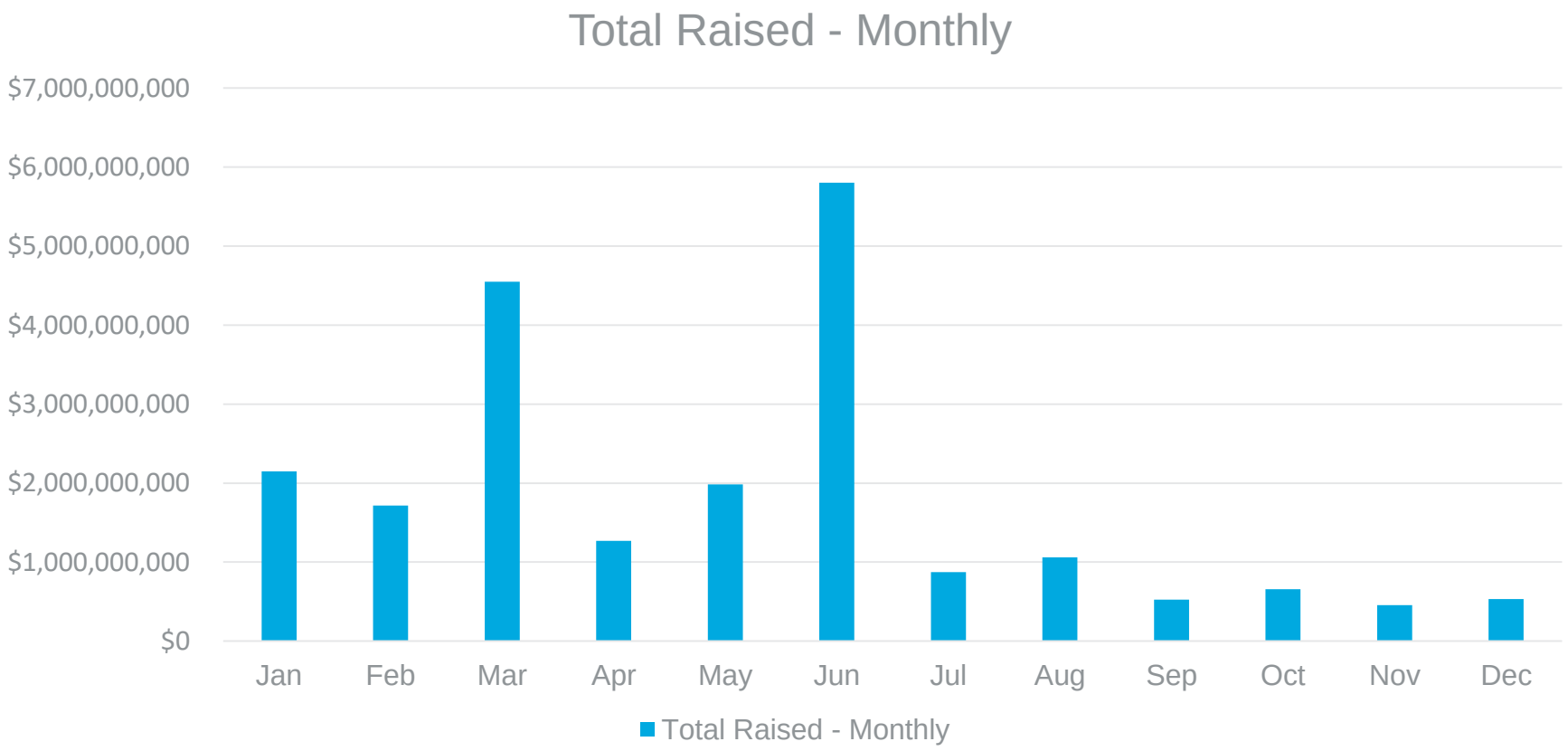
Blockchain Technology 2.0
Legal Implications and Issues in 2019 and Beyond

February 21, 2019

ICOs Raised More than $21 Billion in 2018



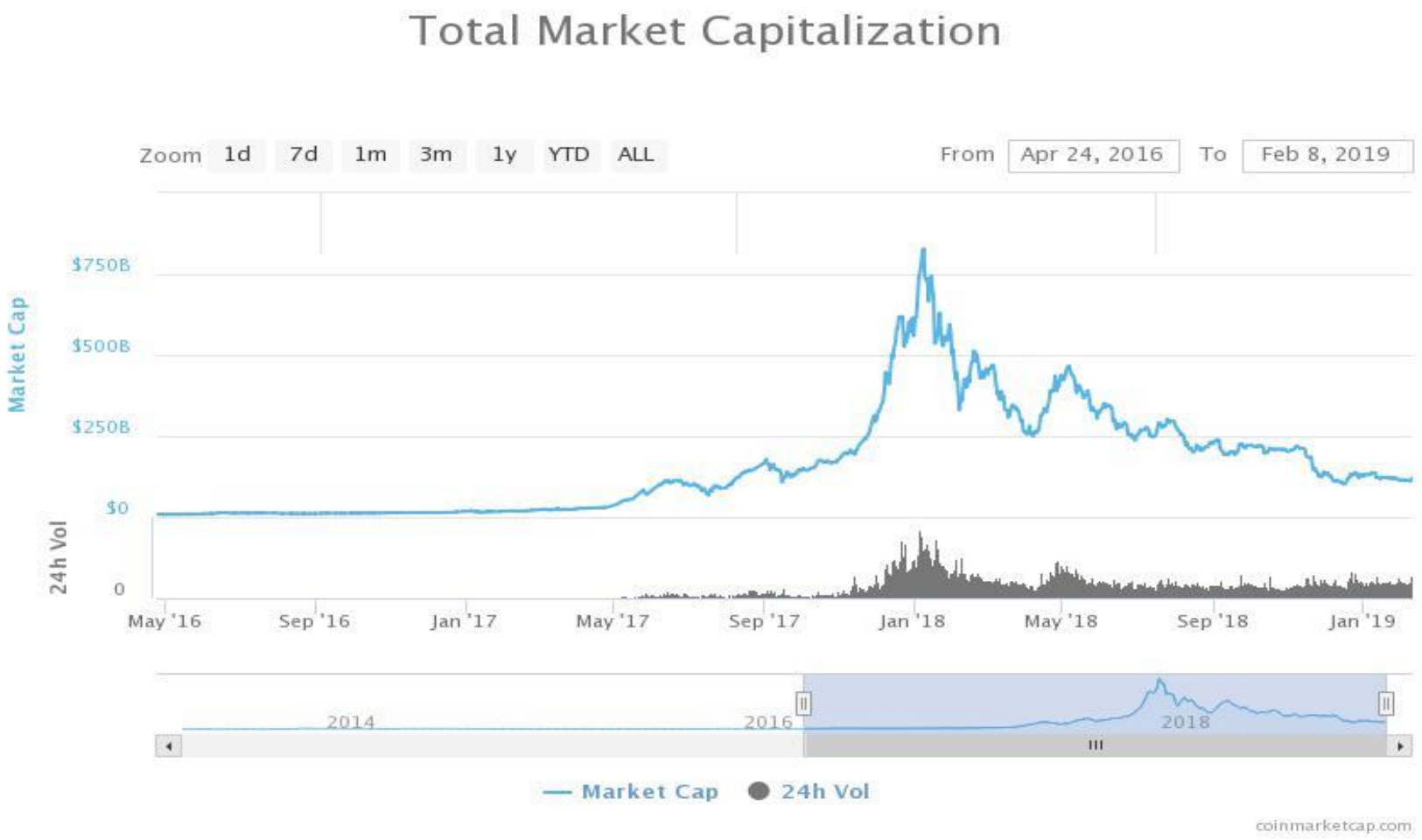
Source: CoinSchedule https://www.coinschedule.com/stats.html?year=2018

2018 Year in Review

Coins and token issued by ICO and STO may be considered "securities" and therefore subject to Securities Regulation

As regulators got involved, the number of new ICOs and STOs dramatically decreased

Crypto Market Increased to $831B and Plunged to $118B



Source: CoinMarketCap: https://coinmarketcap.com/charts/

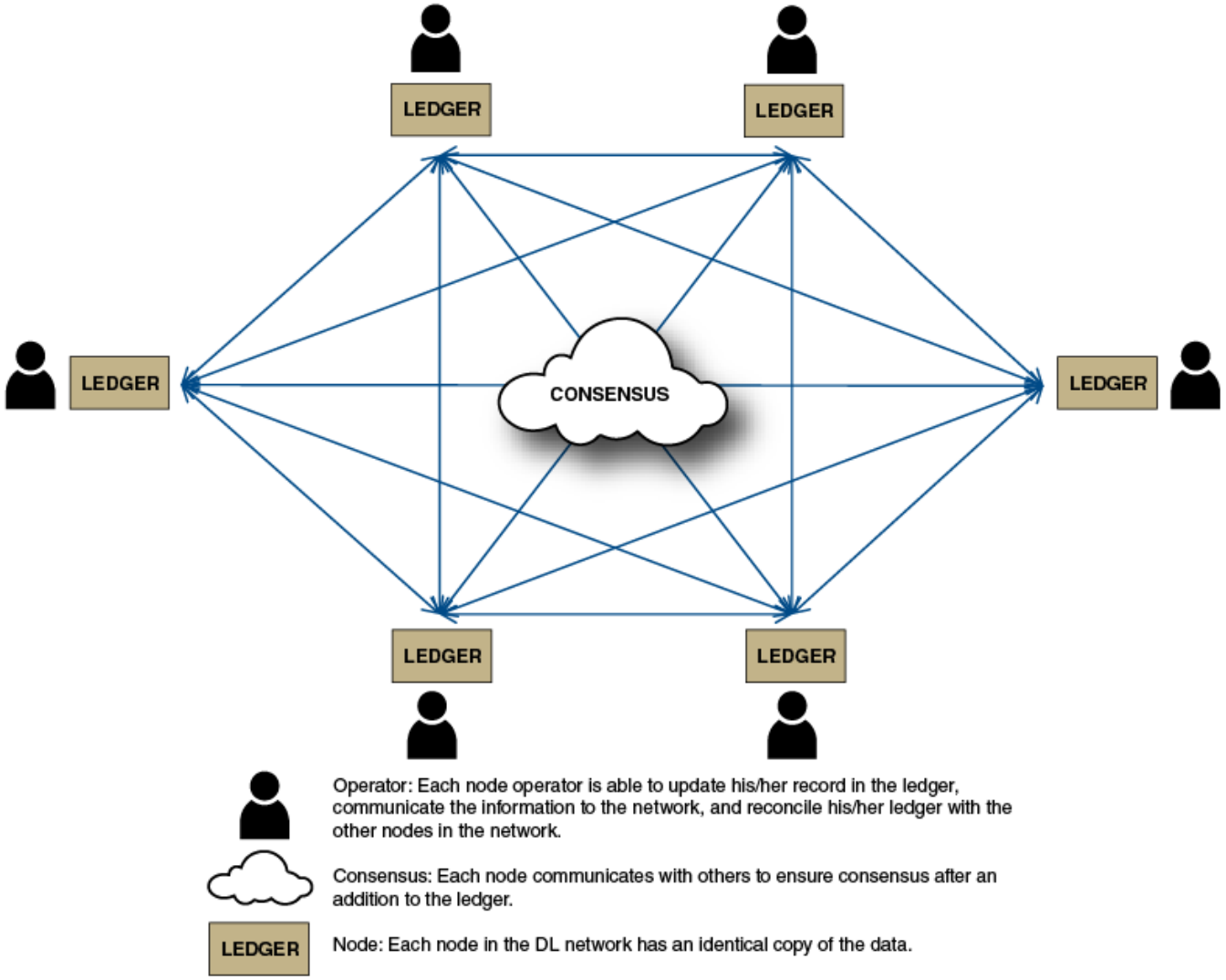
Crypto Becomes Mainstream - #1 Ranked Question in Google for 2018

Agenda:

- Overview of Blockchain technology and its key attributes
- Overview of smart contracts and how they interact with Blockchain technology
- Review of current use cases for Blockchain and Smart Contracts
- Legal considerations when using Blockchain and Smart Contracts

What is Blockchain?

- Digital technology consisting of a shared ledger distributed across all network participants.
  - ➢ This ledger is updated in real or near real-time
- Date-stamped transactions compiled into blocks; submitted to the network for approval.
- Once approved, that block is chained to the previous block, which is linked to all other blocks in the chain.
- Use of cryptography makes transactions extremely hard to tamper with (immutable).
- Transaction approval is based on a consensus protocol.
  - ➢ Network participants need to agree



Source: Federal Reserve Bank of Chicago - Blockchain and Financial Market Innovation Rebecca Lewis, John McPartland, and Rajeev Ranjan

Public Versus Permissioned Blockchain

- Permissioned Blockchain applications allow:

➢controlled access and membership

➢scalability and higher throughput

➢additional confidentiality between parties

➢different consensus mechanisms

  ❖ can be chosen to support the underlying business model

➢governance and integration

When is Blockchain a Good Choice?

- **Who?**
  - digital signatures
- **What?**
  - clear statements of what happened
- **When?**
  - digital timestamps
- **How much?**
  - monitored in real time
- **How committed?**
  - binary statements

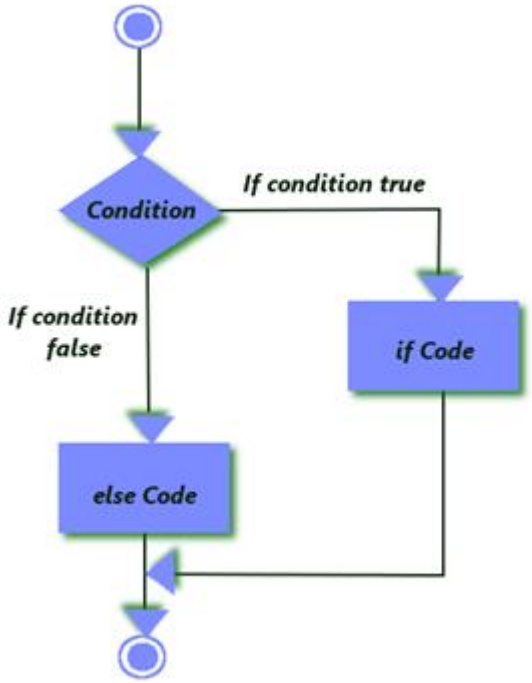
Platforms

- Ethereum
  - Open-source, public, blockchain-based distributed computing platform and operating system featuring smart contract functionality.
  - Allows developers to program their own smart contract.

- Hyperledger
  - Open source blockchain technology owned by the Linux Foundation.

What is a Smart Contract?

- What they ARE:
  - Nick Szabo: “an application that runs in a distributed and trust-minimized manner on a blockchain”
  - code that runs on top of a blockchain platform that contains a set of rules under which the parties agree to interact with each other
  - suitable for binary "if, then" conditions. Once a condition is met, the smart contract will take the next step necessary to execute the contract.



Source: Udemy Blog -https://blog.udemy.com/multiple-if-statements-in-excel/

What is a Smart Contract? (And What is it Not?)

- What they ARE NOT:
  - artificially intelligent
  - capable of machine learning

- Is it a contract? It depends…
  - form
  - law applicable
  - specific use

Smart Contracts

- Why Use a Smart Contract?

  - *Autonomy* — Reduce the need for certain third-party intermediary or facilitator
  - *Trust* — Encrypted and stored on a secured, shared ledger
  - *Savings* — Need for certain third party intermediaries are reduced.
  - *Safety* — If implemented correctly, they are difficult to hack
  - *Efficiency* — Save time normally spent on manually processing documents, sending or transporting them to specific places, etc.
  - *Predictability* – Improve the accuracy of loss expectations and risk management

Smart Contract – Legal Considerations

- Validity
- Jurisdiction & Dispute Resolution
- Amending & Terminating
- Coding Errors & Limitations
- Enforcement

Validity & Enforceability of Smart Contracts

- No requirement as to form – code not itself a barrier
  - Canadian examples
  - Delaware, Arizona, Tennessee statutes

- But to be enforceable, a smart contract needs to meet legal test:
  - Offer & Acceptance
  - Consider – there must be a “meeting of the minds”

- Unlawful & unconscionable contracts

Limitations of Smart Contracts

- Coding limitations
  - concepts like “best efforts”; other governing terms like dispute resolution
  - ability to amend & terminate
  - hacking
  - flawed code

- Ricardian contracts
  - include code and natural language

Dispute Resolution

- Jurisdiction and law
  - parties may be located in different jurisdictions
  - law important to enforceability

- Arbitration
  - private and confidential
  - expert adjudicators
  - enforceability

Making Use of Blockchain and Smart Contracts

- Voting
- Financial Services
- Energy
- Law
- Insurance
- Music
- Healthcare
- Public Records
- Supply Chain Management
- Real Estate
- Cloud Computing
- Retail

Example 1: Land Registry

- Currently, a purchaser of property must (i) secure title and (ii) have the lawful owner sign it over.
  - riddled with defects
  - susceptible to political changes

- Solution – Blockchain to establish a more reliable land registry through the use of “hashes” to identify real estate transactions.
  - Correct and more timely data encourages investment as it increases certainty and reduces complexity.

Example 2: Supply Chain Management

- Currently - paper-based, manual contracts, lack transparency among all stakeholders, increase costs and closing times, introduce inefficiencies and raises the risk of fraud.

Using Blockchain

- Private Blockchains can be used by a group of stakeholders involved in a specific supply chain.
- Combine Blockchain, Smart Contracts and Sensors.
- Adopted by major retailers (Walmart, Nestle, Alibaba).
- Fish industry using Blockchain to combat “Food Fraud”.

The KYC Problem DLT Could Solve

What is the problem…

- For **Financial Institutions**?
  - KYC is expensive (average cost $600 per “KYC”)
  - time-consuming (averaging 24 days to onboard new corporate client)
  - KYC/CDD is risky
    - regulatory risk – consequences of non-compliance
    - reputational risk – brand damage
  - rarely a competitive differentiator

The KYC Problem DLT Could Solve, cont'd

- For **Customers**?
  - point of friction – leading to poor customer experience
  - inefficient process – uncertain account-opening times
  - duplicative processes within an institution – multiple document exchanges

- For **Regulators**?
  - relying on post-mortem, rather than real-time data
  - increased pressure to enforce regulatory requirements
  - lack of standardized reporting processes

Today's KYC/CDD Process:

- **inconsistent** processes across the organization
- no **enterprise-wide view** of a client/customer
- no clearly-structured data model
- **manual** processes;
  - ➢ data collection and risk assessment
- systems were developed **in reaction** to specific regulatory concerns;
  - ➢ led to fragmentation, inefficiencies and high cost within institutions

How Can DLT Help KYC/CDD:

- **ecentralization** of records, eliminating the “single-point of failure” in centralized data models
- building a “**single source of truth**” – Enterprise-level KYC
- improve **data quality** and **governance**
- **Transparency** and Communication
  - updates are immediate
  - all data available in real-time

Model 1: Self-Sovereign Model

- **Entity creates** and manages own identity
- Become the "**gate-keeping**" of their own identity
- Customer-to-bank
  - no sharing of customer's information (between entities)
- Maintain FI-customer relationship
- FI still responsible for due diligence
  - traditional contractual relationships in place

- Type of Blockchain?
  - private, permissioned Blockchain
  - banks participate as nodes on the network

Model 2: FI-Sharing Model

- More disruptive
- Data provided by a customer + other information provided by other participants (not customer-provided)
- Information is shared between participants
  - ➢ Data collection
- Due diligence could also be shared

FI-Sharing Model: Considerations

- Clear liability framework needed
  - ➢ sharing information among FIs
- Strong support from the regulator required
- development of standards
  - ➢ rely on same information?
- Complex contractual relationships between participants
- Clear dispute resolution process

Storing Personal Data

"On-Chain"

- transactions that occur on the Blockchain itself
- dependent on the state of the Blockchain for their validity
- visible to network participants

"Off-Chain"

- moving value or information off the Blockchain
- can be anonymous, cheaper, faster
- more scalable
- security off-chain could be a concern

Issues to be Addressed - KYC

- Costs of implementation
- Coordination required between competitors
- Regulatory changes required to support the technology?
- Privacy
- Standardization of information – digitization
- Network governance
- Pre- and post-ledger complexity
- Network effects needed for successful implementation

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