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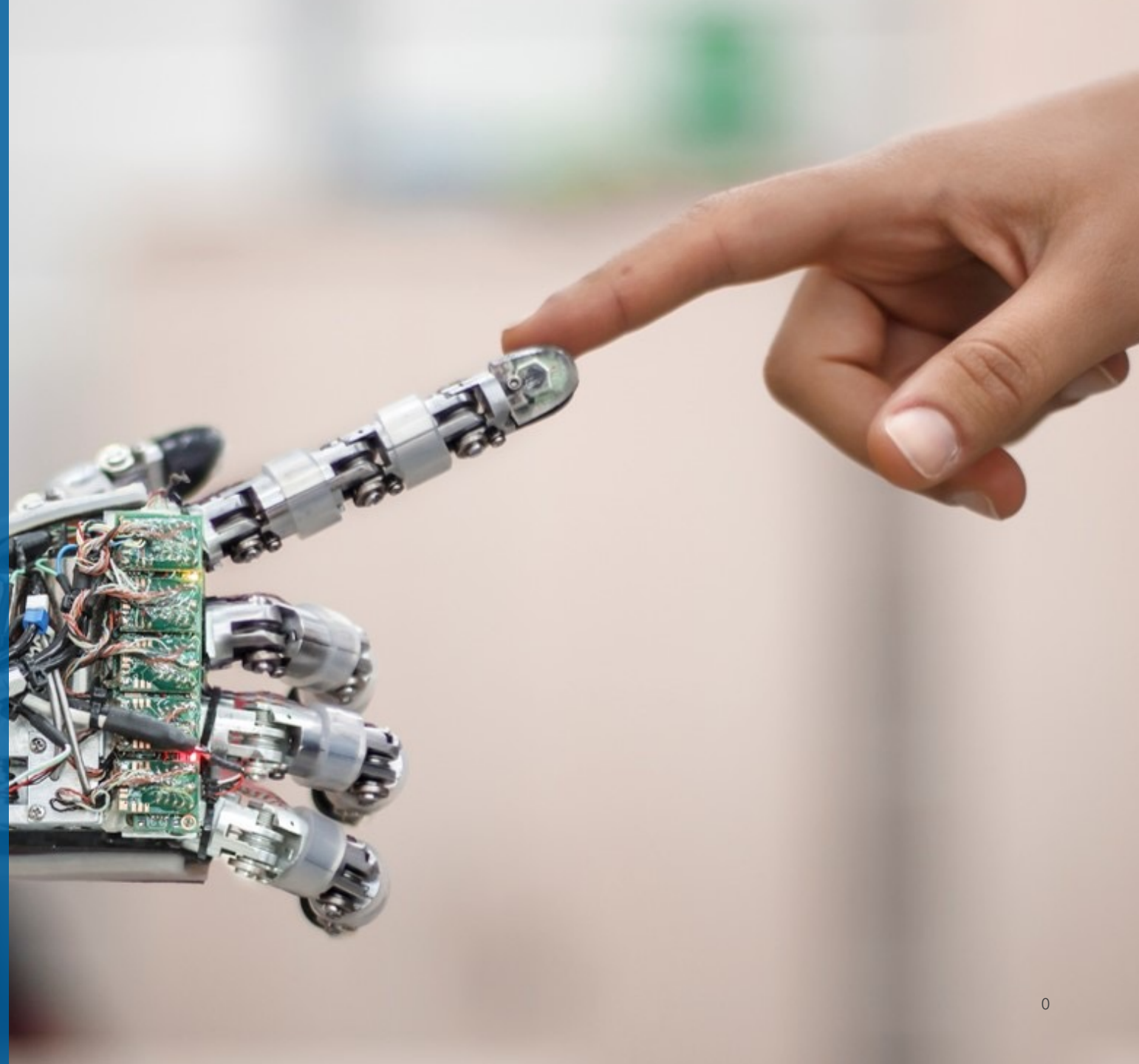
Ramifications of the AI disruption and opportunities for investors

March 2024

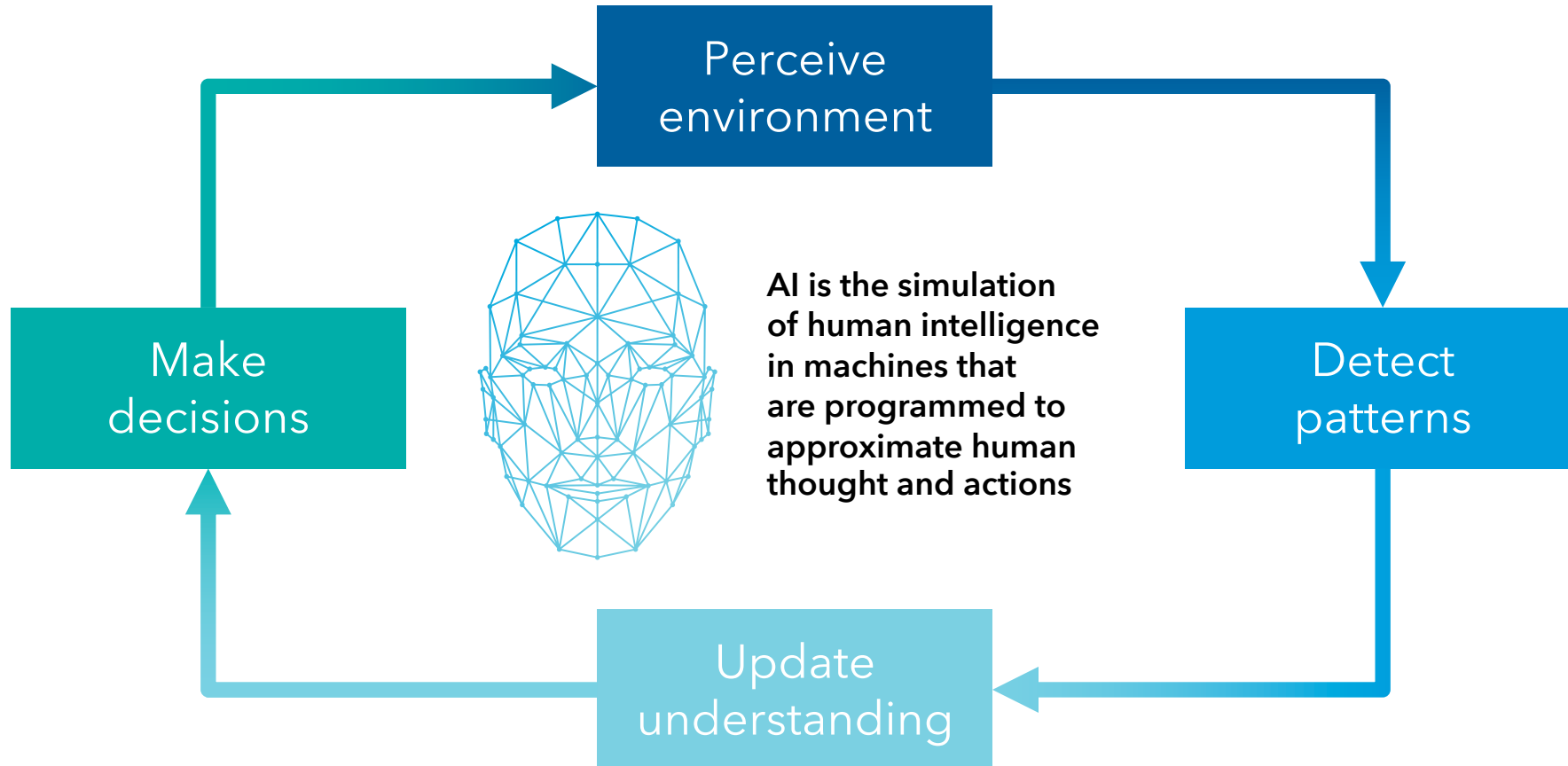
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Refer to page 16 for a list of key terms used in this presentation.

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What is AI?



AI: artificial intelligence.

Source: Capital Group.

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A brief history of AI

Artificial intelligence

Machine learning era

Deep learning era

1956

"Artificial intelligence" coined at the Dartmouth Conference

First computer vision, natural language processing and expert systems

"AI winter" period of decreased funding and limited progress

Advancements in expert systems, machine learning, natural language processing and robotics

Focus of AI research shifts to machine learning and neural networks

Reinforcement learning

Rapid acceleration due to availability of large data sets and powerful computing resources

Proliferation and commercialization across a wide range of domains

1950s

1960s

1970s

1980s

1990s

2000s

2010s

2020s

Generative AI: The next frontier

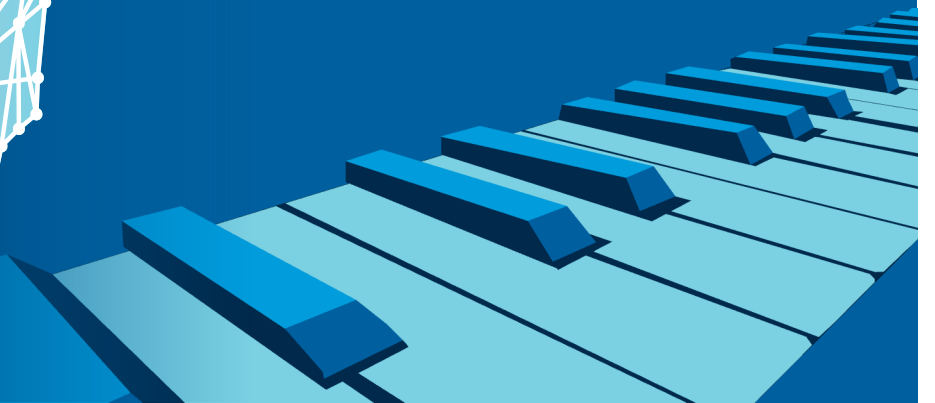
Traditional AI

Based on a set of **predefined rules** and conditions that the AI follows to **produce a specific output**

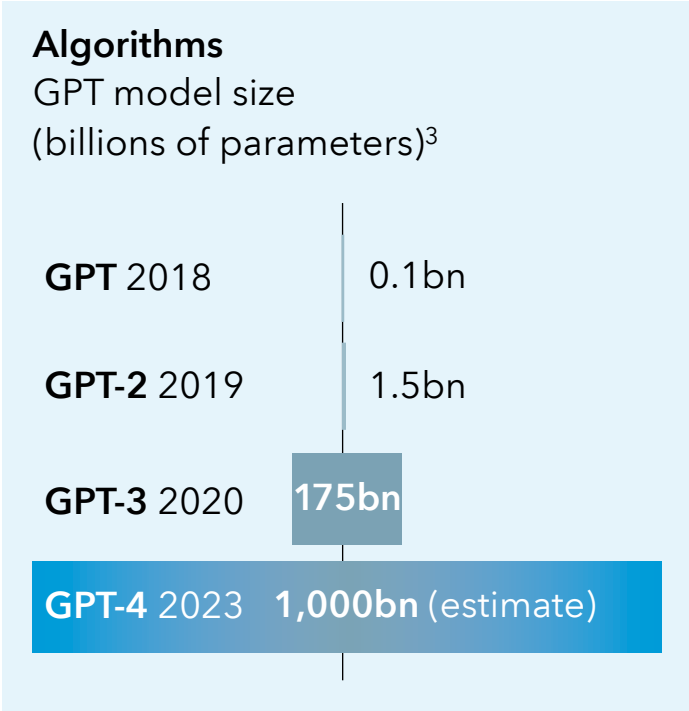
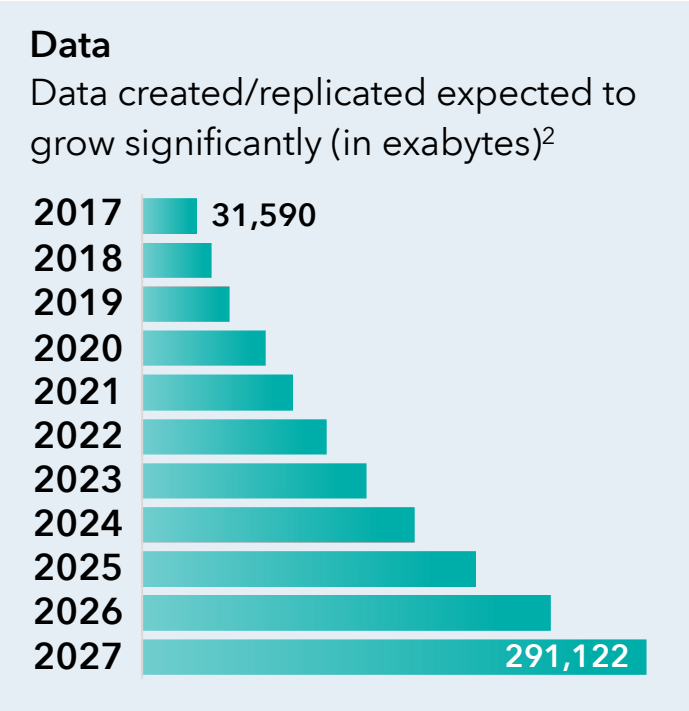
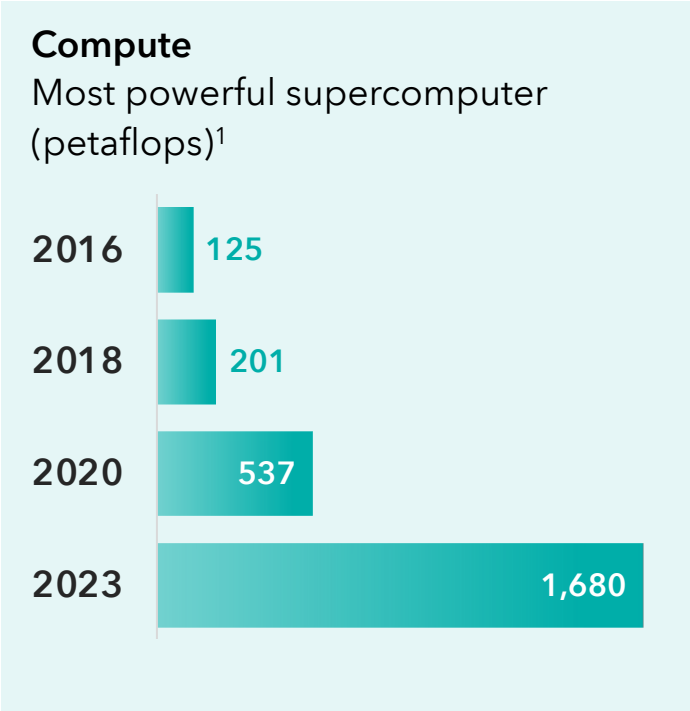


Generative AI

Learns **patterns** from data to generate new data that's similar but **not identical to what it's seen before**



Convergence of powerful trends underpins an inflection point in the capability to deliver advanced and commercially viable AI



Petaflops: a unit of measure for calculating the speed of a computer (1,000,000,000,000,000, or 1 quadrillion, floating-point operations per second). GPT: Generative Pre-trained Transformer.

¹Source: Top500. As of November 2023.

²Source: Pivot Table: IDC Global DataSphere Forecast, 2023-2027 Doc #US50851323. As of 2023. 2024-2027 are estimates; reflects global data. 1 exabyte = 1,000,000,000,000,000 bytes, or one quintillion bytes.

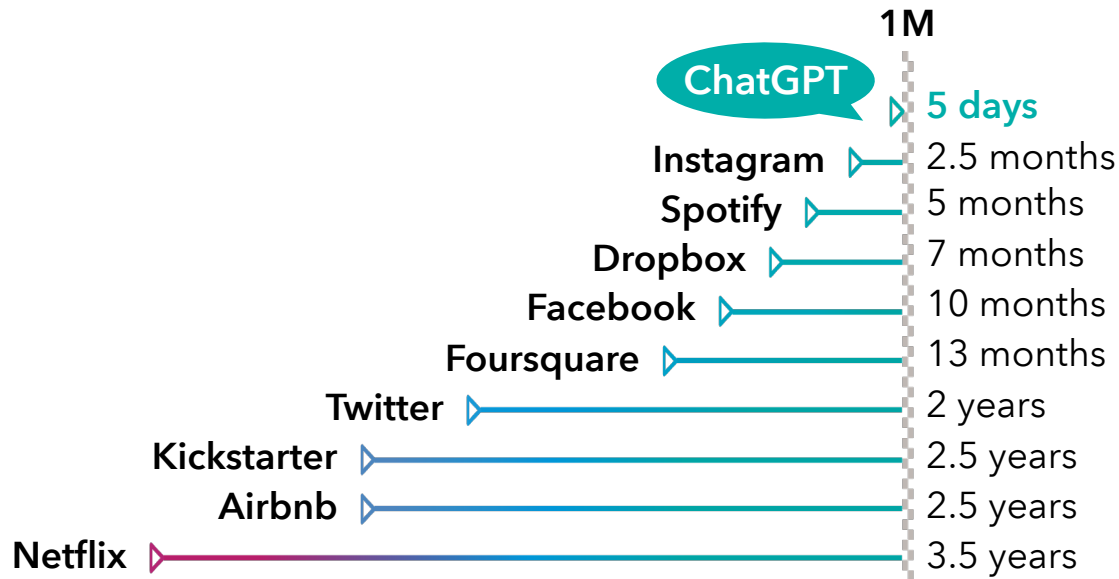
³Source: TechTarget. As of November 2023.

Why this tech megacycle could be different

GenAI's open-ended TAM, rapid adoption curve and significant capital intensity could provide the backdrop for a profoundly different next wave of digital disruption

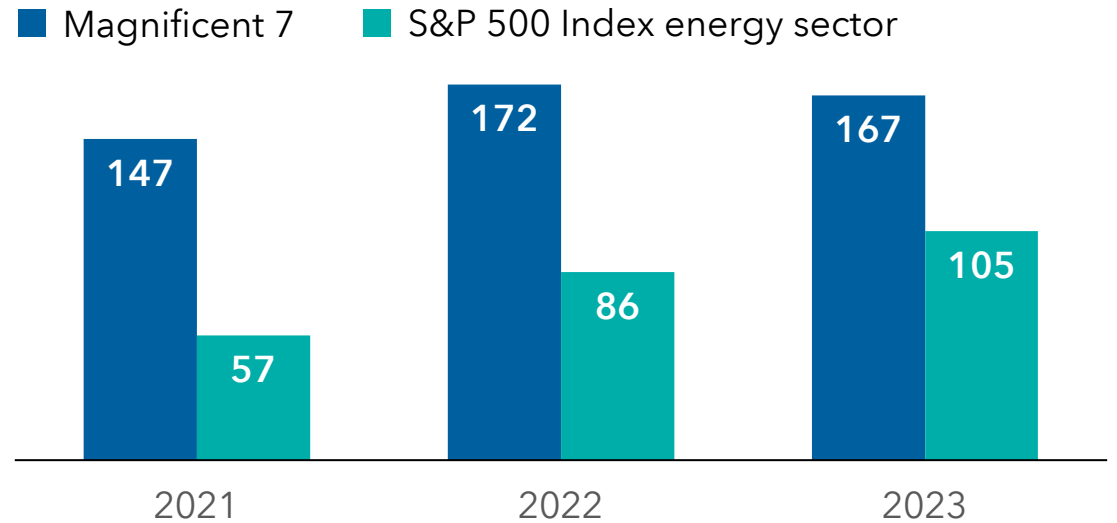
Pace of adoption could be faster than any technology we've seen before

Time taken to reach 1 million users¹



Capital intensity of the Magnificent 7 is greater than the entire U.S. energy sector

Total capital expenditure (USD billions)²







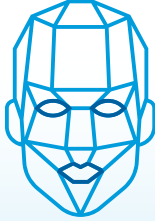
TAM: total addressable market. GenAI: generative artificial intelligence.

¹Source: Statista, Inc. As of 12/31/22. Kickstarter refers to the number of backers. Airbnb refers to the number of nights booked. Foursquare and Instagram refer to the number of downloads.

²As of 12/31/23. Companies in the "Magnificent 7" reflect the top contributors in the S&P 500 Index year to date as of 12/27/23, and include Apple, Microsoft, Alphabet, Amazon, NVIDIA, Tesla and Meta Platforms. Contribution to the S&P 500 Index's total return is based on individual stock return performance multiplied by each constituent's weight in the index at the beginning of the period. Periods reflect calendar years. Sources: Capital Group, FactSet, S&P Dow Jones Indices LLC.

How big is AI's total addressable market?

AI is an open-ended opportunity that has the potential to be many multiples bigger than previous technological paradigms

Technology	 Smartphones	 Digital payments	 Electric vehicles	 Overall IT	 Artificial intelligence
How to size the TAM?	Total adult population	Total amount of spending	Total vehicle revenue	Worldwide IT spending forecast	?
Simple estimate	\$1.6tn¹	\$2.0tn²	\$2.6tn³	\$4.5tn⁴	?

“The ultimate addressable market for AI is the hardest of any I’ve ever tried to size. What is the ‘value’ of extra intelligence? It’s unknowably large...”



Mark Casey
Portfolio Manager

As of 12/31/22, unless otherwise noted. Values in USD terms. TAM: total addressable market. SaaS: software as a service. Tn: trillion.

¹Total global population aged 15-64 (source: United Nations) multiplied by estimated average smartphone selling price of \$300 (source: Capital Group).

²Total global GDP (source: World Bank) multiplied by estimated average take rate of 2% (source: Capital Group).

³Global automotive industry revenue. Source: Statista, Inc. As of July 2023.

⁴Gartner Press Release, Gartner Forecasts Worldwide IT Spending to Grow 4.3% in 2023, July 19, 2023, <https://www.gartner.com/en/newsroom/press-releases/2023-07-19-gartner-forecasts-worldwide-it-spending-to-grow-4-percent-in-2023>. GARTNER is a registered trademark and service mark of Gartner, Inc. and/or its affiliates in the U.S. and internationally and is used herein with permission. All rights reserved.

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Staying focused on real investment opportunities

As AI permeates every facet of our lives, global research depth will become even more critical

	Opportunities	Potential investment perspectives ¹	Investment timeframe
Semiconductors	<ul style="list-style-type: none"> • Chip designers & providers • Foundries • Manufacturing equipment 	<ul style="list-style-type: none"> • Currently the most immediate investable opportunity • “Picks and shovels” providers are often attractive investments • Highly consolidated industry with significant barriers to entry 	
Infrastructure	<ul style="list-style-type: none"> • Cloud hyperscalers • Data centers • Networking 	<ul style="list-style-type: none"> • Computation intensity of AI requires rapidly expanding infrastructure • Cloud growth had been slowing, but may see a renewed uplift from AI • Enablers of data ecosystems can become very entrenched 	
Models	<ul style="list-style-type: none"> • Foundational models • Platforms • “Big Data” owners 	<ul style="list-style-type: none"> • Oligopolistic structure; the best models are “owned” by a handful of firms • High barriers to entry; cost to develop state-of-the-art models is increasing rapidly • Be wary of difficulties in commercialization and potential commoditization 	
Applications	<ul style="list-style-type: none"> • Software • IT services • Physical applications 	<ul style="list-style-type: none"> • Difficult to predict what new companies could emerge over the next decade • Current focus on existing companies productizing AI successfully • Look for sustainable competitive advantages (e.g., access to captive data) 	
Beneficiaries	<ul style="list-style-type: none"> • Health care • Financial services • Many others 	<ul style="list-style-type: none"> • AI poised to be transformational for the global economy and will likely impact all industries • But we are still very early in the adoption cycle; most companies still in “exploration” mode • Global research depth and an active investment approach will help identify potential beneficiaries 	

Near-term Long-term

Source: Capital Group.

As of 12/31/23.

¹Please note that the views of individual investment professionals may vary.

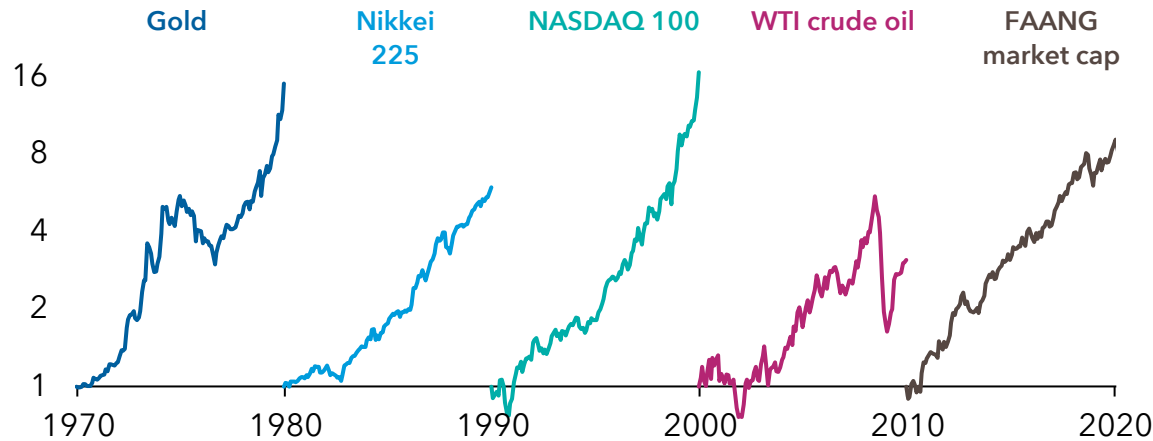
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Megacycles can be important concepts for investing

They apply to the market as a whole, as well as to the tech sector specifically

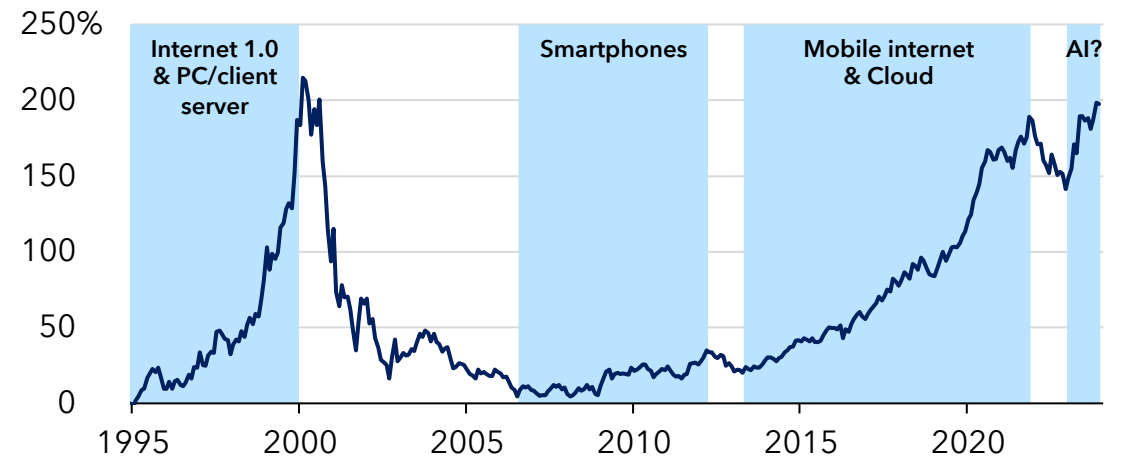
Markets tend to move in megacycles in which one or a handful of themes can dominate

Examples of previous thematic cycles (log scale)¹



Major technology changes can power megacycles

Relative return of MSCI ACWI IT sector versus MSCI ACWI Index²



“I believe that AI hit an inflection point in 2022 and is likely to be one of the most important themes that investors have to get right this decade.”

Julien Gaertner
Equity Investment Analyst

¹Price return for the decades shown. Gold (USD/Troy ounce); Nikkei 225 Index; NASDAQ 100 Index; USD WTI/barrel – Cushing, Oklahoma; FAANG: Facebook (Meta Platforms), Apple, Amazon, Netflix and Google (Alphabet). Source: BCC Research, London Stock Exchange Group. WTI: West Texas Intermediate, a measure and pricing model for oil. Troy ounce is the standard weight used for pricing gold. This chart is based on a logarithmic (log) scale, so it uses smaller and smaller increments for larger numbers. The indexes are unmanaged and, therefore, have no expenses. Investors cannot invest directly in an index.

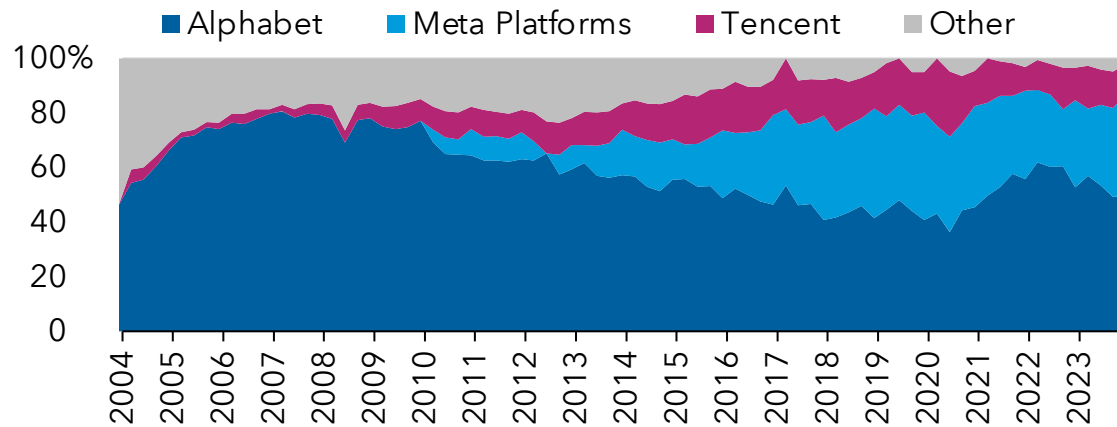
²Data from 12/31/94 to 12/31/23. Chart shows the relative total return of MSCI All Country World Index (ACWI) information technology (IT) sector versus the return of MSCI ACWI with all sectors included. Source: London Stock Exchange Group. Past results are not predictive of results in future periods.

Investing in technology platform shifts

Lessons from history that could guide investment principles for the age of AI

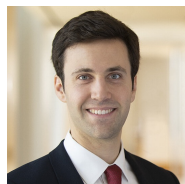
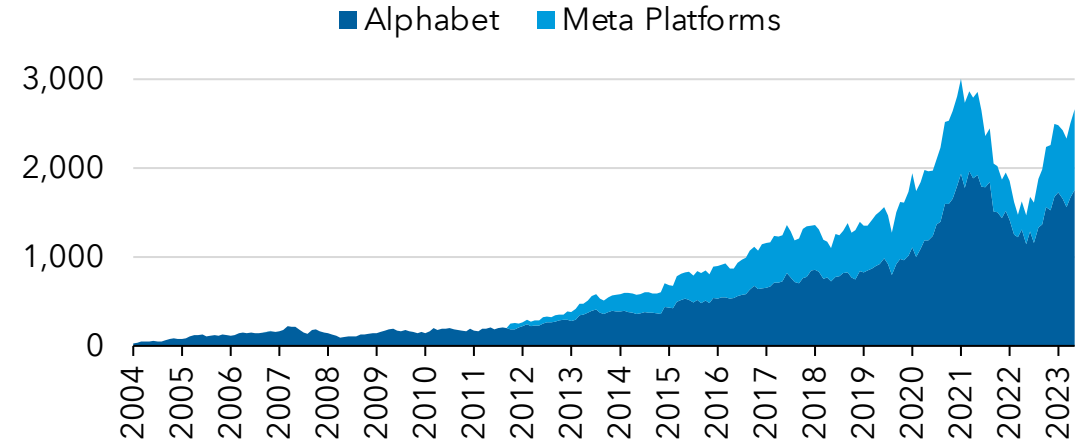
Profit pools have tended to be power law distributed; with 1-2 companies taking 70-80% of profits for many years¹

Interactive media & services industry share of total profits



The largest returns have accrued to investors who have held these investments over long periods of time²

Alphabet and Meta Platforms combined market capitalization (USD billions)



“Power laws have tended to govern the profit pools of many prior technology cycles due to network effects, developer ecosystem buildouts and extremely low marginal distribution costs. Having a sharp research view on which companies are on the right side of these forces can be profoundly impactful for our clients.”

Drew Macklis

Equity Investment Analyst

As returns increase, their share of the market cap also increases.

¹Total earnings before interest and taxes (EBIT) for companies within the Global Industry Classification Standard (GICS) interactive media & services industry, MSCI ACWI. Data from 12/31/03 to 12/31/23.

²Combined market capitalization for Alphabet and Meta Platforms through 12/31/23. Data from 8/31/04 for Alphabet, and from 5/31/12 for Meta Platforms.

Opportunities and risks

Artificial intelligence

OPPORTUNITIES



Increased productivity



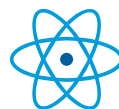
Access to information and essential services



Health and well-being



Efficient and autonomous transport



Scientific advancement



RISKS

Accuracy / misinformation



Safety and privacy



Copyright / IP infringement



Job security



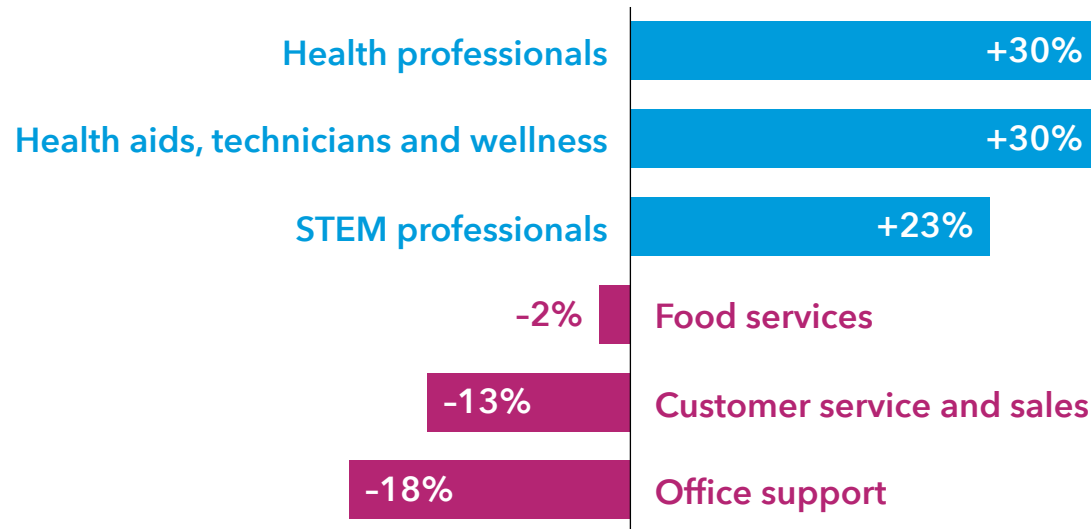
Resource consumption



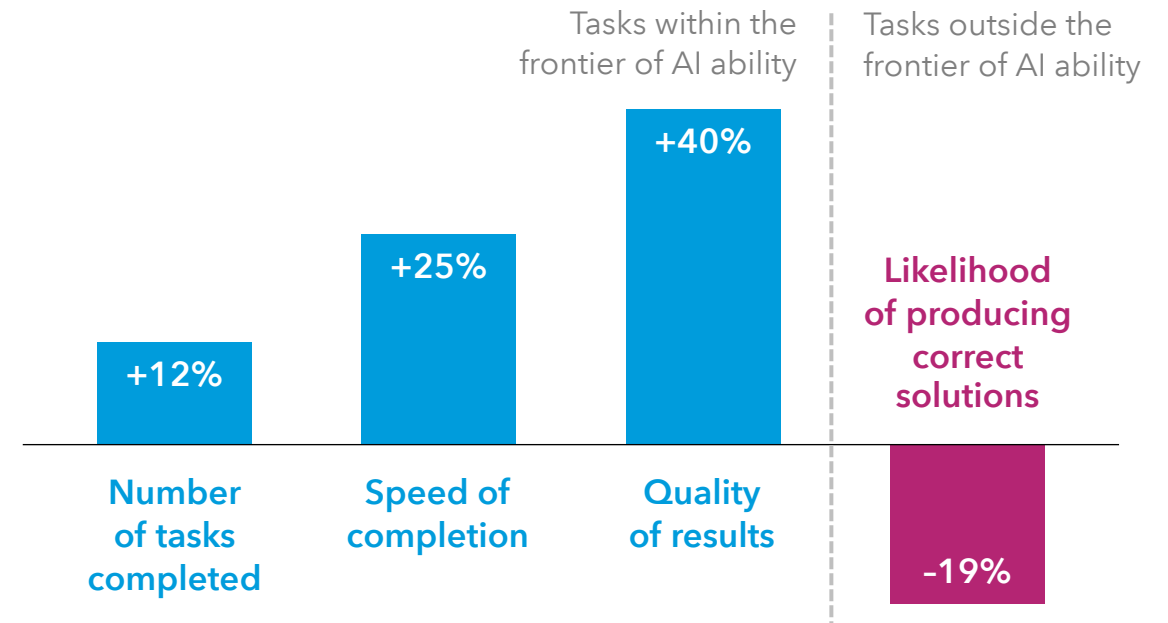
Impact of AI on industry

Like all major technological advancements, AI will likely bring structural shifts within the labor market

Estimated net change in labor demand across certain industries, 2022-2030¹



Impact of AI on knowledge worker productivity and quality²



¹As of 2022. STEM: science, technology, engineering and mathematics. Source: McKinsey & Company, 2023.

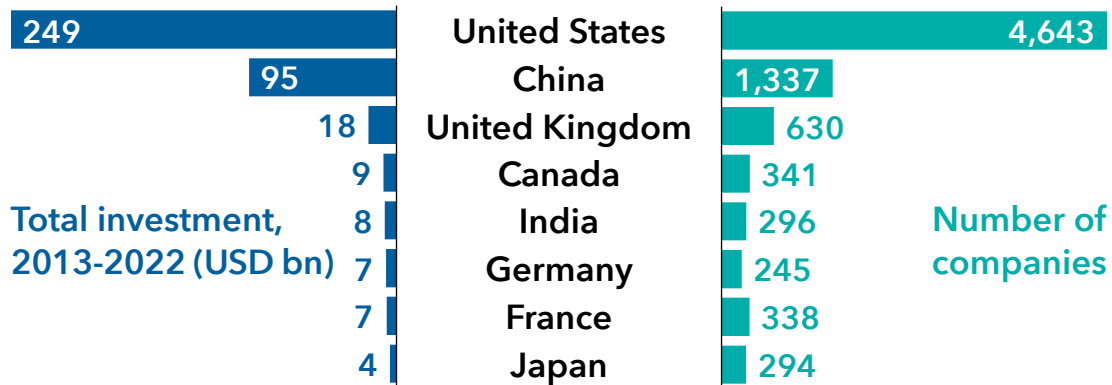
²Source: Dell'Acqua, Fabrizio, Edward McFowland III, Ethan Mollick, Hila Lifshitz-Assaf, Katherine C. Kellogg, Saran Rajendran, Lisa Kraye, François Cadelon, and Karim R. Lakhani. "Navigating the Jagged Technological Frontier: Field Experimental Evidence of the Effects of AI on Knowledge Worker Productivity and Quality." Harvard Business School Working Paper, No. 24-013, September 2023. 758 consultants given consulting tasks across a "jagged technological frontier" with some tasks that are easily done by GenAI (within the frontier) and some that are outside the current capability of AI (outside the frontier).

AI around the world

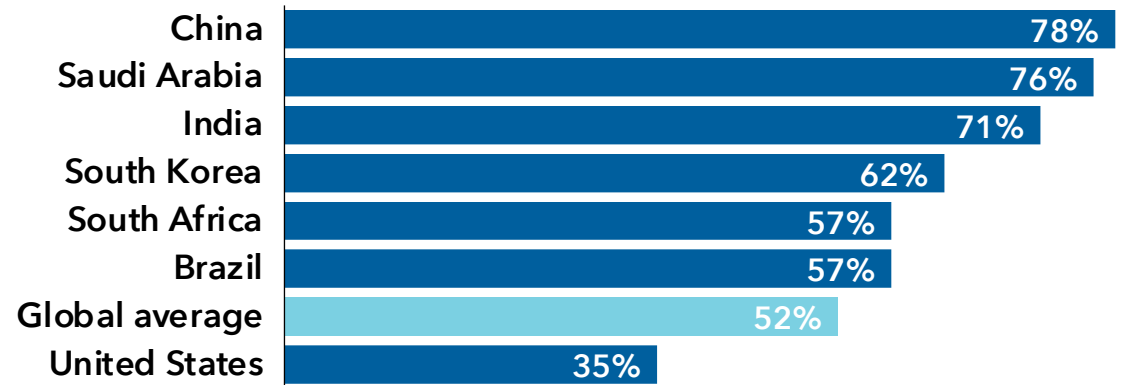
Investment, adoption rates and sentiment could vary significantly by region

Current AI investments are concentrated in developed markets and China...

Private AI investments in selected countries¹



...but emerging markets appear to be the most optimistic
% of survey respondents answering that products/services using AI have more benefits than drawbacks²



¹As of 2022. Source: NetBase Quid.

²As of 2022. Source: Ipsos.

How is Capital Group exploring using GenAI?

As a firm, we are dedicating significant resources into GenAI capabilities to amplify our individual and collective strengths and create more capacity for complex and creative work

GenAI Enterprise Steering Committee

Provides strategic direction, oversight and decision-making to allow for the responsible, secure and rapid enablement of GenAI at Capital Group

Client Group	Operating Group	Investment Group
Objective Enhance our client interactions and accelerate content creation	Objective Allow our associates to benefit from improved productivity	Objective Improve investor productivity and help our investment professionals develop differentiated investment insights
Not replacing our deep, face-to-face relationships with our clients and prospects	Not as a tool to replace our associates with computers	Not replacing the decision-making of our investment professionals with quantitative methods

We are also **mindful of GenAI's limitations** and **actively managing risks** related to quality control, information security and regulatory compliance

Important information

Investing outside the United States involves risks, such as currency fluctuations, periods of illiquidity and price volatility. These risks may be heightened in connection with investments in developing countries.

The indexes are unmanaged and, therefore, have no expenses. Investors cannot invest directly in an index.

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MSCI All Country World Index (ACWI) is a free float-adjusted market capitalization weighted index that is designed to measure equity market results in the global developed and emerging markets, consisting of more than 40 developed and emerging market country indexes. Results reflect dividends gross of withholding taxes through December 31, 2000, and dividends net of withholding taxes thereafter. This index is unmanaged, and its results include reinvested dividends and/or distributions but do not reflect the effect of sales charges, commissions, account fees, expenses or U.S. federal income taxes.

The NASDAQ 100 Index is a basket of 100 largest and actively traded companies on the NASDAQ stock exchange. The index excludes financial industries, such as commercial and investment banks.

The Nikkei Stock Average, the Nikkei 225 is used around the globe as the premier index of Japanese stocks. The Nikkei 225 is a price-weighted equity index, which consists of 225 stocks in the Prime Market of the Tokyo Stock Exchange.

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Key terms

Computer vision – a capability of AI that allows computers to “see” and understand visual data.

Deep Learning (DL) – a type of machine learning that uses neural networks, which has been highly accurate and productive technique in AI.

Expert system – an AI that mimics the ability of a human expert to make a decision on a topic of expertise.

Hyperscalers – large-scale data center that can provide for vast computing needs.

Interactive media & services – sector containing companies engaging in content and information creation or distribution through proprietary platforms, where revenues are derived primarily through pay-per-click advertisements. Includes search engines, social media and networking platforms; online classifieds; and online review companies. Excludes companies operating online marketplaces classified in internet & direct marketing retail.

Machine learning – development of statistical algorithms that apply knowledge from one set of data to new data it has not encountered before.

Magnificent 7 – the 7 companies (Microsoft, Apple, Alphabet, Amazon, NVIDIA, Meta Platforms and Tesla) whose stocks came to dominate the U.S. stock market indexes in 2023. The phenomenon is reminiscent of previous periods of market concentration, including “FAANG” stocks in the mid-2010s and “Nifty 50” stocks in the 1960s and '70s.

Market capitalization – total market value of a publicly traded company's outstanding shares of stock, typically expressed as a dollar figure.

Natural language processing – a capability of AI that allows computers to “hear” and understand human speech and text.

Neural network – concept in which computers send and receive signals between various topics. The more connected ideas and topics are, the more powerful the signals to each other when activated. This concept mimics the way that scientists understand brain neurons to work.

Oligopolistic – as opposed to a monopoly, in which one company dominates an industry, an oligopoly describes a scenario in which a small handful of companies hold almost all the market share in the industry. In this scenario it's difficult for one company to gain a monopoly, and it's also difficult for a smaller company to break into the industry.

Parameters – in AI, these are the weights that a system uses to make decisions on a topic. A higher number of parameters is correlated with a more sophisticated system.

Power law – a power law distribution has the property that large numbers are rare, but smaller numbers are more common. So it is more common for a person to make a small amount of money versus a large amount of money.

Key terms (cont)

Price return – rate of return in which only capital appreciation of a portfolio is taken into account, without earned dividends or interest.

Reinforcement learning – in AI, a learning style in which the computer learns via “rewards” or “punishments” based on its actions and desired results.

Software as a service (SaaS) – software licensing in a subscription model and which is centrally hosted.

Take rate – the percentage of sales that a third party charges a seller on goods sold through the third party's platform or software.

Total addressable market (TAM) – the calculation to determine the market revenue opportunity for a new product or service.