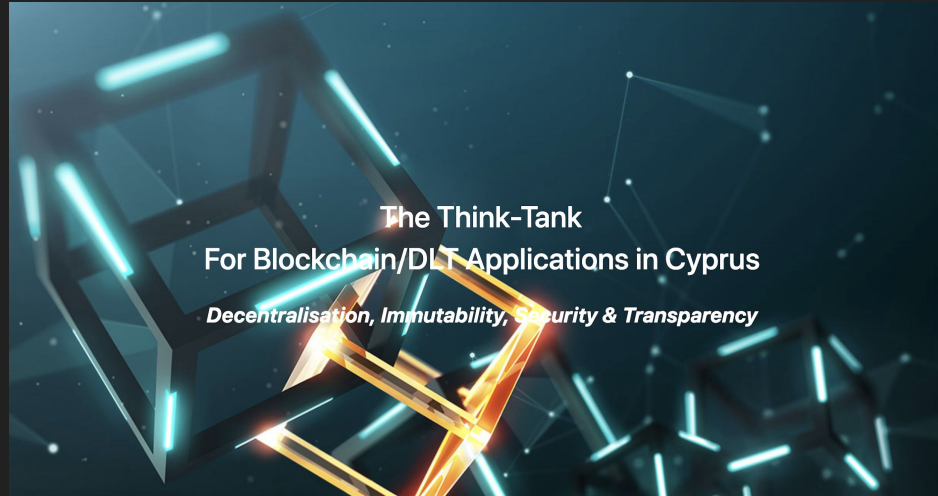




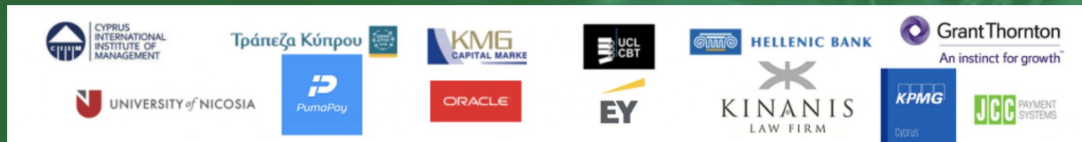
Blockchain, DLTs: Benefits & Challenges

Dr Theodosios Mourouzis

Cyprus Blockchain Technologies



Members



What is Blockchain?

- Another emerging technology....
- Emerging technologies are technologies that are perceived as capable of challenging/changing the status quo

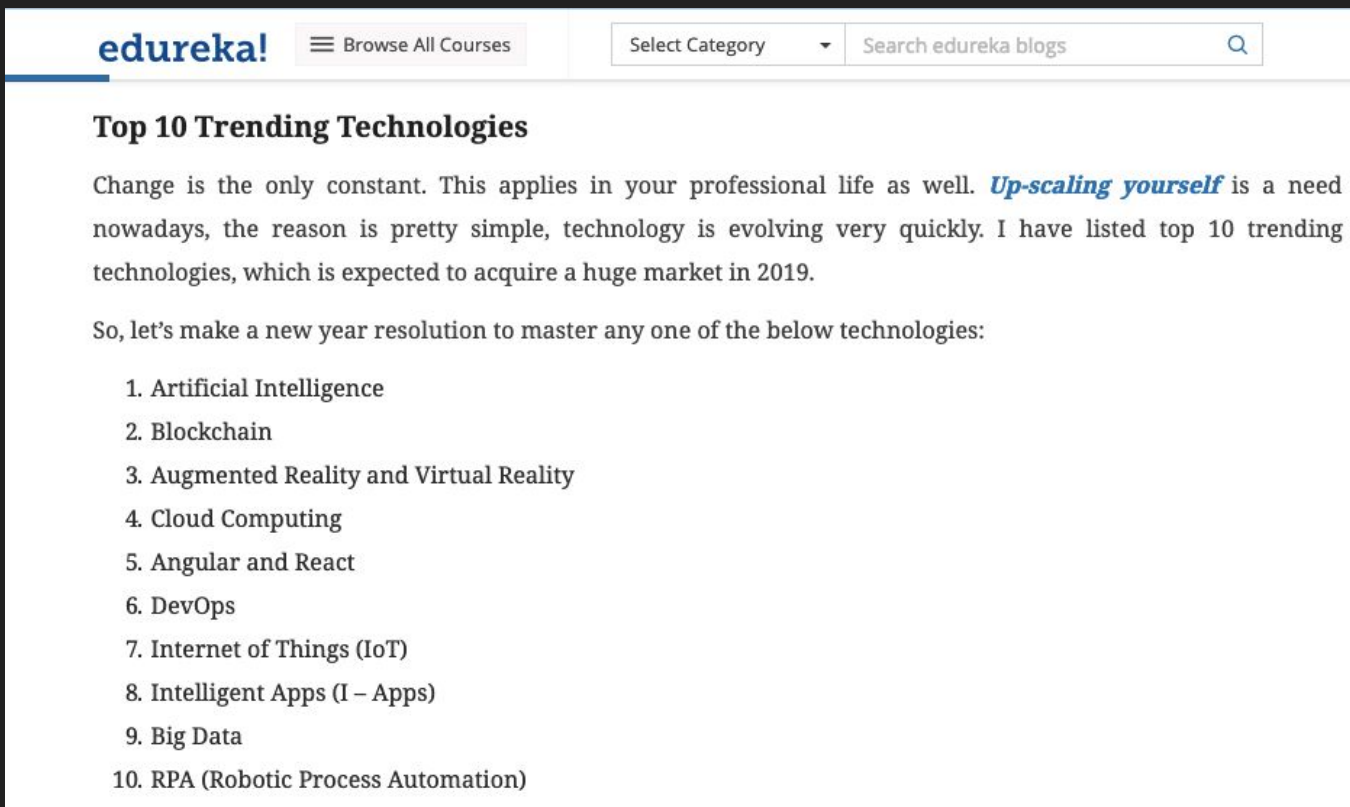


Emerging Technologies

- Always same characteristics
 - (relatively) fast growth
 - virality at very early stages
 - radical novelty
 - disruptive
 - prominent (future) impact
 - uncertainty
 - ambiguity
 - scrutiny



Emerging Technologies



The image is a screenshot of a web page from Edureka. At the top left is the Edureka logo. To its right is a navigation menu with a hamburger icon and the text 'Browse All Courses'. Further right is a search bar with a dropdown menu labeled 'Select Category' and a search input field containing the text 'Search edureka blogs' and a magnifying glass icon. Below the navigation is the main content area. The title of the article is 'Top 10 Trending Technologies'. The first paragraph discusses the importance of staying updated with technology and lists the top 10 trending technologies for 2019. The second paragraph encourages readers to master one of these technologies as a New Year's resolution. The list of technologies is as follows:

Top 10 Trending Technologies

Change is the only constant. This applies in your professional life as well. *Up-scaling yourself* is a need nowadays, the reason is pretty simple, technology is evolving very quickly. I have listed top 10 trending technologies, which is expected to acquire a huge market in 2019.

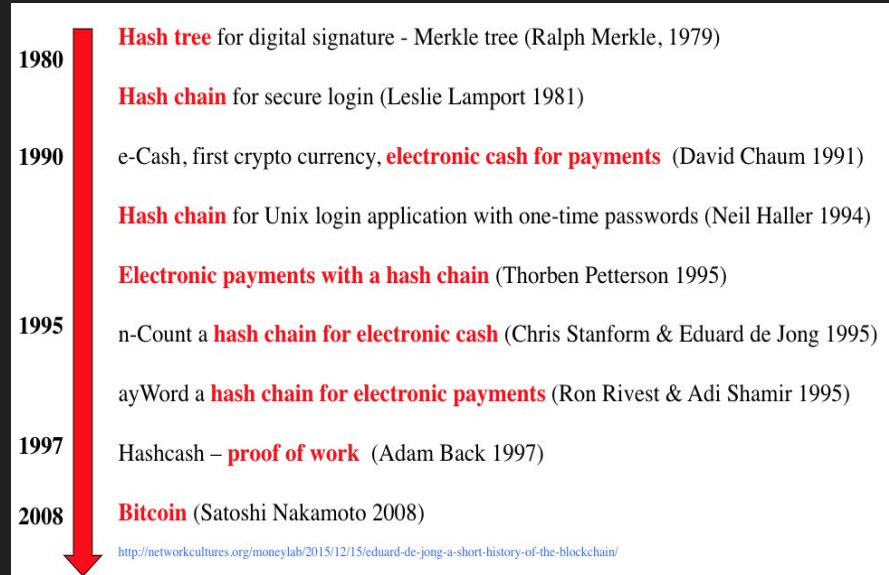
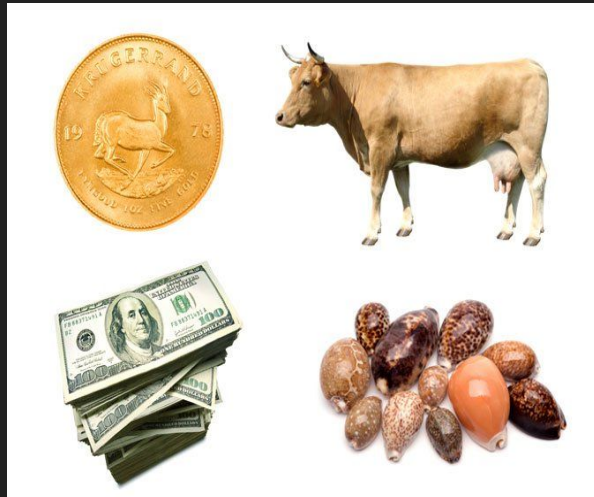
So, let's make a new year resolution to master any one of the below technologies:

1. Artificial Intelligence
2. Blockchain
3. Augmented Reality and Virtual Reality
4. Cloud Computing
5. Angular and React
6. DevOps
7. Internet of Things (IoT)
8. Intelligent Apps (I – Apps)
9. Big Data
10. RPA (Robotic Process Automation)



Blockchain Behind Bitcoin

- Firstly appeared as the accounting ledger of Bitcoin Cash System
- Historical evolution of research towards e-cash systems



Basic Ingredients behind Blockchain

- **Cryptography**
 - Immutability via hash functions & cryptographic sealing
 - Ownership and double-spending avoidance via hashing & digital signatures
- **Distributed Systems**
 - P2P Architectures
 - Byzantine Fault Tolerance and Consensus Algorithms
- **Economics & Game theory**
 - Incentives for alignment of stakeholders

Emerging Technologies: Highly Scrutinized

- When a new technology appears there is always a battle between two groups:
Technology Evangelists vs **The Haters/Opponents**



- Nobody 100% correct ... Nobody 100% wrong!
- What is the usual result? Well it varies ...
- But let's go back in history a bit and see...

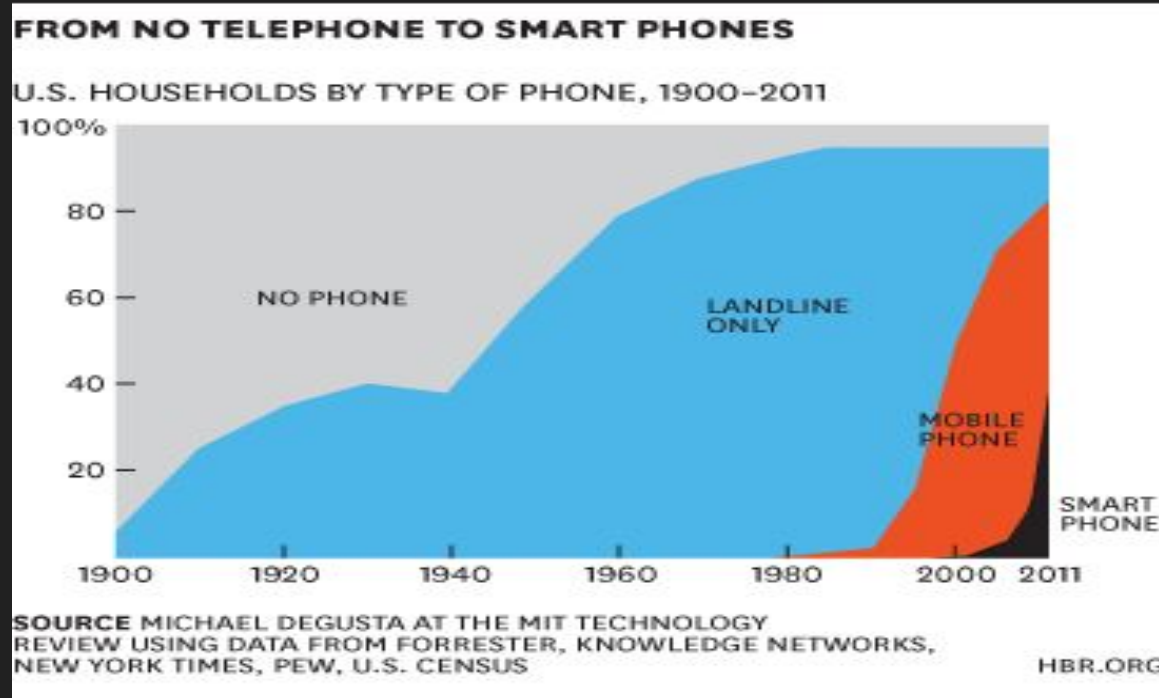
Case 1: Telephone

- **1876:** "The Americans have need of the telephone, but we do not. We have plenty of messenger boys." — William Preece, British Post Office.
- **1876:** "This 'telephone' has too many shortcomings to be seriously considered as a means of communication." — William Orton, President of Western Union.

"This 'telephone' has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us."
—William Orton
someecards
user card



Case 1: Telephone



Case 2: Computers

History of Computers

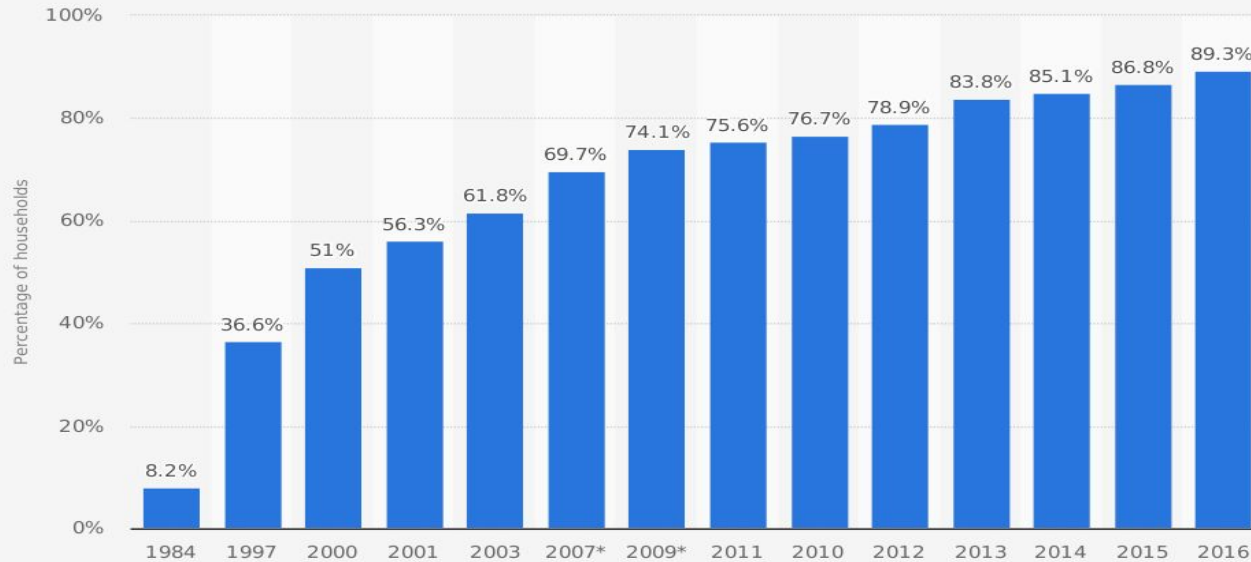
Famous Quotes about Computers

- “I think there is a world market for maybe five computers.” – Thomas Watson, chairman of IBM, 1943
- “Computers in the future may weigh no more than 1.5 tons.” – Popular Mechanics, 1949
- “There is no reason anyone in the right state of mind will want a computer in their home.” – Ken Olson, President of Digital Equipment Corp, 1977.



Case 2: Computers

Percentage of households in the United States with a computer at home from 1984 to 2016



Source
US Census Bureau
© Statista 2019

Additional Information:
United States; US Census Bureau; 2018

Case 3: The Internet



I predict the Internet will soon go
spectacularly supernova and in 1996
catastrophically collapse.

— *Robert Metcalfe* —

AZ QUOTES

Case 3: The Internet

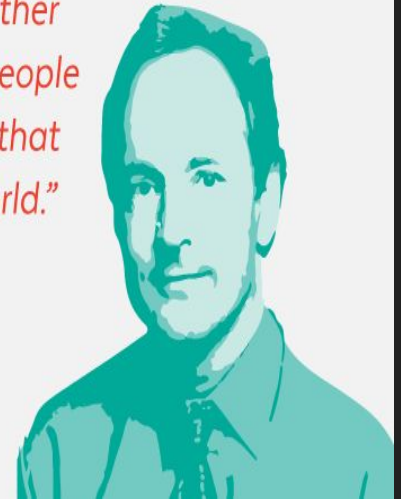


People who bet against the Internet, who think that somehow this change is just a generational shift, miss that it is a fundamental reorganizing of the power of the end user. The Internet brings tremendous tools to the end user, and that end user is going to use them.

— *Eric Schmidt* —

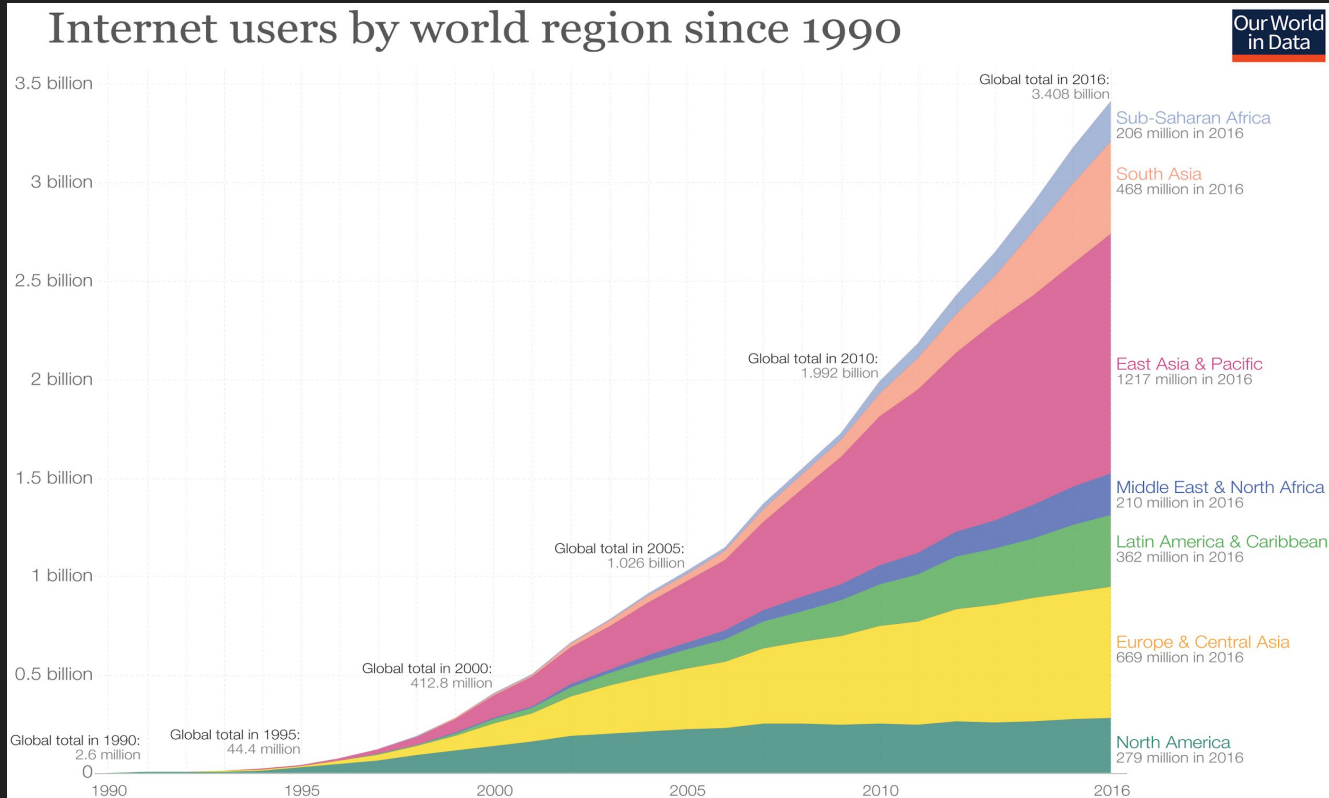
AZ QUOTES

“There was a time when people felt the internet was another world, but now people realize it’s a tool that we use in this world.”



Tim Berners-Lee

Case 3: The Internet



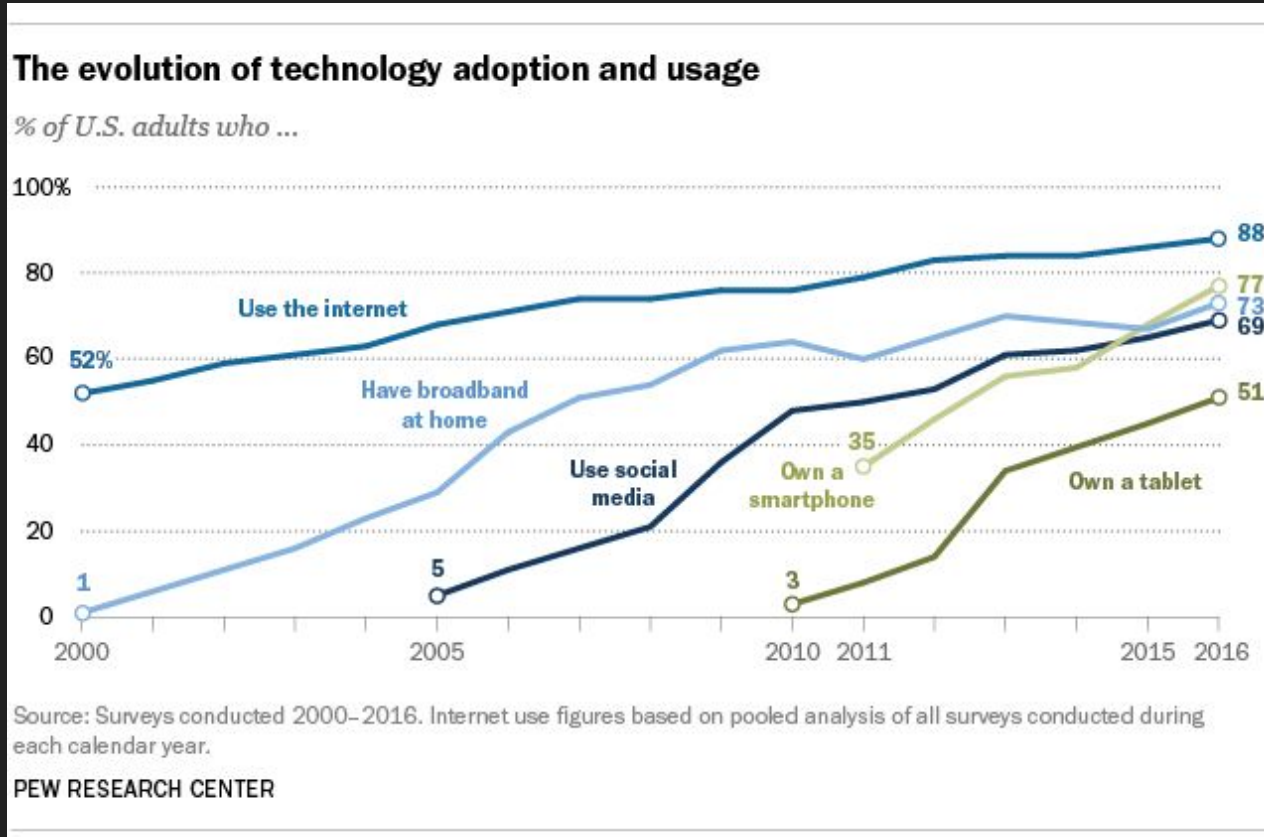
Data source: Based on data from the World Bank and data from the International Telecommunications Union. Internet users are people with access to the worldwide network. The interactive data visualization is available at [OurWorldinData.org](https://ourworldindata.org). There you find the raw data and more visualizations on this topic. Licensed under CC-BY-SA by the author Max Roser.

Case 4: Smartphones

- **2006:** "Everyone's always asking me when Apple will come out with a cell phone. My answer is, 'Probably never.'" — David Pogue, The New York Times.
- **2007:** "There's no chance that the iPhone is going to get any significant market share." — Steve Ballmer, Microsoft CEO.



Case 4: Smartphones



Case 5: Encryption



Coalition [against ISIS] need the tools. And the tools involve encryption where we cannot hear what they're even planning. And when we see red flags, a father, a mother, a neighbor who says we have got a problem here, then we have to give law enforcement the ability to listen so they can disrupt these terrorist attacks before they occur.

— *John Kasich* —

AZ QUOTES



U.K. Gov't: No End-To-End Encryption Please, We're British...

Login

Natasha Lomas @riptari / 3 years ago

Comment

Startups
Apps
Gadgets
Videos
Podcasts
Extra Crunch
—
Events
Advertise
Crunchbase
More

Cybersecurity 101
Facebook
Fundings & Exits
Asia

Search



Case 5: Encryption



Encryption...is a powerful defensive weapon for free people. It offers a technical guarantee of privacy, regardless of who is running the government... It's hard to think of a more powerful, less dangerous tool for liberty.

— *Esther Dyson* —

AZ QUOTES



So end-to-end encryption, keeps things encrypted and that means that law enforcement, without a warrant, cannot read that information.

— *Rod Beckstrom* —

AZ QUOTES

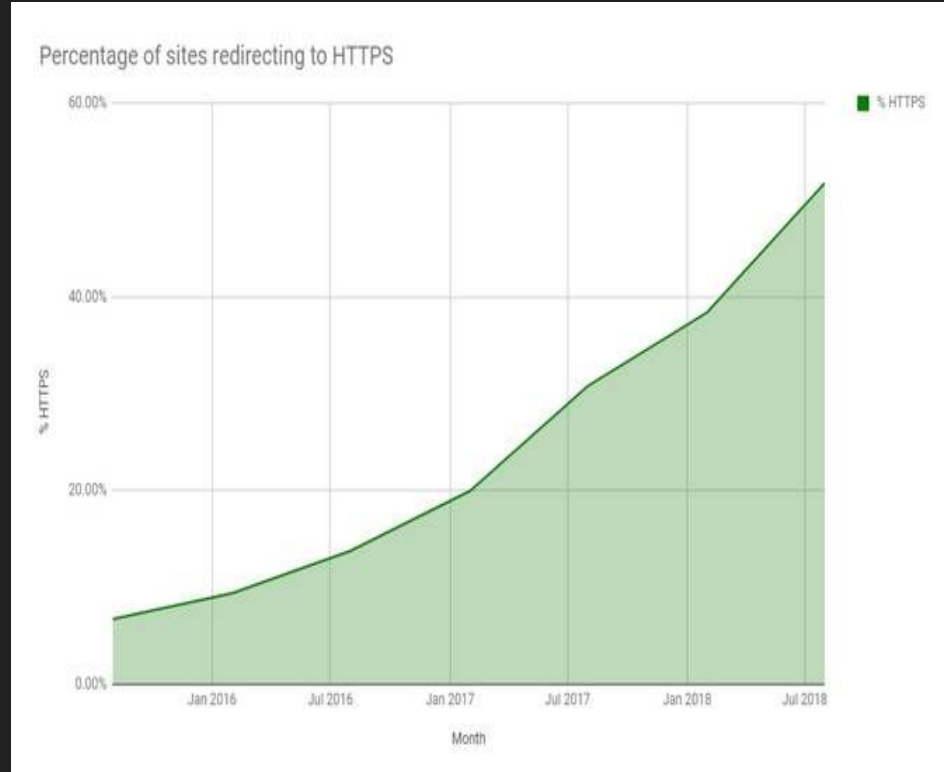


Without encryption, you and I wouldn't be able to do our banking online. We wouldn't be able to buy things online, because your credit cards - they've probably been ripped off anyway, but they would be ripped off left and right every day if there wasn't encryption.

— *Tim Cook* —

AZ QUOTES

Case 5: Encryption



Case 6: Artificial Intelligence



Artificial intelligence is the science of making machines do things that would require intelligence if done by men.

— *Marvin Minsky* —

AZ QUOTES



The development of full artificial intelligence could spell the end of the human race.

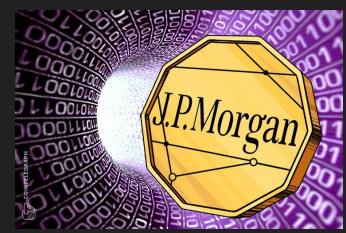
— *Stephen Hawking* —

AZ QUOTES

Case 7: Cryptocurrencies & Bitcoin



Interesting Story: The JPM COIN



JPMorgan CEO Jamie Dimon Returns to Bitcoin Bashing, Calls Cryptocurrency a 'Scam'

48512 Total views 590 Total shares

Listen to article   2:15



MENU

MARKETS

BUSINESS

INVESTING

TECH

POLITICS

CNBC TV

FINANCE

[BANKS](#) | [HEDGE FUNDS](#) | [DEALS AND IPOs](#) | [WALL STREET](#)

JP Morgan is rolling out the first US bank-backed cryptocurrency to transform payments business

- Engineers at the lender have created the "JPM Coin," a digital token that will be used to instantly settle transactions between clients of its wholesale payments business.
- Only a tiny fraction of payments will initially be transmitted using the cryptocurrency, but the trial represents the first real-world use of a digital coin by a major U.S. bank.
- While J.P. Morgan's Jamie Dimon has bashed bitcoin as a "fraud," the bank chief and his managers have consistently said blockchain and regulated digital currencies held promise.



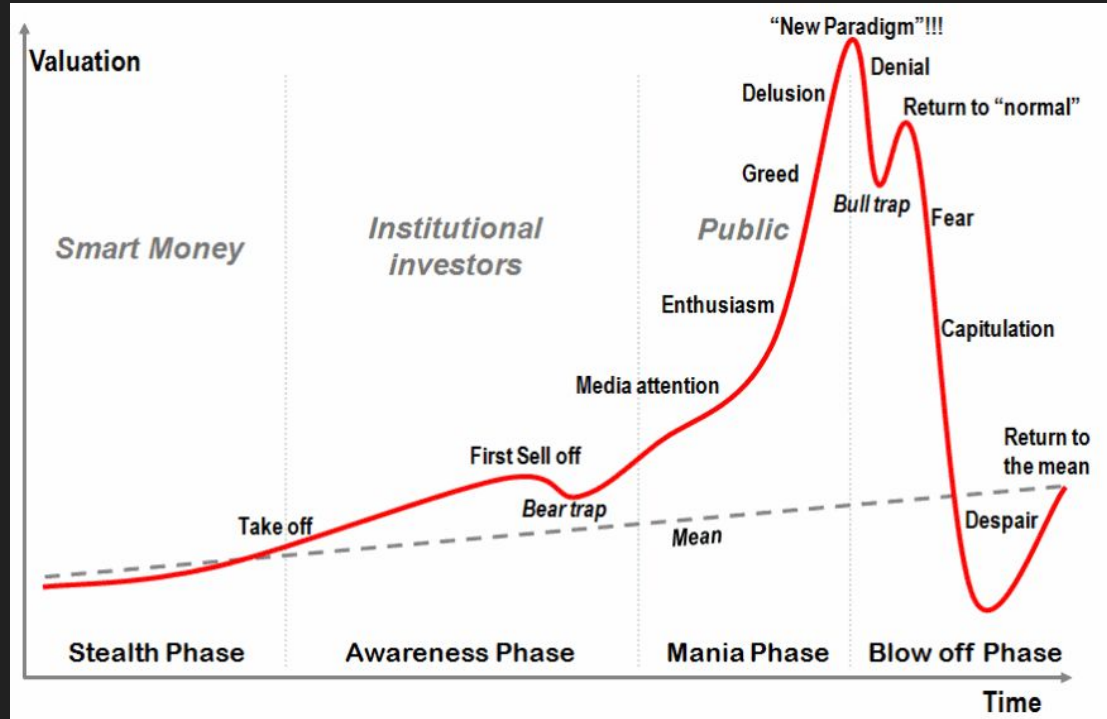
[Hugh Son | @hugh_son](#)

Published 5:59 AM ET Thu, 14 Feb 2019 | Updated 7:13 PM ET Thu, 14 Feb 2019



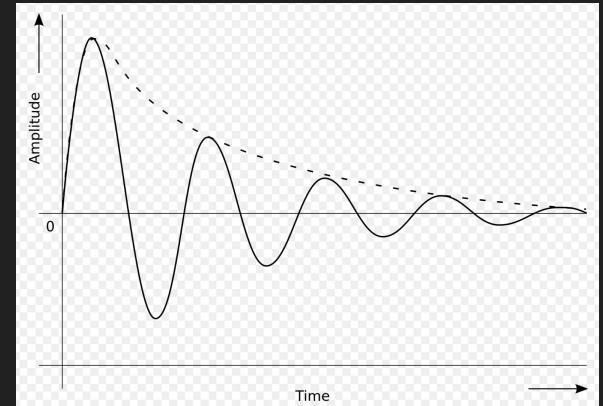
Hype or Hope

- A lot of confusion initially...however the trend is persistent as always



Hype or Hope

- People get excited initially
- Initiatives to reinvent the wheel using the new technology from everywhere
- **What happens next? Guess?**
 - Regression to the Mean
 - Only a few survive with deep knowledge and real use-cases
 - However large numbers enable magic to happen!
 - Low prob. success stories become a reality!



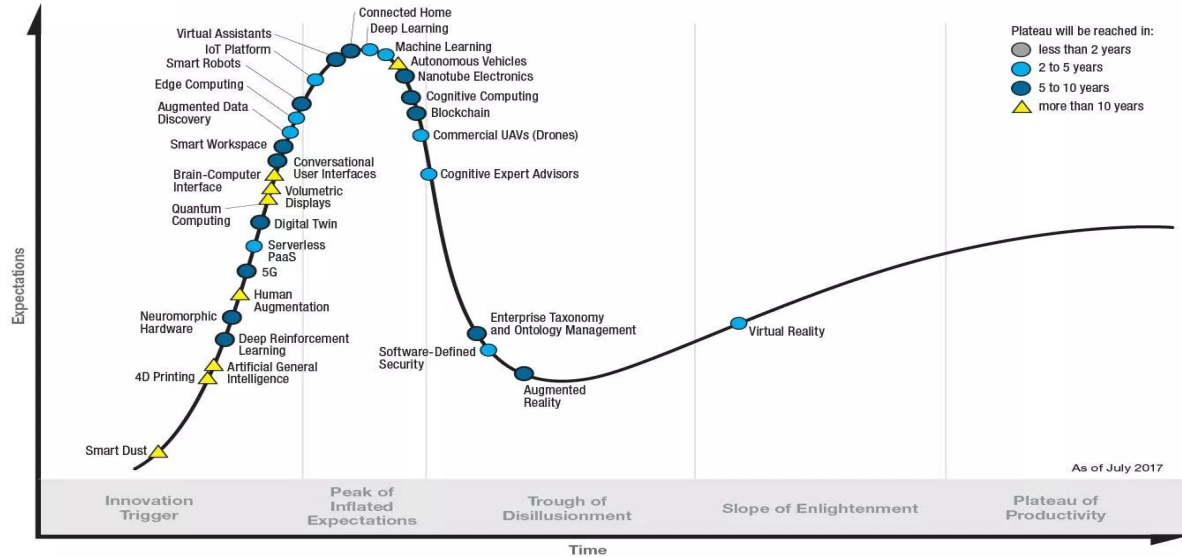
What we have observed in the Crypto space?

- Most of the use-cases are not real and do not solve real business problems
- Most of the decentralised use-cases are ... centralised!
- Most of the cases that claim decentralisation have a hidden agenda ... guess what?
 - Getting some power/money as a central authority
 - Circumvent obstacles and other complexities to facilitate their business
- However same use cases will definitely succeed as happened with previous technologies!



This is just the beginning...More to Come

Gartner **Hype Cycle** for Emerging Technologies, 2017



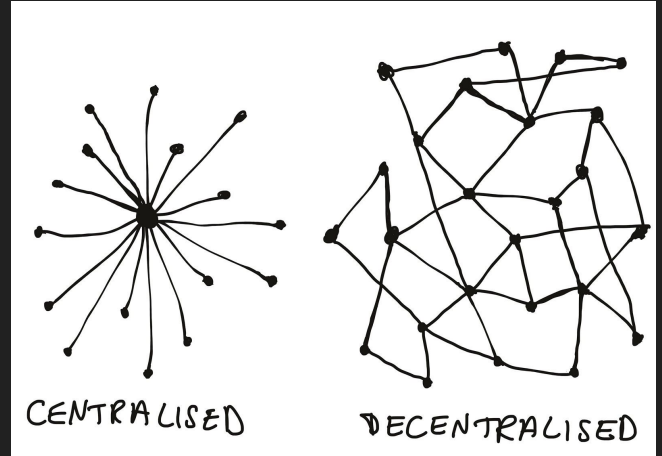
gartner.com/SmarterWithGartner

Source: Gartner (July 2017)
© 2017 Gartner, Inc. and/or its affiliates. All rights reserved.

Gartner

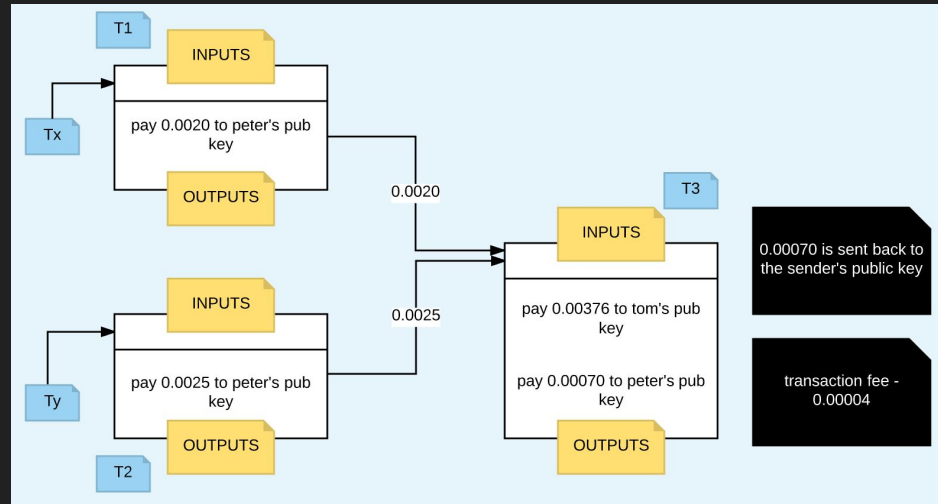
Benefits from Blockchain

- Decentralisation
- No-single point of failure
- No dependency on third-parties



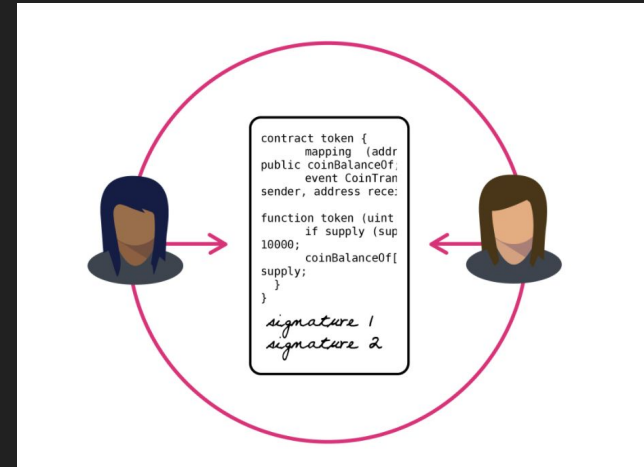
Benefits from Blockchain

- Greater Transparency
- Improved Traceability up to the point of origin
- Immutability



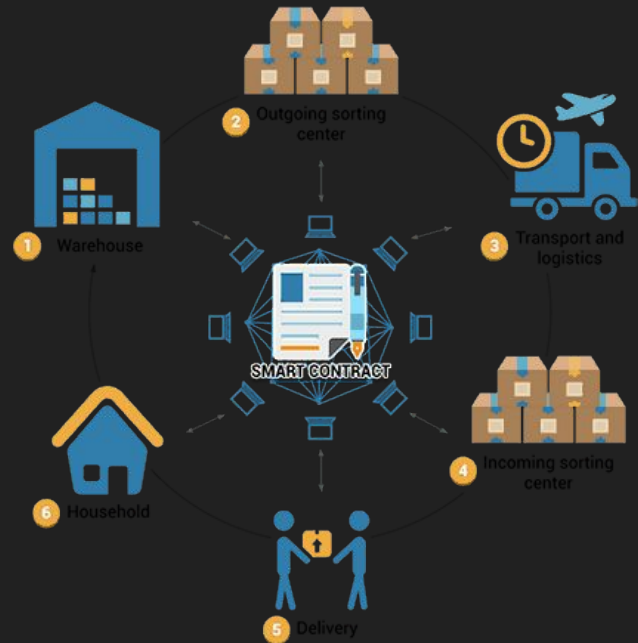
Benefits from Blockchain

- Pre-set conditions for agreements using smart-contracts
- Improved contractual optimisation
- Reduced counterparty risks
- Automated enforcement and execution of contracts



Benefits from Blockchain

- Cross-border payments made instantly and at a lower cost
- Streamlining of complex supply chains
- Financing of new projects (tokenization)




Challenges with Blockchain

- **Interoperability**
 - With an increasing number of players in an ever-expanding industry like blockchain, some worry that with so many different networks, no standard exists to allow them to interact with each other. This standardization is what the industry calls interoperability.



Challenges with Blockchain

- According to Deloitte, the lack of interoperability "grants blockchain coders and developers freedom — and can give IT departments headaches as they discover that platforms can't communicate without translation help."
- For this reason we need standards like ISO/TC 307



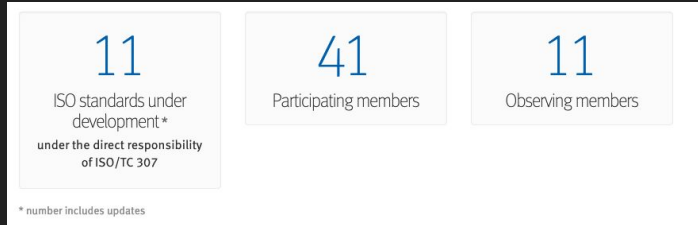
International Organization for Standardization

Great things happen when the world agrees

[Taking part](#) > [Who develops standards](#)
> [Technical Committees](#) > [ISO/TC 307](#)

ISO/TC 307

Blockchain and electronic distributed ledger technologies



Structure Liaisons Meetings

Reference	Title
ISO/TC 307/AG 1	SBP Review Advisory Group
ISO/TC 307/AHG 1	Liaison Review Ad Hoc Group
ISO/TC 307/CAG 1	Convenors coordination group
ISO/TC 307/JWG 4	Joint ISO/TC 307 - ISO/IEC JTC 1/SC 27 WG: Blockchain and distributed ledger technologies Security techniques
ISO/TC 307/SG 2	Use cases
ISO/TC 307/SG 7	Interoperability of blockchain and distributed ledger technology systems
ISO/TC 307/WG 1	Foundations
ISO/TC 307/WG 2	Security, privacy and identity
ISO/TC 307/WG 3	Smart contracts and their applications
ISO/TC 307/WG 5	Governance

ISO/TC 307 - Secretariat

SA Australia

Challenges with Blockchain



- **Privacy**
 - Reaching critical mass is important for privacy-preserving tools to be efficient (ZK-SNARKS, ring signatures, mixnets etc)
 - DLTs & Blockchain have very nice features such as accountability and transparency
 - The main concept behind transparency is the existence of the public ledger that includes all the approved transactions
 - In addition, all assets can be verified or not if they are associated to a given secret key and that implies full non-repudiation related to the funds

Challenges with Blockchain

- **Scalability**
 - Blockchains are having trouble effectively supporting a large number of users on the network.
 - Both Bitcoin and Ethereum, the leading blockchain networks, have experienced slowed transaction speeds and higher fees charged per transaction as a result of a substantial increase in users.
 - Scalable Blockchains is the holy grail in the space.
 - Some solutions exist: Raiden Network & Lightning Network

Challenges with Blockchain

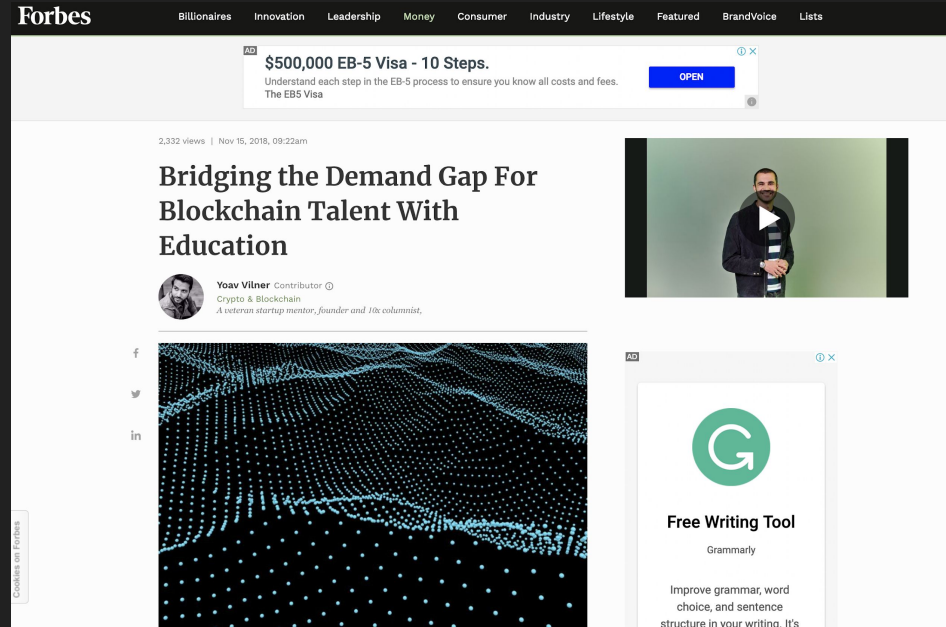
- **Security and (yet unknown) complex attack scenarios**
 - 51% attack
 - Eclipse attack
 - Routing Attack
 - Sybil Attack
 - Selfish Miner attack
 - Public key crypto attacks, especially with quantum algorithms
 - Hot-wallet attacks
 - Smart-contract attacks
 - Phishing
 - Vulnerable signatures

Challenges with Blockchain

- **Lack of awareness and talented people in the space**
 - This is always the case with all emerging technologies (same with data scientists)
 - Education is the solution



Education is the
key to success




Forbes Billionaires Innovation Leadership Money Consumer Industry Lifestyle Featured BrandVoice Lists

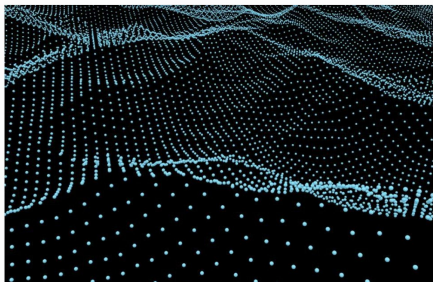
AD \$500,000 EB-5 Visa - 10 Steps.
Understand each step in the EB-5 process to ensure you know all costs and fees.
The EB5 Visa OPEN


2,332 views | Nov 15, 2018, 09:22am

Bridging the Demand Gap For Blockchain Talent With Education

Yoav Vilner Contributor 
Crypto & Blockchain
A veteran startup mentor, founder and 10x columnist.

f
t
in



AD 
Free Writing Tool
Grammarly
Improve grammar, word choice, and sentence structure in your writing. It's

Content on Forbes

Thanks

