

MEGATRENDS

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WHAT ARE MEGATRENDS?









Artificial Intelligence

Demographics

Income Inequality

Shifting Currency Regimes









Computing power

• Big Data

• Algorithms







EVERY MINUTE









Source: Petersen Institute for International Economics





Source: Bureau of Labor Statistics





Source: Bureau of Labor Statistics





Source: AI Index, Crunchbase, VentureSource, Sand Hill Econometrics



Source: Elsevier/Scopus







Source: Moser, World Bank, UN, NEPC





















Source: St. Louis Federal Reserve Bank, NEPC











Source: World Wealth and Income Database

INCOME INEQUALITY



Source: World Wealth and Income Database





Source: Branko Milanovic





Source: BLS Current Population Survey, Katz and Krueger (2015)







Source: US Department of Commerce

NEPC, LLC -









Source: Google Images





Source: CoinMarketCap.Com



Source: Coindesk.com





Traditional Approach to Database/ Transactions





Blockchain Distributed Approach





Source: Accenture

CONCLUSION



MEGATRENDS

How will these Megatrends effect our lives?

• What are the implications for society?

• How can we take advantage as investors?

• What are the Megatrends of the future?



(1) 1.0E+15 is 1 with 15 zeros after it...1,000,000,000,000,000 or 1,000^5, it is also called a quintillion, coming after a quadrillion (12 zeros) and before a sextillion (18 zeros). Also, computing power is measured in FLOPS, Floating Operations Per Second, a measurement of how much a computer chip can perform.

(2) A zettabyte is 1000⁷ bytes of data. Other measurements of data:

1000	kВ	<u>kilobyte</u>
1000 ²	MB	megabyte
1000 ³	GB	<u>gigabyte</u>
10004	ΤB	terabyte
10005	PB	<u>petabyte</u>
10006	EB	<u>exabyte</u>
1000 ⁷	ZB	zettabyte
1000 ⁸	YB	<u>yottabyte</u>



(3) Common AI Terminology and Definitions...

The "AI Effect"

Paradox that AI is regarded as "whatever hasn't been done yet"

Machine Learning

Computer algorithms that are expected to improve over time with more information and data

Natural Language Processing

Ability of computers to read and understand human language

Predictive Analytics

Analysis of past and current data in search of patterns to aid in predictions

Algorithms

Specific set of programmed instructions

Neural Network

Al processes meant to mimic logical neural process of human brain

Deep Learning

Layering of neural networks with high computing power and large data sets

Turing Test

Test developed by Alan Turing in 1950 meant to identify true AI mimicking human thinking

Big Data

Unstructured, large data sets produced from common social, business, and consumer interactions available for complex analysis

Supervised Learning

Type of Machine Learning in which output data sets are classified and algorithms are expected to generate desired output

Ex: Facebook/Amazon recommendations

Unsupervised Learning

Type of Machine Learning used to draw inferences from data without predetermined process or responses Ex: Cluster analysis for image recognition



(4) This <u>article</u> offers a fascinating story of the challenges and breakthroughs in deep learning at Google.

(5) The Notice of the State Council on the issuance of a New Generation of Artificial Intelligence Development Planning Notice was released on July 20, 2017. After a quick conversion from Google Translate (wow, Deep Learning works!) it is 12,000 words and lays out a sweeping plan to make China a global leader in Artificial Intelligence. Link <u>here</u>.

(6) A cool image that I stumbled upon in my research and that really supports that these new powers in Asia are already arriving is the shift in the economic center of gravity from Angus Maddison of University of Groningen:





(7) It's amazing that we take in as many immigrants now as we did in the early 1900s. Also, that spike in the early 1990s is the result of the passage of the Immigration Act of 1990. This act was sponsored by Ted Kennedy (D) and signed into law by George H.W. Bush (R). It wasn't that long ago that things like that happened.



(8) There is a ton more information on the UN Sustainable Development Goals <u>here</u>.



(9) Yeah, I drew that. Thankfully art is not a job requirement for me or I would have been fired a long time ago.

(10) There is a concern that bitcoin and other cryptocurrencies get used mostly for criminal activity but it turns out CASH is what gets used for criminal activity! "Consider the following two questions: a) Of all the physical U.S. dollars in circulation in the U.S., what value proportion is in \$100 bills? 4 b) Suppose we took all the U.S. cash and divided by the total population (everyone including children). How much cash in the average wallet? My guess is that you would be way off on both questions. The \$100 takes up 78% of the value of all cash – even though it is unlikely you know a person carrying a \$100 bill today. In addition, most retail establishments won't even accept \$100s or \$50s. The average wallet size is a stunning \$4,000.3 Not my wallet!" (Cam Harvey)

(11) I showed the top 100 to make the chart manageable. The total number of cryptocurrencies as of December 12, 2017 was 1,045 January 2, 2018 was 1,381 1,576 on April 18, 2018!



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• Sources:

 Sources used in this presentation include: NEPC, IDC, AI Index – 2017 Report, US Bureau of Labor Statistics, Petersen Institute of International Economics, Crunchbase, VentureSource, Sand Hill Econometrics, Elsevier/Scopus, Moser, World Bank, UN, United Nations, St. Louis Federal Reserve, United Nations Sustainable Development Goals, World Wealth and Income Database, Branko Milanovic, BLS Current Population Survey (2015), US Department of Commerce, Bloomberg, Coinmarketcap.com, Accenture, Wikipedia, New York Times, Notice of the State Council of China of a New Generation of Artificial Intelligence Development Planning Notice, US Department of Homeland Security, US Energy Administration, BP 2017 World Energy Report, BP Sustainability Report, Ray Kurzweil: Disruptive Technologies and Dangerous Ideas, MIT Technology Review, The Economist, Bitcoin - Myths (Harvey), Bridgewater Associates: Populism – The Phenomenon, McKinsey – The Age of Analytics, Central Banks – Lessons from History (Schenk/Straumann), Pew Research Center, Income Inequality (Saez/Pikety).