

GLOBAL X

by Mirae Asset



# Generative AI: The Next Computing Platform



Q3 2023

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For more than a decade, our mission has been empowering investors with unexplored and intelligent solutions.



Headquartered in New York, with Global X ETFs listed throughout Europe, Asia, Latin America, and Australia.



Global X ETFs is a fully-owned subsidiary of Mirae Asset Financial Group, a global industry leader with 51 offices and over 12,000 employees worldwide. Founded in 1997 as one of Asia's pioneering fund management companies, the Group now oversees **\$528bn in client assets** across a portfolio that includes real estate, insurance, private equity, and venture capital.<sup>2</sup>

**\$51bn**

in AUM across more than 200 ETF strategies<sup>1</sup>

**Primary Listings by Office**



**United States**  
109 ETF Listings



**Europe**  
34 UCITS ETF & Crypto ETP Listings



**Australia**  
33 ETF Listings



**Latin America**  
31 ETF Listings in Brazil & Colombia



**Hong Kong**  
26 ETF Listings



**Japan**  
32 ETF Listings

<sup>1</sup>As of June 30, 2023 <sup>2</sup>As of December 30, 2022  
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## Global AUM by Product Category<sup>1</sup>



### Income

61 ETFs

Solutions for investors seeking to increase or diversify the yield potential of their portfolio



United States  
28 ETFs



Europe  
3 ETFs



Australia  
9 ETFs



Latin America  
9 ETFs



Hong Kong  
4 ETFs



Japan  
10 ETFs

\$22bn



### Thematic Growth

119 ETFs

Targeting companies that may be poised to benefit from structural shifts in technology, demographics, and adaptations to the physical environment



United States  
38 ETFs



Europe  
22 ETFs



Australia  
8 ETFs



Latin America  
16 ETFs



Hong Kong  
18 ETFs



Japan  
13 ETFs

\$18bn



### Commodities

20 ETFs

Exposure to natural resources, primarily in metals, mining and agriculture

\$7bn

International Access  
30 ETFs

\$2bn

Other Strategies  
28 ETFs

\$2bn

Differentiated Exposures by Region



Sustainable Investing



Digital Assets



Risk Management



Defined Outcome

<sup>1</sup>As of July 31, 2023

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## Growth, Income & Access Solutions That Look Beyond Ordinary

### Harness Disruption

Changes in technology, demographics, and the physical environment are accelerating. Our family of Thematic Growth ETFs targets these and other disruptions reshaping the future.

### Alternative Income Strategies

With savings and bond yields still lagging despite an inflationary environment, traditional fixed income may no longer cut it. Our Income ETFs seek to meet this challenge by tilting toward alternative, potentially higher-yielding strategies.

### Tap Into Commodities

Precious metals and rare earth minerals are vital to supporting next-gen technologies, infrastructure and energy alternatives. We offer a wide range of Commodity focused ETFs to meet this growing opportunity.

### Expanding the Map

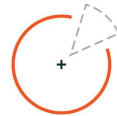
Innovation and opportunity aren't confined by geography. For investors seeking to chart a different course, our International Access ETFs include varied exposure to China and solutions targeting other parts of Asia, Europe, Latam and beyond.

### Client-Centric Solutions



#### Exchange-Traded Funds (ETFs)

A lineup that spans disruptive tech, equity income, commodities, and more



#### ETF Model Portfolios

Differentiated, primarily open architecture solutions for the financial advisor needs of tomorrow



#### Institutional Solutions

Whether via separately managed accounts (SMAs), private funds, or other custom services, we have an experienced team ready to offer support

### Highlighted Strategies



Autonomous & Electric Vehicles



Robotics & Artificial Intelligence



Cloud Computing



Covered Call Options



Renewable Energy

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## Global X's Thematic Growth ETF Suite

Global X has 36 ETFs designed to target companies that may benefit from disruptive structural changes in technology and innovation, people and demographics, and the availability of resources, as well as 2 multi-theme, single-ticker ETF.<sup>1</sup>

### Disruptive Technology

Social Media ETF (SOCL)  
 Lithium & Battery Tech ETF (LIT)  
 FinTech ETF (FINX)  
 Internet of Things ETF (SNSR)  
 Robotics & Artificial Intelligence ETF (BOTZ)  
 Autonomous & Electric Vehicles ETF (DRIV)  
 Artificial Intelligence & Technology ETF (AIQ)  
 Cloud Computing ETF (CLOU)  
 Video Games & Esports ETF (HERO)  
 Cybersecurity ETF (BUG)  
 Data Center REITs & Digital Infrastructure ETF (VPN)  
 Blockchain & Bitcoin Strategy ETF (BITS)  
 Blockchain ETF (BKCH)  
 Metaverse ETF (VR)  
 PropTech ETF (PTEC)

### People & Demographics

Millennial Consumer ETF (MILN)  
 Aging Population ETF (AGNG)  
 Health & Wellness ETF (BFIT)  
 E-commerce ETF (EBIZ)  
 Cannabis ETF (POTX)  
 Education ETF (EDUT)  
 Telemedicine & Digital Health ETF (EDOC)  
 Genomics & Biotechnology ETF (GNOM)  
 China Biotech Innovation ETF (CHB)  
 Emerging Markets Internet & E-commerce ETF (EWEB)

### Multi-Theme

Thematic Growth ETF (GXTG)  
 China Innovation ETF (KEJI)

### Physical Environment

U.S. Infrastructure Development ETF (PAVE)  
 Renewable Energy Producers ETF (RNRG)  
 CleanTech ETF (CTEC)  
 Clean Water ETF (AQWA)  
 Wind Energy ETF (WNDY)  
 Solar ETF (RAYS)  
 Hydrogen ETF (HYDR)  
 AgTech & Food Innovation ETF (KROP)  
 Disruptive Materials ETF (DMAT)  
 Green Building ETF (GRNR)  
 Carbon Credits Strategy ETF (NTRL)

<sup>1</sup>. As of 06/30/2023. US-registered funds.



Our senior investment team brings decades of pioneering experience developing client solutions.

**Product Development**



**Alex Ashby**  
Head of Product Development  

  
 Joined 2010  
 10+ years exp.



**Adam Sze, CFA**  
Head of Digital Asset Product  

  
 Joined 2022  
 15+ years exp.

**Investment Strategy**



**Morgane DelleDonne**  
Head of Investment Strategy, Europe  

  
 Joined 2020  
 10+ years exp.



**Rodrigo Araujo**  
Head of Investment Strategy, Latam  

  
 Joined 2022  
 20+ years exp.



**Malcolm Dorson**  
Head of EM Strategy  

  
 Joined 2015  
 15+ years exp.

**Institutional Solutions**



**Scott Helfstein, PhD**  
Head of Thematic Solutions  

  
 Joined 2022  
 20+ years exp.



**James Glownia, CFA**  
Director of Institutional Solutions  

  
 Joined 2013  
 12+ years exp.



**Christine Jurinich, CFA**  
Director of Institutional Solutions  

  
 Joined 2022  
 20+ years exp.



**Tom Damato**  
Director of Institutional Solutions  

  
 Joined 2023  
 20+ years exp.

**ETF Model Portfolios**



**Jon Maier**  
Chief Investment Officer  

  
 Joined 2017  
 25+ years exp.



**Michelle Cluver, CFA**  
Portfolio Strategist  

  
 Joined 2018  
 10+ years exp.



**Tom Driscoll**  
Director of Model Portfolio Sales  

  
 Joined 2021  
 20+ years exp.

**Research**



**Rohan Reddy, CFA**  
Director of Research  

  
 Joined 2015  
 7+ years exp.



**Pedro Palandrani**  
Director of Research  

  
 Joined 2019  
 7+ years exp.

Complete ETF Model Portfolio & Research Team Organizational Overview on the Following Page





Our Model Portfolio & Research functions are staffed with more than two dozen subject matter experts.



**Jon Maier**  
Chief Investment Officer  
*Manages ETF Model Portfolios & shapes our Investment Outlook*



**Rohan Reddy, CFA**  
Director of Research  
*Areas of focus Include: Equity Income, Commodities & Digital Assets*



**Pedro Palandrani**  
Director of Research  
*Areas of focus Include: Thematic Investing and Sustainability*



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All Portfolios  
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Core Series Portfolios  
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**Francisco Lomba Galluzzo**  
Product Specialist  
*Prev: AFI*

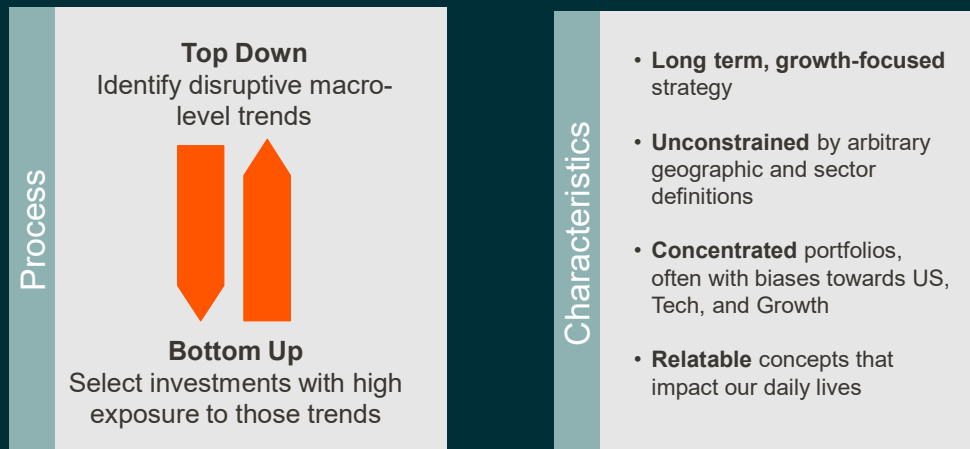


**Jack Goldman**  
Healthcare Innovation  
*Prev: University of Southern California*

## Introduction to Thematic Investing

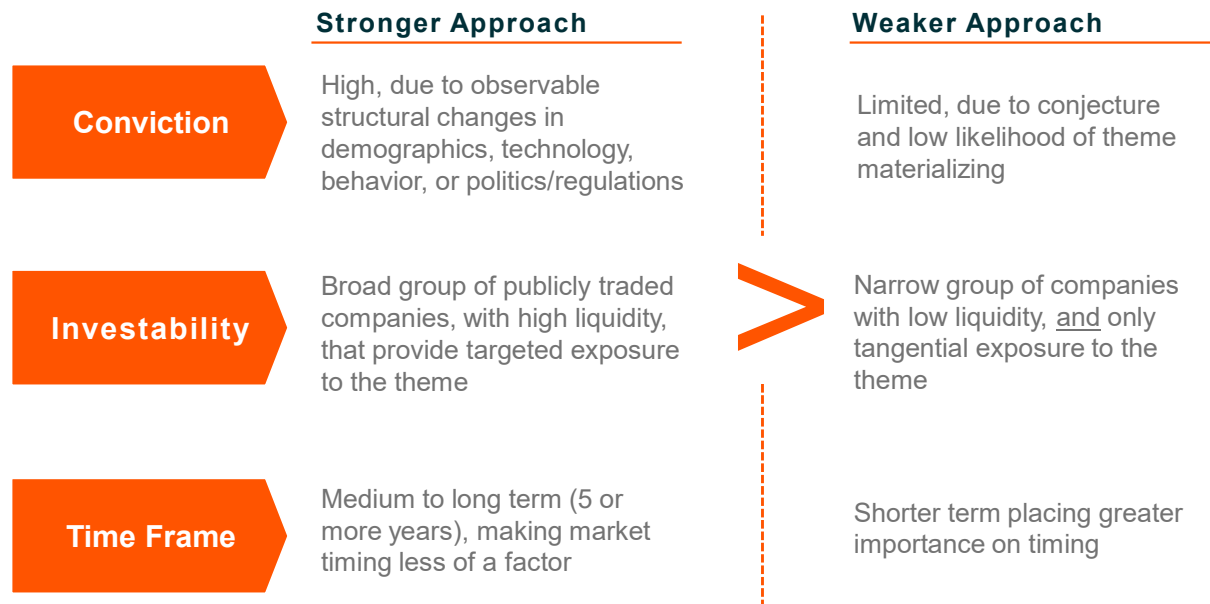
### Thematic Investing

Thematic investing brings a rigorous and research-driven approach to harnessing structural changes around the world. It **seeks to identify powerful macro-level trends and the companies that stand to benefit from the materialization of those trends.**



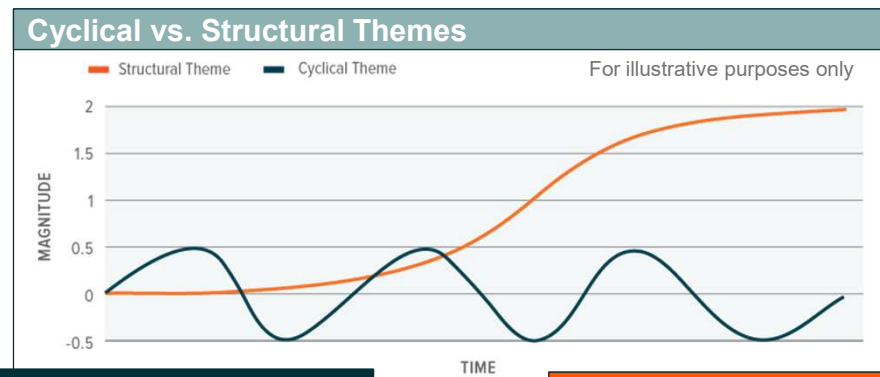
### 3 Steps in Choosing a Theme

**Keys to approaching thematic investing: Look for high conviction themes, investments with high exposure to those themes, and a multi-year time frame.**



## Cyclical vs. Structural Themes

Thematic investing is often used to broadly describe a forward-looking investment approach, but we believe it's important to distinguish between two distinct types of themes: cyclical and structural.



### Cyclical Themes (Blue Waves)

- Occur at somewhat regular short - or medium-term intervals, typically based on changes in the business cycle
- Can be mean-reverting, so that over a long period of time they tend to converge with some average level
- Examples include asset valuations, volatility, interest rates, and currency values

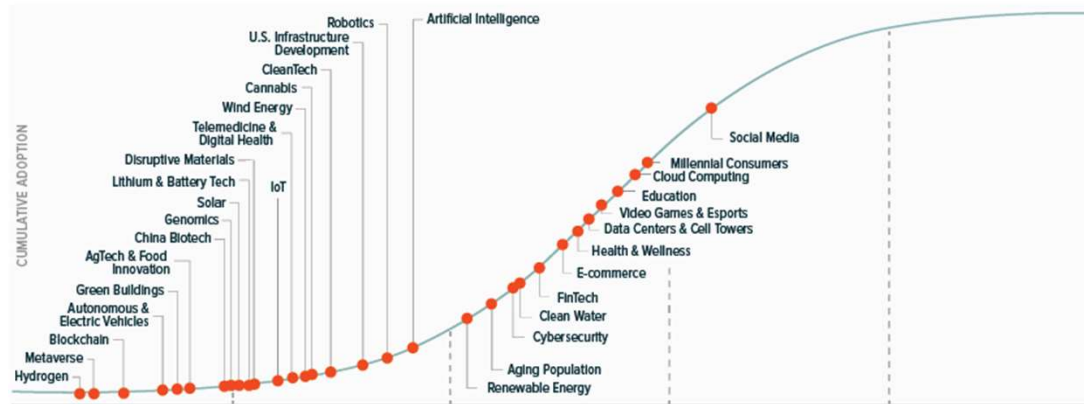
### Structural Themes (Orange S-Shape)

- Occur as one-off shifts that change an existing paradigm
- Tend to be longer-term in nature
- Typically driven by powerful forces such as disruptive technologies, changing demographics and consumer behavior, or evolving physical environments

## Where Do Disruptive Themes Stand?

While each theme follows a unique adoption curve, the chart below estimates the phase of adoption for several themes we cover. Less developed themes plot further to the left on the adoption curve and have both higher risk and higher reward potential. More established themes plot further to the right on the curve.

THEMATIC ADOPTION BY PHASE



Displayed for illustrative purposes. Curve shape not indicative of mathematical transformation.

PHASES OF ADOPTION

INNOVATORS	EARLY ADOPTERS	EARLY MAJORITY	LATE MAJORITY	LAGGARDS
Adoption starts slowly, as only a small group of Innovators take a chance on a new technology before it is proven or widely accepted.	Early Adopters accelerate and evangelize via word-of-mouth. This is often the tipping point, as Early Adopters convince others that a particular technology is worthwhile.	Early Majority, we reach the part of the Adoption S-curve where the slope is the steepest, and hence the rate of adoption is at its fastest. In this phase, sales tends to explode.	Adoption continues growing at a solid pace as the Late Majority are convinced to participate, and the technology appears seemingly everywhere.	Finally, holdouts, begrudgingly acquiesce and accept/adapt a technology.

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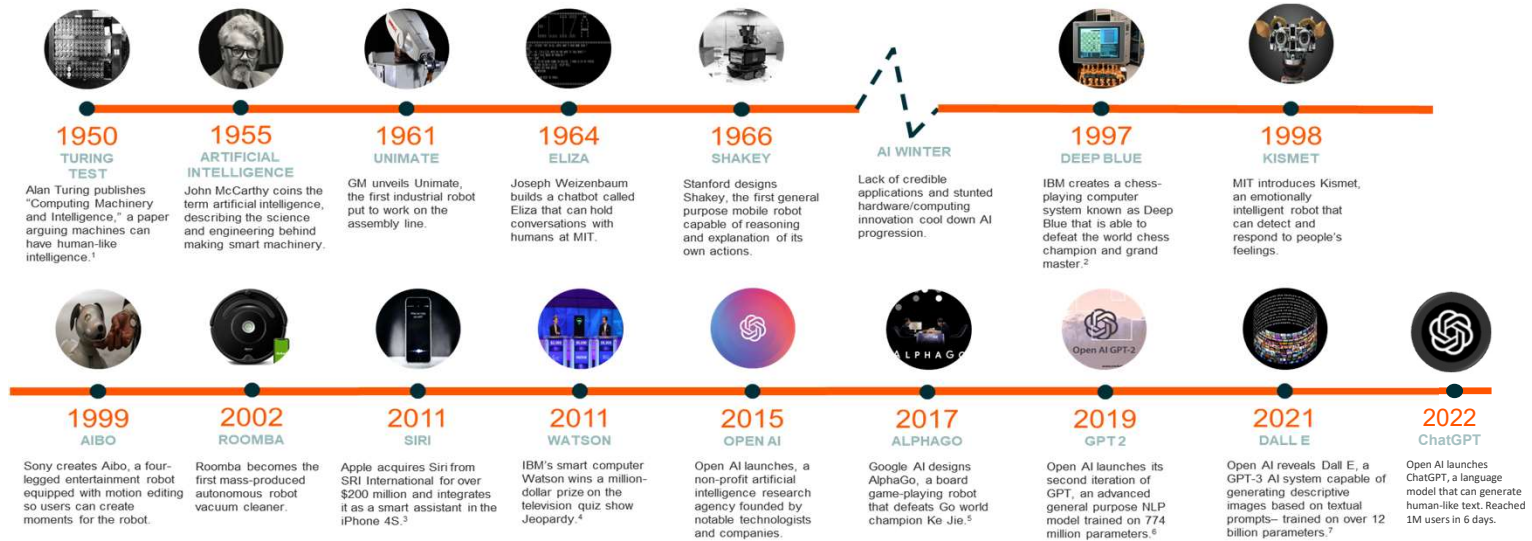
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## Unlocking New Frontier of Growth With Generative AI

## Innovation In AI Has Been More Than A Century In The Making

Between the lines: Researchers have been working on generative AI for a long time. In fact, Open AI itself is already 7+ years old



The first generative models were created in the early 2000s, however the generative adversarial network (GAN) was first designed in 2014, leading to the birth of the term "Generative AI".

Sources: 1. Turing, 1950; 2. IBM, n.d.-b; 3. Perfroth, 2011; 4. IBM, n.d.-a; 5. Byford, 2017; 6. Roadford, Wu, Amodei, Amodei, Clark, Brundage, Sutskever, Askell, Lansky, Hernandez, & Luan, 2019; 7. Ramesh, Pavlov, Goh, & Gray, 2021

## What is Generative AI?

**Generative AI** is an emerging technology that uses AI and ML algorithms that enable machines to create original work. Necessitating only a limited number of parameters, generative AI platforms, such as ChatGPT and DALL-E 2, have the potential to identify the various underlying patterns of input and generate similar higher quality outputs by taking input instructions.

### Generative AI Systems Are the Vanguard of Next Computing Revolution

	PRE-2020	2020	2022	2023*	2025*	2030*
<b>TEXT</b>	Spam detection Translation Basic Q&A	Basic copywriting First drafts	Longer form Second drafts	Vertical fine-tuning gets good (scientific papers, etc.)	Final drafts better than the human average	Final drafts better than professional writers
<b>CODE</b>	1-line auto-complete	Multi-line generation	Longer form Better accuracy	More languages More verticals	Text to product (draft)	Text to product (final) better than full-time developers
<b>IMAGES</b>			Art Logos Photography	Mock-ups (product design, architecture, etc.)	Final drafts (product design, architecture etc.)	Final drafts better than professional artists, designers, photographers
<b>VIDEO / 3D / GAMING</b>			First attempts at 3D/video models	Basic/first draft videos and 3D files	Second drafts	AI Roblox Video games and movies are personalized dreams

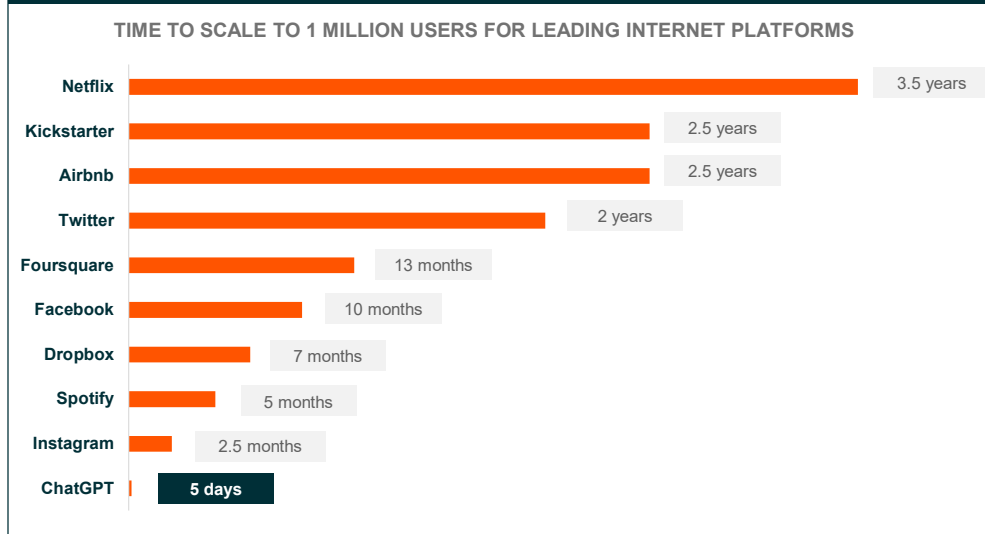
Sources: Huang, Grady, & GPT-3, 2022, \* Estimates



## Initial Adoption of Generative AI Dwarfs Early Momentum Witnessed by Popular Tech Platforms

Rapid experimentation and the entry of well-capitalized players like Microsoft and Alphabet is pushing adoption of generative AI tools. Within 5 days of its launch, Chat GPT managed to grow to 1 million users<sup>1</sup>. In 2 months, the platform scaled to over a 100 million users, the fastest for a digital platform to reach that scale.<sup>2</sup>

Popular internet platforms, despite operating in a less competitive environment, took significantly longer than it has taken Chat GPT to scale to a million users.



Sources: ChatGPT Sprints to One Million Users, (2023, Jan 24), Statista Intelligence, taken on April 20<sup>th</sup>, 2023

### Investments spur widespread usage

- **Chat GPT** is estimated to receive close to 100 monthly visits in March 2023, up 55% month-over-month.<sup>3</sup> Currently, the platform is estimated to have 100 million registered users who have logged in and access the system.<sup>4</sup>
- Access to AI is witnessing **global democratization**. US forms ~12% of Chat GPT users, India forms 6%. Users in China and Russia cannot access the tool.<sup>5</sup>
- **Private Market Activity:** venture capital continue to pour dollars aggressively into AI. VC investments in generative AI went from \$450 million in 2018 to \$4.8 billion in 2021. Another \$4.5 billion was invested in 2022 despite the broad market slowdown.<sup>6</sup>

1 Demand Sage. (2023). ChatGPT Statistics, taken on May 15, 2023; 2 Ibid. 3 Ibid. 4 Ibid. 5. Eric J. Savitz, Barron's (Feb 1, 2023), ChatGPT Users Topped 100 Million in January. Investors Are Betting Big on AI. 6. VCs continue to pour dollars into generative AI, Kyle Wiggers, TechCrunch (March 28, 2023)

## Generative AI Use Cases and Implications

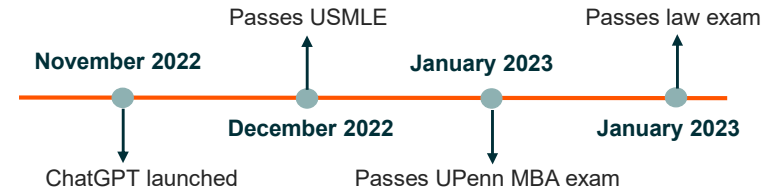
With the evolution of ChatGPT and other LLM's that can communicate in English, write and revise text & code, AI is becoming more useful to a broader population of people. This has huge implications – people can produce **more work, faster than ever before**.

### CHATGPT USE CASE EXAMPLES



Sources: MedPage Today, medRxiv, Wharton UPENN, Fishbowl, University Business; 1 Fishbowl Insights. (2023, January 23), ChatGPT Sees Strong Early Adoption In The Workplace; 2 University Business. (2023, January 18). ChatGPT: Survey says students love it, educators not fans

### EARLY CHATGPT MILESTONES



### Industry & Education Survey Findings – ChatGPT Usage

- **27%** report that they have already used ChatGPT to assist with work related tasks<sup>1</sup>
- **29%** of Gen Z professionals, **28%** of Gen X professionals, and **27%** of Millennial professionals currently use it at work<sup>1</sup>
- **89%** have used ChatGPT to help with homework assignments<sup>2</sup>
- Several companies, including BuzzFeed and Amazon, have announced internal use of ChatGPT moving forward

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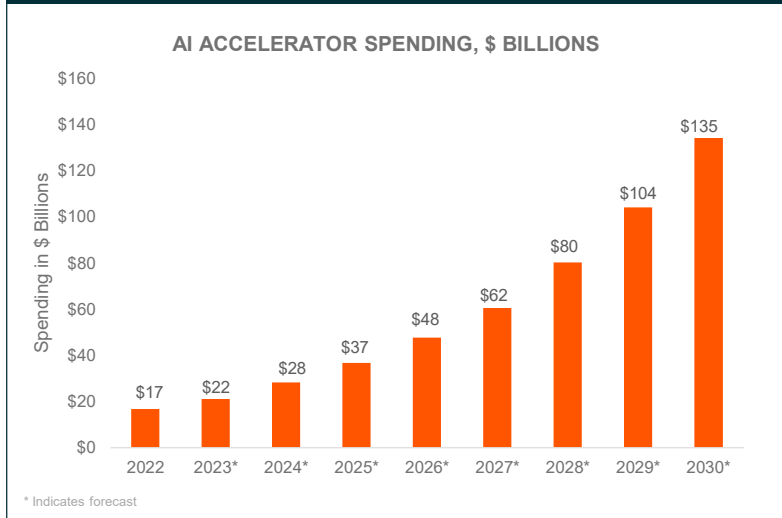


# Generative AI's Potential Winners

## Large Scale Deployment of AI will need Industrial GPU Set ups, Boosting the AI Chipset Market

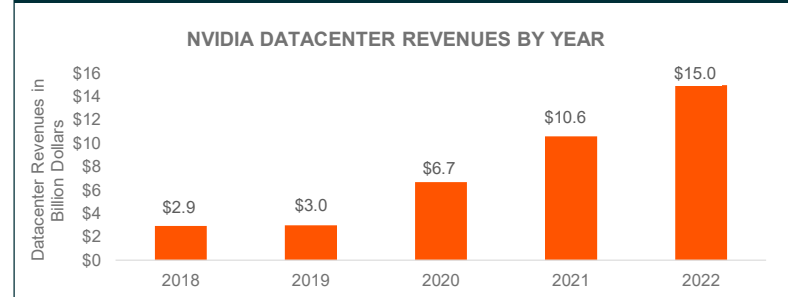
While the broader GPU market is expected to grow to over \$247 billion by 2028, the AI accelerator market is expected to grow to nearly \$135 billion by that time.<sup>1</sup> Currently, Nvidia owns a majority share in datacenter acceleration, but other vendors are rapidly catching up as well.

Large hyperscalers are relying on GPU-based AI acceleration hardware to train large language models at scale and distribute them through cloud services.



<sup>1</sup> Precedence Research, Artificial Intelligence (AI) Chip Market, January 2023, <sup>2</sup> NVIDIA Corporation. (2019, March 11). NVIDIA to Acquire Mellanox for \$6.9 Billion. LHS chart: Precedence Research, Artificial Intelligence (AI) Chip Market, January 2023; RHS chart: NVIDIA Corporation. (2023, February 23). NVIDIA Announces Financial Results for Fourth Quarter and Fiscal 2023. NVIDIA Newsroom

Nvidia supplied Hyperscalers with over \$15 billion in chipsets for 2022. Datacenter revenue eclipsed Gaming segment revenue for the company for the first-time last year.

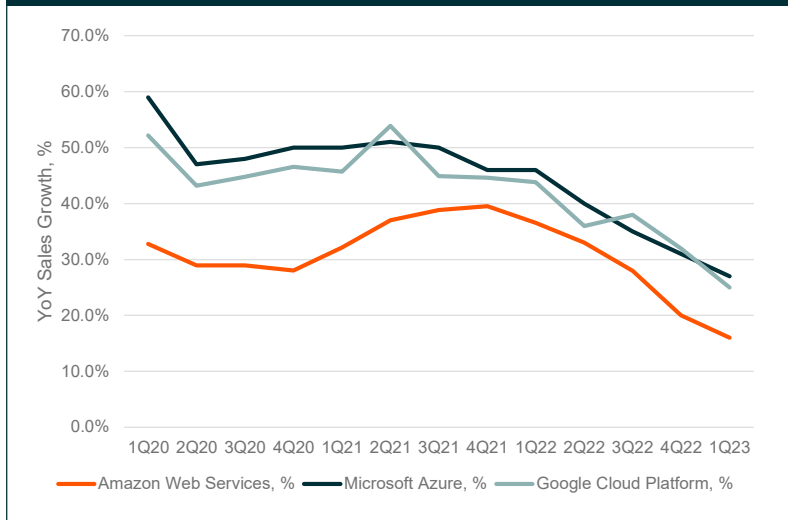


- Datacenter hardware innovation is not restricted to GPUs. In 2019, Nvidia acquired high-speed networking component provider **Mellanox** to build integrated functionality that improves speed of decision making.<sup>2</sup>
- **Microsoft, Amazon, Alphabet** have also prioritized in house research to help build low-cost GPUs internally, while pursuing partnership with accelerator makers like AMD and Intel.

## Cloud Infrastructure Suppliers will Likely Benefit from AI Services Demand

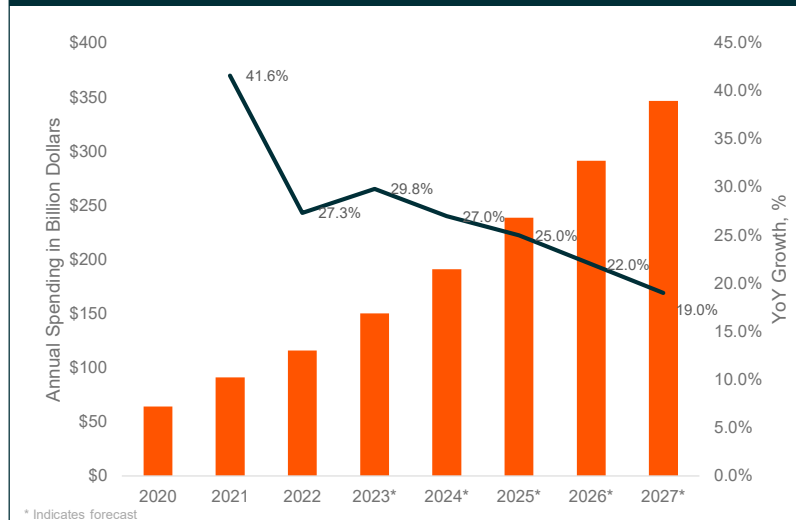
AI services will largely be distributed and consumed through the public cloud. This can significantly boost demand for infrastructure as a service offering from big cloud vendors like Amazon's AWS, Microsoft's Azure, and Google's Cloud Platform, potentially driving growth for the cloud infrastructure market through 2030.

Large Hyperscalers continue to grow aggressively even in a broad economic downturn. The big 3 bring in \$165 billion+ in revenues annually from Cloud Infrastructure Sales.



Sources: Q1 2023 Press Release AMZN, Q1 2023 Press Release Alphabet, Q1 2023 Press Release MSFT, accessed on May 15, 2023

IaaS market is expected to grow at a CAGR of 24.5% through 2027. Demand for AI services is further expected to boost growth.



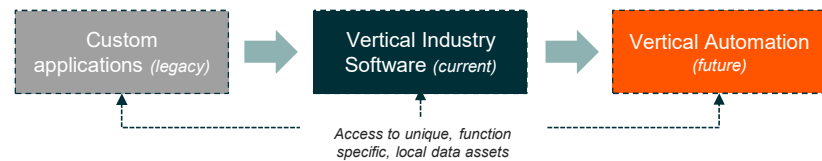
\* Indicates forecast

Sources: Nag, S. (2023, April 19). Gartner forecasts worldwide public cloud end-user spending to reach nearly \$600 billion in 2023, with Global X Estimates

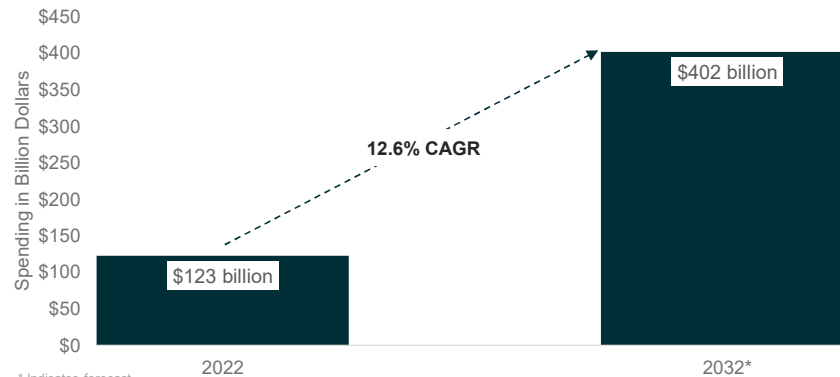
## Platforms with Access to Proprietary Information Could Deliver Specialized Intelligence and Automation

Industry specific software application providers are in an exciting position to leverage data assets at their disposal to train foundational models and bring them to market to automate industry specific systems. For example, models trained on healthcare data could augment decision making for medical professionals.

### Software is moving from Custom-built to verticalized intelligence



VERTICAL SOFTWARE MARKET SPEND, \$B



\* Indicates forecast

Future Market Insights Inc. (2022, September 12). Vertical Market Software Market Share to Surpass US\$400 Bn by 2032 at a CAGR of 12.6% [Press release]. GlobeNewswire.

### Leading Providers of Vertical Software Embrace AI

- Financial Intelligence software provider **Bloomberg** plans on integrating a GPT-style AI system into its Terminal product. Bloomberg has over 350K installed base of terminals worldwide.<sup>1</sup>
- Leading healthcare networking and collaboration platform Doximity launched **DocsGPT**, an automation tool for physicians that acts as a co-pilot assisting with patient treatment workflow.<sup>2</sup> Currently in Beta.
- Google Cloud** recently launched Cloud Security AI Workbench, a cybersecurity suite of models for cyber defense professionals, trained on specialized security data.<sup>3</sup> The tool enables research to identify software vulnerabilities, malware, threat indicators and behavioral threat actor profiles.

<sup>1</sup> Bloomberg. (n.d.). Bloomberg GPT: 50 Billion Parameter LLM Tuned for Finance [Press release]. <sup>2</sup> Healthcare IT News. (n.d.). DocsGPT beta targets physician burnout. <sup>3</sup> Google Cloud Blog. (n.d.). RSA, Google Cloud, and the security of AI: Workbench and generative AI.

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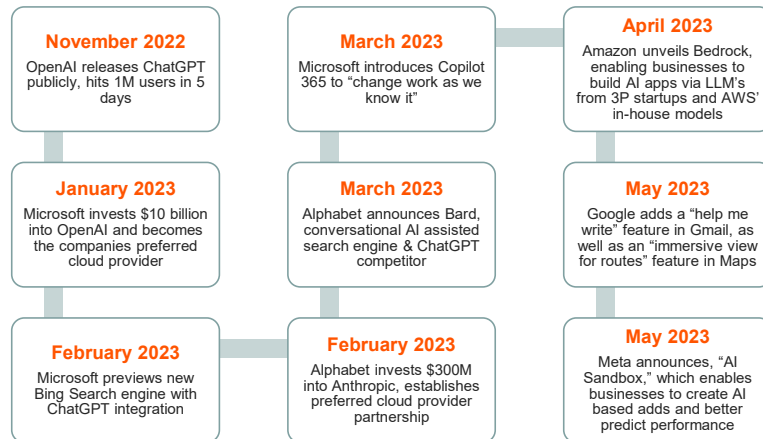


# Generative AI Competitive Landscape

## Data and AI Talent Density Boost Big Tech’s Ability to Capitalize on Generative AI

The jockeying for leadership in generative AI continues with its adoption rising by the day. In addition to rolling out their own products and services, Big Tech players are making their foundational models easily accessible, and they’re also investing in and partnering with the startups building specialized apps on top of their models to help augment their own services. Google, Microsoft, and Meta each said “AI” nearly 50 times on their recent earnings calls, highlighting their ambitions and investments in generative AI.

### Recent Generative AI Milestones From Big Tech



Sources: Global X, Venture Beat, The Economist, TechCrunch, Amazon. Data accessed on May 15, 2023

### Big Tech Generative AI Landscape

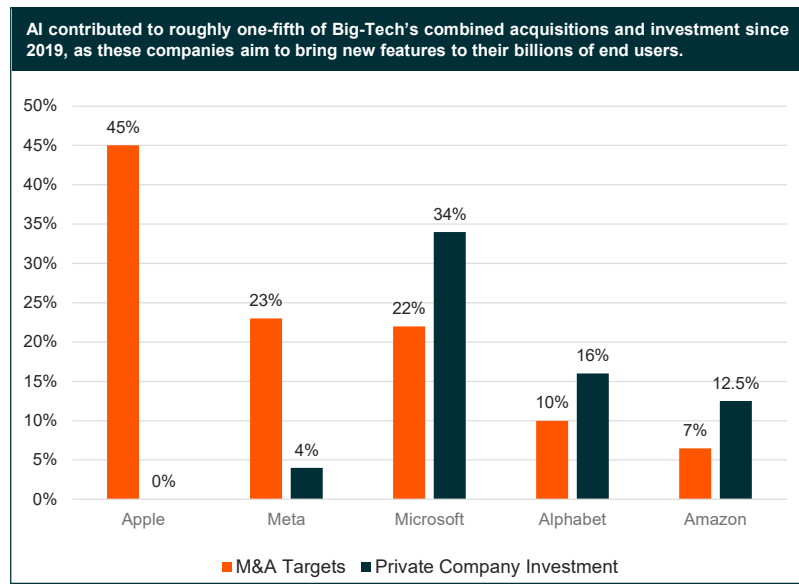
Company	Recent Product Announcements	Key Partnerships	Comments
Microsoft	OpenAI powered Bing, Copilot 365, Office, Azure	OpenAI	Microsoft will receive 75% of OpenAI’s profits until its investment is recouped, followed by 49% of subsequent profits, up to a certain cap
Alphabet	Bard, Help Me Write, Maps Immersive View	Anthropic	MSFT beat Alphabet to the punch with OpenAI; however, Google recently took the narrative back at its I/O developers conference
Amazon	Bedrock, Amazon EC2 Trn1n & Amazon EC2 Inf2, Amazon CodeWhisperer	Bedrock	Bedrock provides AWS with a more distinct offering that focuses exclusively on corporate clients rather than consumers. *See exhibit for Bedrock summary
Meta	Sandbox AI	In-house	Meta recently formed an in-house generative AI team and rolled out several open-sourced frameworks like LLaMA, its own AI language model, and the Segment Anything Model (SAM)
Apple	N/A	In-house	Apple is no stranger to AI – the Siri voice assistant makes use of Natural Language Processing (NLP). AI is also deeply integrated in the company’s iOS software

Sources: Global X, Venture Beat, Barons, TechCrunch, Amazon. Data accessed on May 15, 2023



## Startups Building Specialized And Niche Apps Will Remain Attractive

Startups have ample opportunity to build specialized apps or “copilots” on top of leading foundational models. Startups with indispensable verticalized services and use cases will continue receiving heavy venture capital interest, as well as interest from Big Tech firms as they look to augment their own services and fuel their cloud franchises.



Sources: The Economist, Pitchbook. Data from January 2019-March 2023

**Generative AI startups continue attracting capital despite the broader VC funding slowdown as the competitive landscape intensifies and new applications emerge.**

Company	Platform Type	Application	Valuation (\$B)
OpenAI	Foundational Model	General Purpose	\$29.0B
Anthropic	Foundational Model	General Purpose	\$4.4B
Cohere	Foundational Model	General Purpose	\$2.0B
Hugging Face	Foundational Model	General Purpose	\$2.0B
Lightricks	Application Platform	Image / Video Generation	\$1.8B
Cresta	Application Platform	Customer Service / Chatbot	\$1.6B
Jasper	Application Platform	Sales & Marketing	\$1.5B
Ada Support	Application Platform	Customer Service / Chatbot	\$1.2B
Character AI	Application Platform	Customer Service / Chatbot	\$1.0B
Adept	Foundational Model	User Interface / RPA	\$1.0B
Stability AI	Application Platform	Image Generation	\$1.0B

Sources: Global X ETFs with information derived from CB Insights, Reuters, Sequoia. Data accessed on 5/15/2023

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Related ETFs

## BOTZ: Global X Robotics & Artificial Intelligence ETF

BOTZ seeks to provide investment results that correspond generally to the total return, before fees and expenses, of the Indxx Global Robotics & Artificial Intelligence Thematic Index.



### High Growth Potential

The global robotics market was valued at more than \$55bn in 2021, with forecasts suggesting it could nearly double to \$91bn by 2026.<sup>1</sup>



### Compelling Economics

The average cost of an industrial robot declined from \$46k in 2010 to just \$27k in 2017 – and is forecasted to dip below \$11k by 2025 as technology improves and scales, allowing for broader adoption across industries.<sup>2</sup>



### Unconstrained Approach

Robotics & AI have wide-reaching application, extending far beyond industrial activity. BOTZ invests accordingly, with global exposure across multiple sectors and industries.

### Key Facts

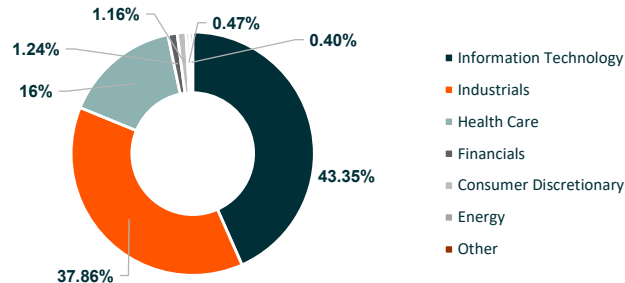
**Inception Date: 09/12/16**  
**Ticker: BOTZ**  
**Tracking-Index: Indxx Global Robotics & Artificial Intelligence Thematic Index**

### Stats & Fees

**Total Expense Ratio: 0.69%**  
**Number of Stock Holdings: 43<sup>3</sup>**

### Key Characteristics

#### BOTZ SECTOR BREAKDOWN<sup>3,4</sup>



#### BOTZ TOP 10 HOLDINGS<sup>3</sup>

Name	Ticker	Weight %
NVIDIA Corp	NVDA	12.15%
Intuitive Surgical Inc	ISRG	10.02%
ABB Ltd	ABBN	7.89%
Keyence Corp	6861	7.31%
FANUC Corp	6954	6.75%
Dynatrace Inc	DT	4.60%
Yaskawa Electric Corp	6506	4.26%
Omron Corp	6645	4.23%
Cognex Corp	CGNX	4.10%
SMC Corp	6273	4.04%

1. Source: BCC Publishing, Feb 2022. 2. Source: Statista, Apr 2019. 3. Source: Bloomberg, as of 06/30/2023. Holdings are subject to change. 4. "Other" classifies a company as one that does not primarily fit into any of the other sectors. It can include companies with diverse range of business activities or not primarily focused on a specific industry. "Other" may also include cash positions and/or allocations outside of equities such as currency positions.

## Global X Robotics & Artificial Intelligence ETF (BOTZ)

The Global X Robotics & Artificial Intelligence ETF (BOTZ) seeks to invest in companies that potentially stand to benefit from increased adoption and utilization of robotics and artificial intelligence (AI), including those involved with industrial robotics and automation, non-industrial robots, and autonomous vehicles.

### Indxx Global Robotics & Artificial Intelligence Thematic Index Selection Process

#### Initial Universe

- Primary listing in Developed Markets
- Market Cap ≥ \$300M
- 6-Month ADTV ≥ \$2M

#### Sub-Theme Revenue Criteria

- Index provider narrows universe to companies that generate ≥ 50% of revenues from **Robotics & AI-related sub-themes**

#### Final Composition

- Minimum of 30 companies by market cap.
- Maximum of 100 companies by market cap.

#### Annual Rebalance/Reconstitution

- Index components are weighted by security-level market capitalization:
  - Max weight = 8.0%
  - Floor = 0.3%

#### Robotics & AI Sub-Themes

- Industrial Robots and Automation: These are companies that provide robots and robotic automation products and services with a focus on industrial applications.
- Unmanned Vehicles and Drones: These are companies that are involved in the development and production of unmanned vehicles (including hardware and software for autonomous cars), drones and robots for both military and consumer markets.
- Non-Industrial Robotics: These are companies that are involved in developing robots and AI that are used for non-industrial applications, including but not limited to agriculture, healthcare, consumer applications and entertainment.
- Artificial Intelligence: Companies that are involved in owning and managing facilities that customers use to safely store data and offer a range of products and services to help keep servers and data safe, including providing uninterruptable power supplies, air-cooled chillers and physical security.

## AIQ: Global X Artificial Intelligence & Technology ETF

AIQ seeks to provide investment results that correspond generally to the total return, before fees and expenses, of the Indxx Artificial Intelligence & Big Data Index.



### High Growth Potential

Forecasts suggest the global artificial intelligence market could increase tenfold from \$30bn in 2020 to \$300bn by 2026.<sup>1</sup>



### Structural Tailwinds

Artificial intelligence is still maturing. As it improves, it could unlock untold opportunity for new applications.



### Unconstrained Approach

Artificial intelligence spans multiple segments, and its most innovative companies include both household names and newcomers from around the world. AIQ invests accordingly, without regard for sector or geography.

### Key Facts

**Inception Date: 05/11/18**

**Ticker: AIQ**

**Tracking-Index: Indxx Artificial Intelligence & Big Data Index**

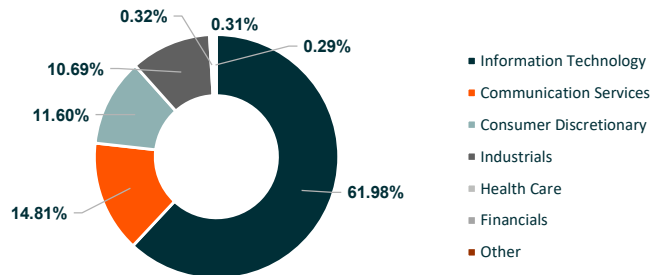
### Stats & Fees

**Total Expense Ratio: 0.68%**

**Number of Stock Holdings: 85<sup>2</sup>**

### Key Characteristics

#### AIQ SECTOR BREAKDOWN<sup>2,3</sup>



#### AIQ TOP 10 HOLDINGS<sup>2</sup>

Name	Ticker	Weight %
NVIDIA Corp	NVDA	5.33%
Meta Platforms Inc	META	4.85%
Tesla Inc	TSLA	4.41%
Microsoft Corp	MSFT	3.41%
Apple Inc	AAPL	3.33%
Salesforce Inc	CRM	3.28%
Oracle Corp	ORCL	3.24%
Adobe Inc	ADBE	3.24%
Amazon.com Inc	AMZN	3.23%
Netflix Inc	NFLX	2.99%

1. Source: Fortune Business Insights, Sep 2021. 2. Source: Bloomberg, as of 06/30/2023. Holdings are subject to change 3. "Other" classifies a company as one that does not primarily fit into any of the other sectors. It can include companies with diverse range of business activities or not primarily focused on a specific industry. "Other" may also include cash positions and/or allocations outside of equities such as currency positions.

## Global X Artificial Intelligence & Technology ETF (AIQ)

The Global X Artificial Intelligence & Technology ETF (AIQ) seeks to invest in companies that potentially stand to benefit from the further development and utilization of artificial intelligence (AI) technology in their products and services, as well as in companies that provide hardware facilitating the use of AI for the analysis of big data.

### Indxx Artificial Intelligence & Big Data Index Selection Process

#### Initial Universe

- Market Cap ≥ \$2 Billion for Category 1 Equities
- Market Cap ≥ \$500 Million for Category 2 Equities
- 6-Months Average Daily Traded Value ≥ \$2M

#### Sub-Theme Revenue Criteria

- Extensive research is undertaken with a focus on identifying business segments that partake in **Artificial Intelligence and Big Data sub-themes**.
- Only those companies that provide direct exposure to AI or have stated their primary business to be in products and services focused on AI products, services, or utilization are eligible for inclusion in the index.

#### Fund Composition

- Top 60 Companies in 'Category 1'
- Top 25 Companies in 'Category 2'
- Must have a positive Exposure score for inclusion.

#### Annual Weighting/Semi-Annual Rebalance

- Free float market cap weighting scheme
  - Components with exposure scores >20% subject to *maximum* weight of 3%
  - Components with exposure scores <20% subject to *maximum* weight of 1%.

### Artificial Intelligence Sub-Themes

#### Category 1

- **Artificial Intelligence Developers:** includes companies that develop AI and use AI in their own products. The companies are considered for inclusion in this category based on the level of AI involvement of the companies
- **Artificial Intelligence-as-a-Service ("AIaaS"):** Companies in this segment typically offer cloud-based platforms that allow their customers to apply artificial intelligence techniques without needing to make a direct investment in AI-related infrastructure.

#### Category 2

- **Artificial Intelligence Hardware:** Companies that produce semiconductors, memory storage and other hardware that is utilized for artificial intelligence applications.
- **Quantum Computing:** Companies that are at the forefront of developing quantum computing technology, which is in the process of being commercialized and is expected to have significance in AI and big data applications.


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**Thank You!**

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# Important Risks & Information



## Important Information

Investing involves risk, including the possible loss of principal.

The investable universe of companies in which the funds may invest may be limited. The companies in which the Funds invests may be subject to rapid changes in technology, intense competition, rapid obsolescence of products and services, loss of intellectual property protections, evolving industry standards and frequent new product productions, and changes in business cycles and government regulation.

International investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles or from social, economic or political instability in other nations. Emerging markets involve heightened risks related to the same factors as well as increased volatility and lower trading volumes. The funds are non-diversified.

Shares of ETFs are bought and sold at market price (not NAV) and are not individually redeemed from the Fund. Brokerage commissions will reduce returns.

***Carefully consider the Funds' investment objectives, risk factors, charges, and expenses before investing. This and additional information can be found in the Funds' summary or full prospectus, which may be obtained by calling 1.888.493.8631, or by visiting [globalxetfs.com](http://globalxetfs.com). Please read the prospectus carefully before investing.***

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