

GLOBAL ✕



What's the Next Big Theme?

Q1 2020

About Us

Global X Mission

To listen to and empower customers to **invest wisely in unexplored and intelligent solutions**

Global X History

Founded in 2008, we are distinguished by our thematic growth, income and international access suites of ETFs, and we have **more than 70 funds available** across U.S. and foreign exchanges. Global X is recognized as a leader in developing intelligent investment solutions for our clients.

Global X Investment Philosophy



Independent Advantage

To open market access to unexplored, intelligent solutions, **we leverage our independence to choose the best path** – in-house development or strategic partnership with the right solution provider



Value Focus

We are focused on providing value to our customers through our **methodical, low-cost index-based solutions**, which provide the potential for better outcomes



Transparent Precision

Our funds' **systematic, published methods eliminate manager drift** and are available to every customer

Global X Overview: ~\$12.3bn in AUM across 72 ETFs

AUM (\$mil) by Fund Family as of 12/31/19





Two Competing Ideas for Portfolio Management

Learn from the Past

- Backward-looking
- “History repeats itself”
- Harvesting factor premias/smart beta
- Mean reversion

Anticipate the Future

- Forward-looking
- “Next time will be different”
- Growth-oriented investment approaches
- **Thematic investing**



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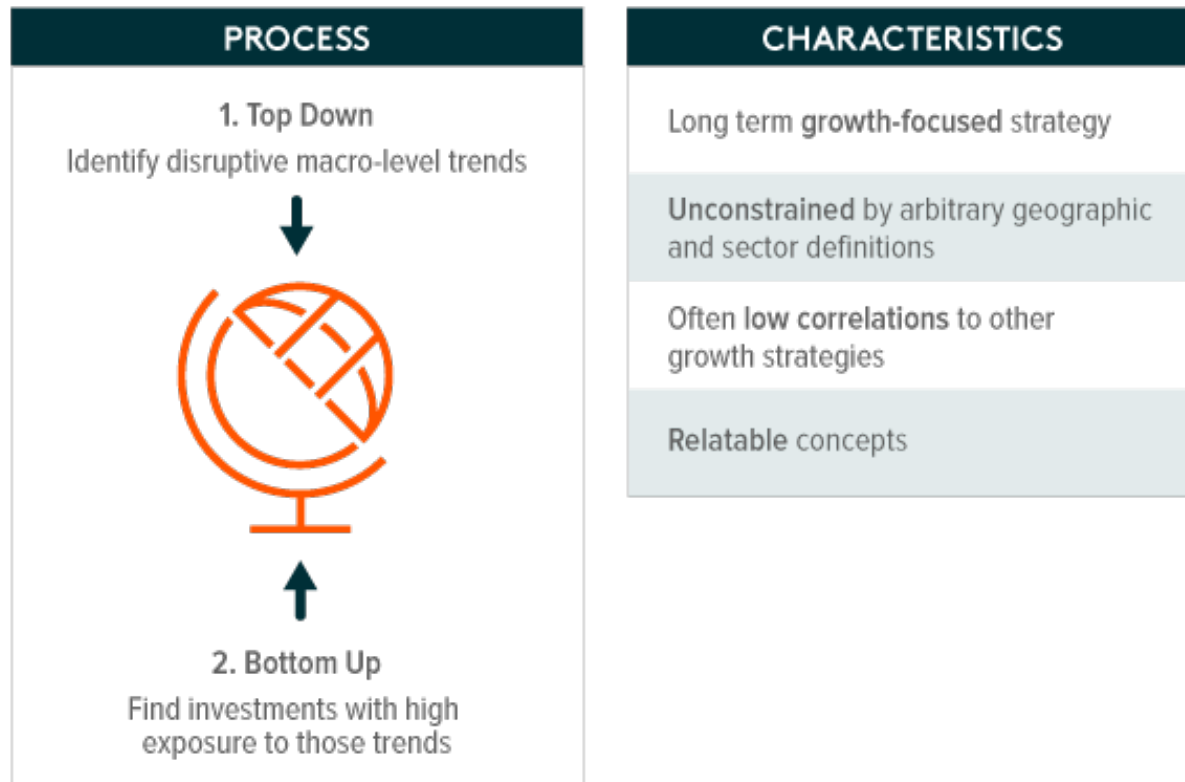
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What is Thematic Investing?

IDENTIFYING DISRUPTIVE MACRO-LEVEL TRENDS

Thematic investing refers to the process of identifying disruptive macro-level trends and the underlying investments that stand to benefit from the materialization of those trends.





3 Steps for 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.

	Stronger Approach	Weaker Approach
Conviction	High, due to observable structural changes in demographics, technology, behavior, or politics/regulations	Limited, due to conjecture and low likelihood of theme materializing
Investability	Broad group of publicly traded companies, with high liquidity, that provide targeted exposure to the theme	Narrow group of companies with low liquidity, and only tangential exposure to the theme
Time Frame	Medium to long term (5 or more years), making market timing less of a factor	Shorter term placing greater importance on timing



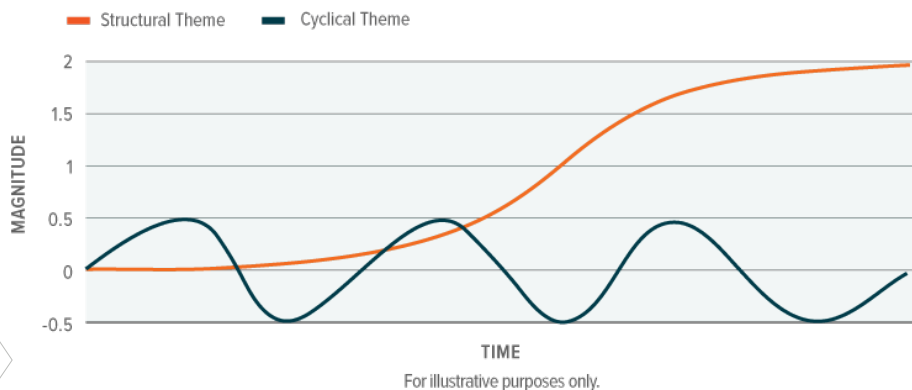
Cyclical vs. Structural Themes

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 themes: cyclical and structural themes.

Cyclical Themes (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 can include asset valuations, volatility, interest rates, and currency values.

CYCLICAL VS. STRUCTURAL THEMES



Structural Themes (S-shape)

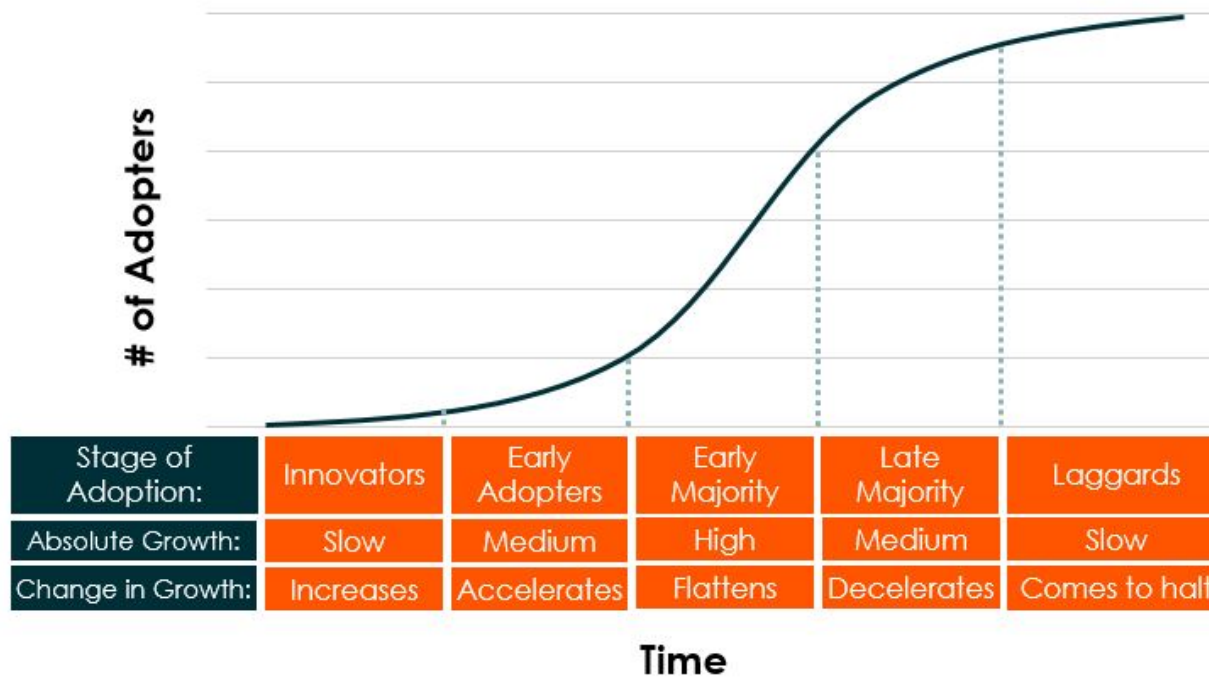
- Occur as one-off shifts that change an existing paradigm.
- Tend to be longer-term in nature.
- Typically driven by powerful forces such as disruptive technologies or changing demographics and consumer behavior.



What Does Disruptive Growth Look Like?

The Diffusion of Innovation Theory holds that the adoption of new technologies tends to follow an S-curve adoption pattern, aligning with the shape of structural themes.

Adoption Curves in Theory



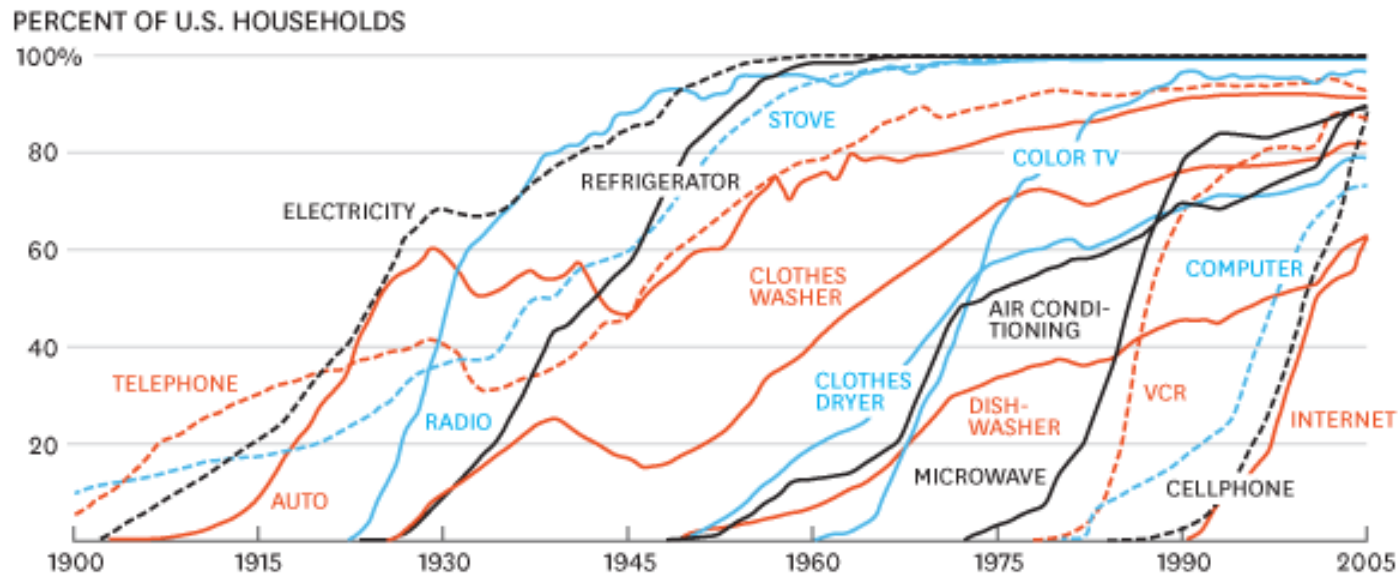
Sources: E.M. Rogers, *Diffusion of Innovations*, Global X Research.



What Does Disruptive Growth Look Like?

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Adoption Curves in Practice



Source: Michael Felton, *The New York Times* and *Harvard Business Review*.

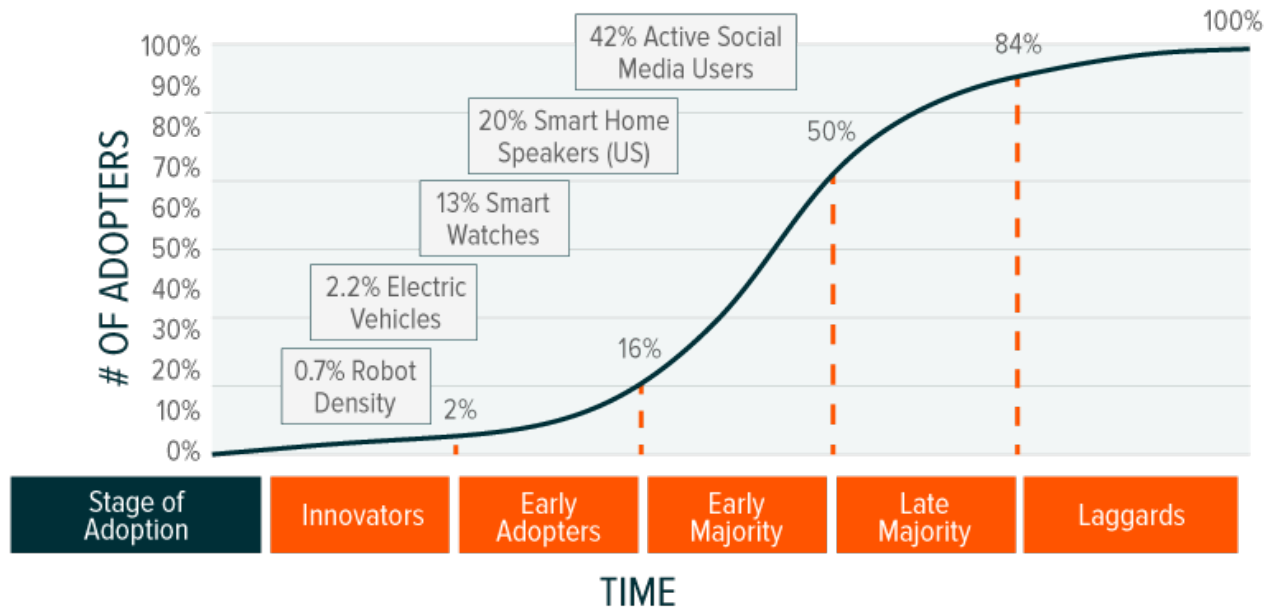


What Does Disruptive Growth Look Like?

Many new technologies are still early in their adoption.

WHERE ARE WE WITH CERTAIN NEW TECHNOLOGIES

Source: International Federation of Robotics, S&P Global Platts, Deloitte, Smartinsights.com





Why Consider Thematic Investing Now?

Rapid advancements in technology and changing consumer preferences are disrupting existing paradigms throughout the economy.

Traditional Sector

Old Paradigm

New Paradigm

Consumer Discretionary

Consumer firms primarily target the spending preferences of baby boomers and Gen Xers, selling through brick-and-mortar channels and appealing to suburban lifestyles and material wants.

Millennials are set to see their incomes rise and inherit trillions from the baby boomer generation. Their unique spending preferences, such as buying online via **E-commerce** platforms, living in cities and favoring experiences, are expected to radically alter what types of products are sold and how they are bought.

Energy

The energy sector largely revolves around the extraction and sale of fossil fuels.

Falling costs and rising production of **Lithium-ion batteries** is leading the shift to renewable energy and electric vehicles.

Financials

Financial firms primarily rely on employee skills to effectively allocate financial capital and provide services to customers.

FinTech allows financial firms to leverage cutting edge technology to reduce costs, improve decision making and risk controls, remove middlemen, and enhance customer experiences.



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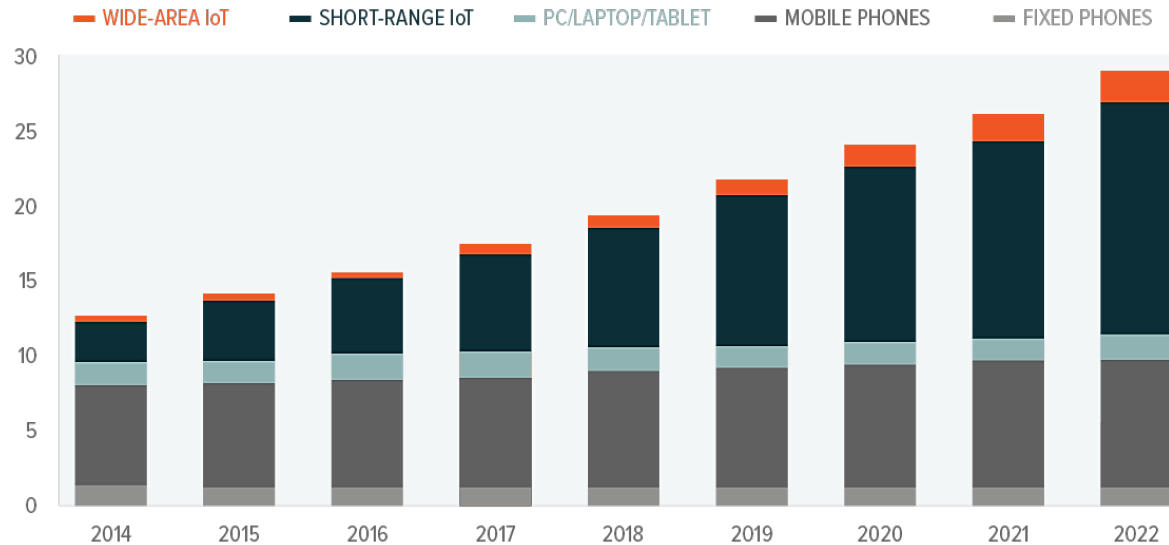
Traditional Sector	Old Paradigm	New Paradigm
Health Care	Health care systems are designed to treat symptoms or ailments once they occur.	<p>Increasing lifespans (Longevity) and rising health care costs are driving people to proactively improve their health & wellness, through physical activity, healthy eating, and greater mindfulness of their well-being. Genomics is helping personalize medicine, preventing and treating illness with innovative treatments.</p>
Industrials	Manufacturers provide workers with tools and training to complete tasks in an efficient and consistent manner.	Advancements in robotics & AI are making machines smarter and more capable than ever before, allowing robots to take on increasingly sophisticated tasks for faster and more accurate production
Information Technology	The technology ecosystem largely revolves around computers, servers, and mobile devices communicating with each other.	Declining chip costs and improving connectivity allows for virtually any object to connect to internet-enabled networks, allowing it to collect or receive data, in a massive expansion of the Internet of Things , supported by the scalable infrastructure of cloud computing .
Communication Services	People communicate or consume information primarily through traditional mediums like phone, TV, or radio.	People around the world are communicating via social media platforms, to share mobile video and photos, chat with friends, listen to podcasts, and read blogs.



The Internet of Things

How Fast is the IoT Growing?

Connected Devices (billions)¹



What is Driving the Growth of the IoT

- **Rapidly falling costs** for chips that can connect devices to the internet
- **Improved internet speed and coverage** allows for more data transmission from more devices
- **Strong consumer demand** for IoT products like wearables and smart home devices
- **Growing commercial adoption** in industrial manufacturing, infrastructure, health care, and real estate

1. Source: Ericsson Mobility Report, June 2017. Data after 2016 are estimates.



The Internet of Things

The Internet of Things is at the crossroads of many disruptive themes and technologies.

What's the IoT's role?

Driverless Cars

Autonomous vehicles depend on the internet of things for the sensors and networking ability to download maps and communicate with other cars and infrastructure

Smart Cities

The IoT allows cities to improve safety via wireless video cameras, reduce traffic through smarter stoplights, and improve the environment by using smart meters for better resource management.

Smart Homes

Many home appliances and devices are becoming internet-enabled, from refrigerators that know what food you have, to lighting and climate control that know your personal preferences.

Robotics

Robots are getting smarter. While much of the attention goes to advancements in artificial intelligence, the IoT plays a critical role in data collection and sharing among robots that facilitates machine learning and enhanced abilities.



The Internet of Things

The internet of things is not just one industry, but an ecosystem of firms from chip manufacturers, to network providers, and product manufacturers.

Which Companies Potentially Stand to Benefit from the Emergence of the Internet of Things?

1

Connected Device Manufacturers: Creators of wearables, smart meters, and appliances.

2

Network Providers or Services: IoT depends on fast, secure, and reliable networks to transmit information from sensors to data processors and control systems.

3

Semi-Conductor Manufacturers: IoT is expected to increase demand for microcontrollers, sensors, communication devices and flash memory.



What is Cloud Computing?

The cloud computing industry is involved in the delivery of computing services such as servers, storage databases, networking, software, analytics and more over the Internet, often referred to as 'The Cloud'.

TYPES OF CLOUD COMPUTING COMPANIES^{1,2,3}

CATEGORY	DESCRIPTION	'18 MARKET SIZE (\$ BN)	'21-22 MARKET SIZE (\$ BN)
Software as a Service (SaaS)	Licensing and delivery of software over the internet on a subscription basis which is sometimes called as "on-demand software."	\$72.2	\$113.1
Platform as a Service (Paas)	Providing a platform for creating software applications which are delivered over the internet.	\$15.2	\$27.2
Infrastructure as a Service (IaaS)	Providing virtualized computing resources over the internet. These services include pooled resources like shared storage, shared servers, etc.	\$46.6	\$63.0
Data Center REITs	Owning and managing facilities that customers use to safely and efficiently store data. They typically offer a range of products and services to help keep servers and data protected, including providing uninterruptable power supplies, air-cooled chillers and physical security.	\$25.0	\$31.0
Cloud and Edge Computing Infrastructure/Cloud Infrastructure Components	Manufacturing or distributing hardware components like chips that are built into servers, specialized network switches and routers, etc. used in cloud and edge computing activities.	\$53.8	\$88.6
TOTAL		\$187.8	\$323.4

Sources: 1. Gartner 2018, 2. Credit Suisse 2018, 3. IDC, 2019



Cloud Computing: Empowering business & consumer applications

Cloud computing provides the scalable resources to gather, analyze and store all kinds of data used for a variety of advanced applications.

Propelling Innovation Forward

CLOUD ENABLES EMERGING TECHNOLOGY



Key Points

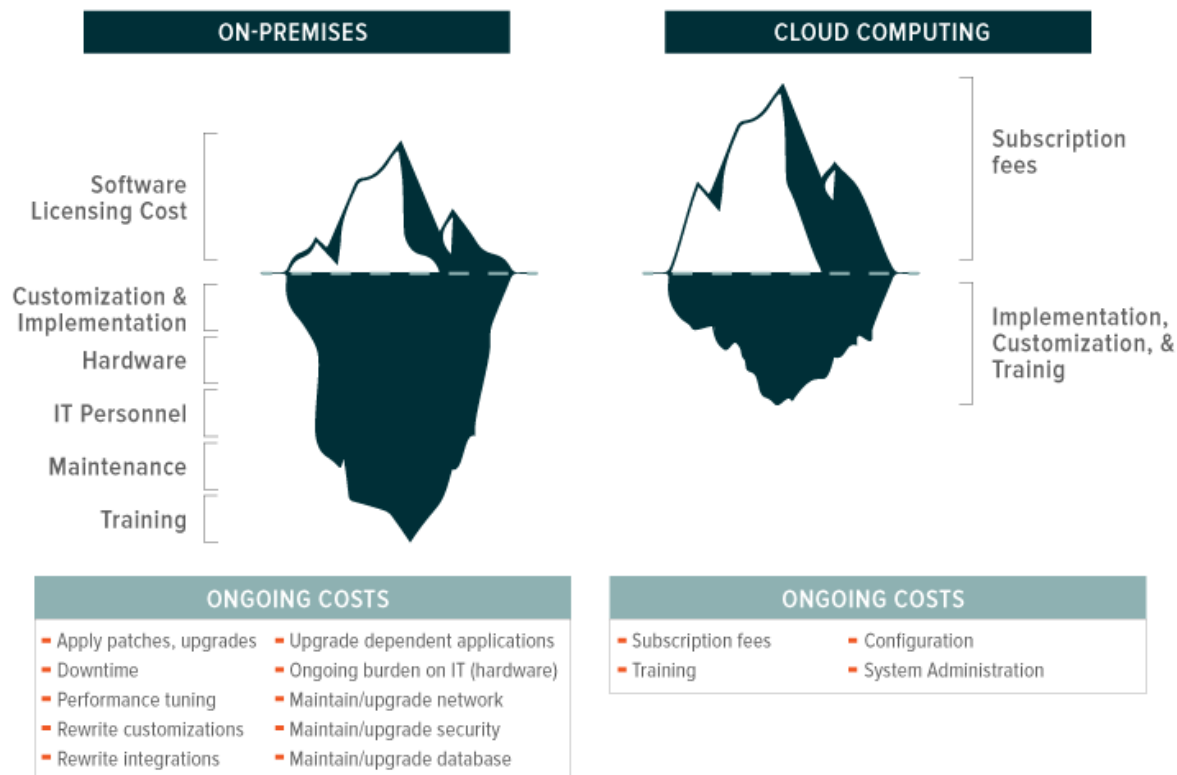
- 1 Cloud enables mission critical business applications from cybersecurity to enterprise resource planning (ERP) and customer relationship management (CRM).
- 2 Consumers also increasingly engage with cloud-enabled streaming services, including AR/VR, gaming and social media.
- 3 Cloud computing provides the scalable infrastructure to process big data collected from the internet of things, as well as the compute power needed for artificial intelligence.



Cloud Computing: Attractive business model

Users of the public cloud generally pay a recurring subscription fee based on usage, offering a more predictable, service-oriented model for consumption of IT resources.

THE TIP OF THE ICEBERG: CLOUD VS. ON-PREMISES INFRASTRUCTURE



Sources: WestMonroe Partners

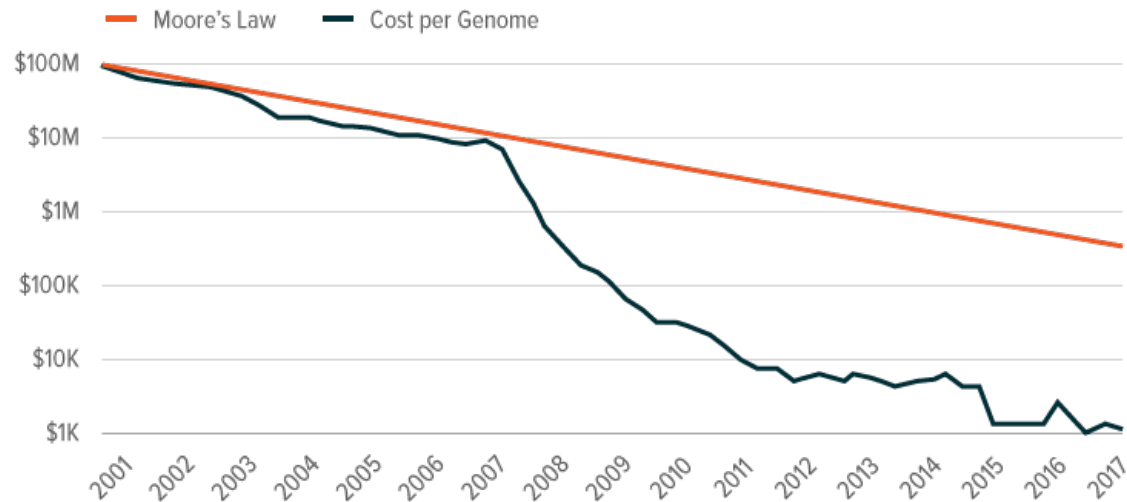


Genomics

How Fast are Genomic Sequencing Costs Falling?

FIGURE: FALLING COSTS OF HUMAN GENOME SEQUENCING (2001-2017)

Source: NIH, National Human Genome Research Institute, Apr 25, 2018



What is Driving the Growth of Genomics?

- **Rapidly falling costs** for genomic sequencing and genetic testing
- **Curing previously incurable diseases** with innovative therapies and treatments
- **Rise of precision medicine** to personalize health care and improve patient outcomes
- **More data** acts as a positive feedback mechanism for R&D and identifying new treatment pathways



Genomics: Innovative treatments for genetic disorders

The genomics industry includes several subsectors that are helping diagnose and treat many genetic disorders with innovative methods.

TABLE: EXAMPLES OF MENDELIAN (SINGLE-GENE) DISEASES

Disease	Type of Inheritance	Estimated Afflicted Globally
Cystic Fibrosis	Autosomal recessive	70,000 ¹
Duchenne Muscular Dystrophy	X-linked recessive	300,000 ²
Hemophilia A	X-linked recessive	140,000 ³
Huntington's Disease	Autosomal dominant	30,000+ ⁴ (US only)
Rett Syndrome	X-linked dominant	373,000 ⁵
Sickle-cell Anemia	Autosomal recessive	120,000,000 ⁶

Approximately 50,000 diseases are caused by a single-gene mutation



Understanding the genomics industry

Genomics sequencing is the process of determining the exact order of one's DNA.

Computational genomics uses computational and statistical analysis to decipher insights from genome sequences and data.

Gene therapies seek to detect, cure or treat diseases by identifying and/or modifying an organism's gene expression or functioning.

Gene editing inserts, deletes or replaces DNA at a specific site in the genome of an organism.

Sources: 1. Cystic Fibrosis Foundation 2019 2. Cure Duchenne 2018 3. World Hemophilia Federation 2015 4. NIH 2018 5. NIH 2019 6. WHO 2018



Genomics: The rise of precision medicine

Precision medicine, also commonly referred to as personalized medicine, uses a patient's genetic information to select the most suitable treatment option for illness.

PRECISION MEDICINE: MORE PERSONALIZED DIAGNOSTICS

Source: CrownBio



- Patients with the same illness often experience different treatment-related symptoms.
- Precision medicine seeks to narrow divergent outcomes by leveraging a better understanding of one's genes to explain why some treatment approaches are better or worse than others for any individual.
- Genomic sequencing and computation, coupled with innovative treatments like gene therapy and editing, **should** help fuel the rise of precision medicine.

Market Size¹

Genomics sequencing: \$25.5 billion in 2025, up from \$6.2 billion in 2017, with a compound annual growth rate (CAGR) of 19.0%.

Computational biology: \$6.8 billion in 2024, up from \$2.3 billion today, with a CAGR of 19.5%

Gene therapy: \$4.4 billion in 2023, up from just \$584 million in 2016, with a CAGR of 33.3%.

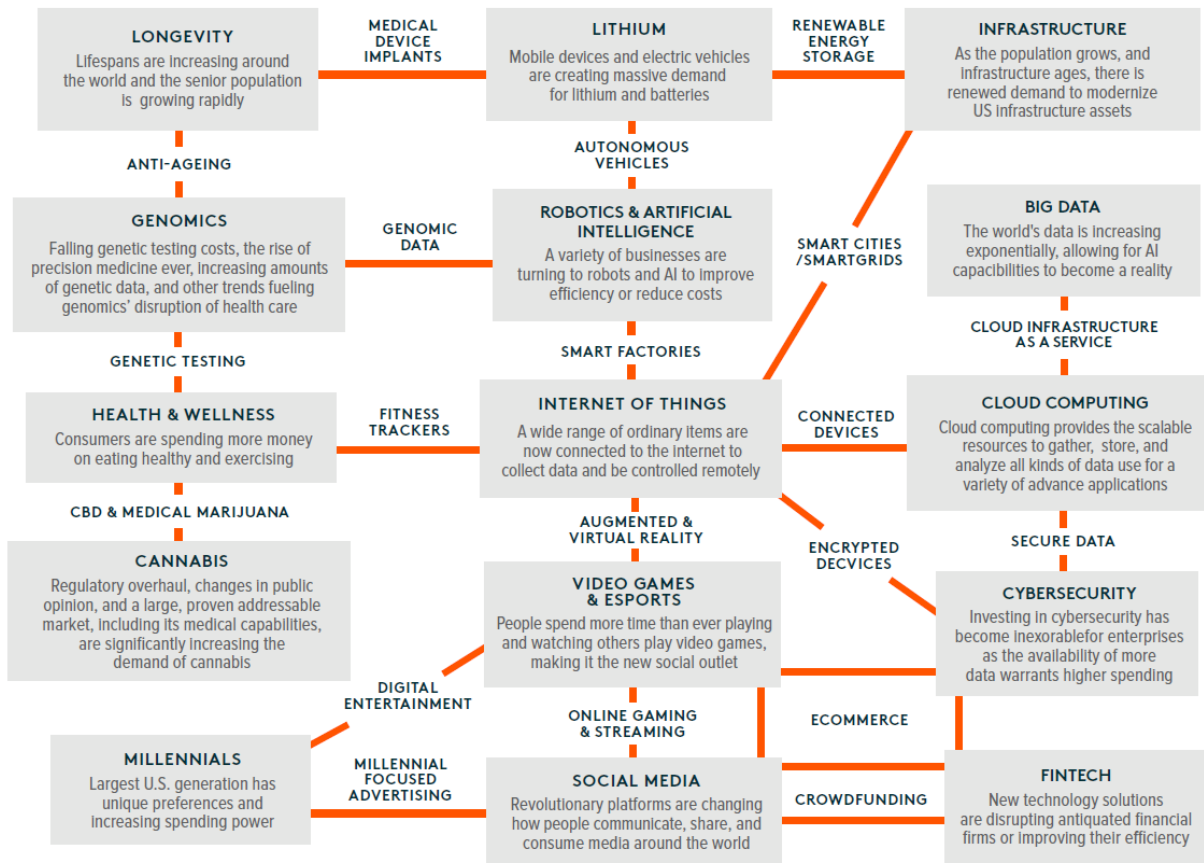
Gene editing: \$7.5 billion by 2024, up from \$3.0 billion in 2017, with a CAGR of 14.5%.

1. Sources: Allied Market Research, Mordor Intelligence, Global Market Insights



Where Themes Converge

McKinsey: “In our experience, the most attractive opportunities are found when **multiple themes converge** and reinforce one another...”¹



Quote

“It’s no coincidence that **consumers are becoming more focused on health and wellness, while at the same time people are living longer around the world.** Nor is it happenstance that social media firms are reporting record revenues, just as Millennials are beginning to see their earnings and consumption power accelerate. As investors vet various themes for possible inclusion in a portfolio, they may be well-served by targeting similarly interconnected ideas.”

-Global X Research, “Chart: What Happens When Themes Converge,” April 13, 2017

¹From Indexes to Insights: The Rise of Thematic Investing’, McKinsey 2014.



Where Does Thematic Investing Fit in a Portfolio?

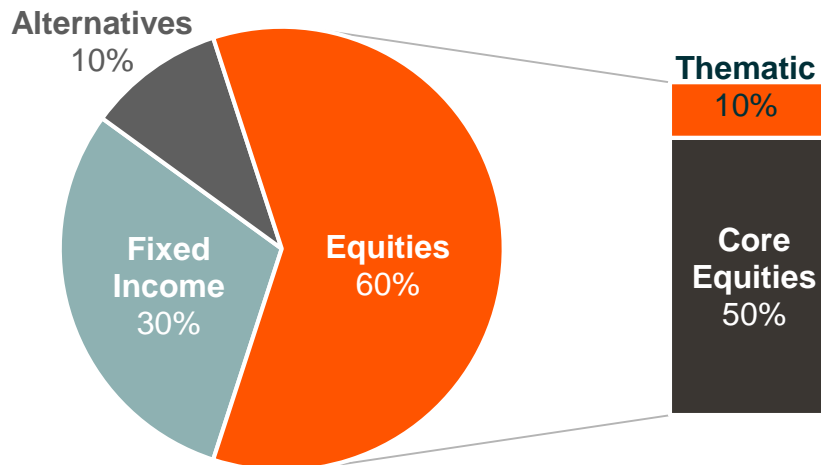
Thematic investing is typically a satellite position or an equity sleeve in a growth-oriented portfolio.

Thematic investing tends to:

- Be alpha-seeking
- Have a long time horizon (>5 years)
- Be growth-oriented
- Equity-based

Thematic strategies may fit best in a portfolio when:

- The portfolio is growth-oriented
- The investor has a longer time horizon
- It replaces a portion of core or growth equity exposure, keeping asset allocation generally the same





Global X's Thematic Growth Suite of ETFs

Global X has 17 ETFs designed to target disruptive structural changes and 1 multi-theme, single-ticker ETF¹

Targets companies that may benefit from structural changes in people and demographics, technology and innovation, the availability of resources.

Global X Thematic ETFs

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)
Future Analytics Tech ETF (AIQ)
Cloud Computing ETF (CLOU)
Genomics & Biotechnology ETF (GNOM)
Video Games & Esports ETF (HERO)
Cybersecurity ETF (BUG)

People

Millennials Thematic ETF (MILN)
Longevity Thematic ETF (LNGR)
Health & Wellness Thematic ETF (BFIT)
E-commerce ETF (EBIZ)
Cannabis (POTX)

Infrastructure

U.S. Infrastructure Development ETF (PAVE)

Multi-Theme

Global X Thematic Growth ETF (GXTG)

¹As of 12/31/2019.

Thank You!



Additional thematic research can be found online at:
globalxetfs.com/research, or on twitter: [@ALittle_gx](https://twitter.com/ALittle_gx)

INVESTING IN TOMORROW
 A WHITEPAPER ON THEMATIC INVESTING

Jay Jacobs, CFA
 Director of Research

GLOBAL X
 Beyond Ordinary ETFs™

An Infrastructure Plan for the 21st Century

Andrew Little
 @ALittle_gx

January 2020

WHAT THE BIP-118 US INFRASTRUCTURE INVESTMENT FALLS FOR BUILT OF ASSETS

UNDERFUNDED US INFRASTRUCTURE HAS COSTLY IMPLICATIONS

	CURRENT EST. (\$B)	ECONOMIC SOCIAL BNFY (\$B)	FUTURE GDP LOSS (\$B)
SURFACE	127.4	1.4	100
TRANSPORT	127.4	1.4	100
UTILITIES	127.4	1.4	100
WATER	127.4	1.4	100
AVIATION	127.4	1.4	100
RAIL	127.4	1.4	100
PORTS AND AIRPORTS	127.4	1.4	100
ROADS AND BRIDGES	127.4	1.4	100

GLOBAL X Beyond Ordinary ETFs™

GLOBAL X Beyond Ordinary ETFs™
 by Mirae Asset

Andrew Little
 @ALittle_gx

Research Analyst, Thematic, @GlobalXETFs #ETFs (link: bit.ly/1SLU2S9)

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Andrew Little @ALittle_gx - Jan 10
 Hey Twitter! Join me in my exploration of thematic disruption: #Robotics, #AI, #5G, #Cannabis, #Gaming, #Genomics, #IoT, and more. @JayJacobsCFA @Palandrani_gx @GlobalXETFs

Andrew Little @ALittle_gx - 2h
 1958's Electronic Age magazine: "In the future when you drive onto a #Superhighway, you'll reach over to your dashboard and push the button marked Electronic Drive." They got it right! Check out this gallery of autonomous vehicles at #CES, #AV #i10!

Disclosures

Investing involves risk, including the possible loss of principal. There is no guarantee the strategies discussed will be successful. International investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles or from 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 volume. Narrowly focused investments may be subject to higher volatility. There are additional risks associated with investing in lithium and the lithium mining industry. The investable universe for thematic ETFs may be limited. The funds are non-diversified.

Video Game and Esports and Cybersecurity Companies are subject to risks associated with additional regulatory oversight with regard to privacy/cybersecurity concerns, shifting consumer preferences, and potential licensing challenges. Declining or fluctuating subscription renewal rates for products/services or the loss or impairment of intellectual property rights could adversely affect profits. Thematic companies may have limited product lines, markets, financial resources or personnel. They typically engage in significant amounts of spending on research and development, capital expenditures and mergers and acquisitions.

Investments in infrastructure-related companies have greater exposure to the potential adverse economic, regulatory, political and other changes affecting such entities. Healthcare, Pharmaceutical, Biotechnology and Medical Device companies can be affected by government regulations, expiring patents, rapid product obsolescence, and intense industry competition. The risks related to investing in cloud computing companies include disruption in service caused by hardware or software failure, interruptions or delays in service by third-party data center hosting facilities and maintenance providers, security breaches involving certain private, sensitive, proprietary and confidential information managed and transmitted by cloud computing companies, and privacy concerns and laws, evolving Internet regulation and other foreign or domestic regulations that may limit or otherwise affect the operations of such companies.

Cannabis companies are subject to various laws and regulations that may differ at the state/local, federal and international level. These laws and regulations may significantly affect a Cannabis Company's ability to secure financing/traditional banking services, impact the market for cannabis business sales and services, and set limitations on cannabis use, production, transportation, export and storage.

Investing in securities engaged in the social media industry include disruption in service caused by hardware or software failure; interruptions or delays in service by third-parties; security breaches involving certain private, sensitive, proprietary and confidential information managed and transmitted by social media companies; and privacy concerns and laws, evolving Internet regulation and other foreign or domestic regulations that may limit or otherwise affect the operations of such companies.

Information Technology companies can be affected by rapid product obsolescence, and intense industry competition. Risks include disruption in service caused by hardware or software failure; interruptions or delays in service by third-parties; security breaches involving certain private, sensitive, proprietary and confidential information managed and transmitted; and privacy concerns and laws, evolving Internet regulation and other foreign or domestic regulations that may limit or otherwise affect the operations. Healthcare, Pharmaceutical, Biotechnology and Medical Device companies can be affected by government regulations, expiring patents, rapid product obsolescence, and intense industry competition.

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. Please read the prospectus carefully before investing.

Disclosures continued

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Global X is not affiliated with Interactive Brokers LLC, or any other FINRA broker-dealer.

The background of the slide is a light gray color with a network of thin, dashed gray lines. These lines intersect at various points, creating a web-like pattern that suggests global connectivity or a network structure.

GLOBAL X

Thank you.