Leadership in Digital Uncertainty: New Strategy to Cope with the New Normal

Prepared for
IGF – Cameroon Working Group

William Favre Slater, III
Chicago, Illinois
June 30, 2020

Agenda

- Executive Summary
- Introduction
- Why?
- The World in 2020
- Information Warfare
- The Internet
- Blockchain Technology
- Cybersecurity
- Types of Blockchains
- Why Blockchain solves problems
- Is There Hope?
- Conclusion
- Resources

Executive Summary

- 2020 has brought the entire World many unexpected surprises and business challenges.

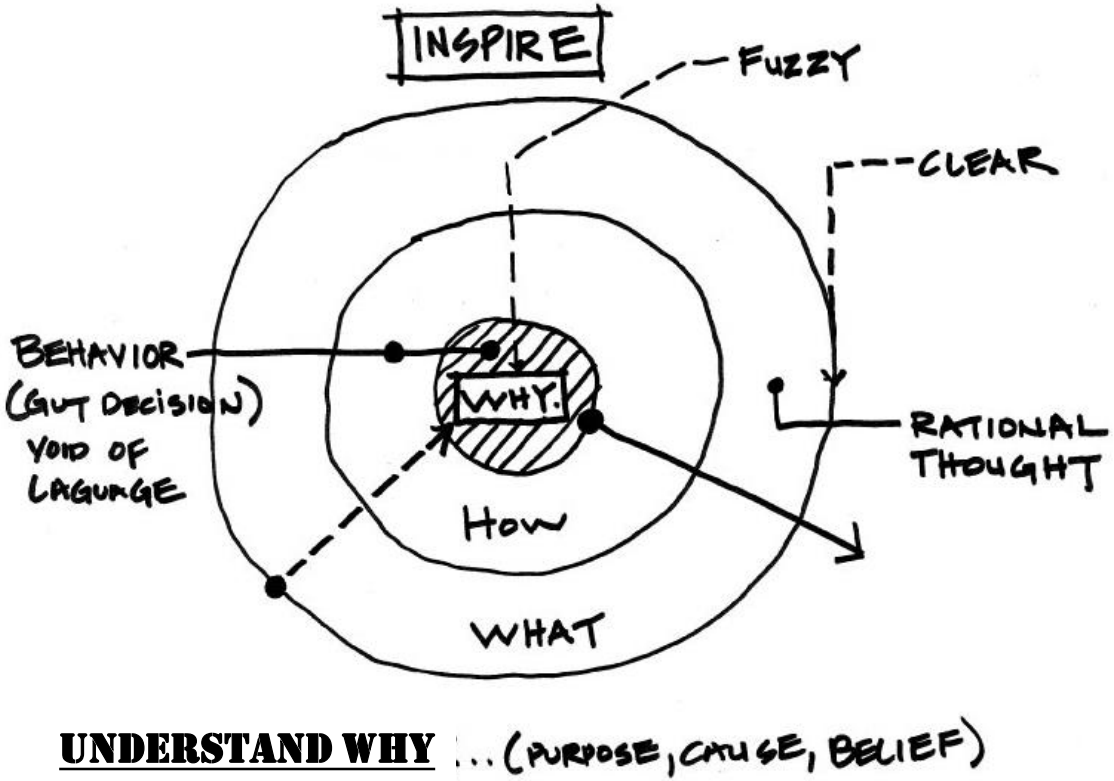
- For Leaders that are resourceful, Technologies such as the Internet, distributed & decentralized computing, and Blockchain offer great hope for the future.

- This presentation will discuss these technologies at a high level and show why they should be considered to help organizations perform the Digital Transformations that will help them embrace the challenges of the “New Normal” that we have all come to expect in 2020 and beyond.

Introduction

- This presentation will discuss at a high level
  - The World in 2020
  - Information Warfare
  - The Internet
  - Blockchain Technology
  - Cybersecurity
  - Types of Blockchains
  - Why Blockchain Solves Problems
  - Is There Hope?
  - Conclusion
  - Useful Reosurces

Why?



For more information about Start with WHY, please view Simon Sinek's legendary presentation: ttps://www.youtube.com/watch?v=qp0HIF3SfI4

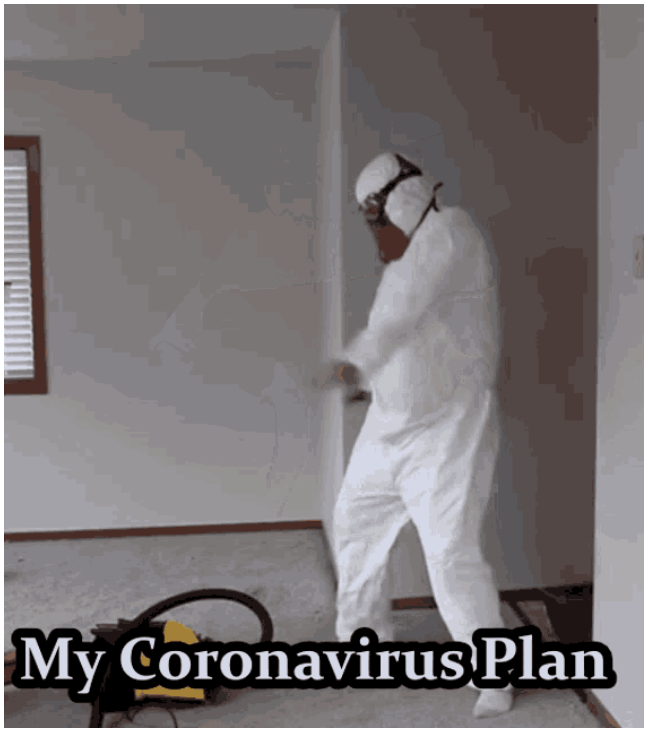
The World in 2020

The World in 2020

Remember that ancient Chinese Curse, "May You Live in Interesting Times."?

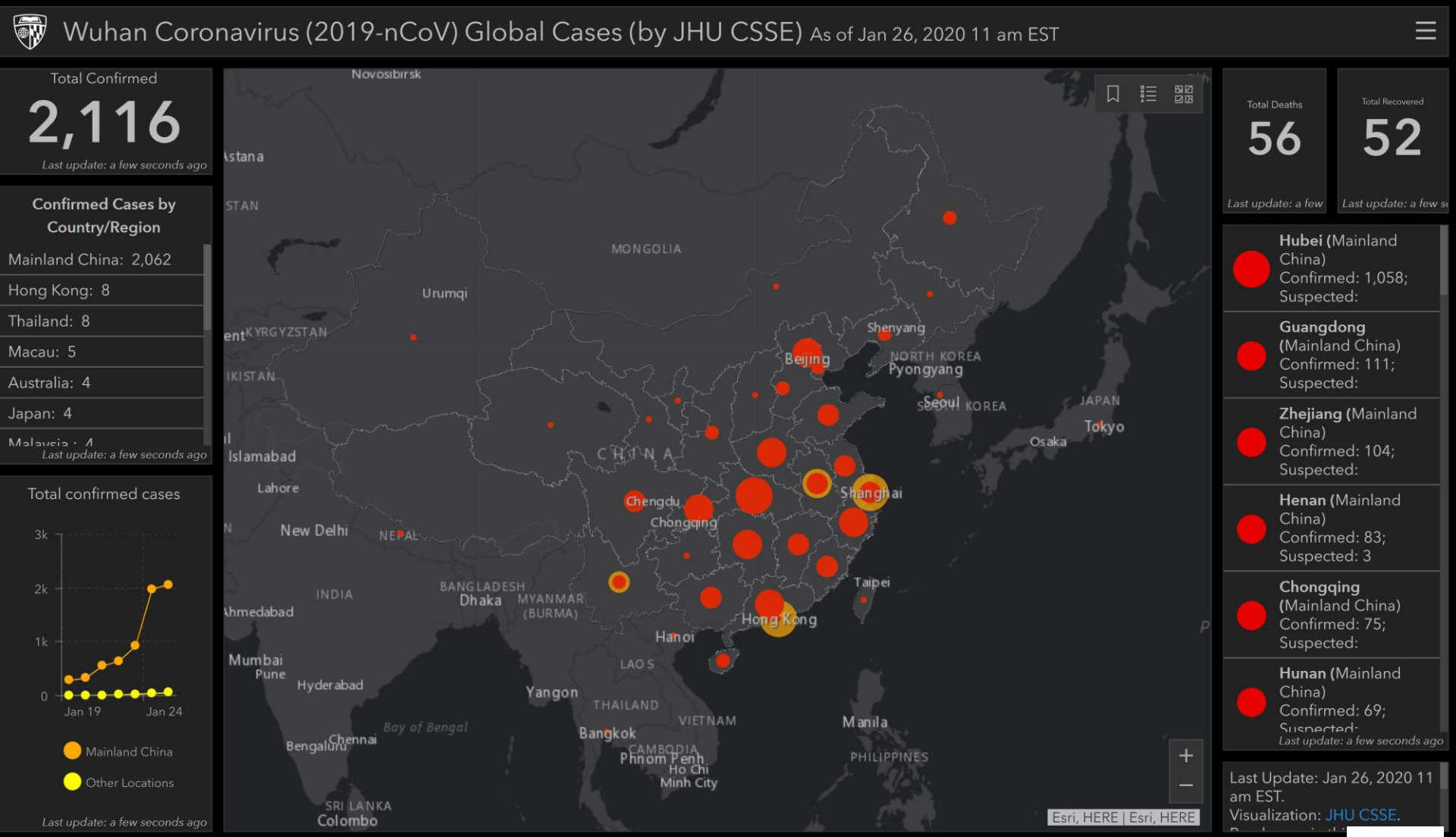
1. **CoronaVirus**
2. **Global Pandemic**
3. **Economic Uncertainty**
4. **Layoffs**
5. **Civil Unrest & Riots**
6. **Lockdowns**
7. **Social Distancing**
8. **Teleworking**
9. **Masks**
10. **Contact Tracing**
11. **Fear Everywhere**

AMERICAN HUMOR ALERT

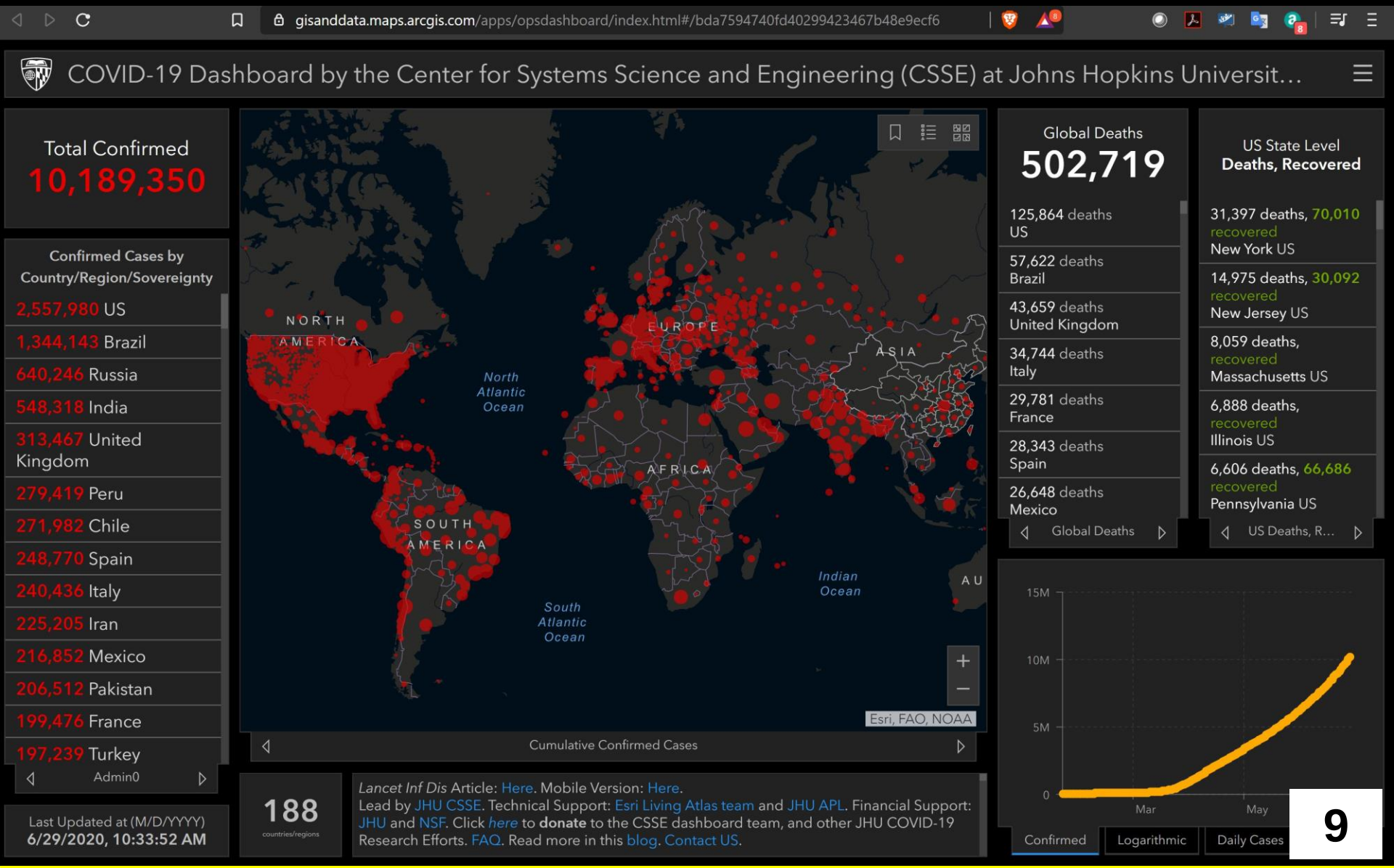


(For maximum effect: Play I Am Everyday People by Sly and the Family Stone.)

CoronaVirus Heatmap – Johns Hopkins University – January 26, 2020



CoronaVirus Heatmap – Johns Hopkins University - June 29, 2020



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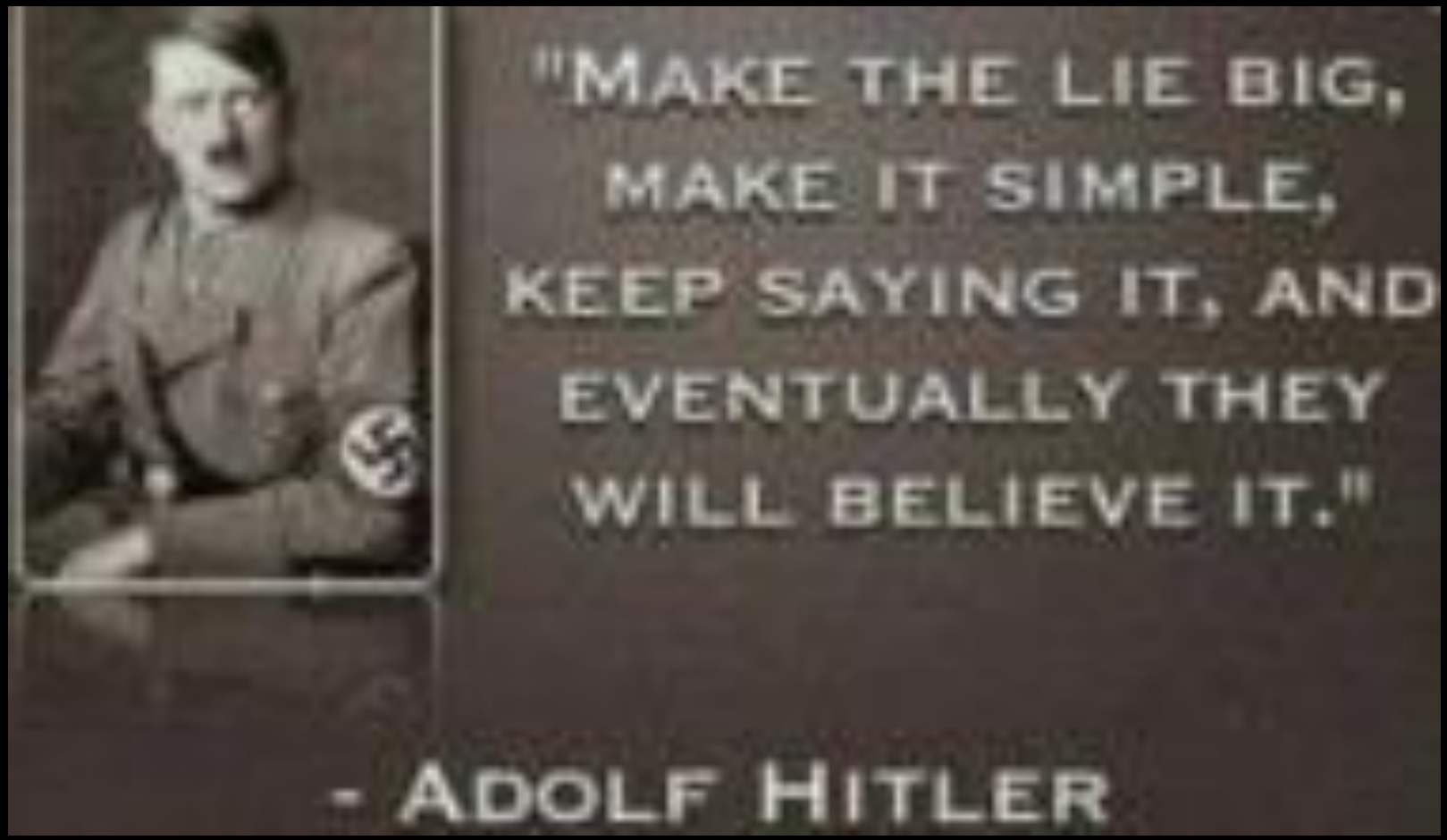
"The future is already here – it's just not evenly distributed."
–William Gibson

Information Warfare


"MAKE THE LIE BIG,
MAKE IT SIMPLE,
KEEP SAYING IT, AND
EVENTUALLY THEY
WILL BELIEVE IT."
- ADOLF HITLER

Information Warfare

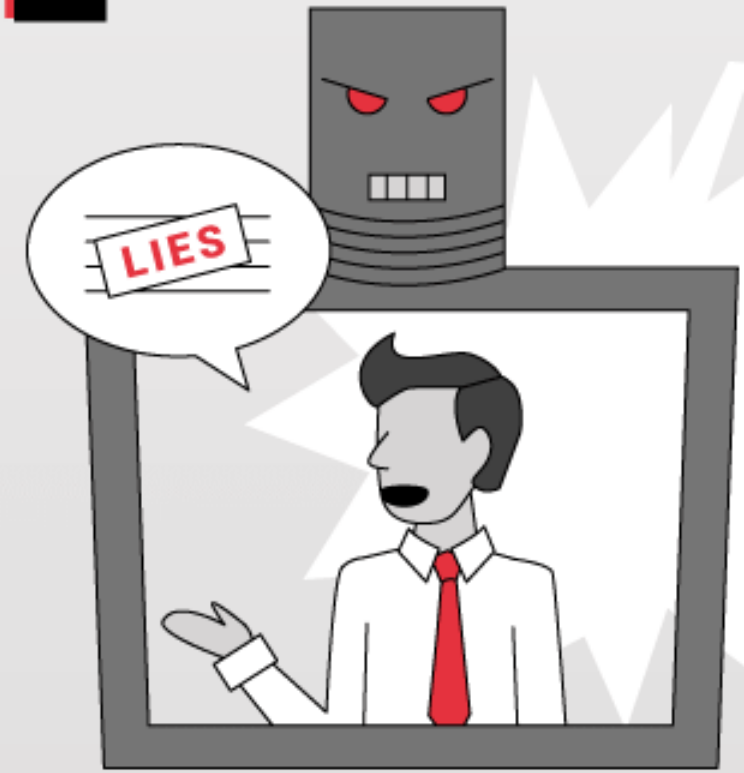
The use and management of information in pursuit of an advantage over an opponent, such as propaganda, disinformation, and gathering assurances that one's own information is accurate.

n. the use of information or information technology during a time of crisis or conflict to achieve or promote specific objectives over a specific adversary or adversaries

Source: https://en.wikipedia.org/wiki/Information_warfare

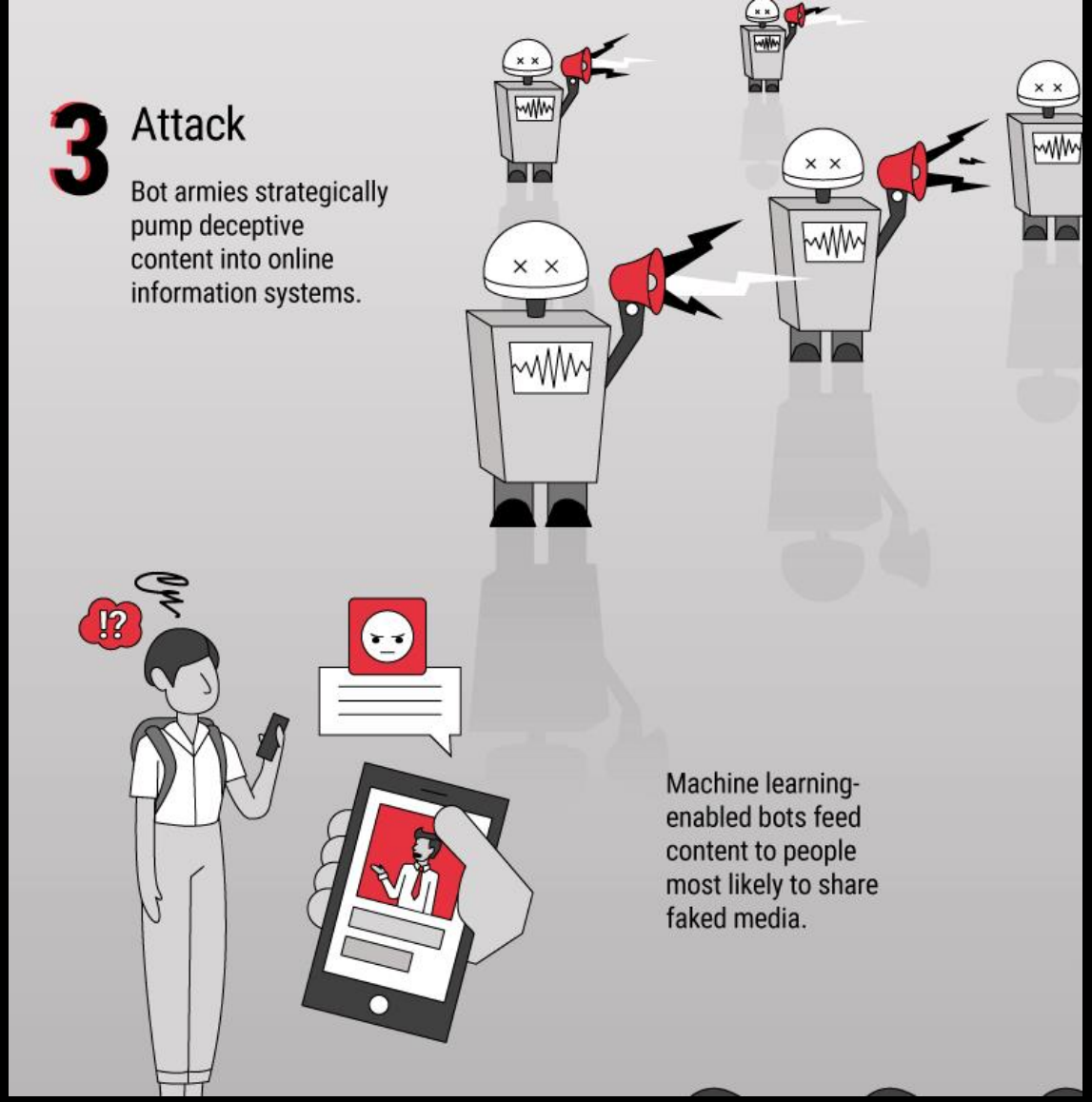
Source: CB Insights. (2018) Memes That Kill Kill: The Future of Information Warfare. Retrieved on May 10, 2018 from https://app.cbinsights.com/research/future-of-information-warfare/.

2 Weaponization



AI-enabled editing software is used to generate malicious fake video and audio content.

Source: CB Insights. (2018) Memes That Kill Kill: The Future of Information Warfare. Retrieved on May 10, 2018 from https://app.cbinsights.com/research/future-of-information-warfare/.



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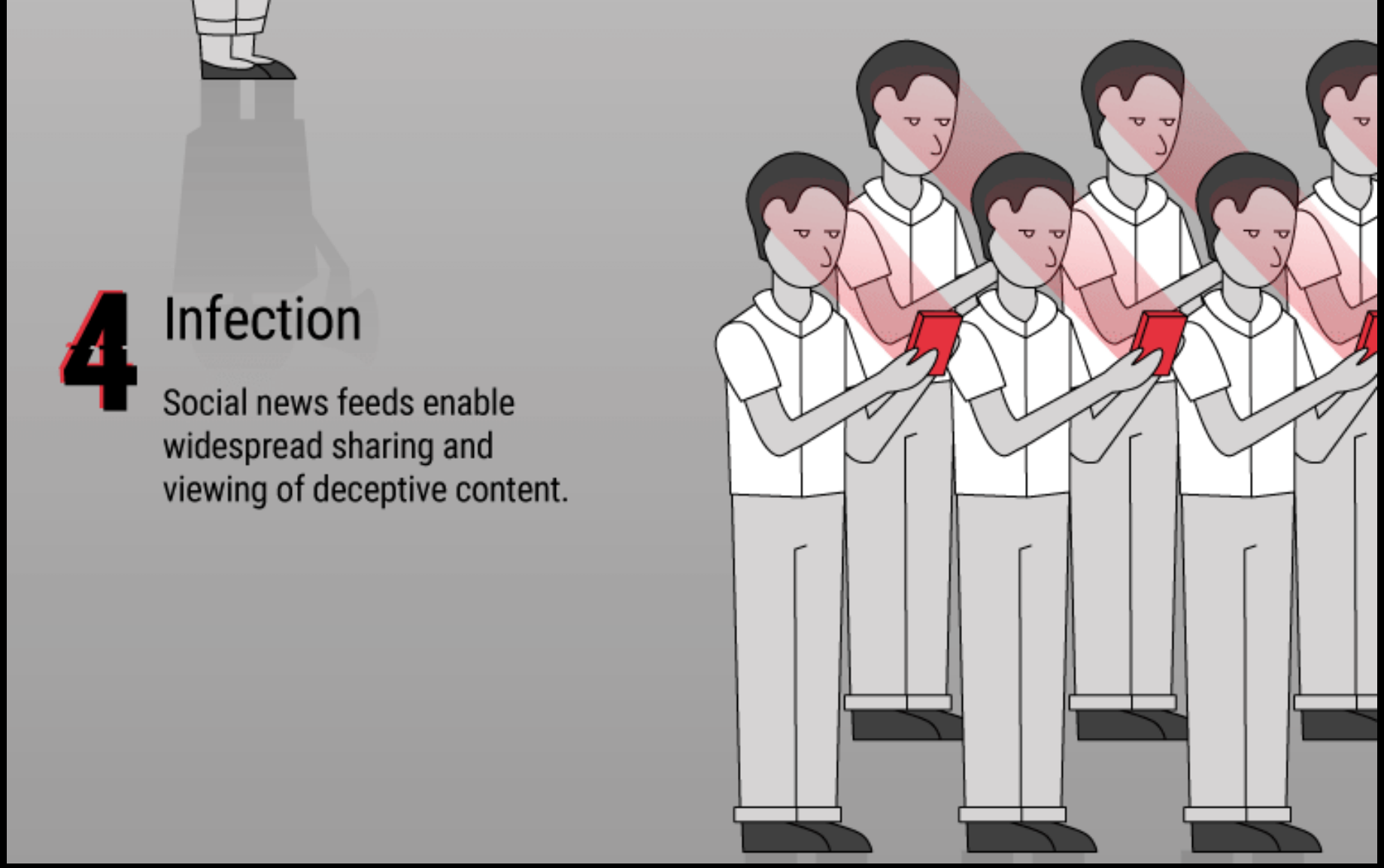

Source: CB Insights. (2018) Memes That Kill Kill: The Future of Information Warfare. Retrieved on May 10, 2018 from https://app.cbinsights.com/research/future-of-information-warfare/.

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- **Rumor: most contagious of all social messages**
- **Kernel of truth in rumor (or urban legend) is distorted in 3 directions:**
  - **(1) Level story (i.e., leave out details essential for understanding true meaning of incident)**
  - **(2) Sharpen story (i.e., make remaining details more specific)**
  - **(3) Assimilate story (i.e., change story so it makes sense to those spreading the rumor)**
  - **Example: rumors of 9/11**

From "Tutorial: Military Memetics," by Dr. Robert Finkelstein, presented at Social Media for Defense Summit, 2011


TELEVISION PROGRAMMING
FEAR PANDEMIC
FEAR ISIS
FEAR TODAY
FEAR TOMORROW
FEAR EACH OTHER
FEAR RUSSIA
FEAR FOR YOUR KIDS
FEAR CLIMATE CHANGE
FEAR, FEAR, FEAR, FEAR, FEAR, FEAR
FEAR EVERYTHING AND THEN GIVE US YOUR POWER SO WE CAN SAVE YOU

A Brief History of The Internet

A Brief History of the Internet

- Telegraph
- Public Switched Telephone Network
- ARPANET
- The Internet
- The World Wide Web
- The Human Internet

A Brief History of the Internet

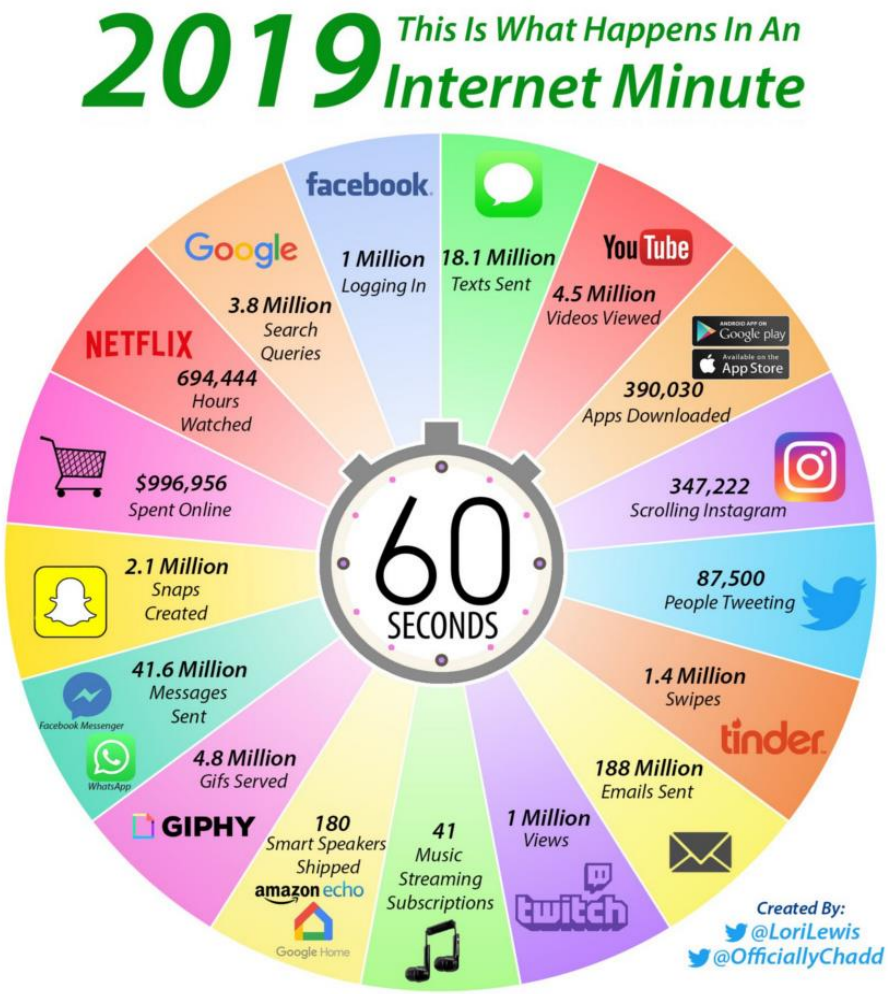
A Brief Summary of the Evolution of the Internet

- Memex Conceived 1945
- A Mathematical Theory of Communication 1948
- Silicon Chip 1958
- First Vast Computer Network Envisioned 1962
- Packet Switching Invented 1964
- Hypertext Invented 1965
- ARPANET 1969
- TCP/IP Created 1972
- Internet Named and Goes TCP/IP 1983
- WWW Created 1989
- Mosaic Created 1993
- Age of eCommerce Begins 1995

1945 — 1995

24

What Happens on The Internet?



A Brief History of Blockchain

What Is Blockchain?

- Distributed Ledger
- Decentralized
- Popularized by Satoshi Nakamoto (Bitcoin inventor)
- Uses Public-Key Cryptography and Hashing
- Append-only Transactions
- The Open Source Code already exists in Github (Bitcoin and Ethereum)
- Immutable (cannot delete blocks or change data i blocks)
- Driven by consensus protocol(s)
  - Proof of Work
  - Proof of Stake
  - Etc.
- The world's largest Blockchain Database is the Bit Blockchain Database, with about 200 GB (it doesn't scale very well)

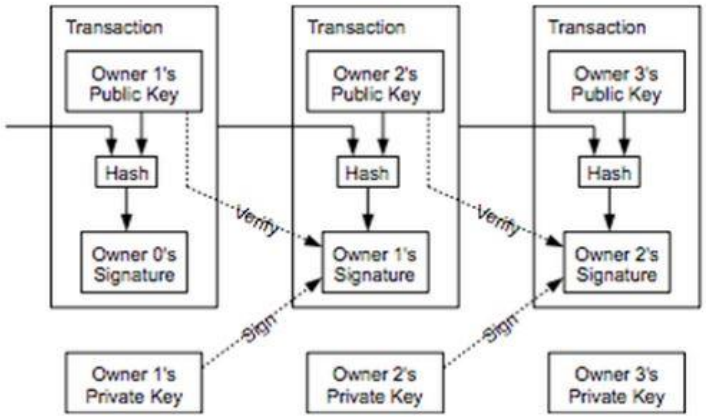


Image: Satoshi Nakamoto

What Is Blockchain?

- **From Blockchain Consensus Protocol Guide:**
  - A blockchain is a decentralized peer-to-peer system with no central authority figure.
  - While this creates a system that is devoid corruption from a single source, it still create a major problems:
    - How are any decisions made?
    - How does anything get done?
    - Think of a normal centralized organizatio
  - All the decisions are taken by the leader o a board of decision makers. This isn't possible in a blockchain because a blockchain has no "leader". For the blockchain to make decisions, they need to come to a consensus using "consensus mechanisms".

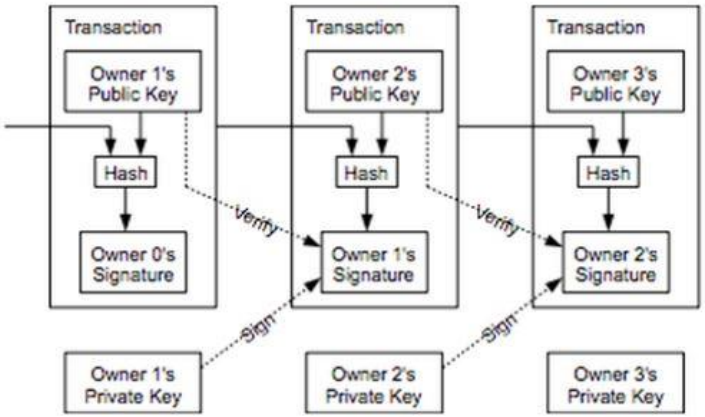


Image: Satoshi Nakamoto

Technologies Events that Led to the Creation of Bitcoin & Blockchain

- Cryptography
- Transistors
- Digital Computers
- Databases
- Silicon Chips
- Programming
- Applied Cryptography
- Computer Networks
- Transaction Processing
- TCP/ IP and The Internet
- The World Wide Web
- Evolution of Security and Privacy Thought
- Digital signatures
- Time-stamped documents
- Smart Contracts
- Byzantine Fault Tolerance
- The Great 2008 Economic Recession

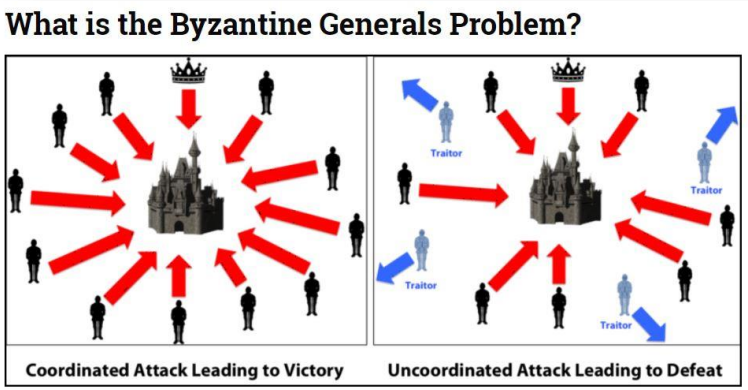
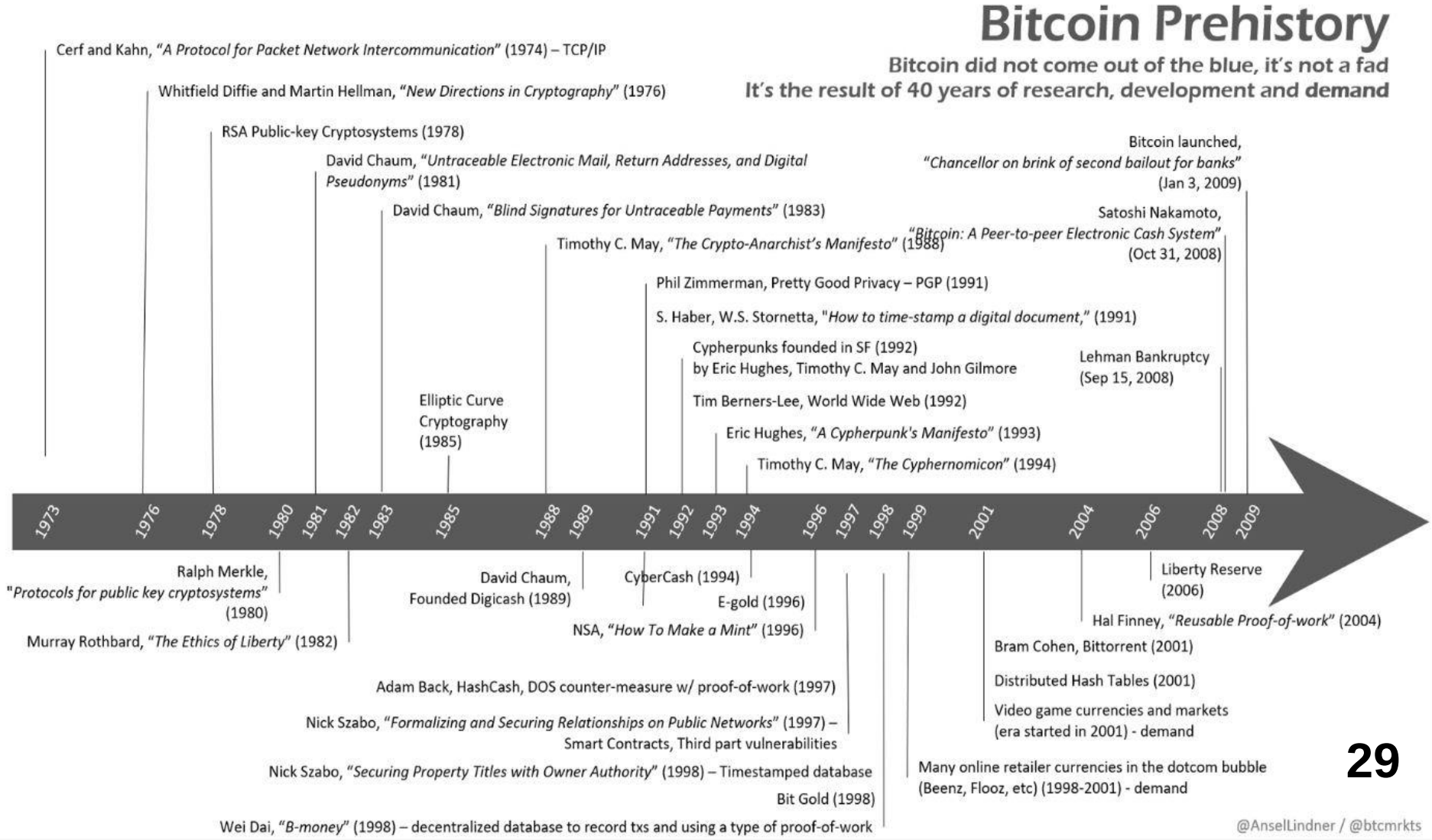


Image Courtesy: Medium

A Brief History of Blockchain



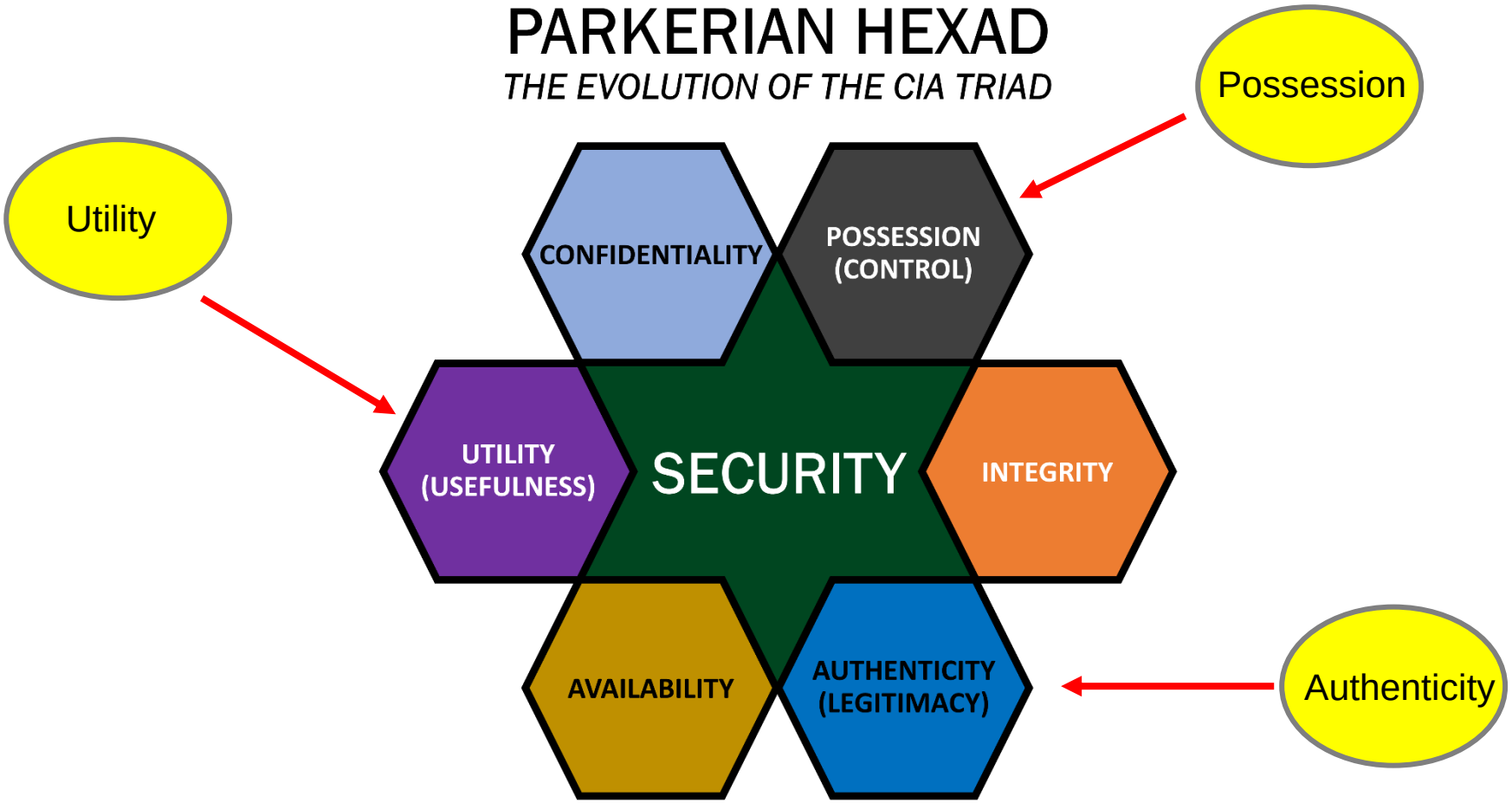
What Is Cybersecurity?

What Is Cybersecurity?

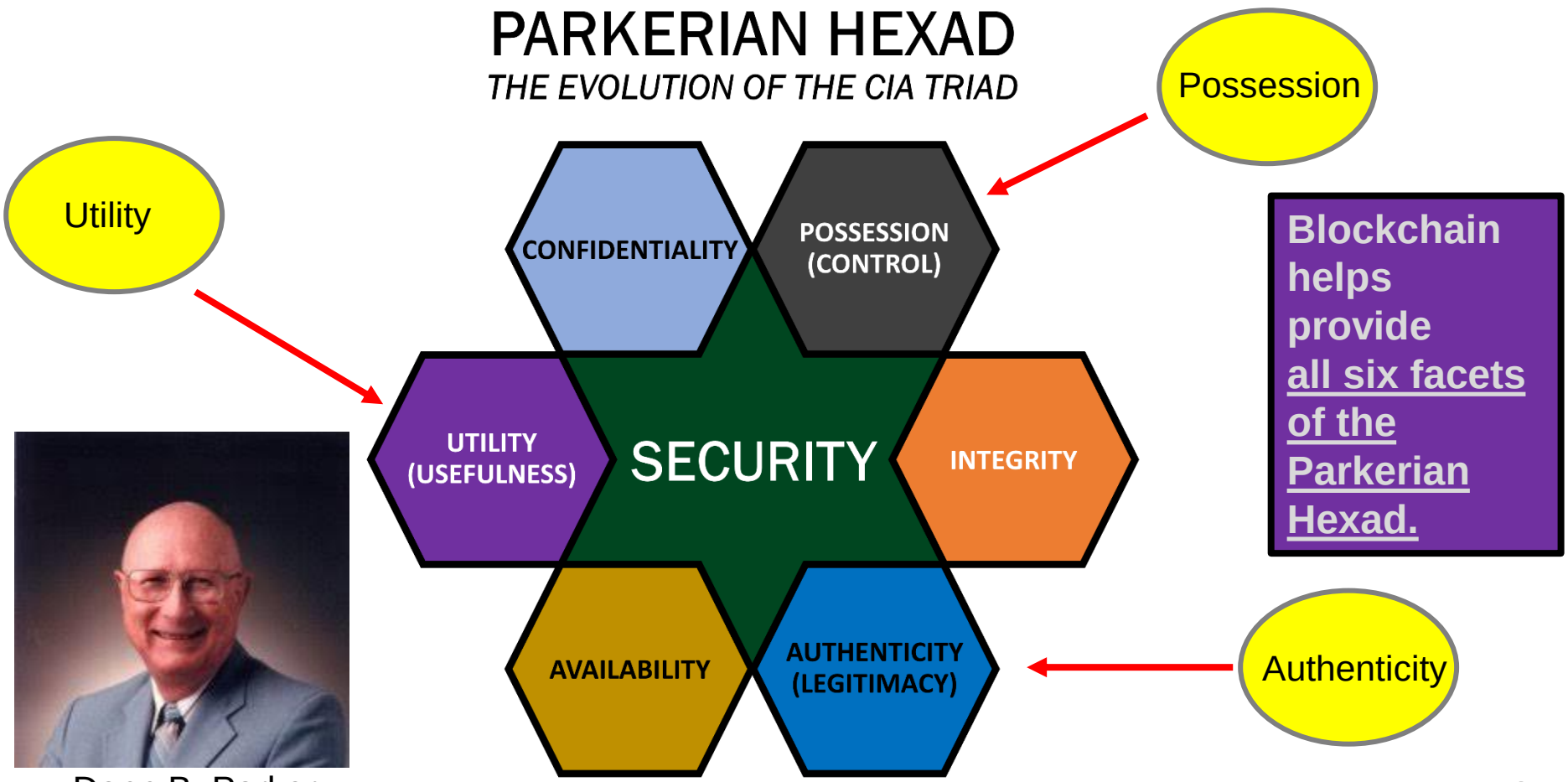
- Most people will tell you that a system or computer network is “secure” if you have control over:
  - ***Confidentiality***
  - ***Integrity***
  - ***Availability***

What Is Cybersecurity, Really?

What Is Cybersecurity, Really?



What Is Cybersecurity, Really?



Donn B. Parker
Godfather of Cybersecurity

2019 – Visual Adaptation of the Parkerian Hexad by Matthew Lammers

More About Blockchain

Why Does Blockchain Solve Issues Related to Misinformation?

Secure Access

Immutable Records

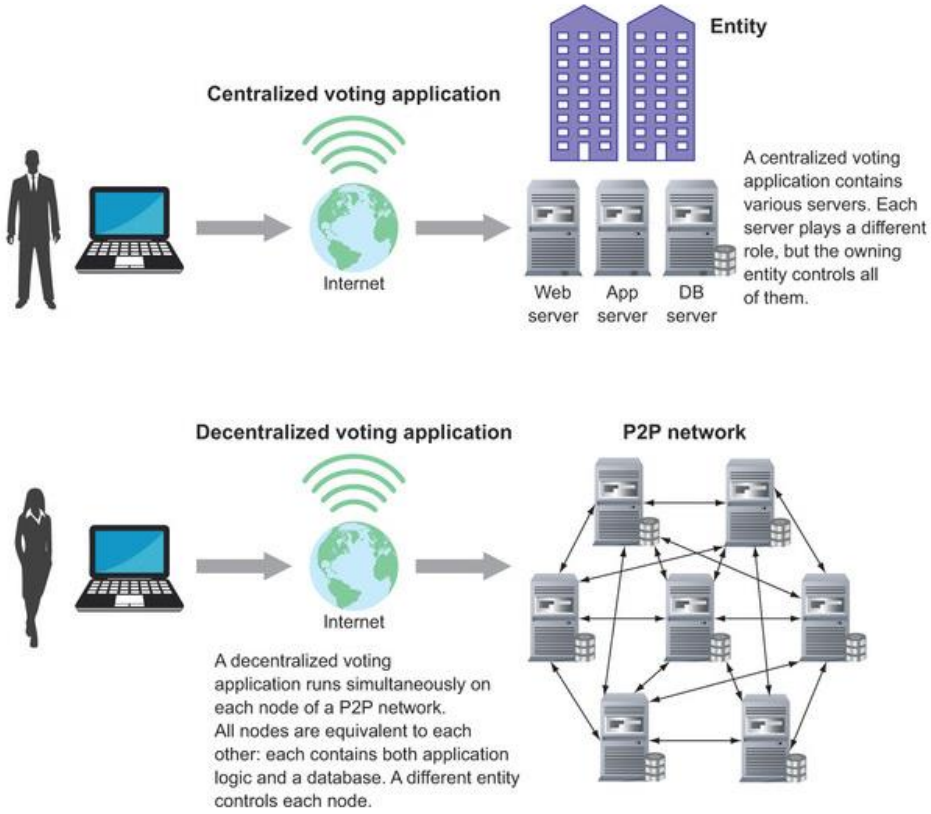
Undeletable Records

Peer-to-Peer

Distributed Ledger

What Does a Blockchain Solution Look Like?

Figure 1.2. Comparison of a centralized voting application with a decentralized one. One institution owns all servers of a centralized application. A decentralized voting application runs simultaneously on multiple nodes of a network that different entities own.



Types of Blockchains

Types of Blockchains

Bitcoin vs. Ethereum vs. Hyperledger (Linux and IBM) and now many others

Public vs. Private

Permissioned (private) vs. Permissionless

Types of Blockchains

Bitcoin vs. Ethereum

	Bitcoin 	Ethereum 
Founder	Satoshi Nakamoto	Vitalik Buterin
Release Date	9 Jan 2008	30 July 2015
Release Method	Genesis Block Mined	Presale
Blockchain	Proof of work	Proof of work (Planning for POS)
Useage	Digital Currency	Smart Contracts Digital Currency
Cryptocurrency Used	Bitcoin(Satoshi)	Ether
Algorithm	SHA-256	Ethash
Blocks Time	10 Mintues	12-14 Seconds
Mining	ASIC miners	GPUs
Scalable	Not now	Yes

Types of Blockchains

Bitcoin, Ethereum, & Hyperledger

Blockchain characteristics comparison

Characteristics	Bitcoin	Ethereum	Hyperledger
Permission restrictions	Permissionless	Permissionless	Permissioned
Restricted public access to data	Public	Public or private	Private
Consensus	Proof-of-Work	Proof-of-Work	PBFT
Scalability	High node-scalability, Low performance-scalability	High node-scalability, Low performance-scalability	Low node-scalability, High performance-scalability
Centralized regulation (governance*)	Low, decentralized decision making by community/miners	Medium, core developer group, but EIP process	Low, open-governance model based on Linux model
Anonymity	Pseudonymity, no encryption of transaction data	Pseudonymity, no encryption of transaction data	Pseudonymity, encryption of transaction data
Native currency	Yes, bitcoin, high value	Yes, ether	No
Scripting	Limited possibility, stack-based scripting	High possibility, Turing-complete virtual machine, high-level language support (Solidity)	High possibility, Turing-complete scripting of chaincode, high-level Go-language

Types of Blockchains

Ethereum, Hyperledger, and Cordia

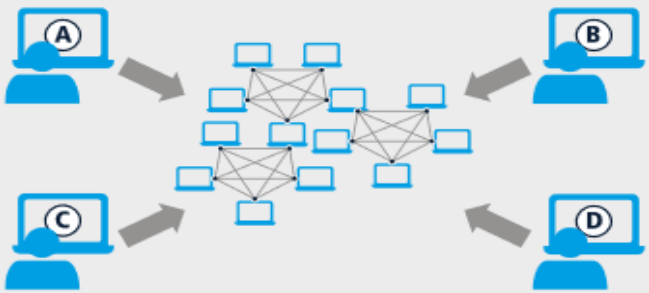
Comparison of Ethereum, Hyperledger Fabric and Corda

Characteristic	Ethereum	Hyperledger Fabric	R3 Corda
Description of platform	– Generic blockchain platform	– Modular blockchain platform	– Specialized distributed ledger platform for financial industry
Governance	– Ethereum developers	– Linux Foundation	– R3
Mode of operation	– Permissionless, public or private[4]	– Permissioned, private	– Permissioned, private
Consensus	– Mining based on proof-of-work (PoW) – Ledger level	– Broad understanding of consensus that allows multiple approaches – Transaction level	– Specific understanding of consensus (i.e., notary nodes) – Transaction level
Smart contracts	– Smart contract code (e.g., Solidity)	– Smart contract code (e.g., Go, Java)	– Smart contract code (e.g., Kotlin, Java) – Smart legal contract (legal prose)
Currency	– Ether – Tokens via smart contract	– None – Currency and tokens via chaincode	– None

Types of Blockchains

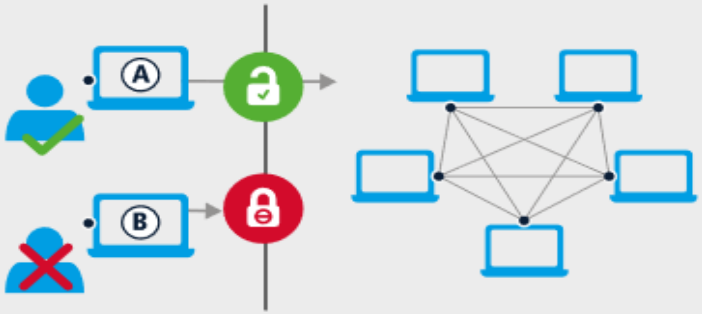
Public vs. Private

PUBLIC VS. PRIVATE BLOCKCHAINS



PUBLIC, PERMISSIONLESS BLOCKCHAINS

- Anyone can join the network and submit transactions
- Anyone can contribute computing power to the network and broadcast network data
- All transactions are broadcast publicly



PRIVATE, PERMISSIONED BLOCKCHAINS

- Only safelisted (checked) participants can join the network
- Only safelisted (checked) participants can contribute computing power to the network and broadcast network data
- Access privileges determine the extent to which each safelisted participant can contribute data to the network and access data from the network

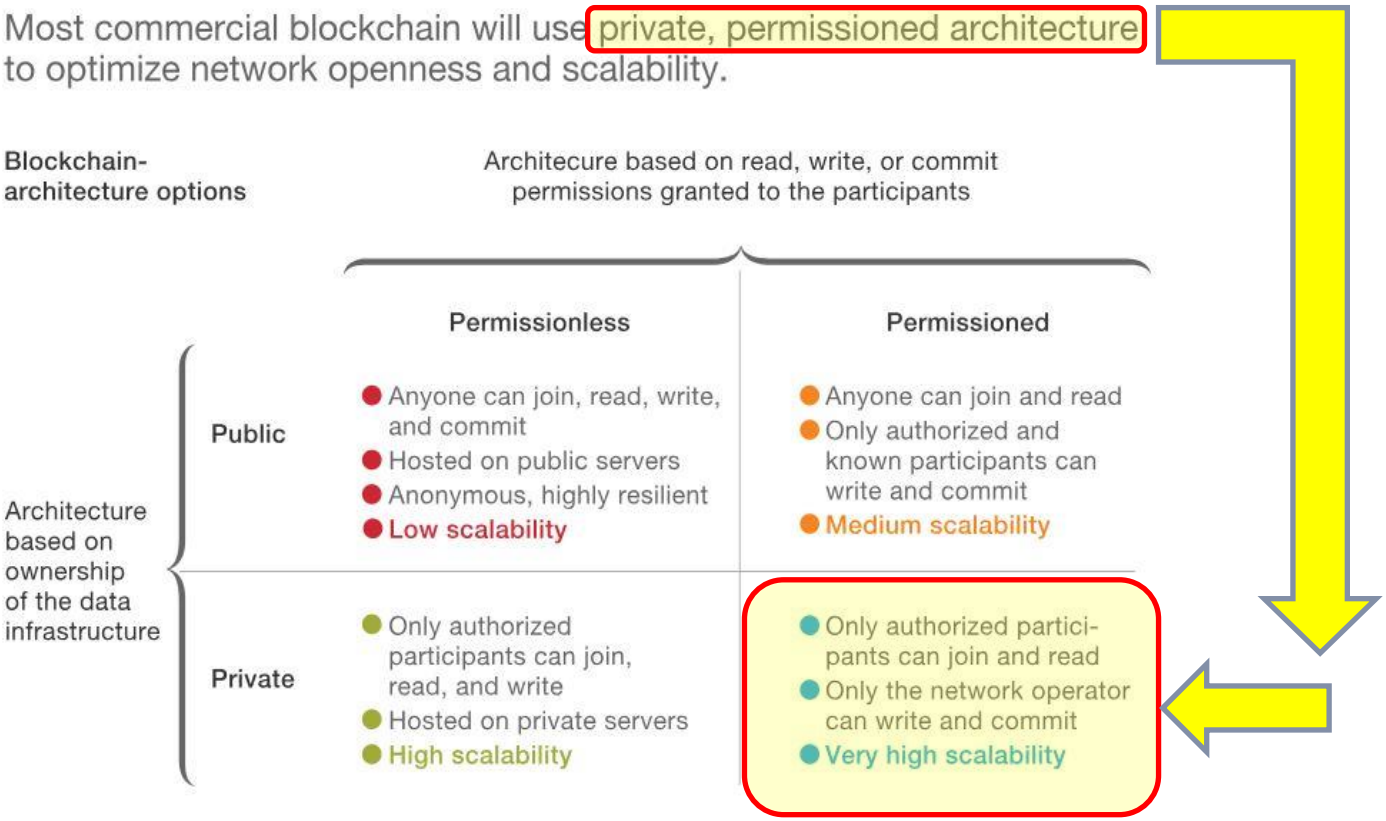
Key differences between public, permissionless blockchains and private, permissioned blockchains; **Source:** Accenture

Types of Blockchains

Important Blockchain Architecture Decision

Exhibit 3

Most commercial blockchain will use private, permissioned architecture to optimize network openness and scalability.

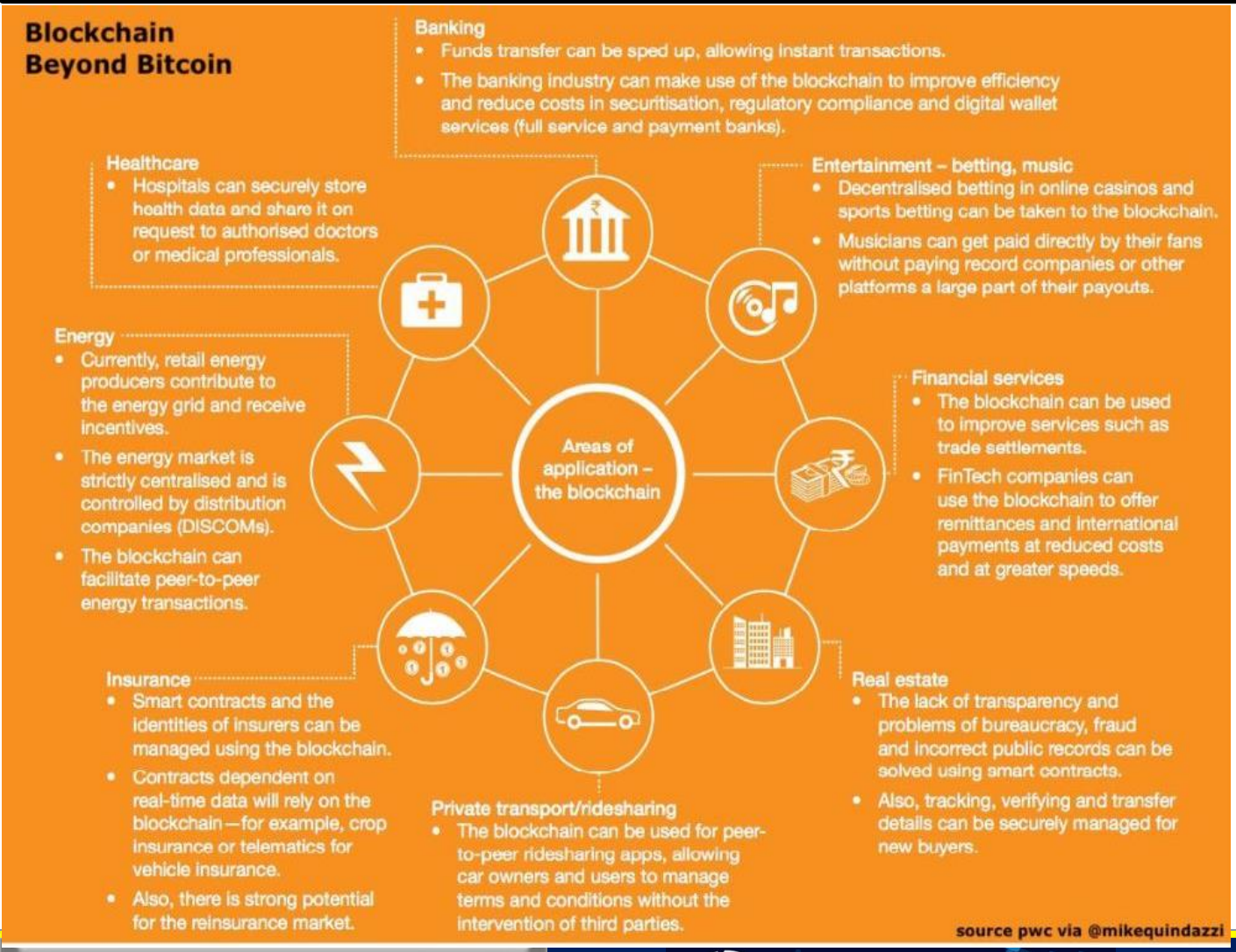


McKinsey&Company

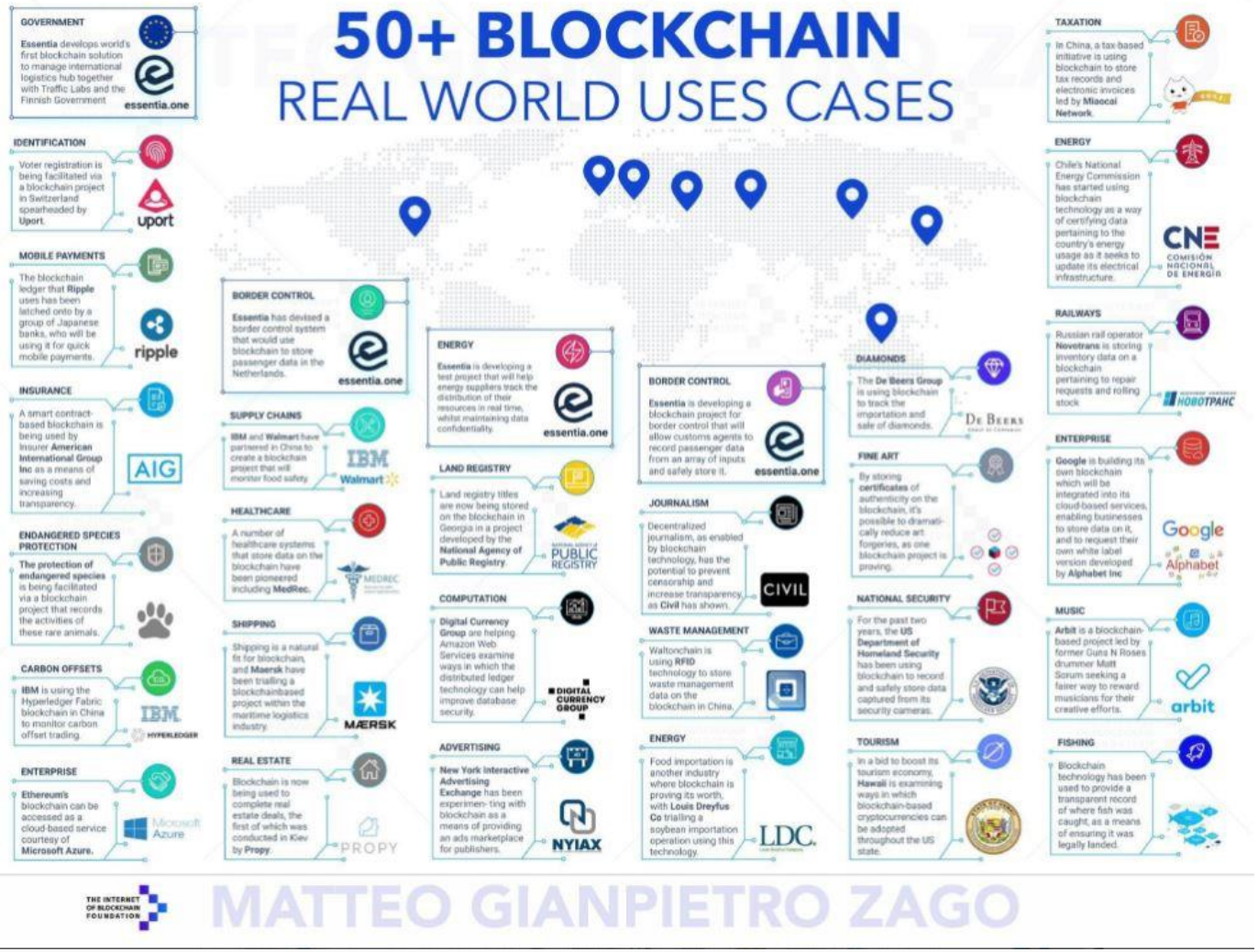
Blockchain Use Cases & Use Case Evolution

Blockchain Use Cases

Blockchain Use Cases



Blockchain Use Cases



Blockchain Use Cases

Non-Financial Use Cases

Digital Content/Documents, Storage & Delivery	Authentication & Authorization	Digital Identity	Marketplace
BitProof, Blockcai, Ascribe, ArtPlus, Chainy.Link, Stampery, Blocktech (Alexandria), Bisantyum, Blockparti, The Rudimental, BlockCDN	The Real McCoy, Degree of Trust, Everpass, BlockVerify,	Sho Card, Uniquid, Onename, Trustatom	Providing premium rights & brand based coins: MyPowers

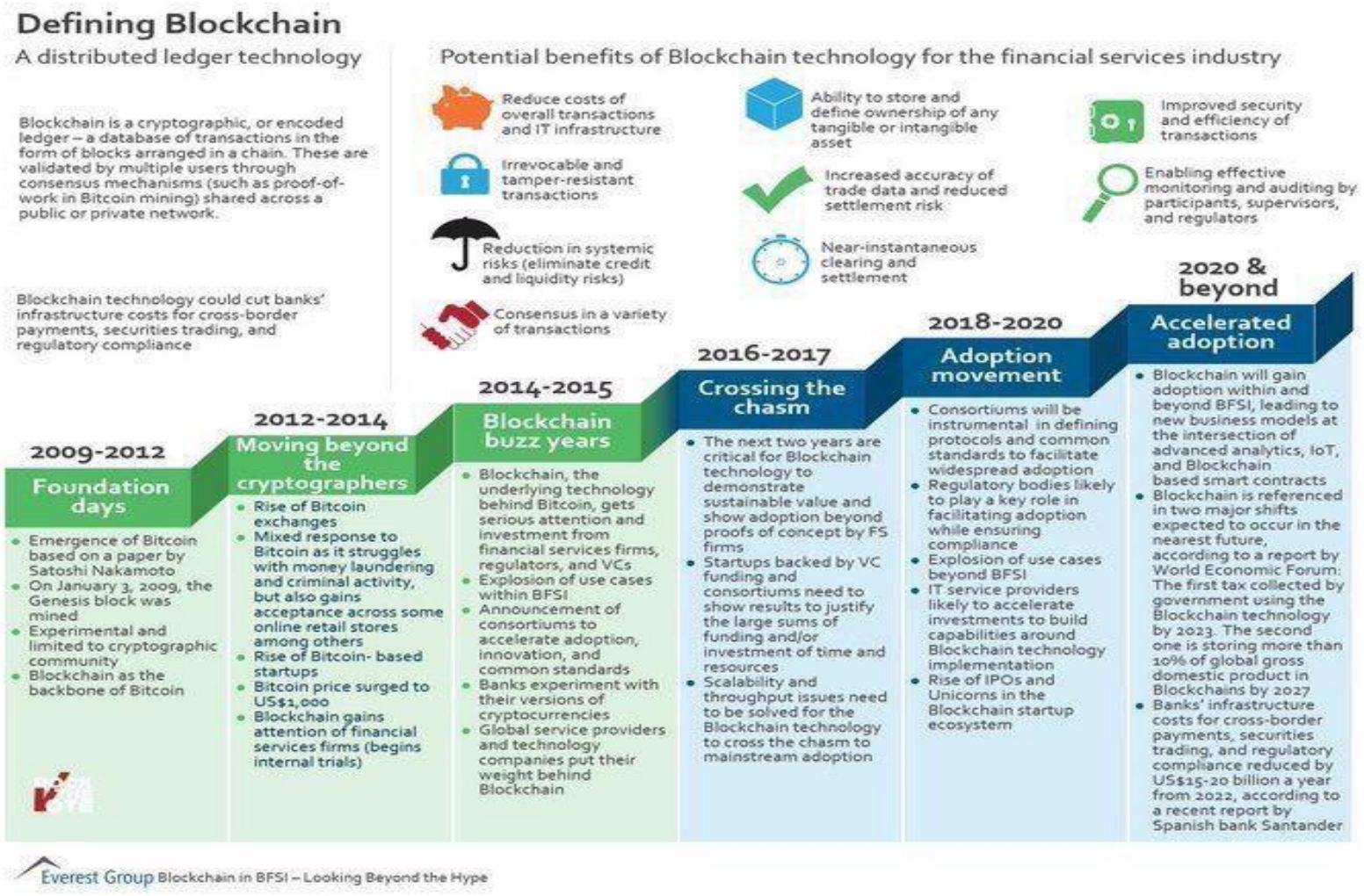
Smart Contracts	Real Estate	Diamonds	Gold & Silver	Reviews/Endorsement
Otonomos, Mirror, Symbiont, New system Technologies	Factom	Everledger	BitShares, Real Asset Co., DigitalTangible (Serica), Bit Reserve	TRST.im, Asimov (recruitment services), The World Table

Blockchain in IoT	App Development	Network Infrastructure & APIs	Other
Filament, Chimera-inc.io, ken Code – ePlug	Proof of ownership for modules in app development: Assembly	Ethereum, Eris, Codius, NXT, Namecoin, Colored Coins, Hello Block, Counterparty, Mastercoin, Corona, Chromaway, BlockCypher	Prediction platform: Augur Election Voting: Follow My Vote Patient Records management: BitHealth

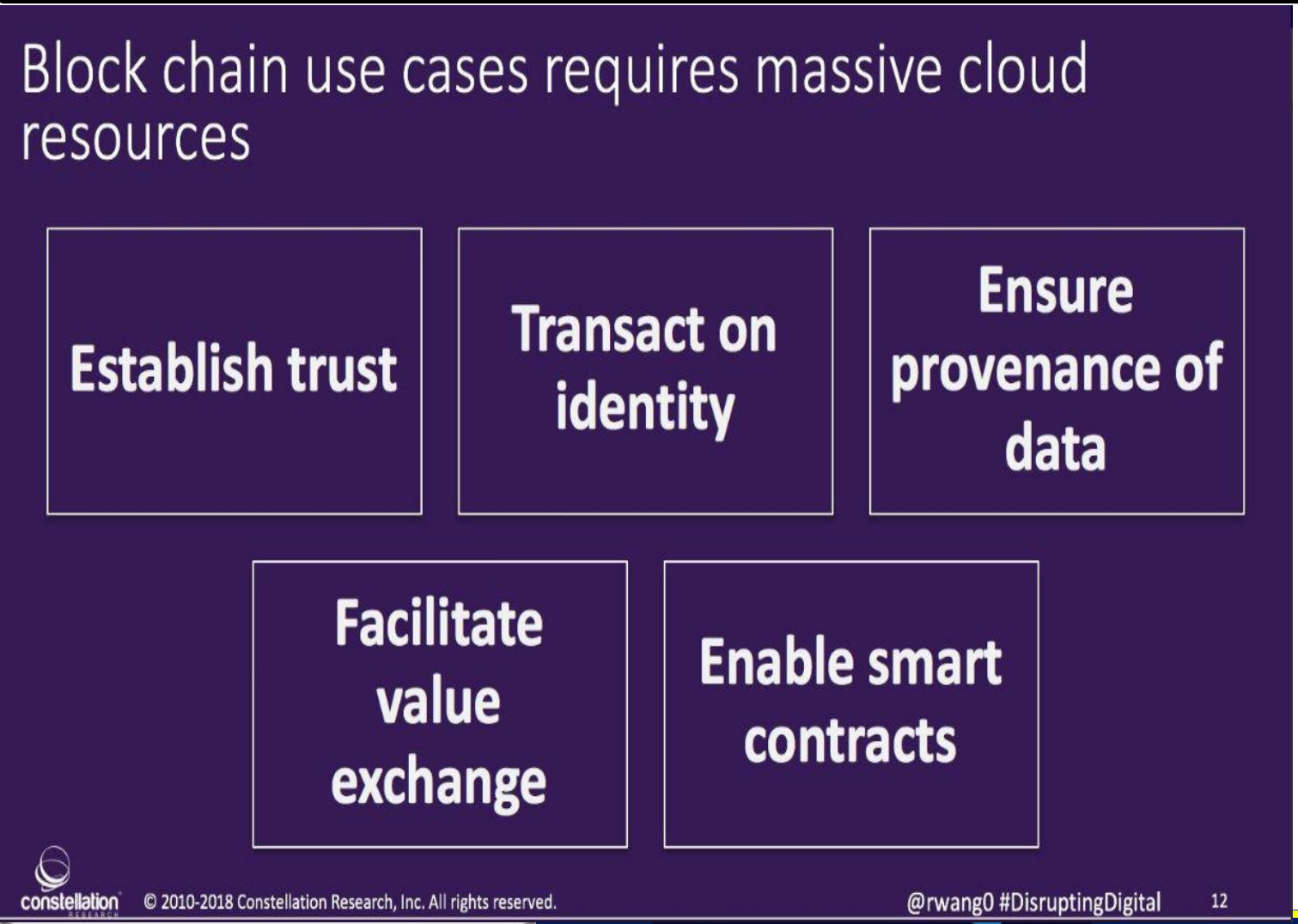
Financial Use Cases

Currency Exchange & Remittance	P2P Transfers	Ride Sharing	Data Storage	Trading Platforms	Gaming
Coinbase (Wallet), BitPesa, Billion, Ripple, Stellar, Kraken, Fundrs.org, MeXBT, CryptoSigma	BTC Jam, Codius, BitBond, BitnPlay (Donation), DeBuNe (SME's B2B transactions)	La'zooz	Storj.io, Peernova	equityBits, Spritzle, Secure Assets, Coins-e, DXMarkets, MUNA, Kraken, BitShares	PlayCoin, Play(on DACx platform), Deckbound

Blockchain Use Case Evolution



Blockchain Use Case Considerations



Is There Hope?

Mary Meeker Says "YES"

- Investor Mary Meeker says Covid-19 crisis is separating businesses with strong online strategies from laggards
- Mary Meeker, who is known for her lengthy annual "Internet Trends" report, sent a letter to her firm's investors detailing observations from the Covid-19 crisis.
- Among them: The businesses who were already well along the offline-to-online transition are faring best.
  - https://www.cnbc.com/2020/04/17/mary-meeker-covid-19-report-online-businesses-beating-laggards.html
  - https://www.axios.com/mary-meeker-coronavirus-trends-report-0690fc96-294f-47e6-9c57-573f829a6d7c.html

Mary Meeker

- Why it matters: Bond's best-known partner, Mary Meeker, is a former bank analyst renowned for her annual Internet Trends Report, which many investors and entrepreneurs use as a touchstone for where tech is now and where it's going. This 28-page report to Bond's limited partners, obtained by Axios, shares some structural similarities.

Mary Meeker Says "YES"

- Some takeaways:

  - "Covid-19 has upended our modern lives in ways we're just starting to understand."
  - Prior epic viruses have permanently changed the world, but coronavirus may prove less impactful because of our information-sharing and scientific technologies.
  - Scientists and other domain experts are getting "more seats at the table."
  - Digital transformation is accelerating, due to so many people working from home. New work-life balances are also being struck.
  - This may become the "call to arms" to better marry technology with healthcare, in terms of everything from telehealth to rapid point-of-care diagnostics, to applying automation and AI to health care services.
  - "We are optimists and believe there is hope on the other side of despair.... We need government, business and entrepreneurial intervention at scale (deployed logically and effectively) to get to the other side."

Mary Meeker

Conclusion

Conclusion

- We covered:
  - The World in 2020
  - Information Warfare
  - The Internet
  - Blockchain Technology
  - Cybersecurity
  - Types of Blockchains
  - Why Blockchain solves problems
  - Is There Hope?

I have learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.

Maya Angelou
1928-2014

Thank You!

Questions & Answers

Parting Thoughts:
As an ISOC Member Since 1998…
I Support Cameroon & Internet Freedom

Parting Thoughts:
Like Records on a Blockchain, let our Love, Support, & Friendship Be Immutable and Enduring

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  United States of America

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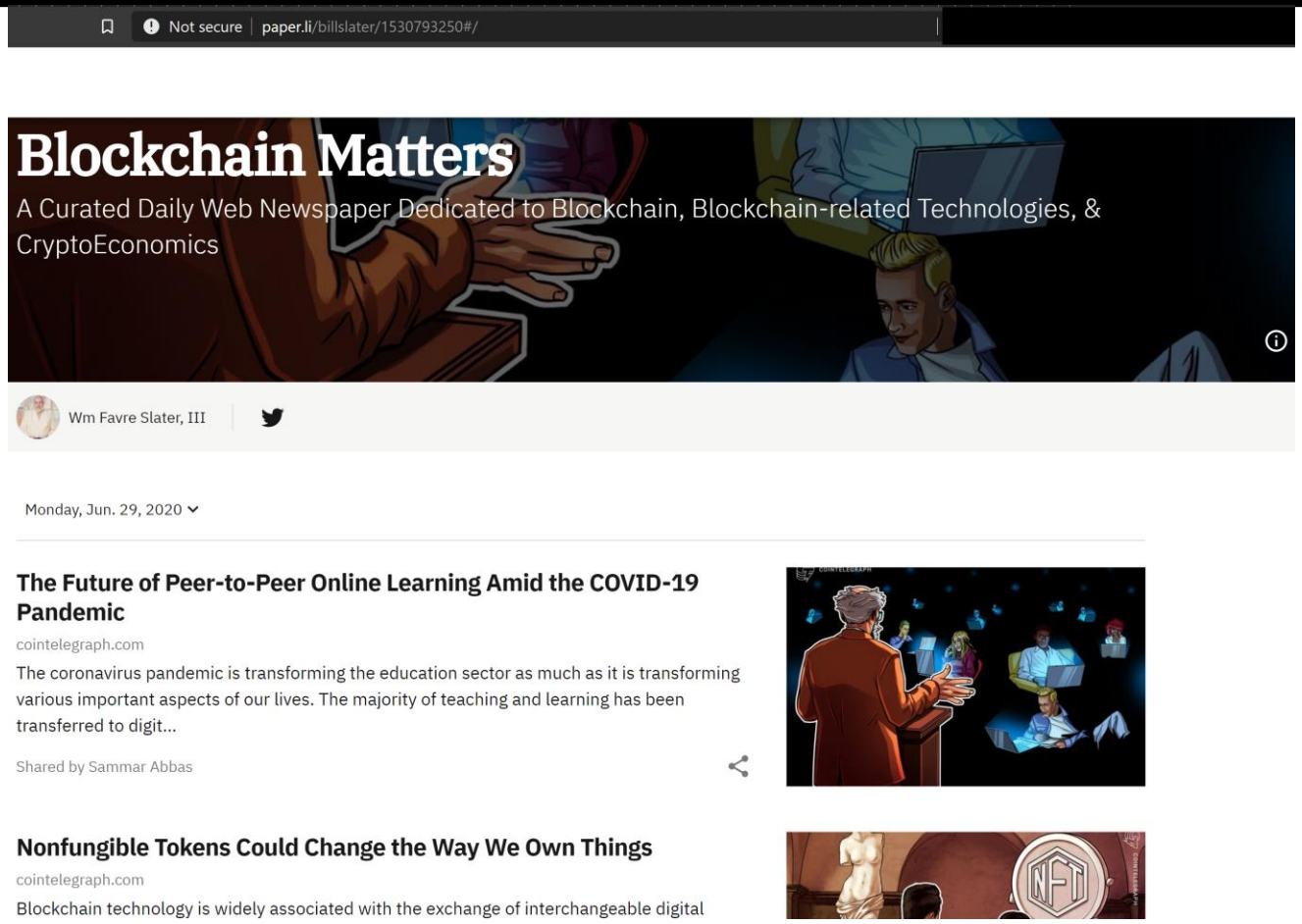
Slater Technologies

Resources

Resources - Free Daily Newspaper on Blockchain

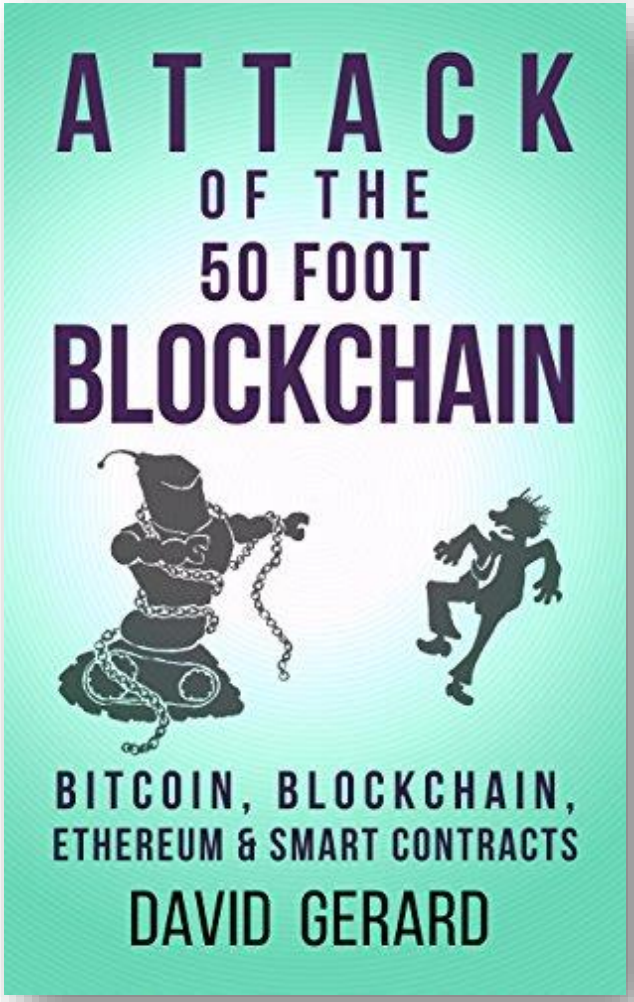


More information: https://paper.li/billslater/1530793250#/

Resources - Best Blockchain Books

- **Mastering Ethereum**
  - by Andreas M. Antonopoulos and Dr. Gavin Wood
- **Blockchain Applications: A Hands-On Approach**
  - by Arshdeep Bahga and Vijay Madisetti
- **Building Ethereum DApps**
  - By Roberto Infante
- **Truffle Quick Start Guide**
  - by Nikhil Bhaskar
- **Mastering Blockchain - Second Edition**
  - by Imran Bashir
- **Introducing Ethereum and Solidity: Foundations of Cryptocurrency and Blockchain Programming for Beginners**
  - By Chris Dannen
- **Ethereum, Tokens & Smart Contracts: Notes on getting started**
  - by Eugenio Noyola
- **Blockchain Enabled Applications: Understand the Blockchain Ecosystem and How to Make it Work for You**
  - by Vikram Dhillon, David Metcalf, Max Hooper
- **Foundations of Blockchain**
  - By Koshik Raj
- **The Book of Satoshi: The Collected Writings od Bitcoin Creator Satoshi Nakamoto**
  - By Phil Champagne

Resources - For a Cynical & Humorous View of Blockchain



Resources - 12 Free Blockchain Resources

1. William Slater's Blockchain Resource Page http://billslater.com/blockchain
2. Factom University http://www.factom.com/university
3. Ethereum 101 http://www.ethereum101.org
4. Build on Ripple http://ripple.com/build
5. Programmable money by Ripple https://goo.gl/g8vFPL
6. DigiKnow https://youtu.be/scr68zFddso
7. Blockchain University http://blockchainu.co
8. Bitcoin Core https://bitcoin.org
9. Blockchain Alliance http://www.blockchainalliance.org
10. Multichain Blog http://www.mutichain,com/blog
11. HiveMind http://bitcoinhivemind.com
12. Chicago Blockchain Project http://chicagoblockchainproject.com/
13. Chicago Bitcoin and Open Blockchain Meetup Group https://www.meetup.com/Bitcoin-Open-Blockchain-Community-Chicago/

Resources - Rules Never to Break The Blockchain

1. Don’t use Cryptocurrency or Blockchain to Skirt the Law
2. Keep your contracts as simple as possible
3. Publish with great caution
4. Back Up, Back Up, Back Up Your Private Keys
5. Triple-check the Address Before Sending Currency
6. Take Care When Using Exchanges
7. Beware of Wi-Fi
8. Identify Your Blockchain Dev
9. Don’t Get Suckered
10. Don’t Trade Tokens Unless You Know What You’re Doing

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Resources - Free Blockchain Projects

- The R3 Consortium http://www.r3cev.com
- T ZERO: Overstocking the Stock Market http://www.overstock.com
- Blockstream's Distributed Systems http://www.blockstream.com
- OpenBazaar's Blockchain http://www.openbazaar.com
- Code Valley: Find Your Coder http://www.codevalley.com
- Bitfury's Digital Assets http://www.bitfury.com
- Any Coin Can Shapeshift http://www.shapeshift.io
- Machine-Payable Apps on 21 http://www.21.co
- Anonymous Transactions on Dash http://www.dash.org
- ConsenSys: Decentralized Applications: http://www.consensys.net

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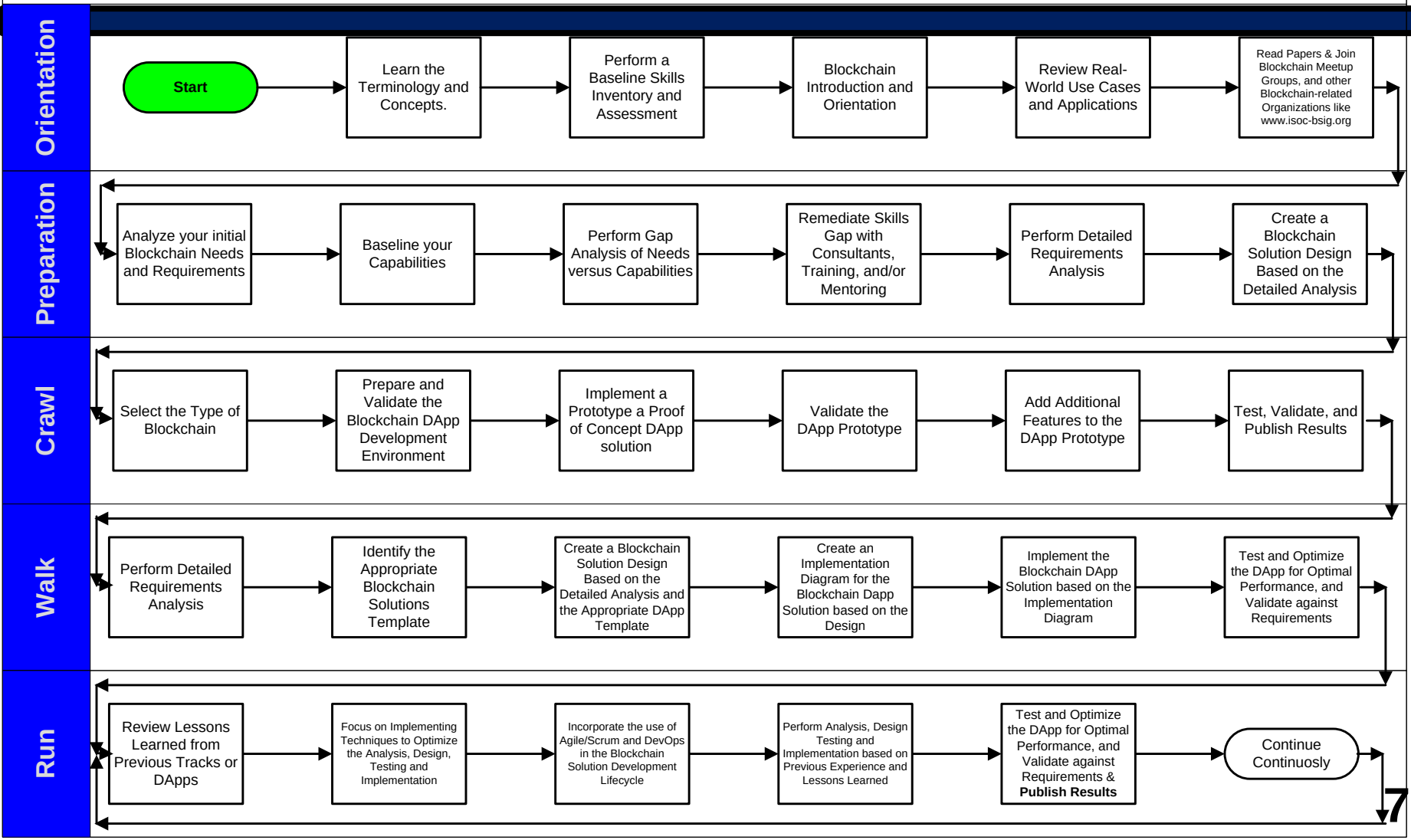
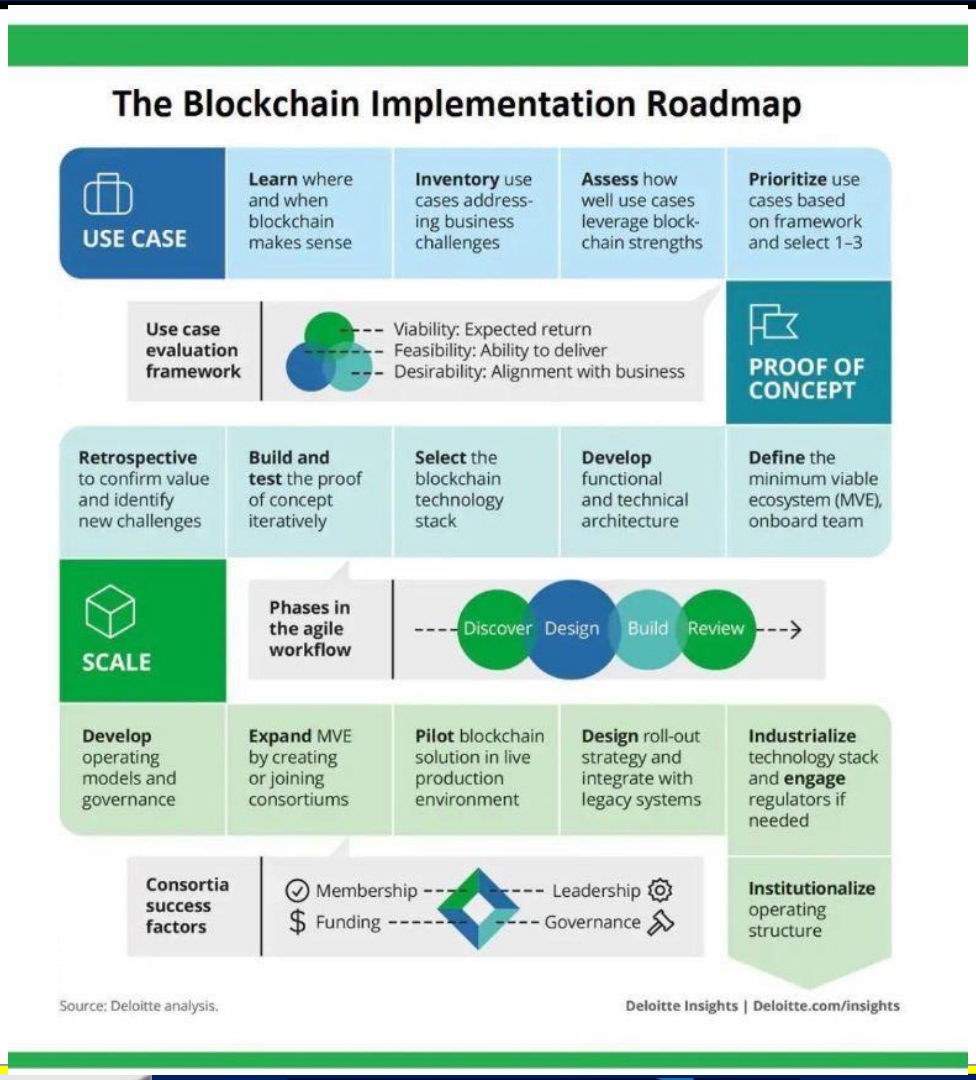
Roadmap to "Blockchain" Your IT Organization: How to Help Your IT Staff Go from Square One to Competence & Dominance in Blockchain Technologies

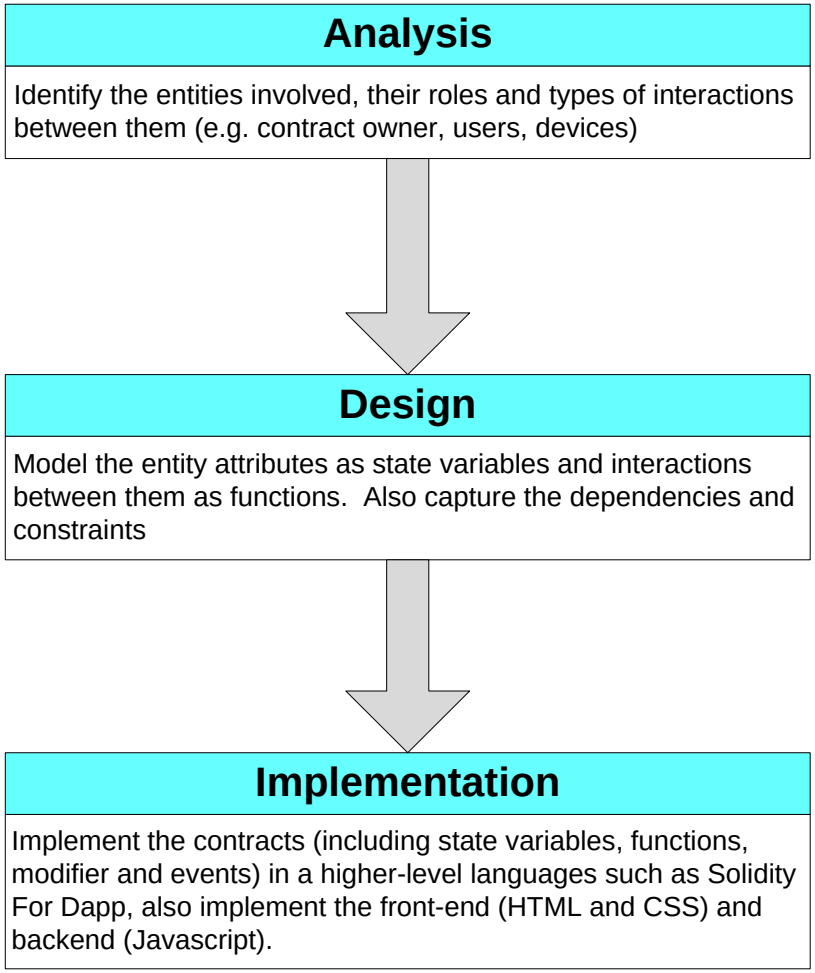


Blockchain Implementation Roadmap



Best Practice – Using Templates and Patterns for Blockchain Distributed Application Development

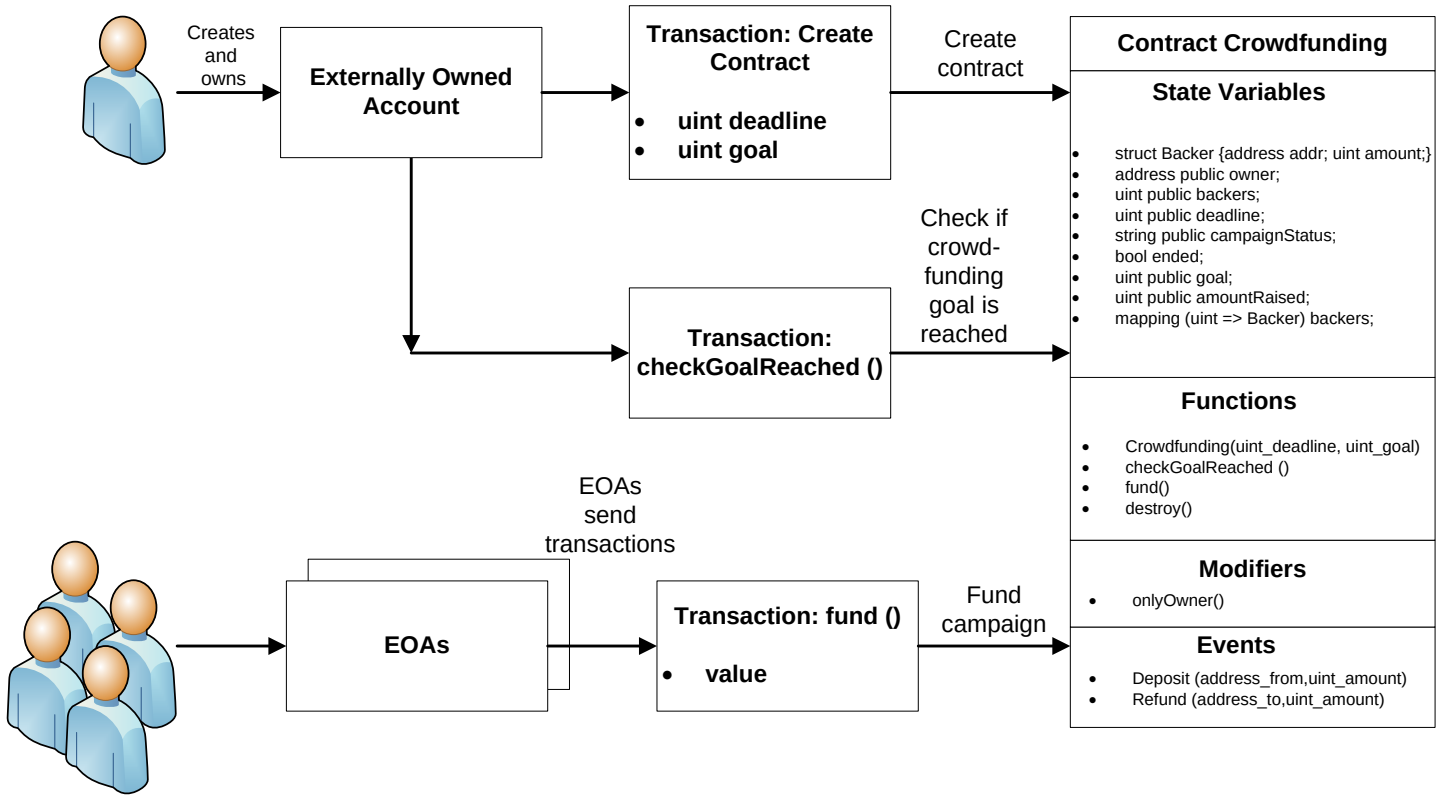
Blockchain Application Development



Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Implementation Diagram

(Example Business Case: Crowdfunding Application)

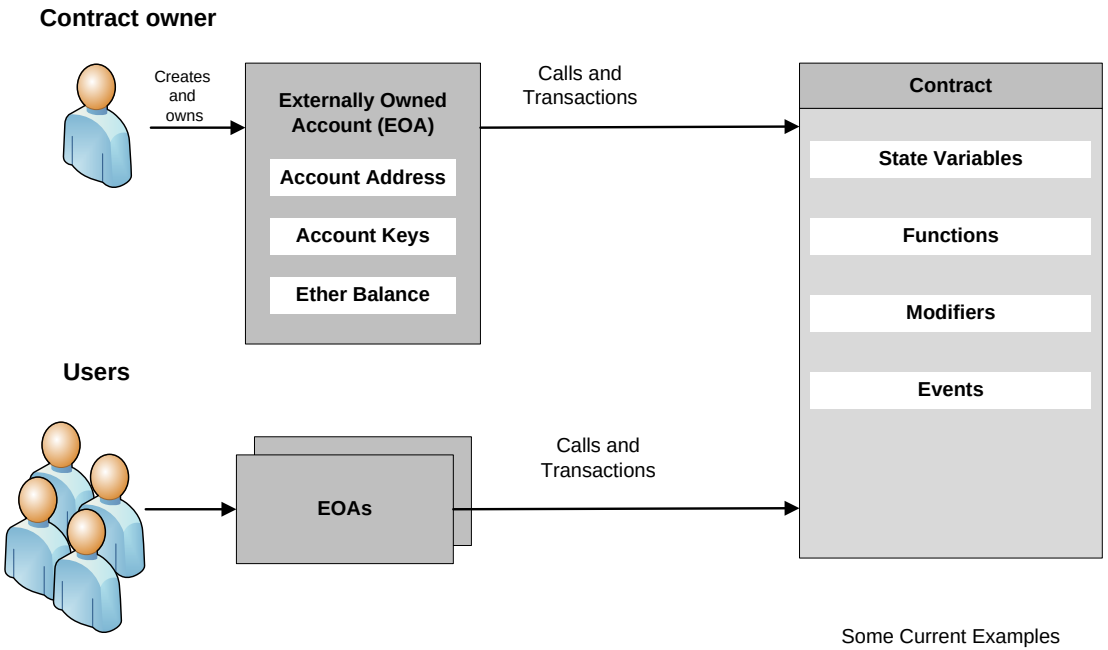


Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Application Template - Many to One

Blockchain Application Templates

Many-to-One



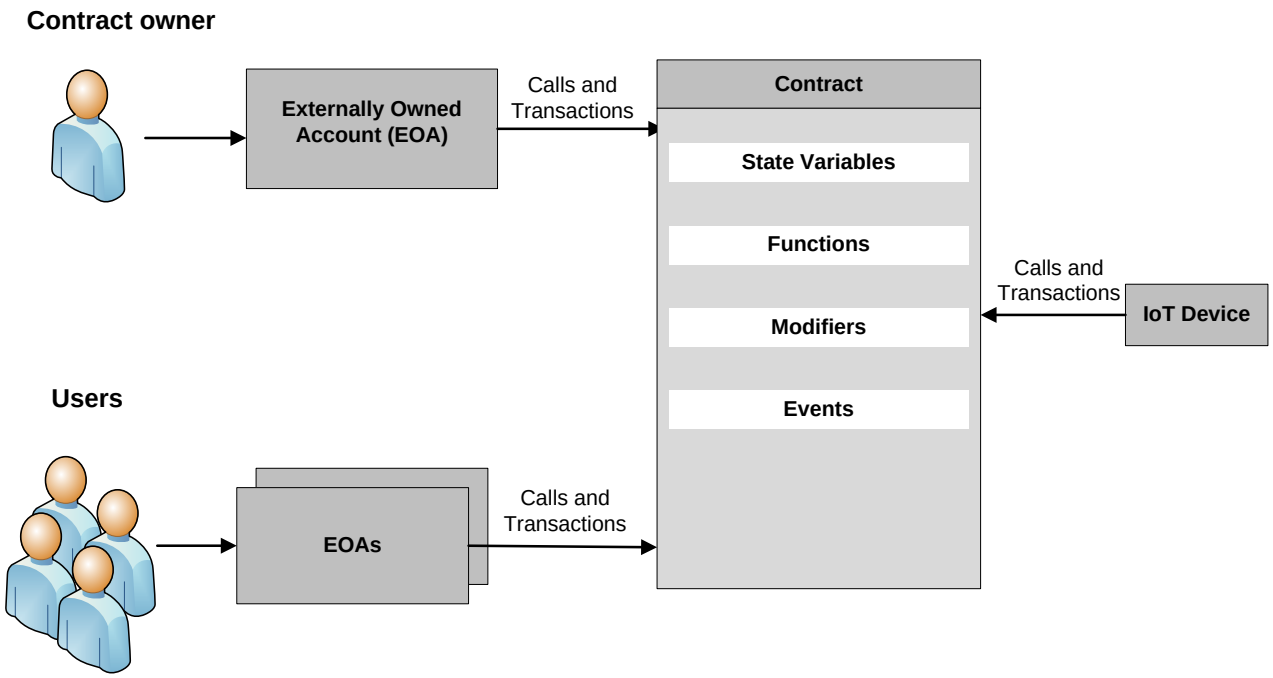
Some Current Examples

- Crowdfunding
- Event Registration
- Voting
- Name Registration

Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Application Template - Many to One for IoT Applications

Many-to-One for IoT Applications

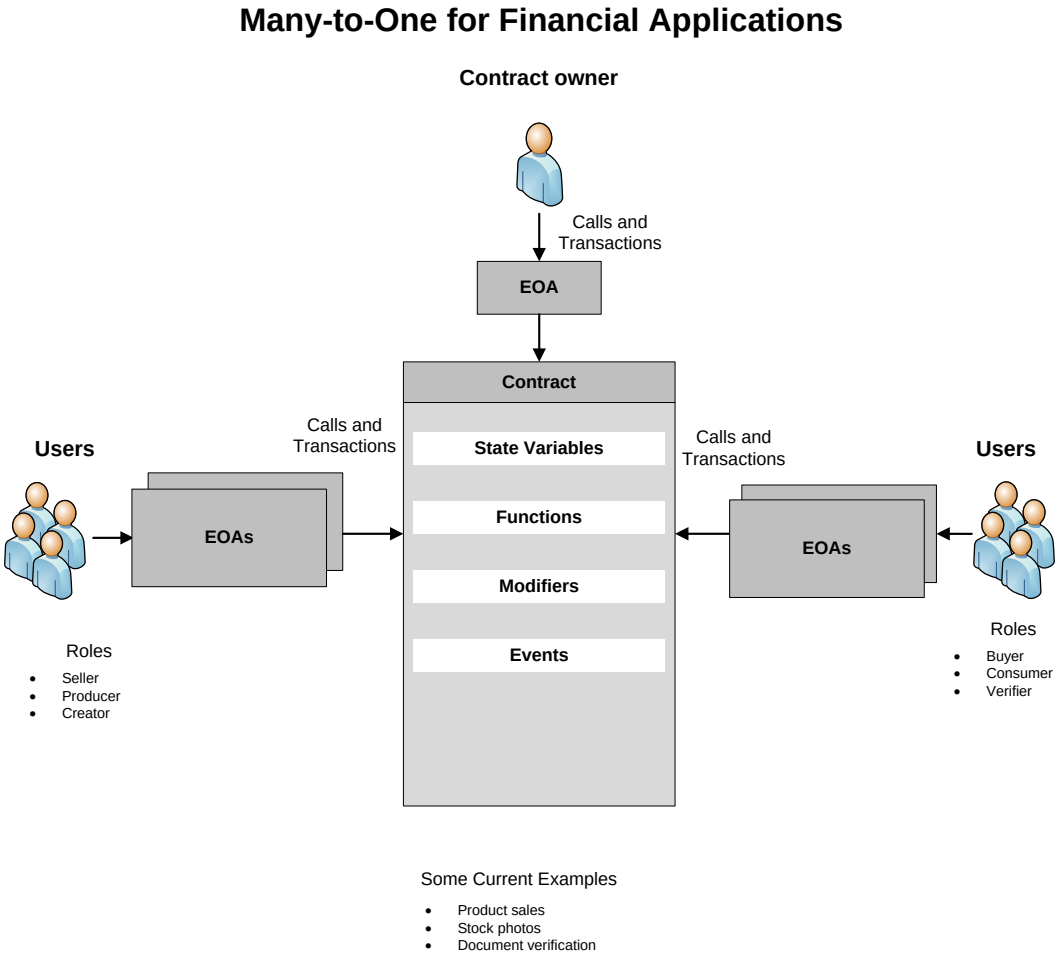


Some Current Examples

- Solar charging stations
- Smart switch

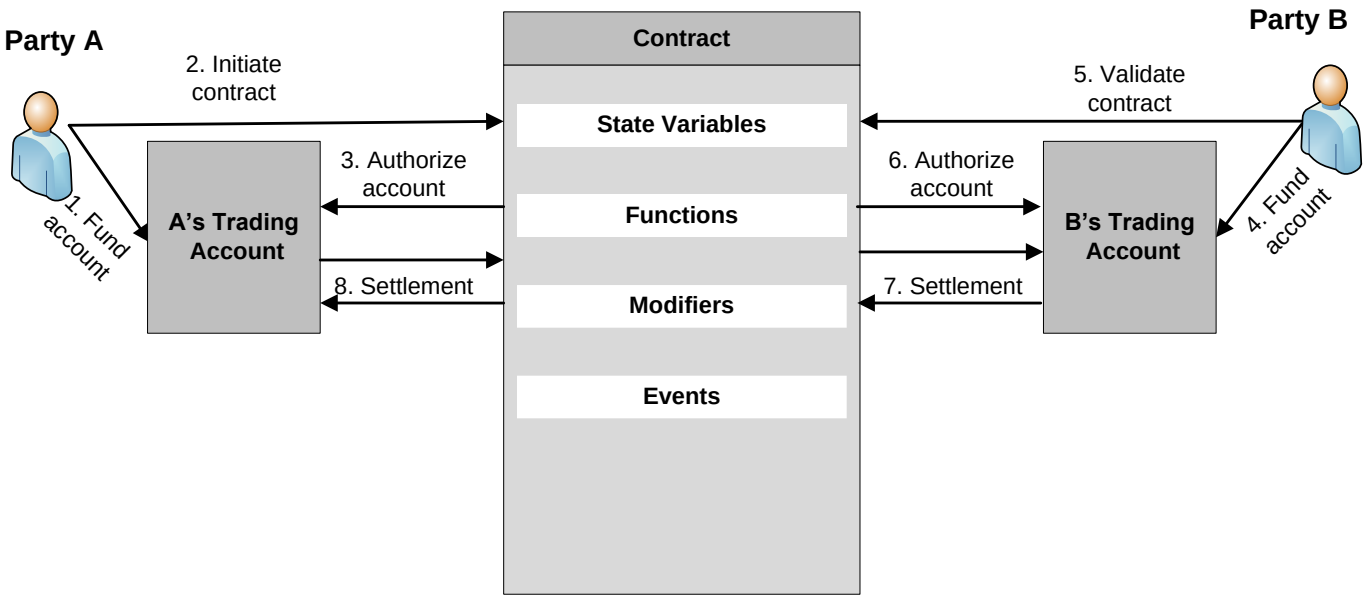
Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Application Template - Many to One for Financial Applications



Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Application Template – Many-to-Many or Peer-to-Peer



Some Current Examples

- Call option
- Interest rate swap

Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti

Blockchain Application Common Patterns

- Condition-Effects-Interaction
- Withdrawal
- Access Restriction
- Mortal
- Automatic Expiration
- Rejector
- Circuit Breaker
- Allow Once Per Account

Source: Blockchain Applications: A Hands-on Approach by Arsheep Bahga and Vijay Madisetti