



 EMERGING TECH RESEARCH

Artificial Intelligence & Machine Learning Report

VC trends and emerging opportunities

Q1
2022





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This report serves as a quarterly snapshot of the AI & ML vertical in Q1 2022. For a comprehensive analysis of the AI & ML industry by segment, please see our latest [AI & ML annual report](#).



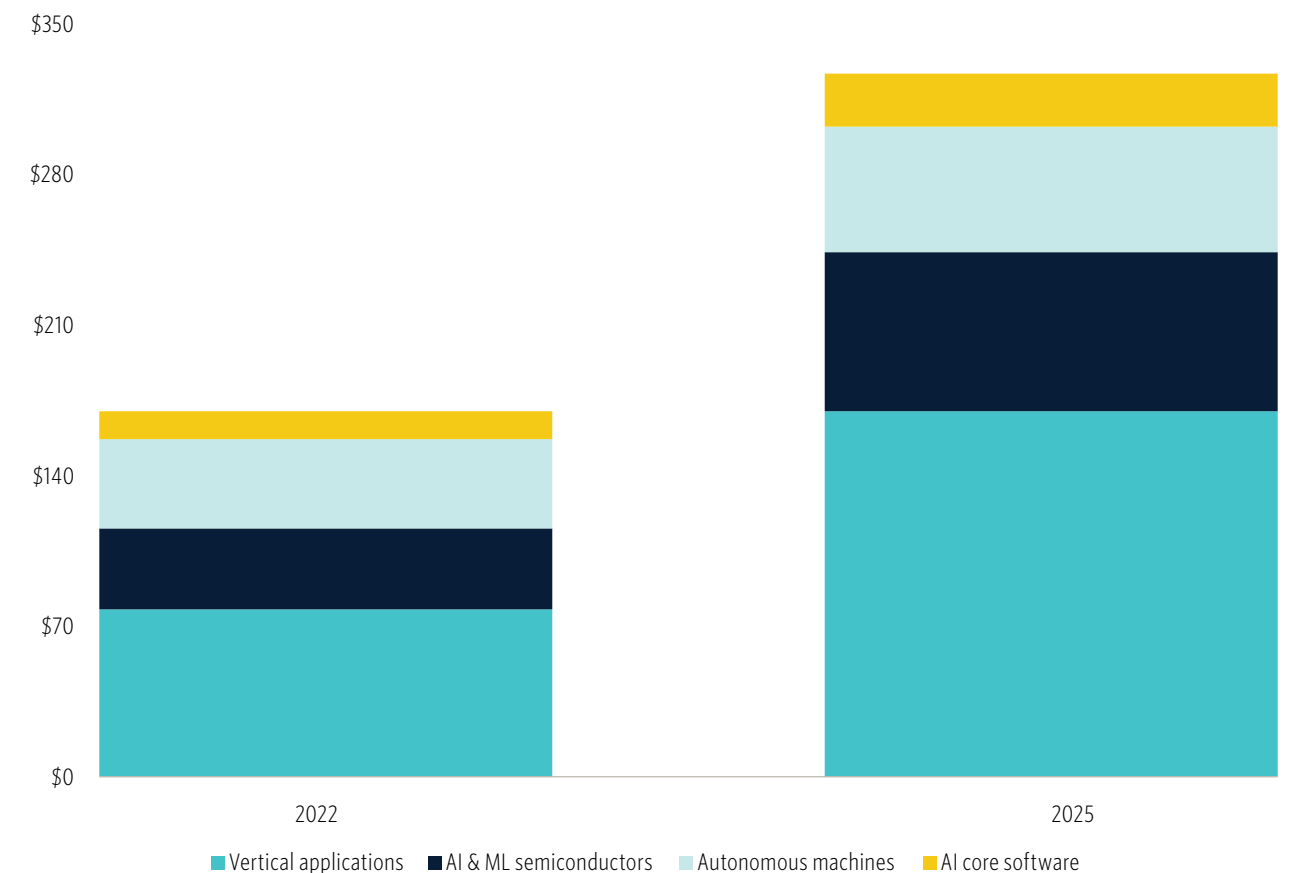
Vertical overview

Outsized expectations for artificial intelligence (AI) companies are meeting economic realities during the stock market slowdown. Public AI companies that enjoyed high valuation premiums during the COVID-19 pandemic face challenging market conditions as technology valuations have regressed below pre-pandemic multiples. During the market downturn, public AI companies have become the target of short sellers aiming to expose inflated claims around future contract value. In one case, a short seller found that C3.ai fluctuated its estimates of its total addressable market in enterprise AI by more than \$100 billion over the course of two months and shifted the target for its TAM to reach \$250.0 billion by four years in different announcements. Outlandish forecasts for the future of AI are unlikely to hold up to scrutiny in this current market environment.

Looking at the market from a bottom-up perspective in terms of actual dollars being spent on AI-centric software and hardware, we estimate the AI & machine learning (ML) market to reach \$169.7 billion in 2022, led by the vertical applications segment, along with significant contributions from semiconductors and autonomous machines. We forecast the market to grow at a 24.1% CAGR to \$327.5 billion in 2025. Improved data on the attach rates of AI capabilities to hardware lead us to believe that software growth will outpace semiconductors out to 2025 after an initial rush to embed AI processing in data centers. AI core software remains a relatively small market at \$13.1 billion, excluding natural language processing (NLP) and computer vision applications that overlap with vertical applications.

1: "Real Intelligence: Sell C3.ai," Spruce Point Capital Management, February 16, 2022.

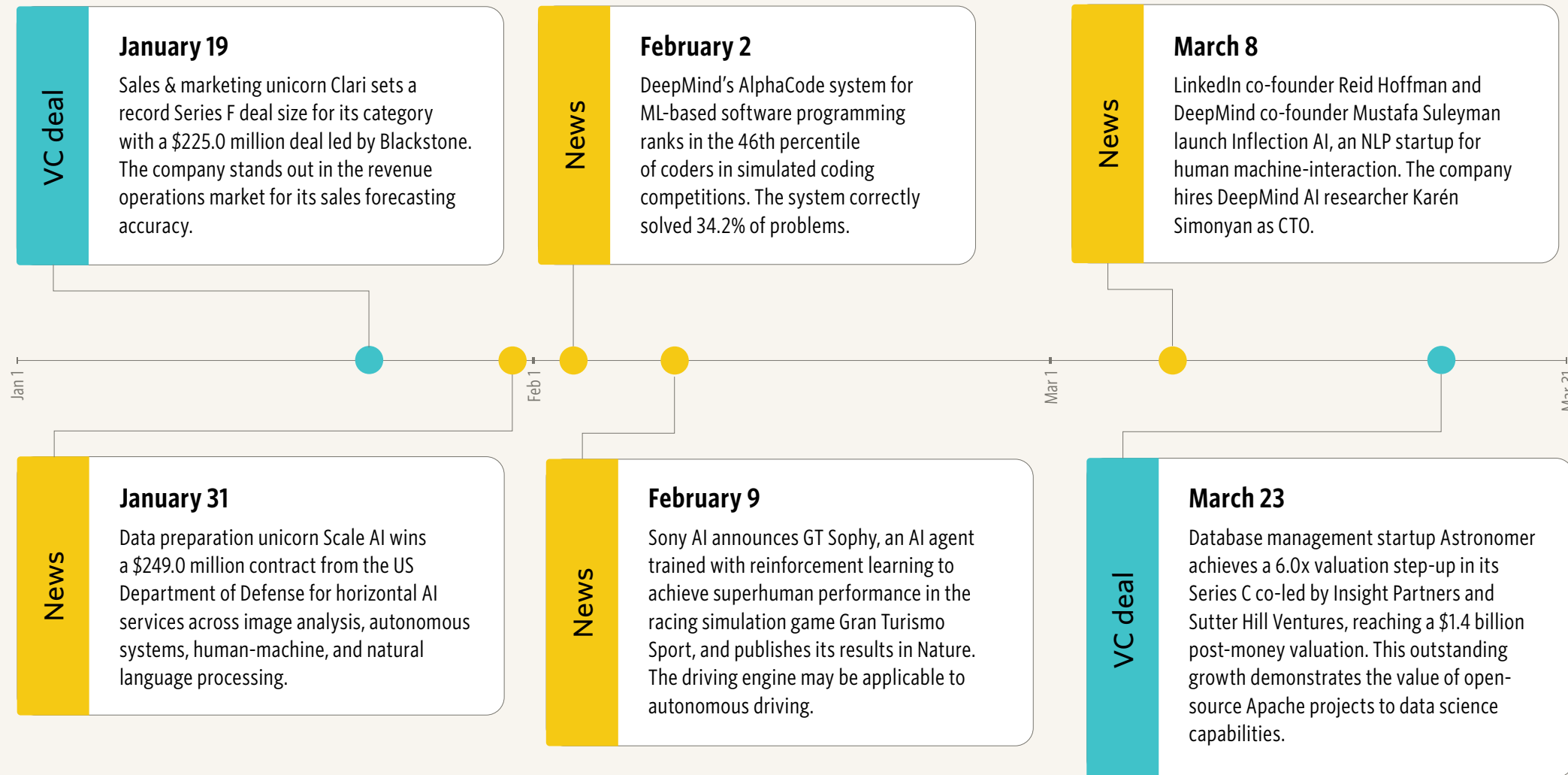
Figure 1. AI & ML market size estimate (\$B) by segment



Source: PitchBook Emerging Tech Research | Geography: Global | *As of March 31, 2022



Q1 2022 timeline



Q1 VC activity

1,487
total deals

\$23.9B
total VC raised

-21.1%
deal value growth QoQ

YTD summary

1,487
total deals

\$23.9B
total VC raised

-9.0%
deal value growth YoY



AI & ML landscape

- 1 Horizontal platforms
- 2 Vertical applications
- 3 Semiconductors
- 4 Autonomous machines

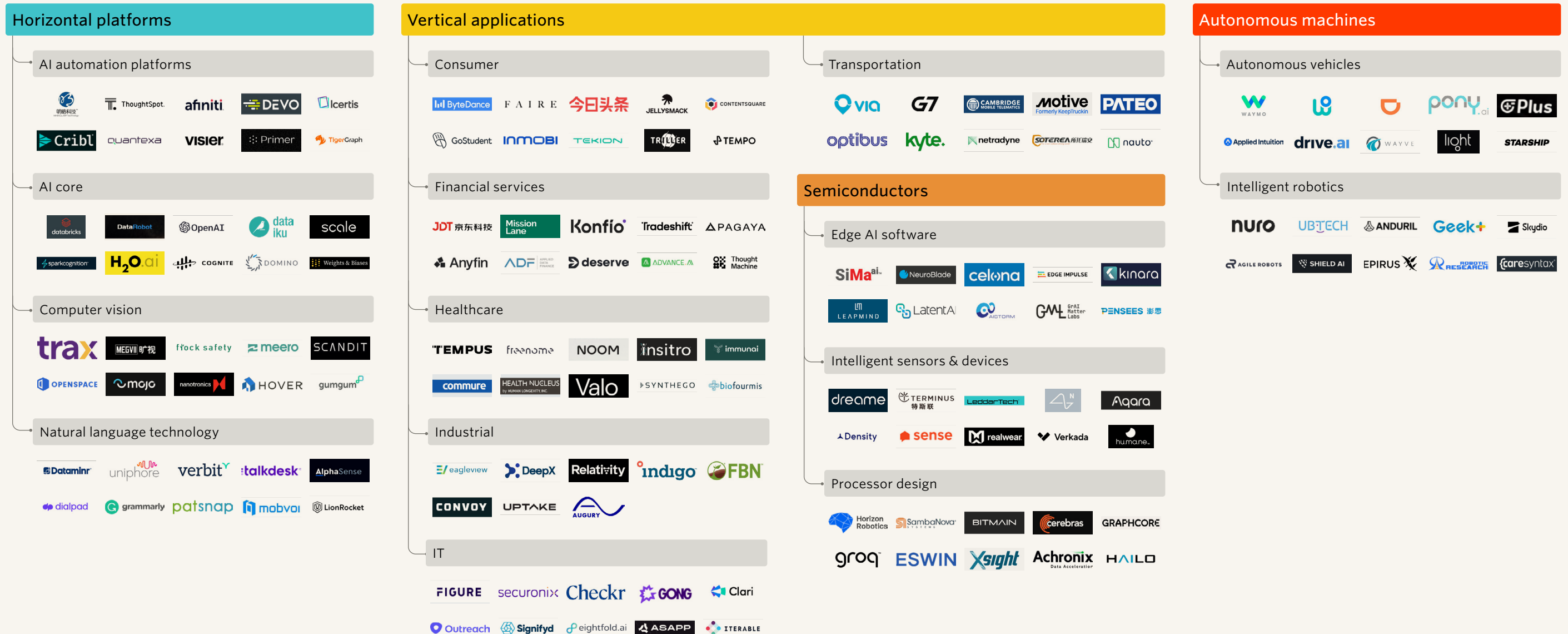




AI & ML VC ecosystem market map

Click to view the interactive market map on the PitchBook Platform.

Market map is a representative overview of venture-backed or growth-stage providers in each segment. Companies listed have received venture capital or other notable private investments.



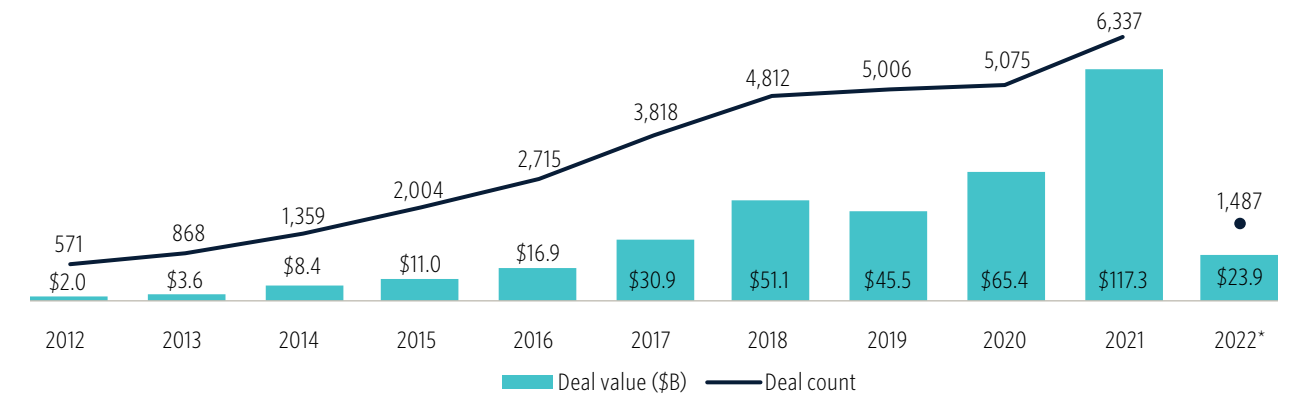


VC activity

AI & ML VC investment slumped in line with the market but retained resilient valuations as the market sorts through the fallout from the tech crash. Funding slumped 21.1% QoQ to \$23.9 billion yet remained in line with quarters prior to Q4 2021. Median late-stage valuation rose 11.1% from \$90.0 million in 2021 to \$100.0 million in Q1 2022, in line with the broader market. VC funding was driven by healthcare, autonomous vehicles, and natural technologies including Conversational AI and NLP. We tracked a record \$1.5 billion deal value for quantum AI startup SandboxAQ in its spin-out from Google. Most of the 70 categories we track are on pace to decline in funding this year, with notable exceptions including accounting automation, autoML, genetic analytics, and supply chain optimization.

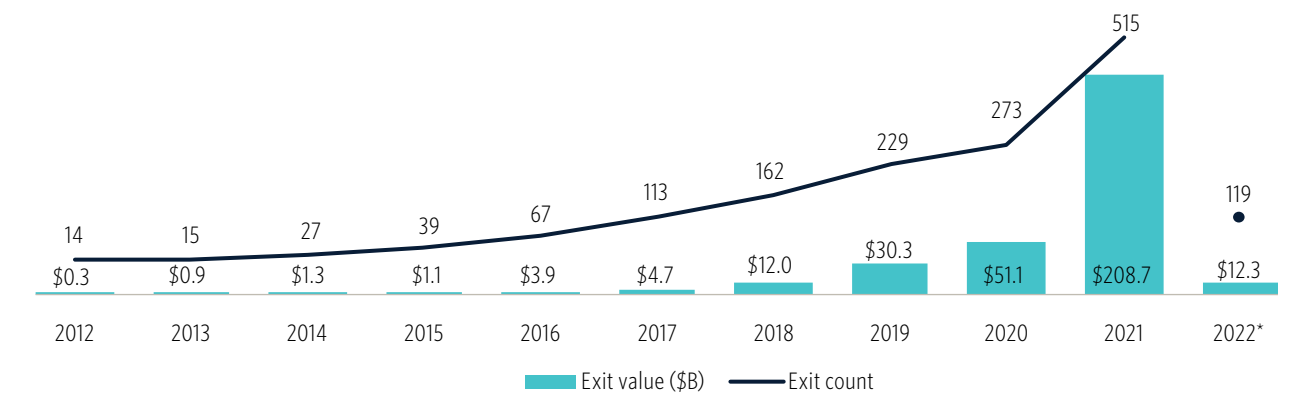
VC exit values regressed from 2021's boom in chillier market conditions. China drove the IPO market with two IPOs over \$1.0 billion for DeepGlint and AlInnovation. The SPAC market remained open for AI-integrated companies including Core Scientific and SES. The acquisition market cooled with tech giants failing to make mega-acquisitions of \$100 million or more. Numerous companies achieved high exit values with MOICs under 3.0x, indicating poor results for their investors. A challenging fundraising environment may encourage more flat or down exits for companies that raised excessive capital during a bull market. Our outlook for an uptick in AI mega-exits has been pushed out until market conditions improve and companies can bear the high operating costs of building sophisticated AI models.

Figure 2. AI & ML VC deal activity



Source: PitchBook | Geography: Global | *As of March 31, 2022

Figure 3. AI & ML VC exit activity

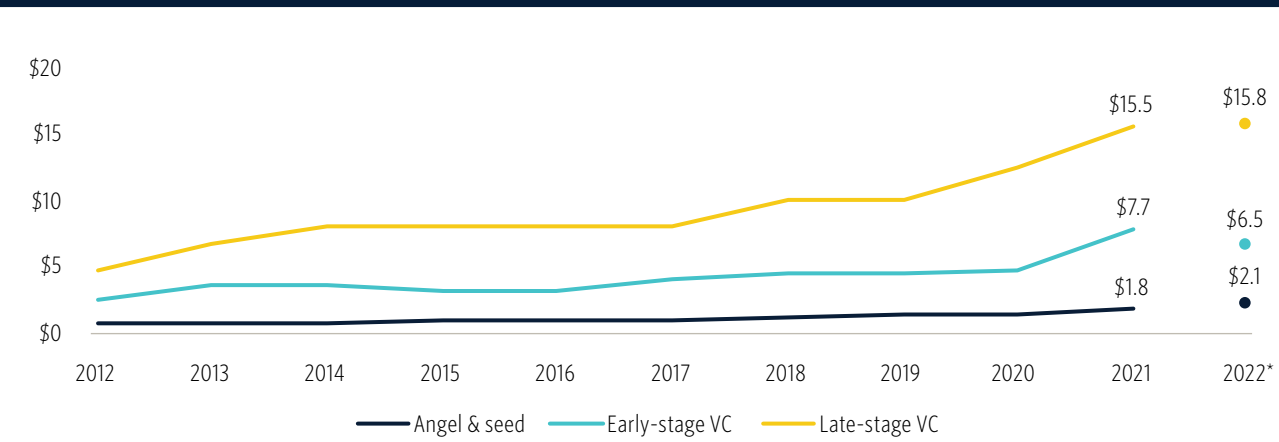


Source: PitchBook | Geography: Global | *As of March 31, 2022



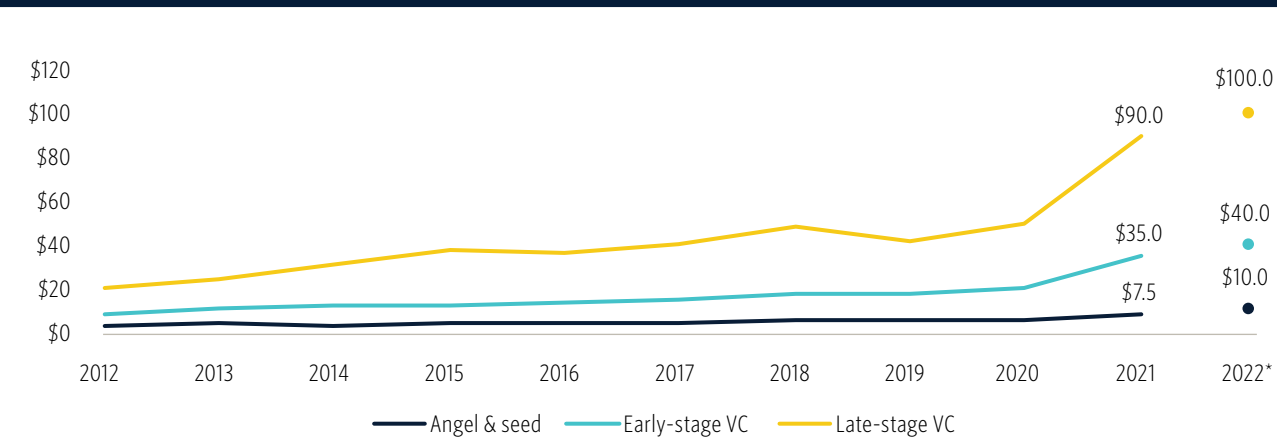
VC ACTIVITY

Figure 4. Median AI & ML VC deal value (\$M) by stage



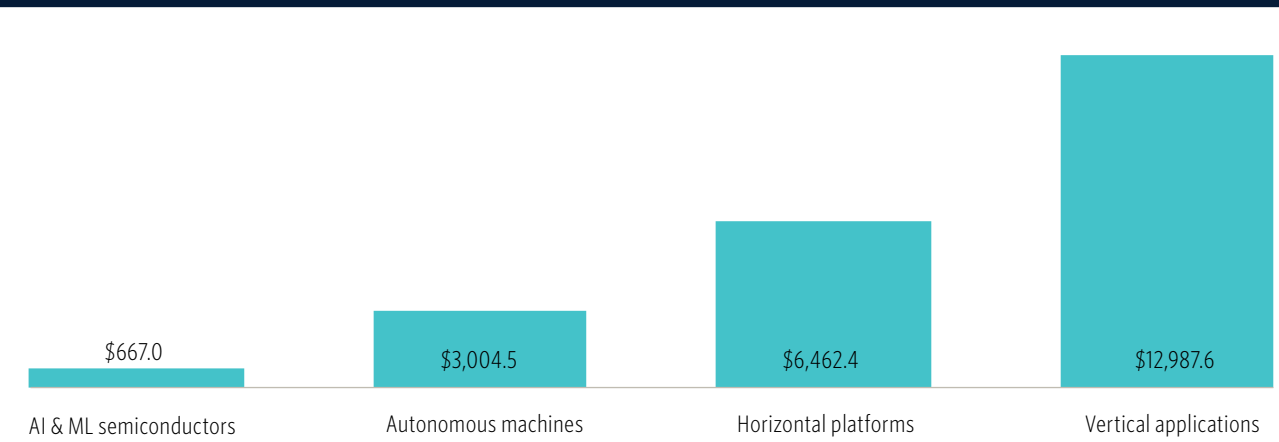
Source: PitchBook | Geography: Global | *As of March 31, 2022

Figure 5. Median AI & ML VC pre-money valuation (\$M) by stage



Source: PitchBook | Geography: Global | *As of March 31, 2022

Figure 6. AI & ML VC deal value (\$M) by segment



Source: PitchBook | Geography: Global | *As of March 31, 2022

Figure 7. AI & ML VC exit count by type



Source: PitchBook | Geography: Global | *As of March 31, 2022



VC ACTIVITY

Figure 8. Key AI & ML early-stage VC deals

Company	Close date	Subsegment	Stage	Deal size (\$M)*	Lead investor(s)	Valuation step-up
Black Crow AI	March 31, 2022	Ad targeting	Series A	\$25.3	Imaginary Ventures	4.5x
Skan	March 30, 2022	Computer vision	Series B	\$40.0	Dell Technologies Capital	4.7x
Yokoy	March 29, 2022	Accounting automation	Series B	\$80.0	Sequoia Capital	4.5x
Selector	March 15, 2022	AiOps	Series A	\$28.0	Atlantic Bridge Capital, SineWave Ventures, Two Bear Capital	53.8x
Greyscale AI	March 11, 2022	Computer vision	Series A	\$11.4	APA Venture Partners	9.6x
Devron	March 3, 2022	Model development tools	Series A1	\$13.8	Tiger Global Management	4.4x
Luminous	March 3, 2022	Chips	Series A	\$105.0	Horsley Bridge Partners, Modern Venture Partners, Alumni Ventures	N/A
Celestial AI	February 4, 2022	Chips	Series A	\$56.0	Koch Disruptive Technologies	3.6x
Atlas Health	January 25, 2022	Personal health	Early-stage VC	\$41.5	Felicis Ventures	13.7x
Sylvera	January 25, 2022	Energy automation	Series A	\$34.0	Index Ventures, Insight Partners	7.0x

Source: PitchBook | Geography: Global | *As of March 31, 2022



VC ACTIVITY

Figure 9. Key AI & ML late-stage VC deals

Company	Close date	Subsegment	Stage	Deal size (\$M)*	Lead investor(s)	Valuation step-up
Astronomer	March 23, 2022	Data preparation platforms	Series C	\$213.0	Insight Partners, Sutter Hill Ventures	6.1x
CausaLens	January 28, 2022	Predictive analytics	Series A	\$45.4	Dorilton Ventures, Molten Ventures	6.0x
Starship	February 4, 2022	Autonomous vehicle design	Series B	\$130.0	NordicNinja VC, Taavet+Sten	3.6x
CommercelQ	March 21, 2022	Pricing optimization	Series D	\$115.0	SoftBank Investment Advisers	2.6x
Run:AI	March 15, 2022	Model development tools	Series C	\$75.0	APA Venture Partners	2.5x
Clari	January 19, 2022	Sales & marketing	Series F	\$225.0	Blackstone	1.5x
SparkCognition	January 25, 2022	AutoML	Series D	\$123.0	Horsley Bridge Partners, Modern Venture Partners, Alumni Ventures	1.6x
Builder.ai	February 8, 2022	Software development tools	Series C	\$100.0	Insight Partners	1.9x
Syntiant	March 28, 2022	Chips	Series C1	\$55.0	N/A	2.2x
Ambient.ai	January 19, 2022	Computer vision	Series B	\$52.0	Andreessen Horowitz	3.8x

Source: PitchBook | Geography: Global | *As of March 31, 2022



VC ACTIVITY

Figure 10. Key AI & ML VC exits

Company	Close date	Subsegment	Exit size (\$M)*	Exit type	Acquirer(s)/index	MOIC
DeepGlint	March 17, 2022	Facial recognition	\$864.5	Public listing	Shanghai Stock Exchange	N/A
Analytical Wizards	February 18, 2022	Hospital administration	\$65.0	Buyout	Advent International, Definitive Healthcare, Spectrum Equity	21.7x
Kryon	February 15, 2022	RPA	\$100.0	Buyout	Nintex, TPG, Thoma Bravo	1.5x
Trifacta	February 7, 2022	Data preparation platforms	\$400.0	Acquisition	Alteryx	1.1x
VisionLabs	February 1, 2022	Facial recognition	\$91.4	Acquisition	MTS AI	N/A
SES	February 1, 2022	Sensors	\$3,049.0	Public listing	Ivanhoe Capital Acquisition	N/A
Alnovation	January 26, 2022	Computer vision	\$1,736.5	Public listing	Laurion Capital Management, SoftBank Investment Advisers	4.8x
Core Scientific	January 20, 2022	Database management	\$2,810.0	Public listing	Power & Digital Infrastructure Acquisition	19.0x
LoopMe	January 18, 2022	Ad targeting	\$120.0	Buyout	Mayfair Equity Partners	2.4x
Enview	January 5, 2022	Geospatial analysis	\$71.0	Acquisition	Matterport	3.5x

Source: PitchBook | Geography: Global | *As of March 31, 2022



VC ACTIVITY

Figure 11. Top strategic acquirers of AI & ML companies since 2020

Name	Deal count*
Apple	8
Accenture	8
Meta Platforms	6
Microsoft	5
Snap Group	5
Cisco Systems	5
DataRobot	5
International Business Machines	5

Source: PitchBook | Geography: Global | *As of March 31, 2022

Figure 12. Top VC investors in AI & ML companies since 2020

Name	Deal count*
Sequoia Capital China	133
Alumni Ventures	119
SOSV	112
Gaingels	78
Sequoia Capital	75
Accel	74
Enterprise Ireland	70
General Catalyst	68
5Y Capital	67
GGV Capital	66

Source: PitchBook | Geography: Global | *As of March 31, 2022



VC ACTIVITY

Figure 13. Top VC-backed horizontal platform companies by total VC raised to date

Company	VC raised to date (\$M)*	Segment	Subsegment
Databricks	\$3,497.4	Horizontal platforms	Data preparation platforms
SandboxAQ	\$1,500.0	Horizontal platforms	Quantum AI
Face++	\$1,258.0	Horizontal platforms	Computer vision
Trax Technology	\$1,087.5	Horizontal platforms	Computer vision
DataRobot	\$1,048.1	Horizontal platforms	AlaaS
Dataminr	\$1,047.4	Horizontal platforms	NLP
Automation Anywhere	\$973.0	Horizontal platforms	RPA
Uniphore	\$711.3	Horizontal platforms	Conversational AI
Dataiku	\$647.8	Horizontal platforms	AlaaS
Scale AI	\$602.7	Horizontal platforms	Data preparation platforms

Source: PitchBook | Geography: Global | *As of March 31, 2022



Emerging opportunities

Conversational AI

Private companies are taking leadership positions in the Conversational AI market for customer service use cases based on their improved user experiences.

Silicon photonics

Silicon photonics semiconductor startups are achieving superior results on training speed for leading AI model types.

Revenue operations

Sales & marketing has separated itself as the most active category of VC exits in AI.



Conversational AI

Overview

Text- and speech-based interfaces that use semantic and deep learning to assist people or automate tasks. Categories of Conversational AI include speech recognition, speech synthesis, intelligent text mining, and emotion detection. Legacy call center vendors are extending technologies such as interactive voice response (IVR) into the AI era, leading to a flood of vendors seeking the “Conversational AI” label. IT incumbents have been highly acquisitive in the space, with Microsoft making one of its largest acquisitions for Nuance Communications. Cisco, SAP, and Genesys have also made significant acquisitions in the space. Among hyperscalers, AWS, Google, and Microsoft feature Conversational AI platforms, with AWS’s Connect product for call centers becoming one of its highest-growing services.

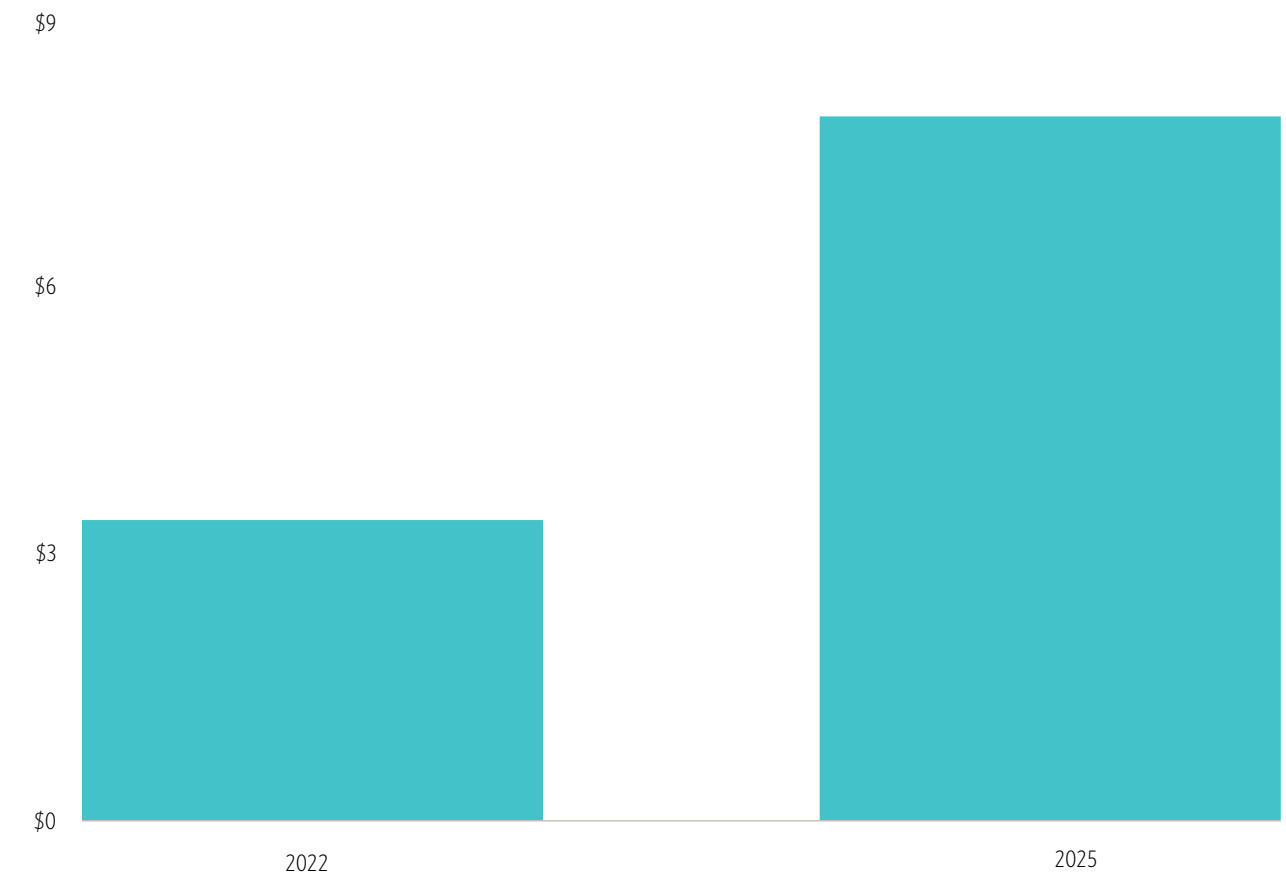
Despite competition, most companies in the space are achieving high growth. According to a Gartner survey, the median revenue growth for Conversational AI vendors reached 36% in 2021, far above the 20% for software vendors more generally.² We expect this growth to continue in a recession scenario given the long-term trends toward digital transformation and cost savings from digitized services.

IDC estimates the market will reach \$3.4 billion in 2022 and grow at a 32.6% CAGR to a \$7.9 billion market in 2025.³ Cloud services are driving growth, even as they contributed a minority of spending in 2021 compared to on-premises deployments. Cloud spending should double by 2025, benefiting both hyperscalers and cloud-native startups.

²: “2021 CAIP Competitive Landscape for CAIP Vendor Survey,” Gartner, June 2021.

³: “Worldwide Conversational AI Tools and Technologies Forecast, 2021-2025,” IDC, David Schubmehl and Hayley Sutherland, June 2021.

Figure 14. Conversational AI software market size estimate (\$B)



Source: IDC, June 2021 | Geography: Global



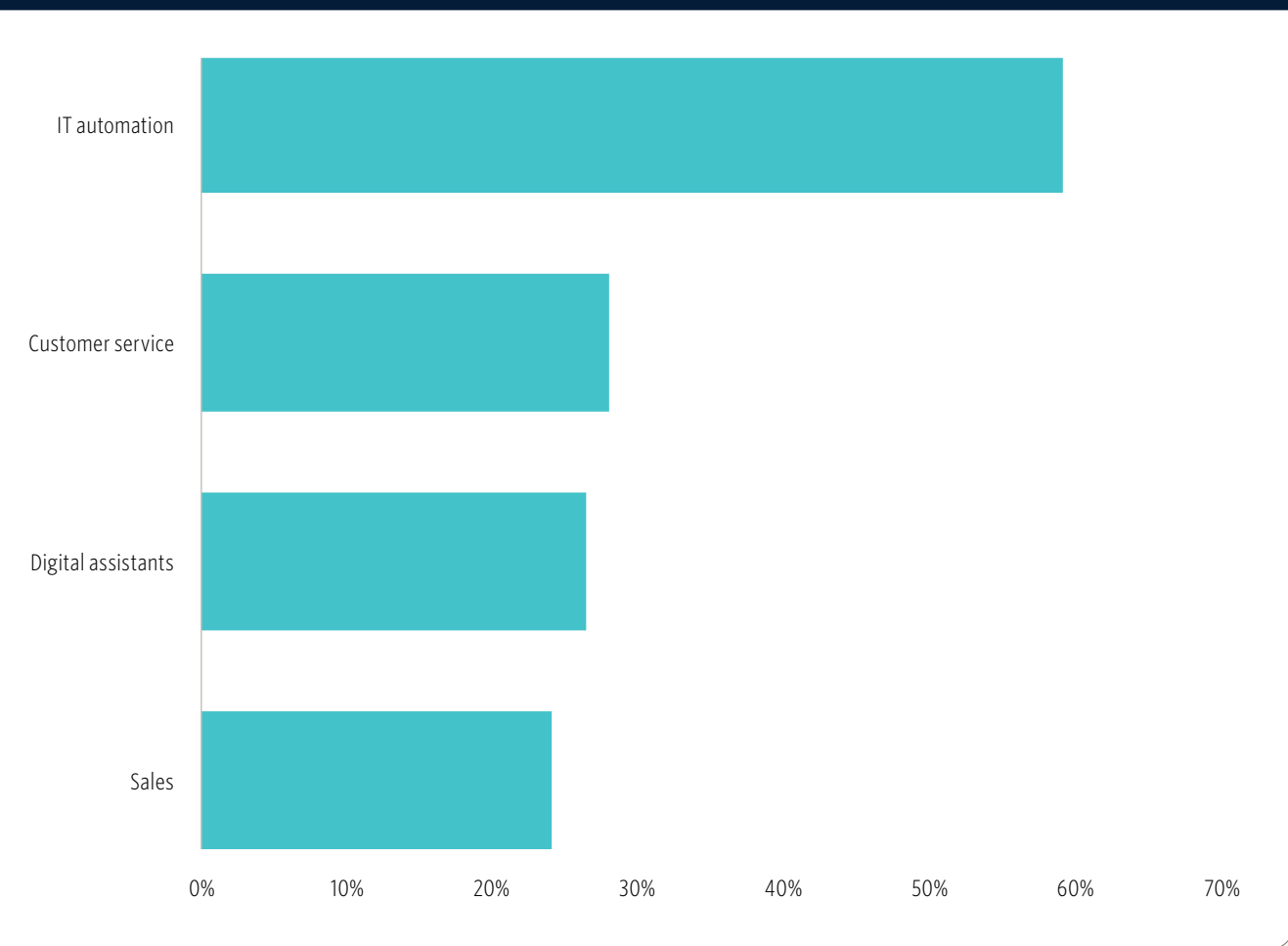
CONVERSATIONAL AI

Market direction

Private companies are taking leadership positions in the Conversational AI market for customer service use cases based on their improved user experiences. Amelia, Cognigy, and Kore.ai rank above Microsoft, Oracle, and IBM in both IDC’s Marketscape for Conversational AI and Gartner’s vendor evaluation for Enterprise Conversational AI Platforms. Cognigy and Kore.AI are rapidly growing their businesses and venture funding to keep pace with demand while Amelia has built a self-sustaining business. Other outstanding private equity backed companies include Omilia and Onereach.ai. The immaturity of advanced AI models enables private companies to develop superior capabilities to incumbents from an early stage. Differentiating factors include natural language understanding (NLU) and natural language generation (NLG) techniques for contextual interpretation and original response scripting.

IT automation is emerging as a leading use case for Conversational AI, according to a survey of AI adopters. This includes embedding chatbots and speech interfaces with common enterprise applications such as enterprise resource management systems. Customer service, digital assistants, and sales process recommendations also rate highly, with e-commerce and merchandising rating relatively lower. In AIOps for IT environments, IT leaders such as ServiceNow embed conversational engines into their web interfaces so that applications can act on voice instructions. Private company Amelia stands out in the market for supporting IT use cases such as IT case management and integrating with ServiceNow for voice.

Figure 15. Percentage of AI adopters using Conversational AI models by use case



Source: IDC’s Artificial Intelligence Adoption Survey, 2020 | Geography: Global | *As of March 31, 2022



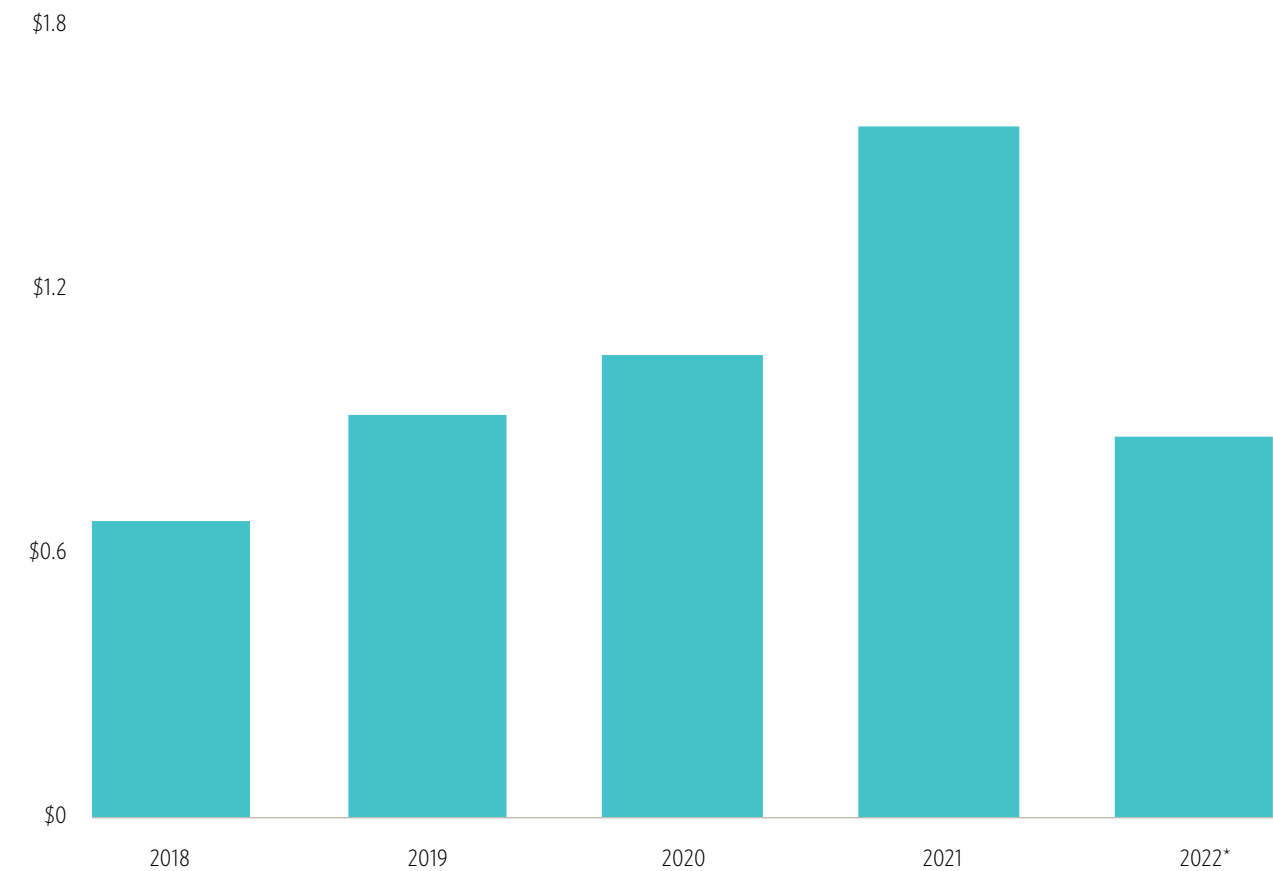
CONVERSATIONAL AI

Trending startups

Conversational AI leadership is beginning to produce large companies. In Q1, Uniphore raised a \$400.0 million Series E at a 2.9x deal size step-up, reaching a \$2.5 billion post-money valuation. The India-founded company offers conversational analytics for contact centers to assess agent interactions. The company has been using M&A to expand its product portfolio to include computer vision and intelligent knowledge discovery. In Q4 2021, the company acquired legacy customer service vendor Jacada to offer an integrated low-code conversational platform. The company has achieved leadership in speech recognition and emotion detection and can scale its horizontal conversational platform to compete with hyperscalers.

At the early stage, Conversational AI disruptors are raising Series A rounds at high valuations from leading investors. Y Combinator alumnus Assembly AI increased its valuation by 2.9x in a Series A extension led by Accel and joined by Stripe’s Collison brothers among other leading angels. The company brings NLP-driven speech-to-text APIs to market and claimed to triple both its customer base and revenue in 2021. Key use cases include content moderation, summarization, PII redaction, and topic detection. Also in Q1, pre-product company Wizard raised a \$50.0 million Series A led by NEA. The company was started by Jet founder Marc Lore to bring AI to conversational e-commerce.

Figure 16. Conversational AI VC activity (\$B)



Source: PitchBook | Geography: Global | *As of March 31, 2022



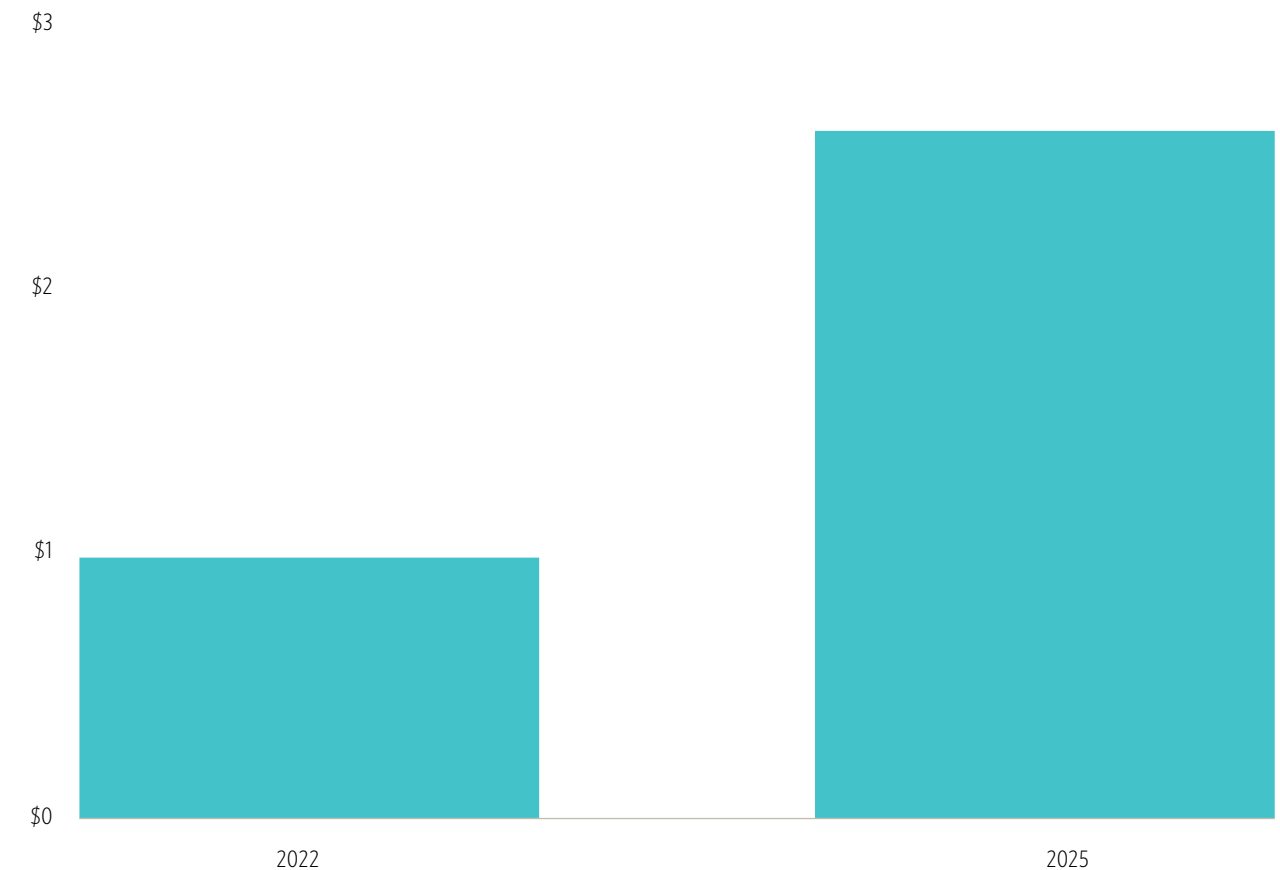
Silicon photonics

Overview

Silicon photonics companies are the future of AI processing as pure silicon runs out of headroom for additional processing density. The AI chip market reached \$36.0 billion in 2021 yet requires increasingly complex combinations of CPUs and GPUs to optimize performance. Even the most advanced architectures retain high energy costs and increasingly expensive fabrication costs with ever-smaller form factors. Optical computing has long been used for fiber optics and optical data transfer. The technology converts binary values into photons that can more rapidly transfer data than digital bits with less heat loss. Photonics can continue to improve AI training efficiency in the long run, creating the opportunity for large standalone chipmakers to be created in the emerging space.

Silicon photonics are on pace to become common in data centers by 2025. We estimate the technology's market will reach \$2.6 billion by then, reaching the same size as the AI GPU market as of 2020. The primary form factors are transceivers and data center switches that complement existing processors. This estimate does not include the long-term potential for deployment of photonic processors as replacements for GPUs in data centers. We believe that startups will need to bring interconnect products to market in the short-term and partner with silicon incumbents before commercializing alternatives.

Figure 17. Silicon photonics market size estimate (\$B)



Source: PitchBook Emerging Tech Research | Geography: Global



SILICON PHOTONICS

Market direction

Photonics startups are achieving superior results on training speed for leading AI model types. Startup Lightmatter is optimizing its hardware for leading neural network types including ResNet for computer vision, BERT for NLP, and Meta AI’s deep learning recommendation model for digital personalization. The company claims to reduce training times by 10x compared to Nvidia’s A100 though these test results have not been verified by a standards body. Its blade server named Enviser optimizes its chip clusters for the open-source BERT-base NLP model from Google’s TensorFlow. Its fellow startup Saliency Labs is commercializing academic research from a consortium including Oxford University that finds that light-based processors can outperform Google’s Tensor Processing Unit on processing speed for neural network calculations with parallel processing using different colors of light. We believe that this research focus demonstrates that photonics will be used for AI training in the future as opposed to more common current use cases including interconnect and switches.

Semiconductor foundries are laying the groundwork for commercialization of photonics architectures. In Q1, GlobalFoundries launched a silicon photonics manufacturing platform called GF Fotonix based on its silicon germanium technology. The company filed 17 patents referencing photonics from 2018 to 2020 after limited R&D in the space previously. This announcement featured support from leading design partners Nvidia and Cisco as well as private company Ayar

Figure 18. Silicon photonics industry market map





SILICON PHOTONICS

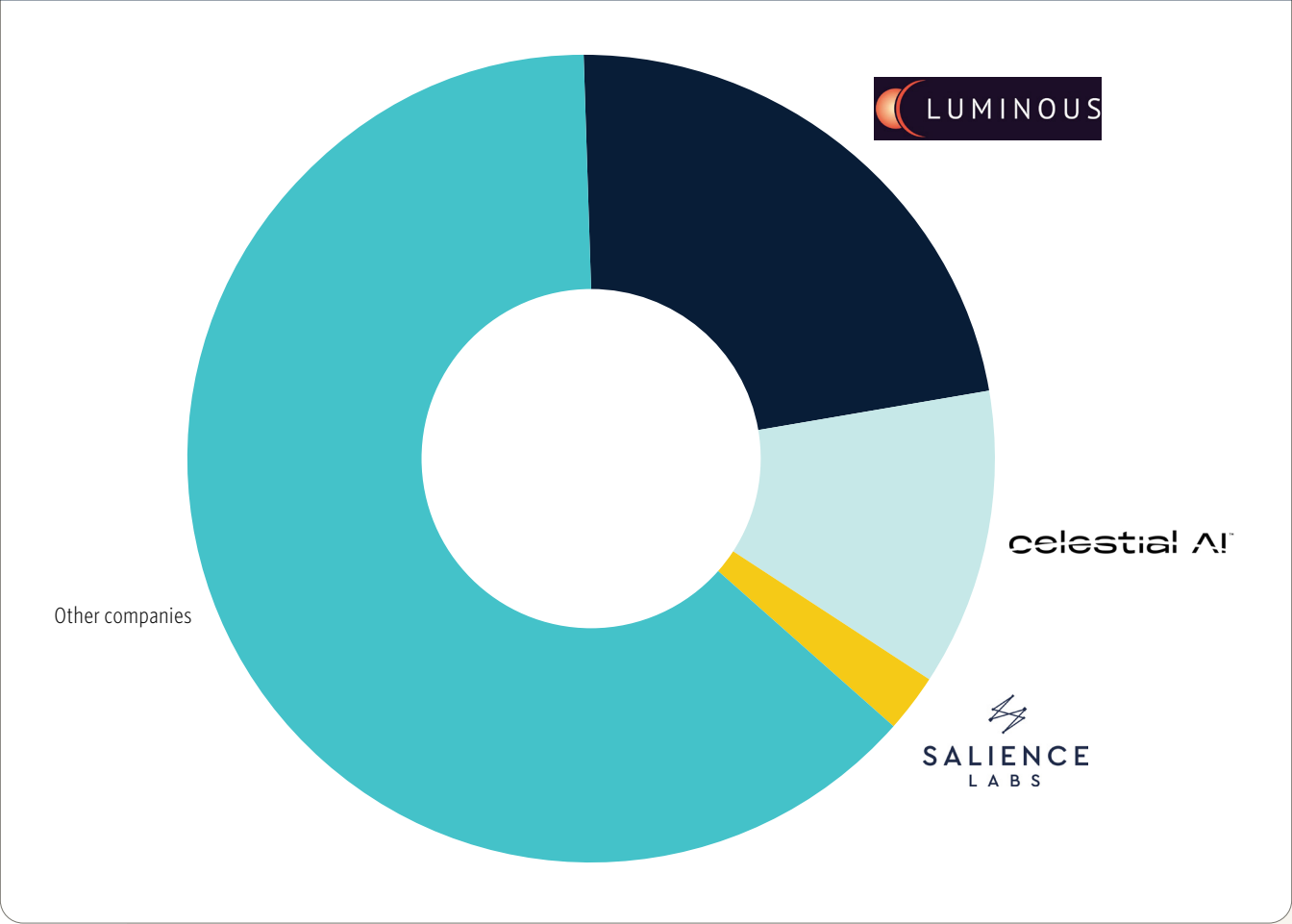
Labs. This opportunity gives GlobalFoundries a differentiated offering compared to foundry leader Taiwan Semiconductor Manufacturing Company (TSMC). Hyperscalers recognize the need for improved silicon performance and are moving chip development in-house, giving this platform another source of future customers.

Trending startups

In Q1, the market downturn affected silicon ASICs but did not hinder emerging photonics companies. AI chip design startups only raised \$470.7 million after raising \$7.4 billion in 2021. Of these deals, the two largest were for silicon photonics startups. Luminous raised the largest deal we have tracked in AI-specific photonics startups with a \$105.0 million Series A from a syndicate of investors including Bill Gates to pursue commercialization. The company has [five active patents](#), including for parallel photonic processing, based on prior research by the company’s CTO at Princeton University. The company is focusing on interconnect applications in the short-term with a long-term view to enable photonic processing.

Also in Q1, Celestial AI raised a \$56.0 million Series A led by Koch Disruptive Technologies. The company seeks to optimize intra-chip data transfer with photonics, supplementing the field’s current focus on interconnect. The company was founded by a former Applied Materials executive and founder of IP licensing company Intermolecular. The company remains in stealth mode with regard to product development and has been assigned no patents that we have tracked. Its investors support its software development, reinforcing our thesis that chip design companies must be primarily software companies to compete with Nvidia. Celestial AI also has a long-term view to enabling photonics-centric accelerators, with no clear short-term strategy to pursue interconnect.

Figure 19. Silicon Photonics startups’ share of Q1 2022 AI chip design VC funding



Source: PitchBook | Geography: Global



Revenue operations

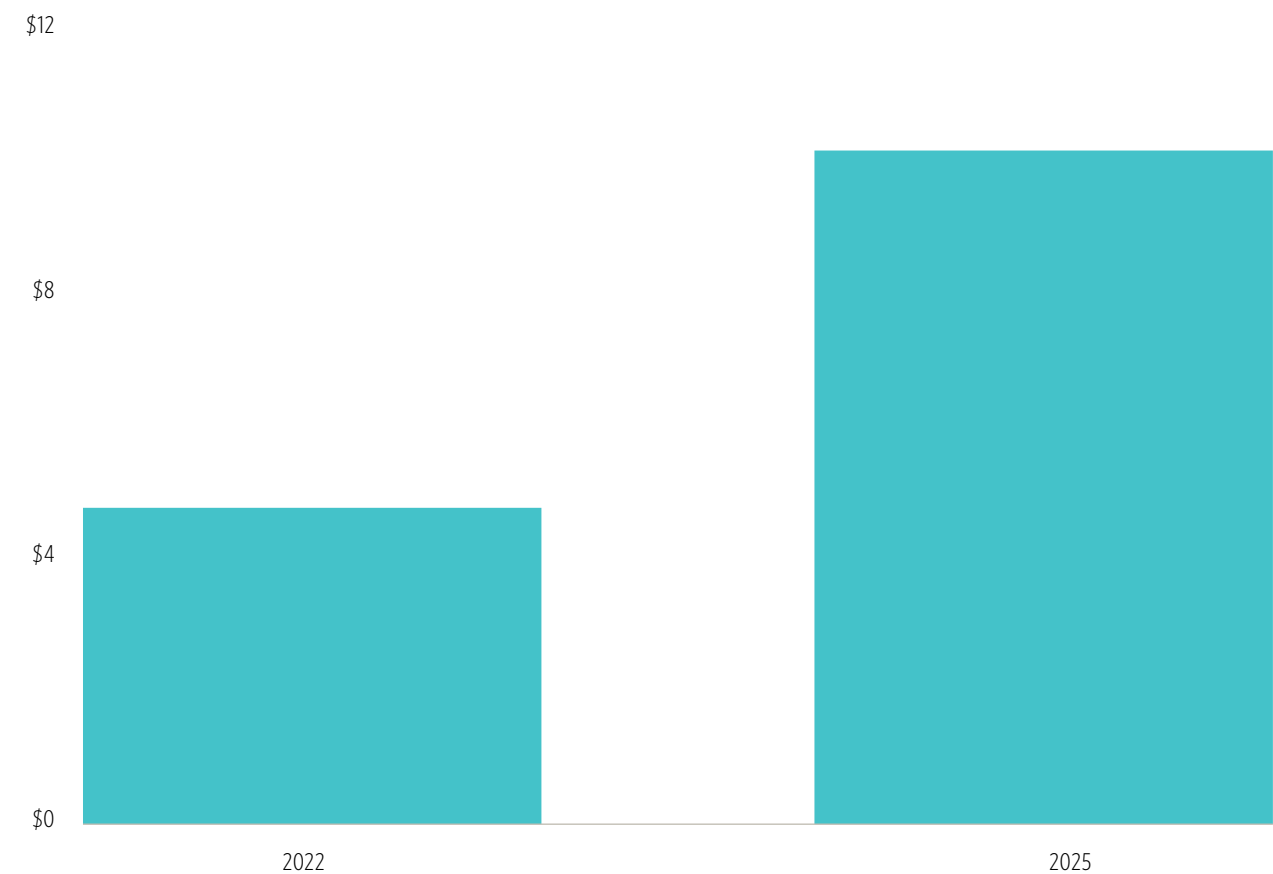
Overview

Sales functions gain advantages through improved prediction of outcomes via ML analytics. Increasingly, enterprises are creating a single department called revenue operations (RevOps), which integrates sales, marketing, and customer success with a single IT back-end and set of common industry KPIs. Customers can connect various data sources including CRM, social media, ERP, and third-party analytics platforms into a central platform that uses ML to normalize disparate data streams and uncover correlations among them. This enables organizational restructuring to unify sales, marketing, and customer success under a chief revenue officer.

The challenge with building this function is integrating disparate sources of data to build a department that is greater than the sum of its parts. To facilitate this, platforms can be built on graph database back-ends. Graph databases use ML to find correlations between data points and label data for predictive analytics. High-value data sources that may have previously been excluded from sales processes include website engagement patterns, conversational emotion detection, voice data, and chat apps.

We estimate the AI RevOps opportunity to reach \$4.8 billion in 2022, growing at a 28.8% CAGR to a \$10.2 billion market in 2025. This includes AI-centric sales automation software, excluding legacy CRM software more broadly.

Figure 20. AI revenue operations market size estimate (\$B)



Source: PitchBook Emerging Tech Research | Geography: Global | *As of March 31, 2022



REVENUE OPERATIONS

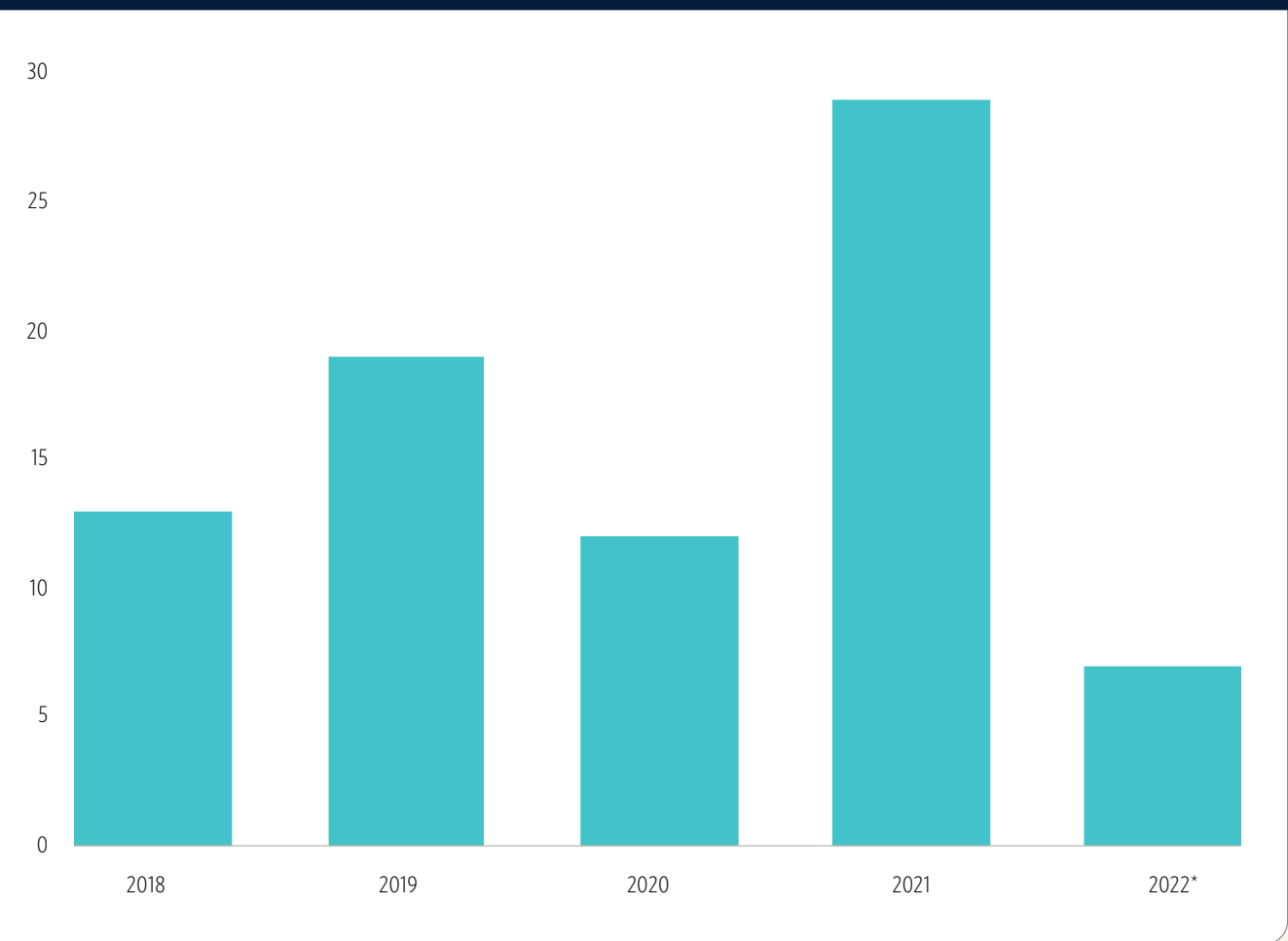
Market direction

Startups are scaling analytics solutions on top of sales & marketing systems of record such as Salesforce , Microsoft Dynamics, and HubSpot. In 2020, Salesforce announced its Revenue Cloud to address the RevOps opportunity, packaging together numerous products to create a RevOps solution. The giant also offers an AI product called Einstein that requires extensive configuration in Salesforce’s native development environment. Thus far in 2022, the company launched Revenue Intelligence to integrate analytics from Einstein and its acquisition of Tableau, but it is unclear if the solution will resolve the adoption issues facing its product suite. Given this limited functionality, startups build on top of Sales Cloud to offer improved user experiences.

Market leaders in RevOps include AI-native startups including Gong, Outreach, and Clari. Gong gained a foothold with conversational AI for sales calls and is expanding into forecasting and recommendations based on its unique insights. In Q1, the company released a direct integration with Salesforce to enrich data in Sales Cloud. Clari and Outreach offer more direct competition with Salesforce by offering comprehensive revenue management solutions that natively integrate capabilities across forecasting, conversation intelligence, and pipeline outreach automation.

Sales & marketing automation has separated itself as the most active category of VC exits in AI. The category produced 27 VC exits in 2021 after producing double-digit exits from 2018-2021, and activity remained high in Q1 2022. We tracked three mega-exits in 2021 over \$100 million, including IPOs for website analytics company SimilarWeb and marketing software vendor Appier. Appier directly addresses the RevOps opportunity via marketing conversion optimization. Building on the website analytics trend, LinkedIn acquired startup Oribi for \$85.0 million in Q1, demonstrating the value of website visits to customer data analytics.

Figure 21. Sales & marketing automation VC exit count



Source: PitchBook | Geography: Global | *As of March 31, 2022



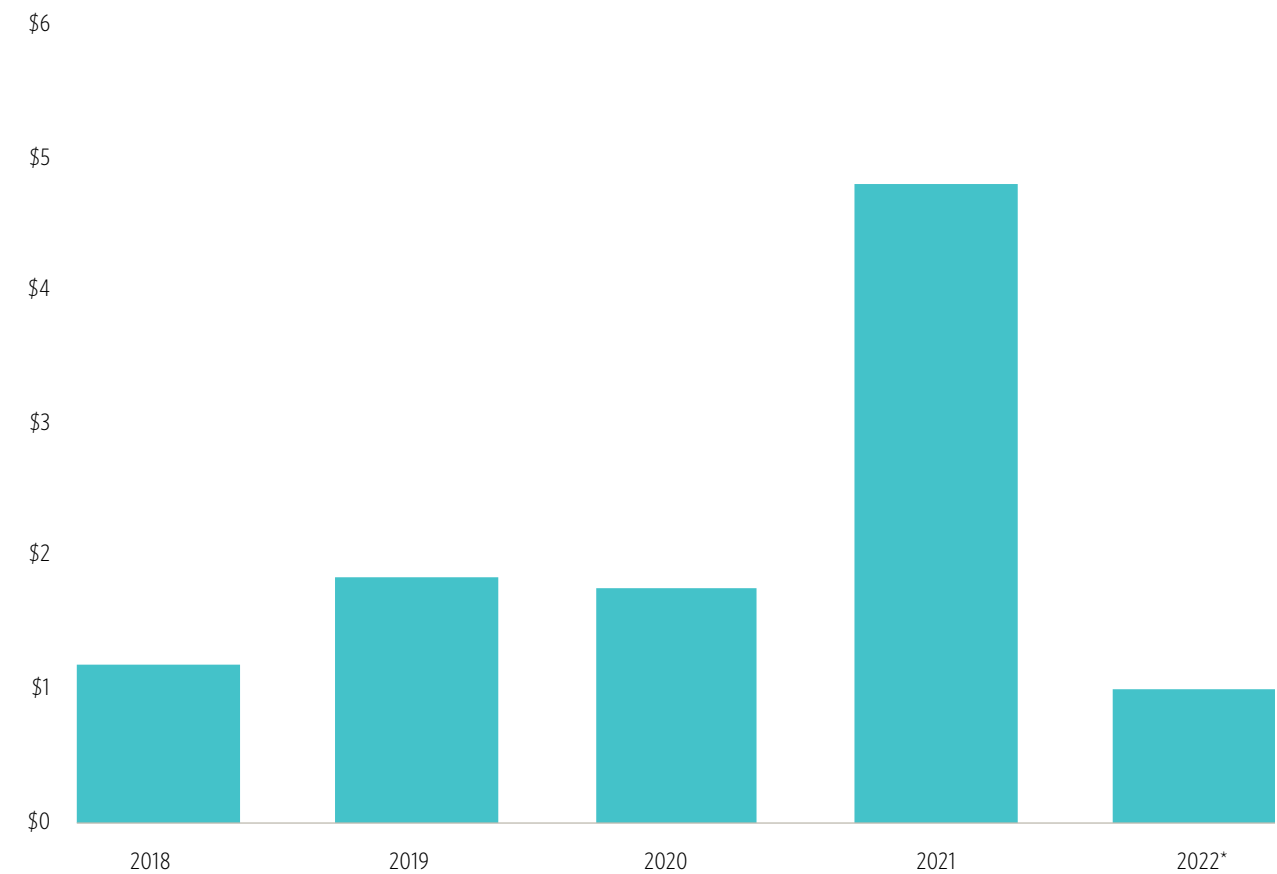
REVENUE OPERATIONS

Trending startups

Sales & marketing unicorn Clari set a record Series F deal size for its category with a \$225.0 million deal led by Blackstone. The company stands out in the revenue operations market for its sales forecasting accuracy. One day later, 6Sense raised a \$200.0 million Series E extension at a 2.4x valuation step-up to reach a \$5.0 billion post-money valuation. The company focuses on customer success rather than new sales, demonstrating the scale of the RevOps opportunity across the sales organization. Further bolstering this theme, customer intelligence platform Databook achieved an outlying 5.2x valuation step-up into its Series B, reaching a \$550.0 million post-money valuation. These companies demonstrate ongoing innovation in the RevOps category that poses fundamental challenges to legacy CRM vendors.

At the early stage, SecondNature raised its valuation by 3.6x into its Series A to enable AI-driven sales coaching. The tool uses NLP to engage with sales representatives in simulated calls and score their performance. Zoom participated in the round through its Apps Fund and is also a prominent customer. Specialist investor Gradient Ventures backed conversational intelligence startup Zowie at the seed stage. The startup optimizes customer service chatbots for enhanced sales, measuring success in the upsell achieved by its AI. We believe that conversational AI offers continued innovation opportunities for highly interpersonal sales functions.

Figure 22. Sales & marketing automation VC activity (\$B)



Source: PitchBook | Geography: Global | *As of March 31, 2022



Select company highlights



DATABRICKS



Founded
2013

1,700 employees
in 20 offices globally

Total raised:
\$3.5B

Leader in Gartner Magic
Quadrant for Data Science and
Machine Learning Platforms

Last financing valuation:
\$38.0B

Last financing:
Raised \$1.6M in a Series H

Lead investors:
Franklin Templeton
Investments, Andreessen
Horowitz, NEA

Business overview

Founded in 2013, Databricks offers a data science platform that includes AlaaS functionality with a suite of data science tools for data engineering, data warehousing, and machine learning algorithms. The company grew out of the open-source Apache Spark data science community and created an extensible Unified Data Analytics Platform that can ingest data from enterprise silos and prepare it for cluster-based computing. Once an effective open-source product was in place, the company moved to a closed-source model and rapidly grew revenue beginning in 2016.

Databricks now offers a product suite on top of Apache Spark that includes notebooks for ML model collaboration, a data lake, and data security. In Q4 2021, the company made its second acquisition—of 8080 Labs, an open-source startup that enables low-code Python development. 8080 Labs’ products allow correlation of multiple data types using Python, thereby demonstrating the opportunity to expand data formats in modern data lakes. We believe streaming data analytics will become a priority in the future.

Leadership

Databricks’ management has high technical expertise capable of generating product-led growth. The company was founded by seven early contributors to the popular open-source data science framework Apache Spark, and all the cofounders remain at the company. CEO and co-founder Ali Ghodsi earned a Ph.D. in distributed computing and was VP of engineering before being promoted to CEO at the start of the company’s growth phase in 2016. CFO Dave Conte previously took Splunk (NASDAQ: SPLK) public in the same role, which suggests Databricks’ accounts will be ready for scrutiny by public markets. The board features co-founders and VC investors, including a16z co-founder Ben Horowitz. In Q3 2021, the company added Google’s former Head of Product Security Fermín Serna as Chief Information Security Officer and Salesforce’s former President of North America Andy Kofoid as President of Global Field Operations, bolstering its public company experience.



DATABRICKS

Competitors

Databricks stands out in the AI & ML market by supporting MLOps atop its data lake, functionality that distinguishes it from legacy vendors such as SAP (ETR: SAP), Microsoft, and AWS while also being more AI-oriented than next-generation data warehouse vendor Snowflake (NYSE: SNOW). Because of its ability to support batch processing for machine learning analytics and other high-value workloads, Databricks is capturing market share from incumbents such as Alteryx (NYSE: AYX), IBM (NYSE: IBM), Oracle, and SAS. Databricks runs on Microsoft Azure and AWS, although those hyperscalers would likely prefer to natively support their ML workflows and may improve their offerings in the future. The company gains market credit for scaling ML model deployment and management across a variety of compute clusters—a critical problem for data scientists new to ML.

Outlook

The company has achieved the necessary scale and growth to realize high performance on public markets. Its most recent investment values the company at \$38.0 billion—or 63.3x annual recurring revenue (ARR) of \$600.0 million—on the back of 41.1% YoY ARR growth. The company ended 2021 with \$800.0 million ARR, excluding usage fees for its computing infrastructure. Snowflake debuted in 2020 with similar scale and higher growth and has traded at elevated revenue multiples, although it has been disproportionately affected by the correction in tech valuations, thus reducing its forward revenue multiple to 30x from 35x. As a result, Databricks may be valued below its most recent private valuation if it goes public in 2022. In the long run, Databricks will likely be valued higher than relational database incumbents based on the growth opportunities of data lake architecture for streaming data.



Figure 23. Databricks financing history

Series H Total raised: \$1,600.0M Pre-money valuation: \$36,400.0M Lead investor: Counterpoint Global	Series G February 1, 2021 Total raised: \$1,000.0M Pre-money valuation: \$27,000.0M Lead investor: HFranklin Templeton Investments	Series F October 22, 2019 Total raised: \$400.0M Pre-money valuation: \$5,800.0M Lead investor: Andreessen Horowitz	Series E February 5, 2019 Total raised: \$250.0M Pre-money valuation: \$2,500.0M Investors: Andreessen Horowitz (lead), Coatue Management, Founders Future, Geodesic Capital, Green Bay Ventures, Microsoft, NEA
Series D August 22, 2017 Total raised: \$140.0M Pre-money valuation: \$800.0M	Series C December 15, 2016 Total raised: \$60.0M Pre-money valuation: \$453.0M Lead investor: NEA (lead), Andreessen Horowitz, B7, In-Q-Tel, SineWave Ventures	Series B June 30, 2014 Total raised: \$33.0M Pre-money valuation: \$214.0M Lead investor: NEA (lead), Andreessen Horowitz, Australia Future Fund, Data Collective	Series A September 24, 2013 Total raised: \$14.0M Pre-money valuation: \$34.0M Investors: Andreessen Horowitz (lead)



DATAROBOT



Founded
2012

1,182 employees
in 8 offices globally

Leader in Forrester Wave for
automation-focused Machine
Learning Solutions, Q2 2019

Total raised:
\$1,048.1M

Visionary in Gartner Magic
Quadrant for Data Science
and Machine Learning
Platforms, March 2021

Last financing valuation:
\$6.3B

Last financing:
Raised \$300.0M in a
Series G

Lead investors:
Tiger Global Management,
Altimeter Capital
Management, Sapphire
Ventures, Meritech Capital
Partners, NEA, Atlas
Venture, Right Side Capital
Management, IA Ventures

Business overview

DataRobot's Enterprise AI platform offers end-to-end automated machine learning (autoML) tooling, including data preparation, model development, security, and monitoring. The platform is designed for data scientists, software developers, operations teams, business line users, and executives. The platform can train and deploy models across cloud, on-premises, and hybrid production environments. Recent acquisitions in autoML (Zeff), model management (ParallelM), data visualization (Zepl), and data preparation (Paxata and Zeff) have been successfully integrated to create a data science platform that can compete with hyperscalers. In Q3 2021, the company acquired machine learning operations (MLOps) startup Algorithmia and predictive analytics startup Decision.AI. Algorithmia was achieving a leading market position in MLOps after receiving investment from Google and Microsoft, making the acquisition highly strategic for DataRobot. The acquisition of Decision.AI shows the company's strategy to move downstream to the application layer and make its platform user-friendly for a wide range of business users. We believe the company will continue to focus on the application layer going forward.

According to management, the company is on pace for \$210.0 million in revenue in 2022.⁴ The company appears to have received a premium valuation multiple in its Series G, possibly approaching that of Snowflake and Databricks. AutoML has yet to become a large market relative to other enterprise software categories, which potentially constrains DataRobot's achievable scale. Further, the company competes with open-source frameworks, internal data science teams, and hyperscaler cloud platforms. Its revenue base is diversified across industries, with a strong presence in financial services.

Leadership

Graduating from Techstars in 2013, DataRobot was founded by data scientists Jeremy Achin and Tom de Godoy. Achin was CEO until Q1 2021, when he handed the role to former COO Dan Wright. Godoy remains CTO. Founder leadership has led to continued product innovation and reinvestment in new features via R&D and M&A. Wright was formerly COO of AppDynamics through its acquisition by Cisco Systems (NASDAQ: CSCO). In Q3 2021, the company promoted the former Chief Product Officer of its

⁴: "How DataRobot Hit \$210M Revenue with 850 Customers in 2022," GetLatka, 2022.



DATAROBOT

subsidiary Paxata to the same role, retaining a focus on innovation in autoML user experience. Also in Q3, the board recently added three current or former public company executives and Harvard Business School professor James I. Cash. We believe the current management team is prepared to take the company public and continue its platform acquisition strategy.

Competitors

Due to its breadth of features as well as its best-in-class augmented analytics for nonspecialist users, DataRobot has emerged as a leader in the burgeoning autoML market. Smaller competitors such as H2O.ai lack the MLOps functionality to manage model deployment. Larger competitors, including Alteryx, Microsoft, and Google, lack the flexibility to customize models across open-source frameworks

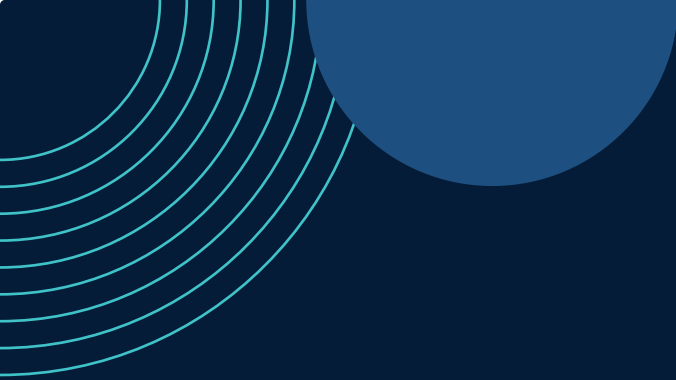
and production environments. Relative to hyperscalers, DataRobot offers a superior user experience and support for diverse organizational use cases.

Outlook

DataRobot is currently progressing toward public markets—considering either an IPO, direct listing, or SPAC merger. The company’s growth will be closely tied to enterprise investment in AI, which remains limited to specific use cases and data scientist users. DataRobot is unlikely to become a large cap software name until a higher portion of enterprise employees use autoML, which isn’t likely in the short term. The company can expand its TAM by displacing conventional business analytics via application layer releases. DataRobot’s product suite could benefit from further expansion into synthetic data, which would enable the provision of high-quality datasets tailored to specific use cases.

Figure 24. DataRobot financing history

Series G	Series F	Series E	Series D	Series C	Series B	Series A
October 7, 2021	December 9, 2020	September 17, 2019	October 25, 2018	November 3, 2017	June 1, 2016	August 1, 2014
Total raised: \$300.0M	Total raised: \$371.0M	Total raised: \$206.0M	Total raised: \$100.0M	Total raised: \$68.0M	Total raised: \$33.0M	Total raised: \$21.0M
Pre-money valuation: \$6,050.0M	Pre-money valuation: \$2,500.0M	Pre-money valuation: \$1,090.0	Pre-money valuation: \$625.0M	Pre-money valuation: \$215.0M	Pre-money valuation: \$89.0M	Pre-money valuation: \$50.0M
Lead investors: Altimeter Capital Management, Tiger Global Management	Lead investor: Altimeter Capital Management	Lead investor: Sapphire Ventures	Lead investors: Meritech Capital Partners, Sapphire Ventures	Lead investor: NEA	Investors: NEA	Investors: NEA



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