DT (Digital Transformation)

The Intersection of Blockchain, Crypto and DeFi with Data Innovation, Privacy and Security

March 16, 2022

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Always exceed expectations through teamwork and excellent client service.

DT in the Age of the Pandemic

- *Digital transformation is the process of using digital technologies to create new, or even disrupt the current business processes, the culture, customer experience, to meet those ever-changing business and market requireme*nts.”

- *“All people…should get the most out of the* ==digital transformation==*. The digital rights and principles will guide [us] in promoting an inclusive, prosperous, and sustainable society.”*

  – European Commission, 26 January 2022, Brussels

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ATDT 2021 Fall Series

- *Navigating the Patchwork of Cybersecurity and Data Privacy Laws that Govern*
  - Tuesday, Sept. 21, 2021

- *Supply Chain Risk Management: a Cybersecurity and Data Privacy Imperative*
  - Tuesday, Oct. 26, 2021

- *The Internet of Things and the Cybersecurity and Data Privacy Laws Implicated*
  - Wednesday, Dec. 8, 2021

ATDT 2022 Winter Series

- ***California and China – Two Worldviews on Data Privacy***
  - Wednesday, February 9, 2022

- ***<u>The Intersection of Blockchain, Crypto, and DeFi with Data Innovation, Privacy, and Security</u>***
  - Wednesday, March 16, 2022

- ***Legal and Ethical Issues Surrounding the Use of Artificial Intelligence and Data Innovation, Privacy, and Security***
  - Wednesday, April 27, 2022 (changed from April 20)

Data Innovation, Privacy, Security (DIPS)

Data Innovation
Technologies that create new, or disrupt existing, business processes, to meet ever-changing business and market requirements

Privacy
Legal, contractual, and ethical obligations governing how personal information is accessed, used, and disclosed.

Security
How you protect information, including but not limited to personal information, and electronic systems.

All at once, a patchwork of legal, regulatory and industry standards is fast-emerging.

Cybersecurity Incidents – the Impetus for New Laws

- *Web3's Surging Wave of DIPS Laws*
  - February 18, 2022

- *Crypto and Blockchain's Surging Wave of Data Laws*
  - March 1, 2022 (Part I of IV)

- *DeFi and the Biden Administration's Key Priorities*
  - March 15, 2022 (Part II of IV)

- *Non-fungible Tokens (NFTs)*
  - March 23, 2022 (Part III of IV)

- *Decentralized Autonomous Organizations (DAOs)*
  - March 30, 2022 (Part IV of IV)

The Technology

Blockchain vs. Distributed Ledger Technology ("DLT")

Blockchain vs. Distributed Ledger Technology ("DLT")

- Computer software that is distributed, runs on peer-to-peer networks, and offers transparent, verifiable, permanent transaction management maintained through a *consensus mechanism* rather than <u>by a trusted third-party intermediary</u>, and that guarantees execution.

- Blockchain is the "operating system" while DLT is the ledger itself.

- Can track ownership and place of origin of any asset.

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Decentralized and Immutable

Blockchains are immutable digital ledger systems implemented in a distributed fashion (i.e., without a central repository) and usually without a central authority. At its most basic level, they enable a community of users to record transactions in a ledger public to that community such that no transaction can be changed once published

(NIST Blockchain Technology Overview Draft NISTIR8202, January 23, 2018)

Basics on Blockchains

- **Blocks are a file containing data and that information is locked, encrypted, so only someone with a key can access the information.**

- **The files (blocks) are linked one after the other forming a "chain."**

- **Each file (block) includes a timestamp that records when it was created, history about the files (blocks) that precede it in the chain, and information that is new to that file (block). The "blockchain" is the collection of the files.**

Nodes and Distributed Ledgers

- **Anything that is used to access the internet when connected together is a "node" of the blockchain (anything from smartphones to servers).**

- **Nodes store the blockchain.**

- **Permissionless blockchains are open to anyone (crypto mining).**

- **Permissioned blockchains are limited to certain users (sale of goods, finance transaction, supply chain).**

- **A distributed ledger is a system in which data is stored and shared across multiple sites.**

- **A traditional database stores all the digital data in a centralized location.**

- **With blockchain, the different nodes store the same data.**

A Distributed Ledger has no central authority and every node is responsible for maintaining the ledger

Image Credit: Paul Baran On Distributed Communications RAND Corporation (1964)

CENTRALIZED
(A)

DECENTRALIZED
(B)

DISTRIBUTED
(C)

Link

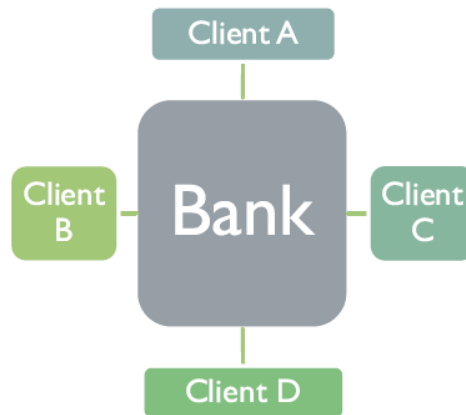Station

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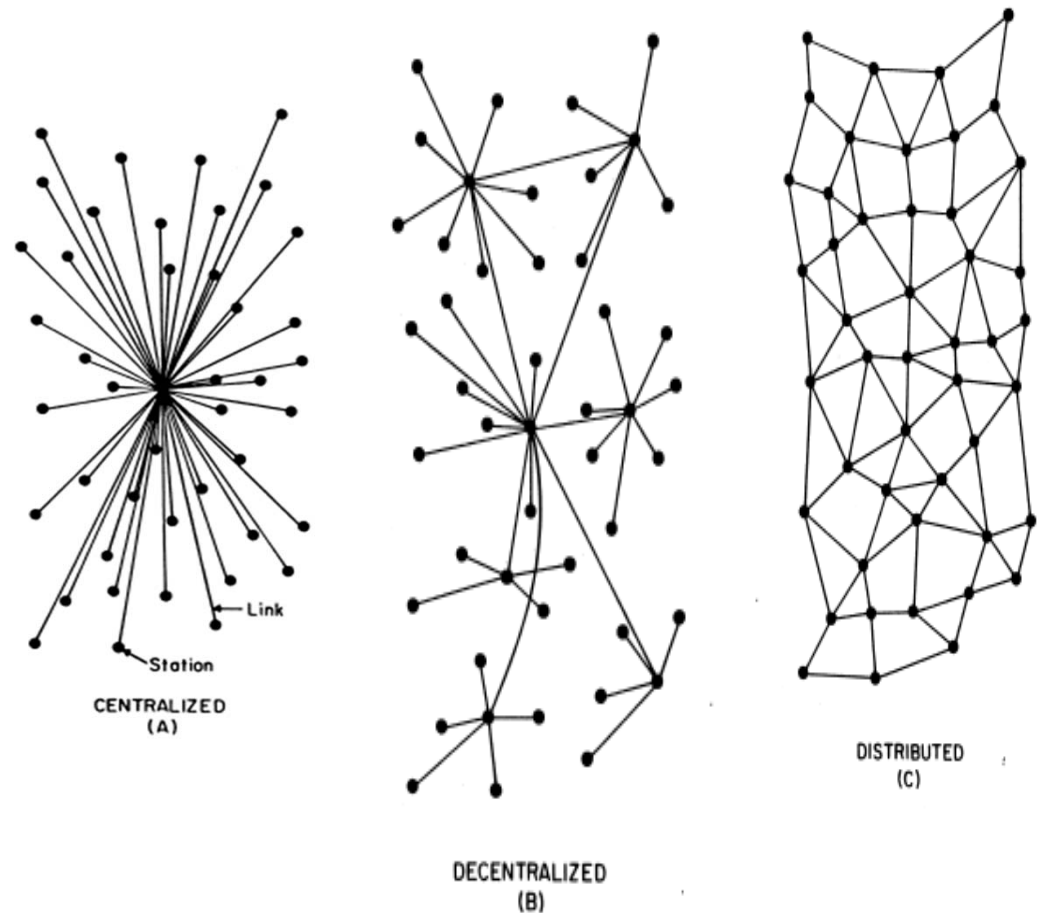
WHAT IS "BLOCKCHAIN"?

Technology that permits transactions to be gathered into blocks of data (i.e., the "ledger")

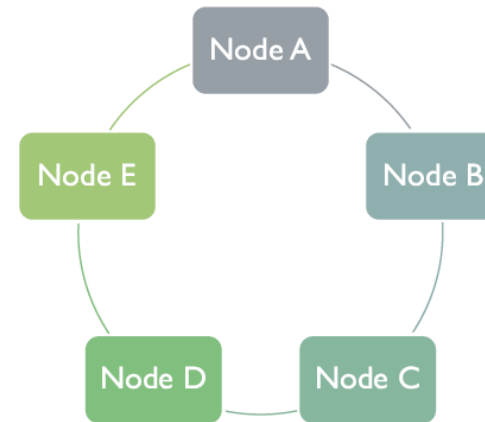- Cryptographically chains blocks of data together

Resulting in a ledger accessible by all participants

- Ledger can be either centralized or distributed (i.e., a copy held by each participant and therefor incredibly redundant, geographically spread with no centralized or "official copy")
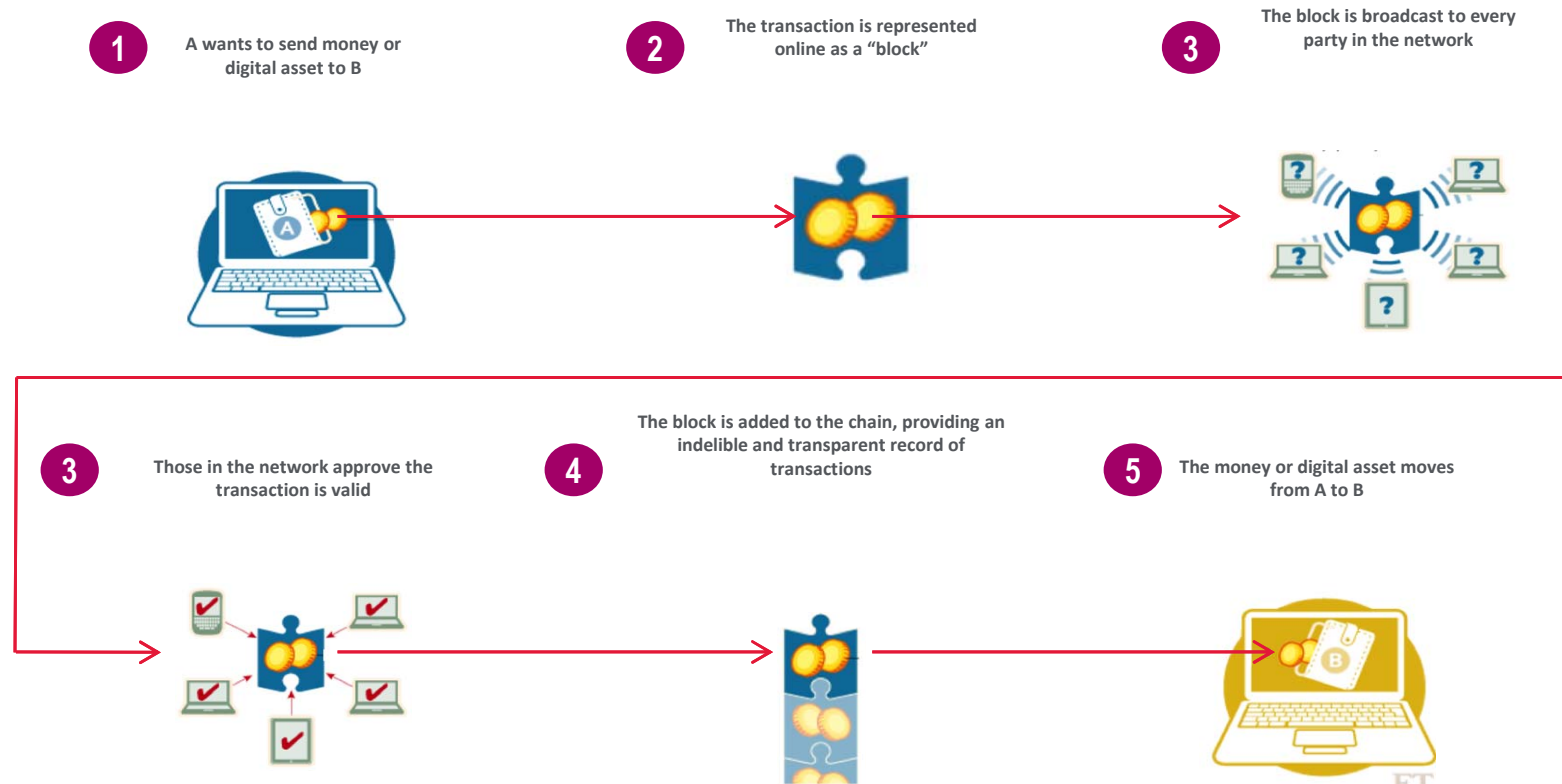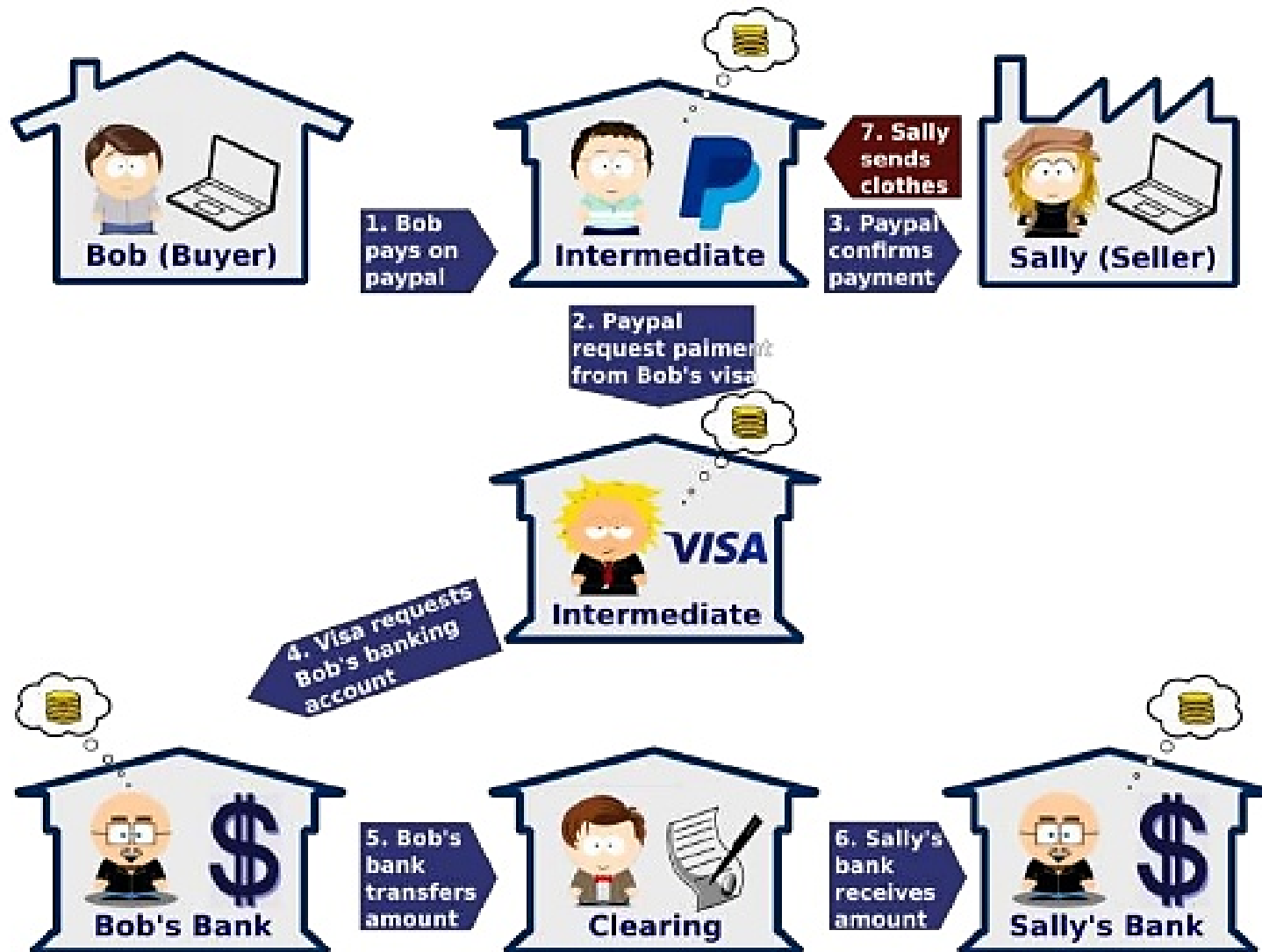
Centralized Ledger

Client A

Client B   **Bank**   Client C

Client D

Distributed Ledger

Node A

Node E   Node B

Node D   Node C

How Blockchain Works

1 A wants to send money or digital asset to B

2 The transaction is represented online as a "block"

3 The block is broadcast to every party in the network

3 Those in the network approve the transaction is valid

4 The block is added to the chain, providing an indelible and transparent record of transactions

5 The money or digital asset moves from A to B

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Cryptocurrency (Virtual Currency) vs. Digital Token

- **Cryptocurrency – digital representation of value that can be traded and functions as a unit of account or stored value.**

- **Token – representation of a unit functionality, service, or rights in or to an asset.**

- **NFTs can represent real-world items like artwork and real estate. "Tokenizing" these real-world tangible assets makes buying, selling, and trading them more efficient while reducing the probability of fraud.**

- **Wallet (or Digital Wallet)**

  - Storage mechanism for digital assets.

  - Wallets are cryptographically protected by a digital key that is personal to the owner of the wallet.

Bitcoin is the most commonly known use of blockchain and is seen as a proof of concept (this platform is both "open" and "permissionless")

- Unit of virtual currency (created in 2008 by Satoshi Nakamoto)
- Specific implementation of a "protocol"
- A "protocol" is tech speak for the code language making up, in this case, a software platform

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Smart Contracts

- **Smart contracts are digital contracts stored on a blockchain that are automatically executed when predetermined terms and conditions are met.**

- **They typically are used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary's involvement or time loss.**

- **They can also automate a workflow, triggering the next action when conditions are met.**

"if/when...then..."

- **Smart contracts work by following simple "if/when...then..." statements that are written into code on a blockchain.**

- **A network of computers executes the actions when predetermined conditions have been met and verified.**

Examples:

- releasing funds to the appropriate parties;

- registering a vehicle;

- sending notifications; or

- issuing a ticket.

The blockchain is then updated when the transaction is completed. That means the transaction cannot be changed, and only parties who have been granted permission can see the results.

Terms = Software

- **Parties can identify as many "if/when …then…" rules as they want.**

- **Parties agree to how their transactions and data are represented on the blockchain**

- **Parties identify all possible exceptions**

- **Parties identify a framework for dispute resolution**

- **A software developer can program the smart contract**

- **Business templates, web portals, and online tools such as apps are used to simplify structuring the contract**

Real World Applications

IBM commissioned Forrester to conduct a study in September 2020 to investigate how supply chain leaders are using data to handle disruptions due to the pandemic and how adoption of blockchain can help in the future

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- **Key Findings**
  - Supply chain disruptions have a negative ripple effect on the entire organization. COVID-19 has emphasized this and exposed greater infrastructure issues.
  - Proper data and automation paired with digitized models aid in supply chain problem solving, effectiveness, and efficiency — all areas where blockchain flourishes.
  - Blockchain for supply chain users enables transformative benefits, especially in common and crucial problem areas such as data integrity.
- **Companies are pushing toward further, and rapid, digitization of supply chains by adopting emerging technologies like blockchain to improve data quality, integrity, and visibility that will allow firms to adapt to challenges in real time.**
- **Data is at the heart of the problem and also the key to the solution.**
- **Most respondents saw value in improvements to data integrity, automation of business processes, a single shared data source, and the tokenization of digital and physical assets as key remedies to any disruption.**

Benefits

Speed, efficiency and accuracy

Once a condition is met, the contract is executed immediately so there's no paperwork to process and no time spent reconciling errors that often result from manually filling in documents.

Trust and transparency

No third party involved encrypted and records of transactions are shared across participants so fraud through alteration is avoided.

Security

Blockchain transaction records are encrypted, and because each record is connected to the previous and subsequent records on a distributed ledger, hackers would have to alter the entire chain to change a single record.

Savings

Intermediaries to handle transactions are eliminated which reduces delays and fees.

Retailer-supplier disputes and inefficiencies are quickly addressed in real time

- **Vendors stock a warehouse for Home Depot that then ships to the retail stores**

- **Vendors need to know what was shipped**

- **Retailers need to know what has been received**

- **Right product arrives**

- **Payment is released**

- **If something goes wrong, there are a lot of blind spots in the chain and it takes months to identify the problem (examples include human error through manual entry process or a system breakdown)**

Benefits in Action

- **Access to the permissioned ledger allows both the vendor and the retailer to see the transactions in real time**

- **The blockchain creates a permanent, unchangeable record of the data that cannot be altered**

- **Vendors see only their information and not other vendors**

- **Problems are identified in minutes, not weeks**

- **Using smart contracts, Home Depot can review the terms and find where the terms have not been executed (wrong amount/unit of measure, arrival in one location and not another)**

WTO reports that 60% of small and medium sized enterprises trade finance requests are denied

80% of international trade is based on some form of credit or guarantee

The global finance trade gap is US$ 1.5 trillion

US$ 10 trillion annual finance market

Financing

- **IBM we.trade is a block chain platform shared by 15 major European banks.**

- **Online templates are used to allow sellers and buyers to create and draft proposals**

- **Blockchain smart contracts define automated financing offers, logistics partners, and payment terms based on the meeting of certain conditions**

How it Works

- The parties agree on terms

- The terms are stored on the blockchain

- The buyer sends a purchase order with 90 day payment terms which is also stored on the blockchain

- The buyer can request a bank payment undertaking (just like in a letter of credit transaction)

- Payment can be made to the seller or seller's bank once the settlement conditions are met in the smart contract

- Seller can ask for an invoice financing arrangement for 90 days from its bank so that payment can be made immediately

- Seller ships and sends the invoice through the platform

- Both parties can track the blockchain backed shipment and related details

- Compliance with Customs Authorities can also be made more efficient by granting access to the blockchain to regulatory authorities preventing fraudulent documents, counterfeit goods, misdeclaration of values, and trafficking in banned or restricted products, complying with know your customer procedures, and allow for audits in real time

- Compliance terms can be embedded in smart contracts as terms
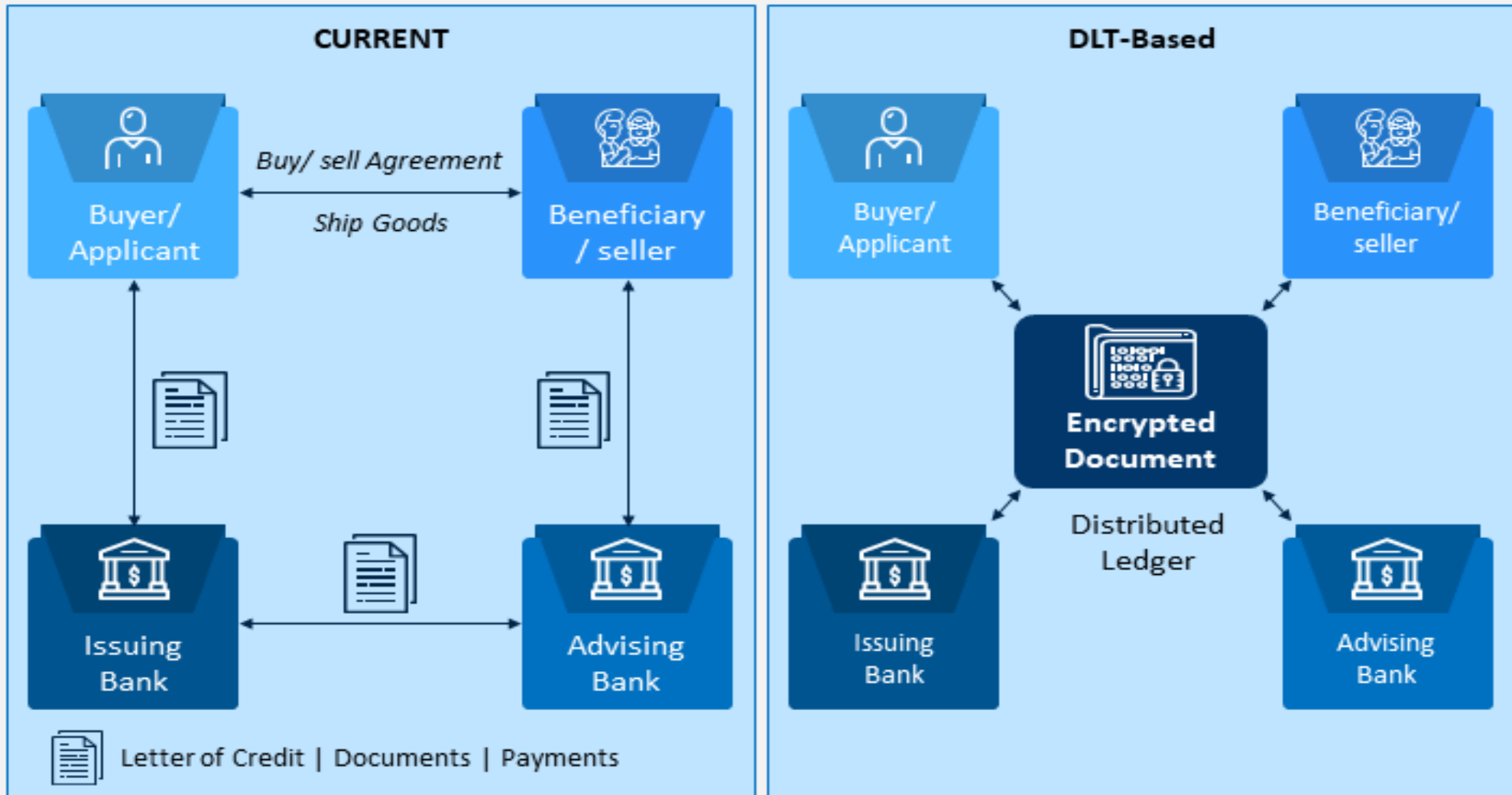
Fitting New Technology Into Existing Legal Frameworks

What and Who govern these new assets?

"Magic: The Gathering Online Exchange." (AKA MtGox, MtGox, or Mt Gox)

- Mt. Gox was a Tokyo-based cryptocurrency exchange founded in 2010.

- Mt. Gox was at one time responsible for more than 70% of Bitcoin transactions.

- In 2011, hackers used stolen credentials to transfer Bitcoins.

- In 2011, deficiencies in network protocols resulted in several thousand Bitcoins being "lost."

- In 2014, Mt. Gox was hacked and thousands of Bitcoins were stolen.

- Reports on the number of coins lost ranged from 650,000 to 850,000.

- The company filed for bankruptcy shortly after.

- In late 2021, creditors and the Tokyo District Court reached an agreement on the Mt. Gox rehabilitation plan, closing a seven and half year legal battle.

See In re MtGox Co. Ltd., No. 14-31229-sgj-15, Docket No. 174 (Bankr. N.D. Tex. Feb. 28, 2017) (seeking approval of settlement agreement with U.S. Department of Justice, which would, in part, release funds that were seized by the DOJ pursuant 18 U.S.C. § 981 in connection with allegations that MtGox affiliate, Mutum Sigillum LLC, was involved in transactions and attempted transactions in violation of 18 U.S.C. § 1960 and was engaged in the *unlicensed money transmitting business*); *see also* Order Approving Settlement Agreement, *In re MtGox Co. Ltd.*, No. 14-31229-sgj-15, Docket No. 177 (Bankr. N.D. Tex. May 1, 2017).

Regulator's Choice

- FINRA believes, like many other regulators, that Firms that engage in activities related to digital assets, whether or not they are securities, are reminded to consider all applicable FINRA rules and federal and state laws, rules and regulations.

- Digital assets that meet the definition of an "investment contract" under Section 2(a)(1) of the Securities Act of 1933 or under Section 3(a)(10) of the Securities Exchange Act of 1934 are "securities" governed by the federal securities laws and FINRA rules, irrespective of whether or not they are labeled as "securities."

- On April 3, 2019, Strategic Hub for Innovation and Financial Technology of the Commission published a framework for analyzing whether a digital asset has the characteristics of an "investment contract" and whether offers and sales of a digital asset are securities transactions. See also Securities Exchange Act Release No. 81207 (July 25, 2017), **Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO**.

- On July 8, 2019, the staffs of the SEC Division of Trading and Markets and the FINRA Office of General Counsel released a joint statement addressing some key regulatory concerns regarding a broker-dealer's ability to comply with financial responsibility rules in the context of digital asset securities. See Public Statement, Division of Trading and Markets, U.S. Securities and Exchange Commission and Office of General Counsel, Financial Industry Regulatory Authority, Joint Staff Statement on Broker-Dealer Custody of Digital Asset Securities, (July 8, 2019).

SEC, Security or Investment Contract?

- Crypto-Currencies, as instruments, do not fit readily into any of the types of security listed in the definition (*e.g.*, notes, stock, bond, etc.).

- In addition to all other regulations at the SEC's disposal there is a possible private right of action liability for selling or promoting unregistered securities.

- Section 12(a)(1) of the Exchange Act prohibits the offer or sale of any unregistered security in interstate commerce. 15 U.S.C. § 77l(a)(1). *See Pinter v. Dahl*, 486 U.S. 622, 643-647 (1988) (extending Section 12(a)(1) liability beyond "persons who pass title" to "the person who successfully solicits the purchase" of such security, "motivated at least in part by a desire to serve his own financial interests or those of the security owner.").

- Section 15 of the Exchange Act confers secondary liability upon "[e]very person who, by or through stock ownership, agency, or otherwise . . . controls any person liable" under Section 12. 15 U.S.C. § 77o(a).

- *In re Tezos Securities Litigation*, No. 17-cv-06779-RS, Order on Defendants' Motions to Dismiss, Docket No. 148 (N.D. Cal Aug. 7, 2018) (prohibition against extraterritorial application of the Exchange Act not applicable in situation where: (1) actual situs of initial coin offering ("ICO") transactions occurred through a website: (a) hosted on a U.S. server; and (b) primarily run by a U.S. resident; (2) plaintiff participated in ICO in response to marketing that targeted U.S. residents; and (3) where transactions were validated and added to the blockchain by a network of *nodes* clustered more densely in the U.S. than in any other country).

Investment Contract

- **Courts and regulators examine whether the instrument can be considered to be an "investment contract."**

- **In many situations a Crypto-Currency or Alt-Coin is not introduced in isolation and its initial distribution to backers and the public is often paired with or arises out of a purportedly innovative block-chain technology, mechanism, or scheme.**

  - PATRON, a crypto currency which operates on the Ethereum platform began by marketing itself as building a decentralized influencer-marketing platform to eliminate inefficiencies in branded content and social media, and then conducted a $40 million token sale.

- **The U.S. Supreme Court first articulated the elements of an investment contract in *SEC v. W. J. Howey Co.*, 328 U.S. 293, 299 (1946) concluding that an offering of units of a citrus grove development in Florida, coupled with a contract for cultivating, marketing and remitting the net proceeds to the investor, constituted an investment contract, and therefore a security, within the meaning of the Exchange Act and stating that and investment contract "means a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or third party.**

Laws, Regulations, and Industry Standards

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Wyoming

- To date, Wyoming is the most crypto-friendly state in the nation, passing nearly two dozen blockchain-enabling laws in the past three years.

- These laws seek to clarify the existing regulatory environment around cryptocurrency businesses and serve as a model for other states and federal agencies to follow.

- Examples:

  - 2019 – Wyoming passed a law allowing digital asset businesses to become Special Purpose Depository Institutions, which are similar to traditional custody banks. See WY ST § 13-12-103

  - 2021 – Wyoming passed a Decentralized Autonomous Organization (DAO) bill, which allows for the legal recognition of DAOs as a distinct form of an LLC. See WY ST § 17-31-104

Delaware

- **In July 2017 Delaware enacted Senate Bill 69, that provides statutory authority for Delaware corporations to use networks of electronic databases (including blockchain) to create and maintain corporate records.**

  - The law expressly permits corporations to trade corporate stock on the blockchain so long as the stock ledgers serves three functions: (1) to enable the corporation to prepare the list of stockholders, (2) to record information, and (3) to record transfers of stock.

  - Section 224 of the Delaware Corporate Code states, "Any records administered by or on behalf of the corporation in the regular course of its business, including its stock ledger, books of account, and minute books, may be kept on, or by means of, or be in the form of, any information storage device, method, or 1 or more electronic networks or databases (including 1 or more distributed electronic networks or databases) ..." (emphasis added).

- **On June 19, 2019, Delaware enacted Senate Bills 89, 90, and 91, which, among other things, amend certain laws such as the Delaware Revised Uniform Partnership Act and Delaware Limited Liability Company Act to permit the use of "distributed ledgers" or a "blockchain" to maintain certain records and facilitate certain electronic transmissions.**

Protections

You Should Implement

Incident Response Plan (IRP)

- **Why?**

  - A patchwork of laws: PCI, HIPAA, GLBA.

  - FTC: a reasonable plan, reasonably followed, may be the difference for a regulatory action.

  - SEC: recent enforcement actions have analyzed IRPs.

  - Insurance: an IRP is becoming mandatory by underwriters.

  - Reputational harm: consumers and other third parties increasingly intolerant of a botched response.

  - Business continuity: responding as important to survival than defending.

Risk Assessments (RA)

- **Risk assessments**

  - Lead to policies, then standards, then procedures, all of which together serve to comprehensively outline objectives and administrative, technical and physical controls.

- **You will get asked to -**

  - Describe your risk assessment process, including but not limited to how the nature and level of risk is assessed and recorded, the frequency of risk assessment, and how the Company responds to . . . identified risks.

Responses

You Should Have Ready

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Written Information Security Program (WISP)

"Evaluate and adjust the [Written] Information Security Program <mark>in light of any changes to [your] operations or business arrangements</mark> …."

i.e., emerging technologies like blockchain, crypto, etc.

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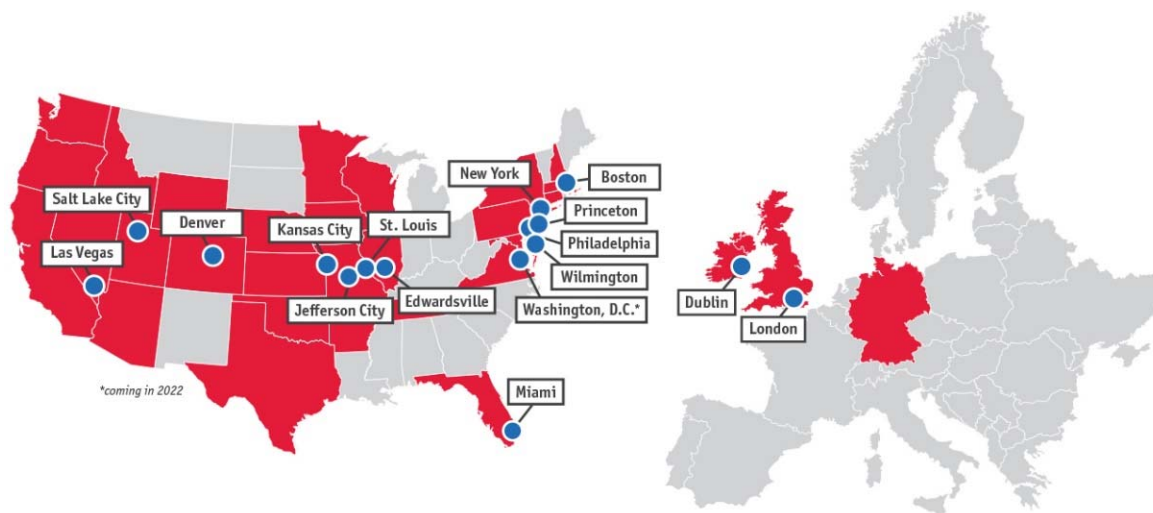
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*coming in 2022

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