Tech Giants Pursue Inorganic Growth with AI

M&A priorities for AI industry leaders

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Key takeaways

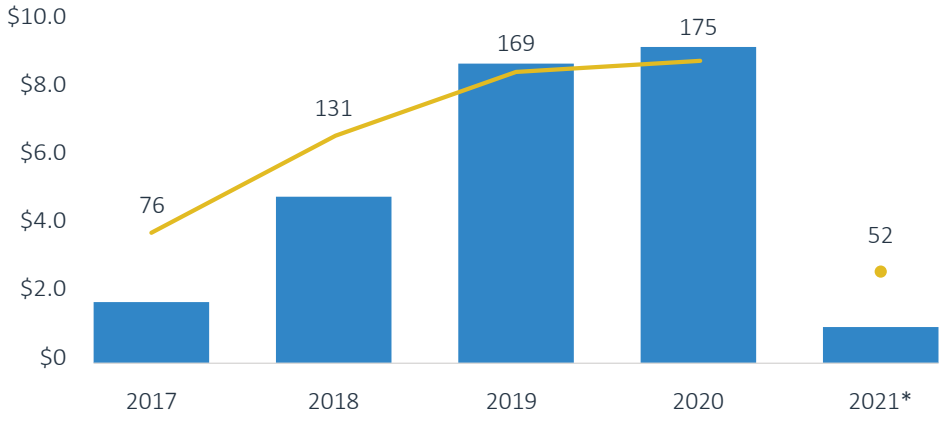
- Recent acquisition activity of VC-backed AI companies exhibits flat deal count growth and low deal value, with tech giants consistently investing in deep learning R&D, digital media optimization, and conversational AI via tuck-in acquisitions.
- Recent high-profile acquisitions have the potential to catalyze deal flow to higher levels. This includes the acquisitions of Nuance (NASDAQ: NUAN) by Microsoft (NASDAQ: MSFT) for $16.0 billion and Peakon by Workday (NASDAQ: WDAY) for $700.0 million, which demonstrate that AI leaders are willing to pay up for AI software that can add new business lines.
- Our analysis of acquisitions back to 2017 finds AI industry leaders are prioritizing acquisitions of AI core software, AI automation platforms, natural language processing, and consumer AI in M&A over computer vision and most vertical applications.

Overview

Similar to the technology itself, M&A in AI has shown signs of immaturity. In contrast to venture funding and IPO values, recent deal values and counts have not risen. Given the nascent stage of the technology and antitrust concerns, leading acquirers, including FAMGA, feel little pressure to acquire commercially leading AI companies and have been content to invest heavily in internal R&D along with tuck-in acquisitions, including acqui-hires. As a result, VC deal count and deal values were flat for acquisitions of VC-backed companies in 2020, and Q1 2021 saw only $1.0 billion in disclosed acquisition value. For AI industry leaders, $1 billion+ acquisitions have only been disclosed for autonomous vehicles and semiconductors, leaving a long tail of general AI acquisitions without significant venture outcomes.

However, recent activity suggests that AI leaders may be ready to invest more substantial capital in commercially proven AI models. Thus far in 2021, Microsoft (NASDAQ: MSFT) announced the largest acquisition we have tracked in AI & ML with a $16.0 billion deal for conversational AI company Nuance (NASDAQ: NUAN). Nuance (NASDAQ: NUAN) demonstrated commercial traction for its conversational AI in the healthcare industry, making it more than a tuck-in acquisition for Microsoft (NASDAQ: MSFT). The deal cleared regulatory hurdles and is on track to close, suggesting that AI acquisitions do not face close antitrust scrutiny. Among VC-backed companies, human resources automation leader Workday (NASDAQ: WDAY) acquired the employee sentiment analytics platform Peakon for $700.0 million at a significant valuation premium. These deal values signal

Acquisition deal activity for AI & ML VC-backed companies



Source: PitchBook | *As of March 31, 2021

that AI leaders may see near-term commercial applications for cutting-edge AI innovation.

AI incumbents use M&A along with R&D to expand their AI capabilities. We believe that leading tech companies, including FAMGA, commit significant shares of their R&D budgets to AI research, with each incumbent announcing new products and research discoveries on a regular basis. In 2020, FAMGA companies spent $133.5 billion on R&D, which means that AI R&D spending among tech giants could reasonably exceed the total VC investment in North America of $29.3 billion in 2020. Google's (NASDAQ: GOOGL) seminal acquisition of horizontal AI startup DeepMind for $650.0 million in 2014 demonstrated that AI R&D leaders are willing to invest heavily in leading-edge technology and talented teams. Acquisitions since then have been relatively low in deal value, but this may change with the improved performance of AI systems and regulatory clarity.

M&A considerations for AI leaders

To date, AI leaders have principally used M&A to support existing business lines and add research talent to R&D departments. As an example of the former, Apple's (NASDAQ: AAPL) voice recognition AI fell behind its peers for its Siri product, and we believe that as a result, many of its AI acquisitions have aimed to fill that gap. Similarly, Intel (NASDAQ: INTC) acquired Habana Labs after its own AI chip design efforts stalled. As an example of the latter case, Alphabet (NASDAQ: GOOGL) places a priority on AI R&D for the future of its business, with CEO Sundar Pichai saying in an earnings call that the company is "one of the largest R&D investors in AI in the world."[1] Facebook (NASDAQ: FB) and Microsoft (NASDAQ: MSFT) are also prolific R&D investors in AI and have added talent primarily to research basic science and develop new frameworks.

We believe that AI leaders have maintained conservative M&A strategies centered on tuck-in acquisitions and acqui-hires to appease shareholders and avoid both antitrust scrutiny and high losses. New business lines have not been the primary purpose of AI acquisitions, apart from acquisitions such as autonomous vehicle companies by Intel (NASDAQ: INTC) and Amazon (NASDAQ: AMZN). This hardware focus may be changing with Microsoft's (NASDAQ: MSFT) acquisition of Nuance. AI leaders may make larger acquisitions of mature AI software companies to leverage pre-trained and customer-validated AI models via their cloud services.

A full list of AI industry leaders used in this analysis can be found in the AI & ML analyst workspace on the PitchBook platform at this link.

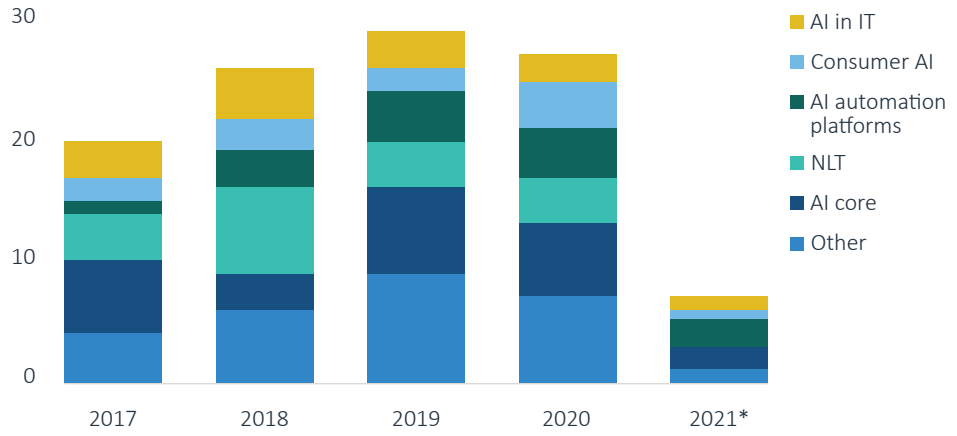
AI leader M&A priorities by product category

M&A can show which capabilities are most challenging to develop in-house. Further, they can demonstrate the areas of greatest strategic importance to AI leaders. To assess the priorities of M&A leaders, we analyzed the acquisitions of 110 companies that stand out in market research for leadership in general AI R&D. We did not include verticalized companies that have successfully applied AI to a specific business problem. While

1: "Earnings Call Transcript: Q1 2021," Alphabet (GOOGL), April 27, 2021.

this is not an exhaustive list, we believe it is a representative sample of AI leaders with unique vantage points into the present and future of AI. Large AI acquisitions have been made by companies outside of this list as well, but we believe those acquisitions are less indicative of the leading edge of AI technology.

AI leader M&A deal count by subsegment



Source: PitchBook | *As of April 31, 2021
Note: N=110 leading companies across horizontal AI categories based on market research

Horizontal platforms including AI core software, natural language technology (NLT), and AI automation platforms along with consumer AI have emerged as the leading subsegments for M&A by AI industry leaders.[2] While other categories such as computer vision and edge AI have seen regular deal flow, they have clearly been lower priorities for most AI leaders than the top categories.

The increased deal activity in NLT compared to computer vision (included in "Other" in the chart above) reinforces our thesis that NLT is a faster-growing niche that carries greater commercial and strategic value to big tech companies in the medium term. NLT is the only category to draw four acquisitions in each year from 2017 to 2020. Computer vision has consistently drawn fewer acquisitions, with none in 2018. Both Microsoft (NASDAQ: MSFT) and Alphabet (NASDAQ: GOOGL) have signaled the importance of NLT technology to their futures. Microsoft (NASDAQ: MSFT) has become an exclusive licensee of OpenAI's large language model, GPT-3, while Google has broken ground in language model training with its BERT model. Vertical applications have seen low deal flow overall, indicating that AI leaders are not yet expanding to new industries via M&A. Public cloud hosts are announcing verticalized AI products including for financial services, industrial, IT, and healthcare applications, but have made few acquisitions to bolster their capabilities. Rather, they are acquiring horizontal platforms to develop vertical applications in-house.

2: Subsegment definitions can be found in our Q4 2020 AI & ML update.

Overall, AI leaders have been tepid in both deal counts and deal values—consistent with the overall data. We tracked a peak of $2.7 billion in acquisition value in 2018, apart from Intel's (NASDAQ: INTC) acquisition of Mobileye, with declining deal values since. This in part stems from the fact that only autonomous vehicle and chip companies have earned high deal values, including Zoox (Amazon), Habana Labs (Intel), and Mobileye (Intel). The uncertain ROI of AI acquisitions is putting pressure on valuations for AI startups. As a result, AI leaders have not been willing to pay a premium for AI software startups, with even the cutting-edge Element AI lowering its valuation to be acquired by ServiceNow (NYSE: NOW).

Top deal values for AI & ML acquisitions by AI leaders since 2017

Target	Acquirer	Close date	Deal value ($M)	Segment	Subsegment
Mobileye	Intel	April 1, 2018	15,300	Autonomous machines	Autonomous vehicles
Habana Labs	Intel	December 16, 2019	1,700	AI & ML semiconductors	Chips
Zoox	Amazon	June 28, 2020	1,300	Autonomous machines	Autonomous vehicles
CTRL-Labs	Facebook	September 23, 2019	1,000	AI & ML semiconductors	Intelligent sensors & devices
Datorama	Salesforce	August 20, 2018	766	Vertical applications	AI in IT
Peakon	Workday	March 9, 2021	700	Vertical applications	AI in IT
Figure Eight	Appen	April 2, 2019	300	Horizontal platforms	AI core
DeePhi	Xilinx	July 17, 2018	252	AI & ML semiconductors	Edge AI software
Element AI	ServiceNow	January 8, 2021	230	Horizontal platforms	AI core
Xnor.ai	Apple	January 8, 2020	200	AI & ML semiconductors	Edge AI software

Source: PitchBook | *As of June 8, 2021

FAMGA priorities in leading product categories

Large-cap tech companies have been active in each of the highest priority categories, excluding AI automation platforms. These companies include both public cloud hosts and AI R&D leaders, reinforcing their centrality to the future of AI. Their priorities are likely to, in part, shape the course of AI development and the opportunities for startups going forward. While their vertical concentrations have differed, nearly all of them have been active in horizontal platform acquisitions to bolster their R&D efforts. The gaps they determine in their AI architectures will create the next opportunities for startups.

AI & ML acquisitions by FAMGA companies for leading product categories since 2017

Acquirer	AI core	Consumer AI	National language technology
Alphabet	Halli Labs	N/A	Onward (Bot Builder)
amazon	N/A	Body Labs	N/A
	Curious AI, Inductiv	Fashwell, Laserlike, Scout FM, Spectral Edge, Vilynx ($50M)	Init.ai, Voysis, Pullstring ($30M)
facebook	AtlasML ($40M)	N/A	Bloomsbury AI, Ozlo
Microsoft	Bonsai (Software Development Applications)	N/A	Maluuba, Semantic Machines

Source: PitchBook | *As of June 8, 2021

AI core software

FAMGA companies actively pursue leading researchers in deep learning via M&A before they are able to commercialize their startups. Alphabet's (NASDAQ: GOOGL) 2017 acquisition of Halli Labs came months after the startup emerged from stealth to develop deep learning models. Apple (NASDAQ: AAPL) and Microsoft (NASDAQ: MSFT) also focused on deep learning acqui-hires with their acquisitions of Curious AI and AtlasML, respectively, as both of those startups featured premium talent that had only begun to develop practical models. These acquisitions demonstrate that AI leaders place a higher priority on adding outside talent in deep learning rather than improving efficiency for existing machine learning techniques.

Consumer AI

Consumer-focused companies have made consumer AI the leading vertical application for acquisitions by industry leaders. Apple (NASDAQ: AAPL) has been highly acquisitive in the space, seeking to extend AI across its consumer ecosystem including fashion, video, news, and podcasts. The challenge of optimizing each medium with AI clearly required acquisition of external innovations to supplement internal R&D. Amazon (NASDAQ: AMZN) and Facebook (NASDAQ: FB) have not made as many vertical application acquisitions, instead seeking to acquire horizontal platforms and apply them to diverse media. For Apple (NASDAQ: AAPL), we believe each new business line requires at least one startup acquisition, which is not the case for other tech giants.

NLT

Conversational AI has become a leading driver of M&A as tech giants seek to embed intelligent voice recognition in ambient computing across consumer and enterprise environments. Each of the FAMGA companies has made an acquisition in NLT except Amazon (NASDAQ: AMZN)—which is heavily invested in conversational AI via the Alexa fund. Apple (NASDAQ: AAPL), Facebook (NASDAQ: FB), and Microsoft (NASDAQ: MSFT) have made multiple acquisitions since 2017, demonstrating the range of techniques within NLT, including NLP for text, natural language understanding (NLU), and voice recognition. While deal values have remained consistently low, we believe the $16.0 billion acquisition of Nuance could be a catalyst for higher deal-flow levels.

Outlook

Given the centrality of AI to tech companies' outlooks, we expect further large acquisitions to be made in categories that AI leaders have already prioritized. The previous wave of large social media acquisitions including Instagram, YouTube, LinkedIn, and Slack may serve as a baseline from which AI startups can pitch themselves to acquirers for deal values over $1 billion and as high as $30 billion. We do not expect regulators to focus on antitrust issues in AI given the immaturity of the technology and fragmentation of the industry. We believe AI leaders will want to develop verticalized solutions over time and will acquire specialized AI startups in niche fields including consumer and healthcare. Advanced approaches to deep learning will likely be important to align with the strategic priorities of AI leaders.