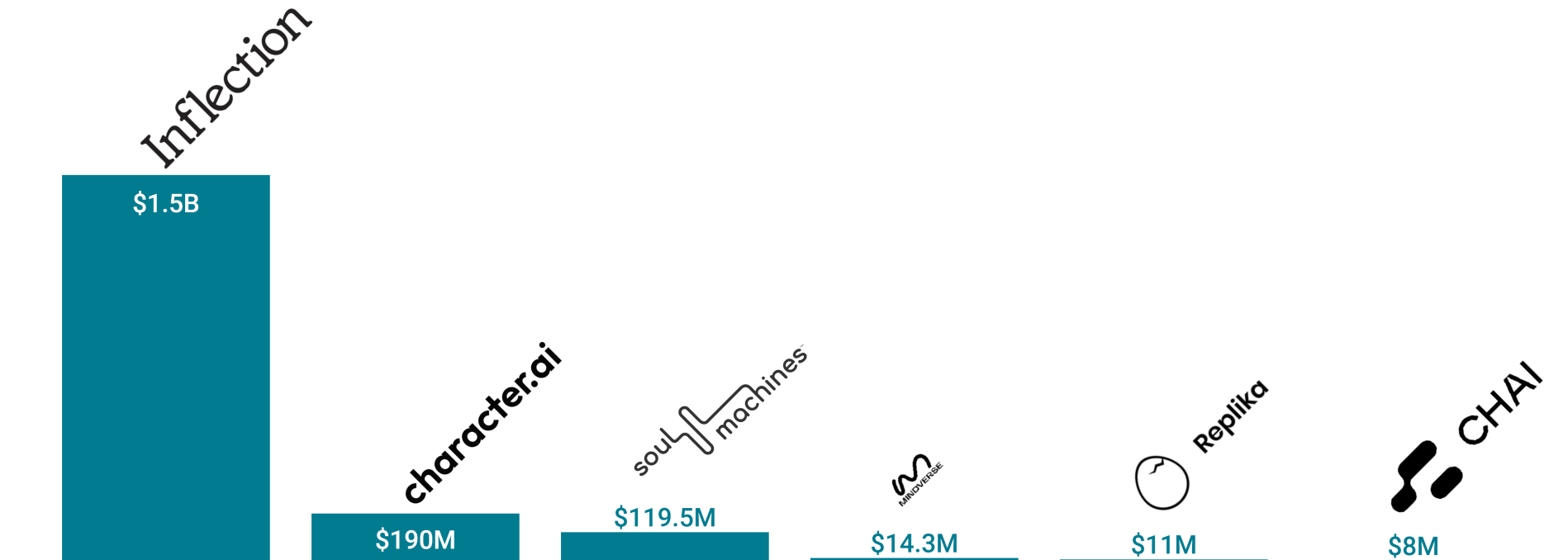
- ✓ Corti offers live augmentation features and a better ML prediction engine.





# 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



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



LLM trained on 2M patients' clinical notes



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

## Transcript

Introductions

Evaluation Structure

**Problem to solve**

Solution Specifics

Sales Experience

Pricing & Packaging

Competitors

Deployment

Post Deployment

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?

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.

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

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



# 3. Opportunity in vertical genAI

Healthcare &  
life sciences

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**Financial services  
& insurance**

Retail



**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

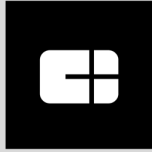


## Customer support & analytics



## Software development



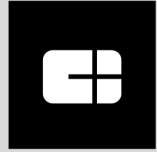


## Generative AI will automate & enhance underwriting

**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**

Kasisto Overview Research Transactions Press IP 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 reimagined 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**

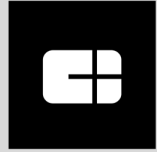


**Scans customer reviews and generates a summary**



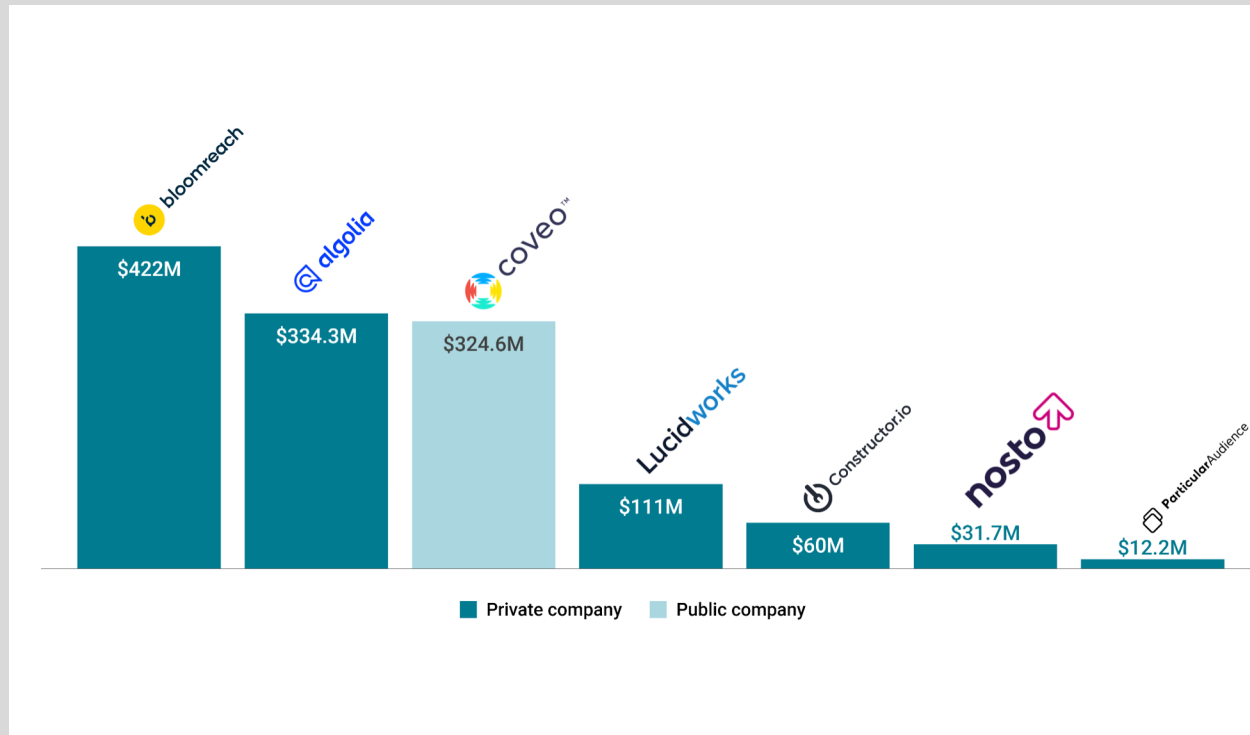
We have a custom contract with AX Semantics that contains the usage of the platform itself, as well as extended customer support. Our **contract allows us to create automated texts in nine languages for different channels, such as the product description on the web shop or the catalog, search engine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

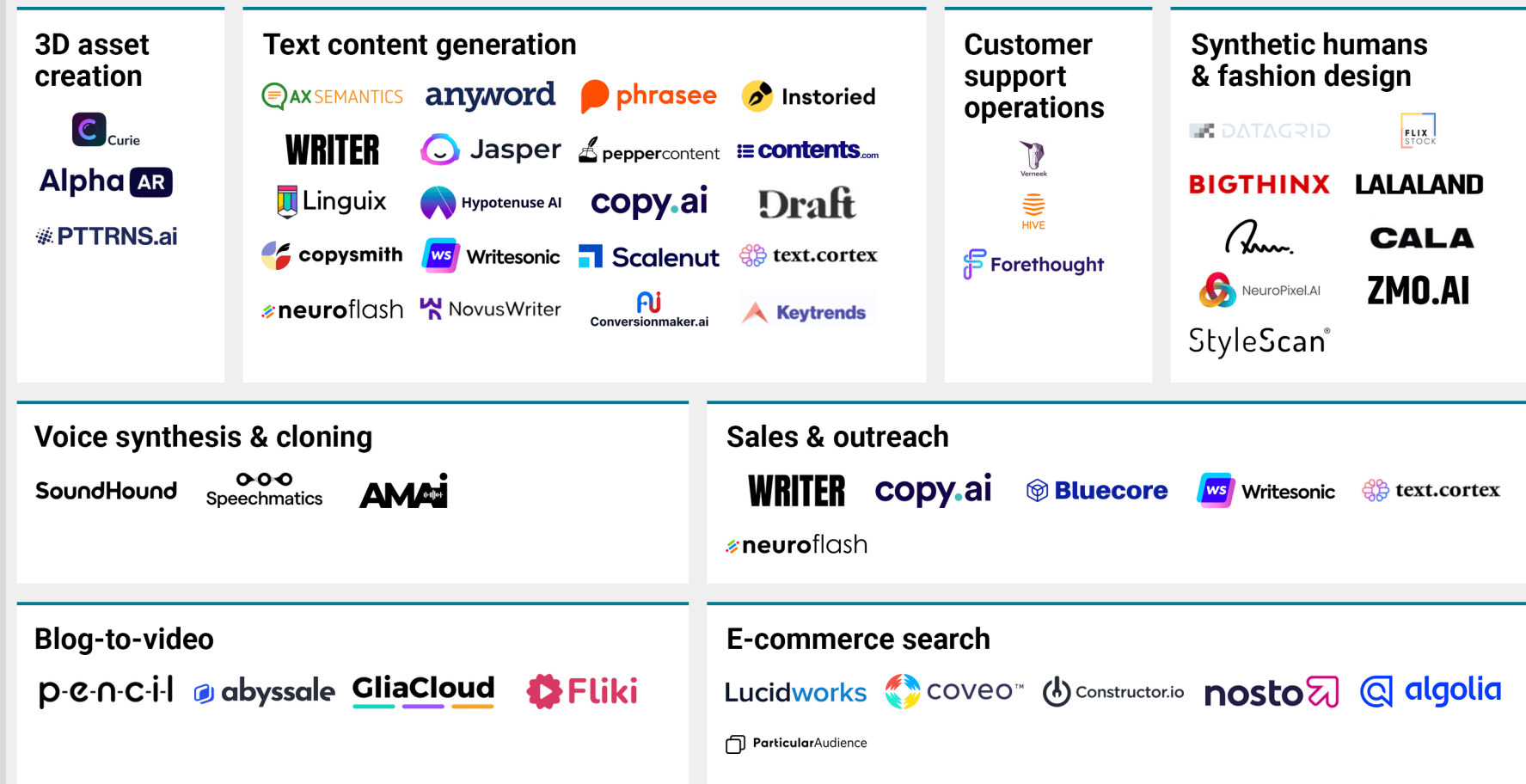


## Leading brands are working with genAI vendors to create personalized avatars and diverse models at scale

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

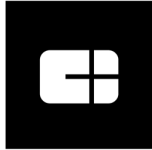


# Retail-specific genAI solutions improve digital shopping operations, engagement, and conversion



# Promising companies to watch





# We identified the 50 most promising genAI startups

## Generative AI 50

[Explore the full list](#)

### AI development tools

<b>Foundation models &amp; APIs</b>   	<b>Data curation</b> 	<b>Model development &amp; fine-tuning</b> 
<b>Model observability</b> 	<b>Vector database tech</b> 	

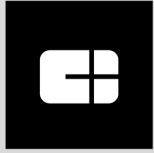
### Cross-industry applications

<b>Workplace knowledge management</b>   	<b>Synthetic voice</b> 	<b>Search</b>    	<b>Image &amp; video generation</b>  <b>Sales &amp; customer support</b> 	<b>Code generation</b>   	<b>AI assistants &amp; HMIs</b>   
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### Industry-specific

<b>Education</b> 	<b>Gaming</b> 	<b>Healthcare</b> 	<b>Materials &amp; manufacturing</b> 
<b>Legal</b> 	<b>Construction</b> 	<b>Media &amp; entertainment</b> 	





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

Explore the Collection

The screenshot shows the 'Generative AI' Expert Collection page on CB Insights. It features a search bar at the top, a 'Companies' dropdown menu, and a table listing various AI companies. The table columns include 'Companies', 'URL', 'Description', 'Industry', 'Applications', and 'Text'. Each row includes a 'Connect' button and a status indicator (green checkmark or grey square).

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



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