Blockchain Technology:
The Next Move in Transparency, Transactions & Recordkeeping

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CPAs & Advisors

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This is me…..Geron O. Morgan

As a member of BKD National Financial Services Group, Geron has more than 15 years of experience providing audit & attestation services to financial institutions of varying size, structure & operation, including public & nonpublic entities. Her work focuses primarily on financial institutions & employee benefit plans. Geron's experience includes providing financial statement audits & internal audits, as well as assisting clients with regulatory & public company filings. She also provides audit services to employee benefit plans of all sizes & complexity, including 11-K filers.

She also provides various consulting services. Her experience includes assisting clients with the implementation of management's assessments on internal controls under FDICIA, performing outsourced & co-sourced internal audit functions, including developing internal audit operational risk assessments & internal audit plans & programs, stock option consulting, merger & acquisition pro forma analysis, assistance with purchase accounting, & model validation engagements under OCC 2011-17 & SR 11-17. She also offers assistance on day-to-day inquiries regarding accounting & strategic issues.

Geron has spent significant time over the last two years researching distributed ledger technology (blockchain), digital assets & cryptocurrencies. She is the co-chair of the BKD Blockchain Task Force. She has spoken to national & regional groups related to these technologies with a goal of educating & creating opportunities for positive use of these tools.

She is a member of the AICPA, Texas Society of CPAs, Texas Bankers Association, Independent Bankers Association of Texas & Financial Women in Texas. In addition, she is on the board of directors & serves as treasurer of the Susan G. Komen Houston affiliate.

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This presentation may include opinions & thoughts. These are the opinions & thoughts of Geron Morgan & may not be sanctioned by BKD LLP. ☺☺

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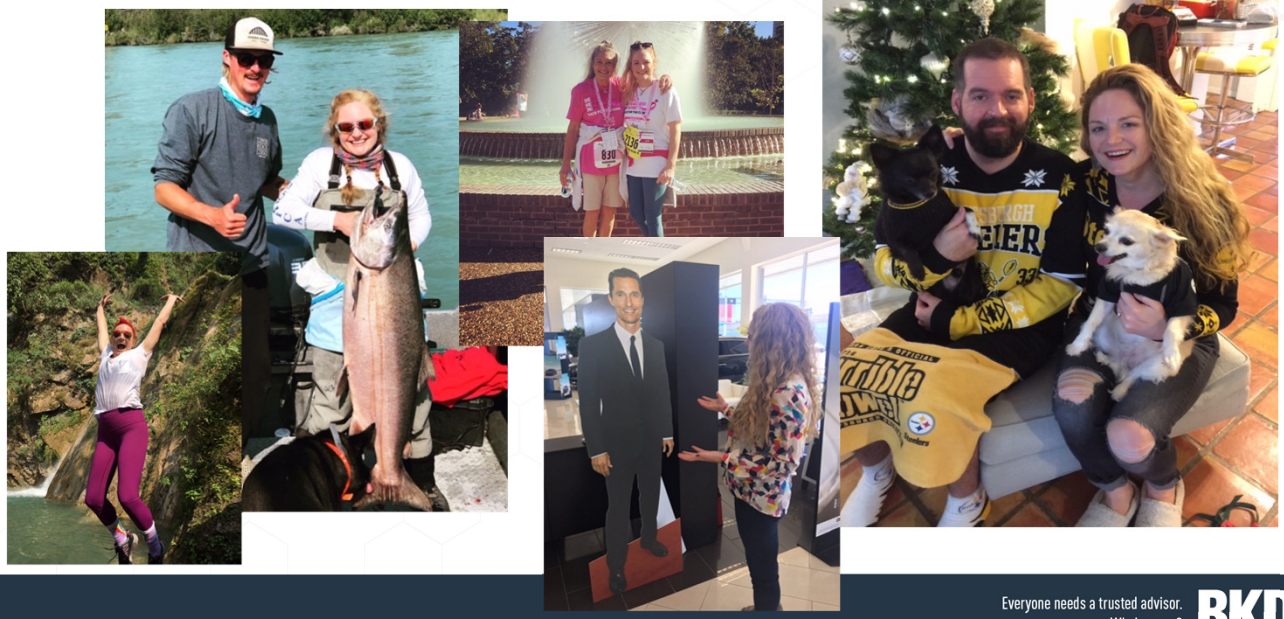
But this is really me….



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Agenda

- Blockchain Technology: What is It & Why It's Here
- Current Perspectives & Uses (Cryptocurrency)
- Business Case for Health Care Industry
- Risk Factors

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CHANGE…..The Only Constant

Computers looked like this…

Data storage looked like this….

CHANGE…..The Only Constant

Phones looked like this…..

Personal music looked like this

What's the Next Move?

- Distributed ledger technology (Blockchain)
- Cryptocurrencies

Why are We Changing?

- Trust & transparency
- Crowdsourcing & consensus
- Access to technology
- Intermediary distrust
- We can!!

What is Blockchain Technology?

BLOCKCHAIN = DISTRIBUTED LEDGER

Blockchain is only **one type** of distributed ledger

Distributed Ledger Technology (emerges circa 1991, Stornetta/Harber)

Blockchain	r3	X-Road
Public Distributed Ledger	Private Distributed Ledger	Private Distributed Ledger
Stores information in blocks	200 companies and regulators on six continents	442 institutions & enterprises 1,304 interfaced systems
Only Transactions	Transaction	Records and transactions

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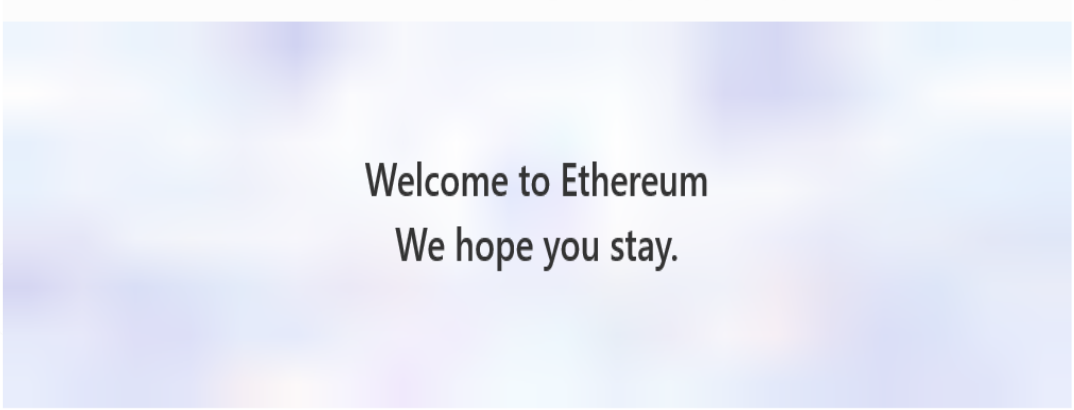

What is Distributed Ledger Technology?

- Distributed ledger is a decentralized database or ledger system used for recording transactions & maintaining records.
- Most distributed ledger databases use consensus & cryptography to secure & validate data.
- Currently, the significant use for distributed leger technology is recording of digital asset transactions, this technology can also be used to exchange data & records in a permissioned or permissionless (public) environment.

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What is the Difference?

- Decentralized; stored/replicated on multiple computers across countries, entities, etc.
  - This makes manipulation unlikely
- Transaction history or recorded data held by everyone
- Near real-time information share/transfer between participants without an intermediary
- Consensus algorithms are used as a validation process

Two Main Types of Distributed Ledger

Permissioned

- Requires permission from central entities to access network & modify ledger
- Identity verification required

Permissionless

- All computers can access
- Local additions made by participants shared with all computers

Myth vs. Reality

	Myth	Reality	
1	Blockchain is Bitcoin	• Bitcoin is just one crypto-currency application of blockchain	• Blockchain technology can be used and configured for many other applications
2	Blockchain is better than traditional databases	• Blockchain's advantages come with significant technical trade-offs that mean traditional databases often still perform better	• Blockchain is particularly valuable in low-trust environments where participants can't trade directly or lack an intermediary
3	Blockchain is immutable or tamper-proof	• Blockchain data structure is append only, so data can't be removed	• Blockchain could be tampered with if >50% of the network-computing power is controlled and all previous transactions are rewritten—which is largely impractical

Myth vs. Reality

4	Blockchain is 100% secure	• Blockchain uses immutable data structures, such as protected cryptography	• Overall blockchain system security depends on the adjacent applications—which have been attacked and breached
5	Blockchain is a "truth machine"	• Blockchain can verify all transactions and data entirely contained on and native to blockchain (eg, Bitcoin)	• Blockchain cannot assess whether an external input is accurate or "truthful"—this applies to all off-chain assets and data digitally represented on blockchain

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Summary of Business Uses

Record keeping: storage of static information

Transactions: registry of tradeable information

1 Static registry

- Distributed database for storing reference data

Example
- Land title
- Food safety and origin
- Patent

2 Identity

- Distributed database with identity-related information
- Particular case of static registry treated as a separate group of use cases due to extensive set of identity-specific use cases

Example
- Identity fraud
- Civil-registry and identity records
- Voting

3 Smart contracts

- Set of conditions recorded on a blockchain triggering automated, self-executing actions when these predefined conditions are met

Example
- Insurance-claim payout
- Cash-equity trading
- New-music release

4 Dynamic registry

- Dynamic distributed database that updates as assets are exchanged on the digital platform

Example
- Fractional investing
- Drug supply chain

5 Payments infrastructure

- Dynamic distributed database that updates as cash or cryptocurrency payments are made among participants

Example
- Cross-border peer-to-peer payment
- Insurance claim

6 Other

- Use case composed of several of the previous groups
- Standalone use case not fitting any of the previous categories

Example
- Initial coin offering
- Blockchain as a service

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Cryptocurrency: What is it Really?

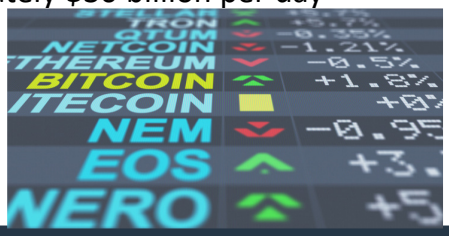
- Cryptocurrency is a digital currency; transactions are verified & data maintained using cryptography on a decentralized network
- NOT actually a currency or "legal tender" (not in the U.S. ☺)
- NOT backed by a government or system of collateral
- Intangible (ASC 350) under Generally Accepted Accounting Principles
- Property under tax law; transactions are therefore subject to short-term or long-term capital gains tax treatment
- Regulation-free (Not for long, FinCEN is coming)

Accounting & Tax Guidance

- GAAP does not currently provide specific guidance on accounting for cryptocurrency
- Accounted for as an indefinite-lived intangible asset, recorded at cost & tested for impairment
- For federal tax purposes, virtual currency is treated as property; capital gain or loss is realized (Ordinary income for mining & staking)
- Tax reporting requires tracking cost basis & recordkeeping by the taxpaying entity

Cryptocurrency: The Evolution

- In 2008, a person or group of persons using the pseudonym "Satoshi Nakamoto" published a white paper about cryptocurrency, specifically Bitcoin which introduced Blockchain
- Today 7,800+ different cryptocurrencies are known; new crypto added every day; each with its own programing code & rules structure
  - Market cap leaders; Bitcoin (BTC), Ethereum (ETH), Binance (BNB)
  - Bitcoin market volume of approximately $30 billion per day
- Proof of work vs. Proof of stake



The Crypto Economic Proposition

- Crypto is finite (like gold, silver & other commodities)
  - Only 21 million BTC in existence
  - Hedge against increase in money supply (money printing)
- A new gold standard
  - Would need to increase market cap by 5X
  - Would also need decrease in volatility
  - Was gold standard stable
- Easy to buy, sell, store, move, or transfer (decentralized, no intermediary)

What to Consider

- Receive & Hold
  - When an organization determines it will "receive & hold," the organization will need to establish a wallet.
    - Exchange account
    - Hardware wallet (public & private key ownership)
  - Organization is subject to volatility of cryptocurrencies
  - Accounting & reporting policies should be adopted
  - Proper internal controls related to public & private keys
    - Can consider a custodial relationship

What to Consider

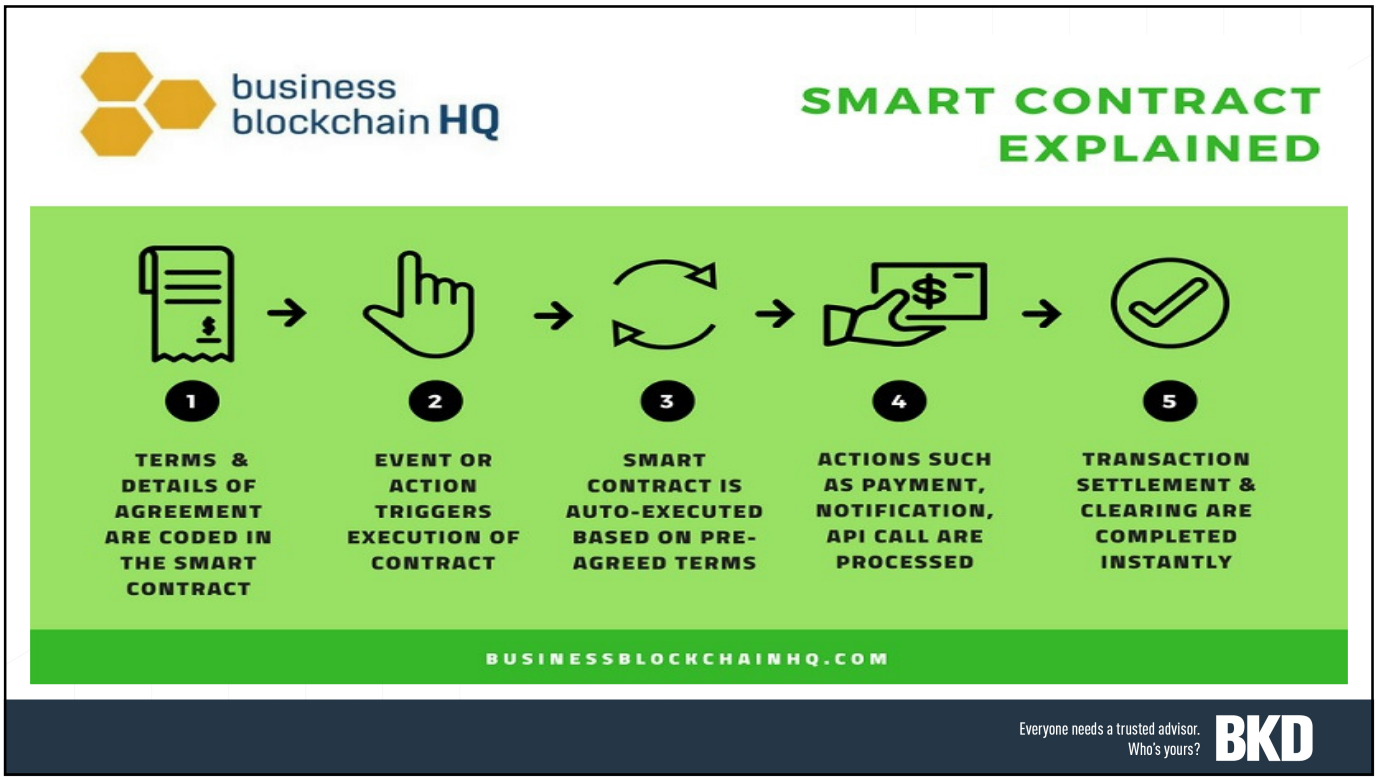
- Receive & Liquidate
  - Requires organization to provide payees with their wallet address
  - Organization then uses an exchange to liquidate the crypto
  - In this case, the organization takes possession of the crypto & is responsible for maintaining record of transactions & reporting gains & losses
  - Accounting & reporting policies should be adopted
  - BitPay – example of third-party payment application

What to Consider

- Third-Party Receive & Liquidate – Transfer Only Dollars
  - Payment application vs. gateway
    - A payment application will utilize the established wallet of the organization while a gateway will require donors to submit the donation through the portal
  - Organization can review the transaction data & approve the transaction
  - The gateway liquidates the crypto & sends cash to the organization; the organization is not required to have a wallet (in most gateway transactions, the organization does not take possession of the crypto)
  - A fee is charged (1% is the word on the street)

Smart Contracts

- Execution code stored on a Blockchain
- Allows for the automated release of assets when stated conditions are met
- Immutable & objective
- Currently available with Ethereum network
  - *E.g.*, Ethereum user can send 10 Ether to the commissioner of her fantasy football league on Wednesday night at 10pm if the two trades she requested are executed/accepted…☺ because the league contract charges five ether per trade.



Decentralized Finance (DeFi)

- "Peer-to-peer" open marketplace platforms (no intermediary)
  - Investors earn yield on tokenized tangible assets such as invoices, mortgages, or streaming royalties
  - Borrow, save, invest, trade, NFTs & digital art
- Many of the leading DeFi's are running on Ethereum blockchain due to the ability to include programable contract terms (**smart contracts**) on an open code

The Office of National Coordinator for Health Information Technology (ONC)

- **Interoperability Roadmap 2021 – 2024 goal:**

  "Achieve nationwide interoperability to enable a learning health system with the person at the center of a system that can continuously improve care, public health & science through real-time data access"

Business Case: Patient Records

- Where are the current pain points for patient data
  - Redundancy within systems
  - Lack of ability to share timely
  - Lack of standardized architecture, terminology, specifications & capabilities
  - Patient access
  - Security

Business Case: Patient Records

- How could a distributed ledger environment change the game?
  - One network with uniform data protocols
  - Replicating data to all computers near real-time
  - Public key / Private key
  - Encryption & protocols

Pharmaceutical Tracking & Prescription Verification

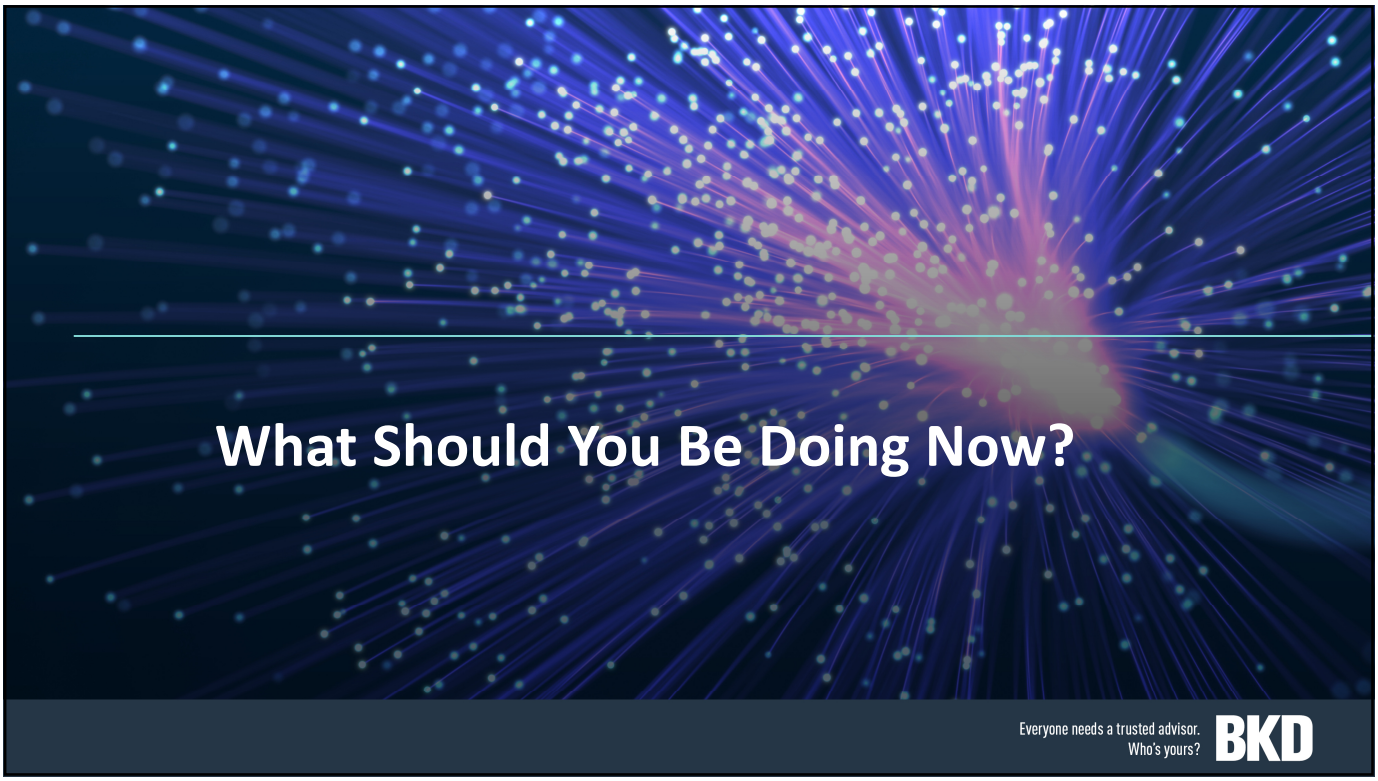
- Providers able to issue prescriptions through the distributed ledger
- Pharmaceutical database with near real-time update of patient prescription consumption
- Tracking & exchange of regulatory reporting for pharmacies

Research & Data Exchange

- Record & exchange research data in a standardized manner
- Track study results & provide data integration with patient care facilities
- Real time append database submission of research results and analysis
- Use of anonymous real patient data in research
- Vaccination records

Pandemic Response

- What we learned from COVID –
  - Testing
  - Contact tracing (algorithmic)
  - Statistics – quickly identify potential high-risk areas
  - Vaccination records and verification (no card, just private key/ public key identifiers)
  - Variant monitoring



Consider Risk & Strategy

- Operational Risk
  - We don't know what we don't know
  - The security of the Blockchain is only as good as that of the computer/ user interface
  - The Decentralized Autonomous Organization (DAO) is an example of how a small defect can have a large impact
  - 51% take over – dissolution of immutability through manipulation
- Regulatory Risk
  - There are currently minimal regulations &/or laws

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Acknowledge the Barriers

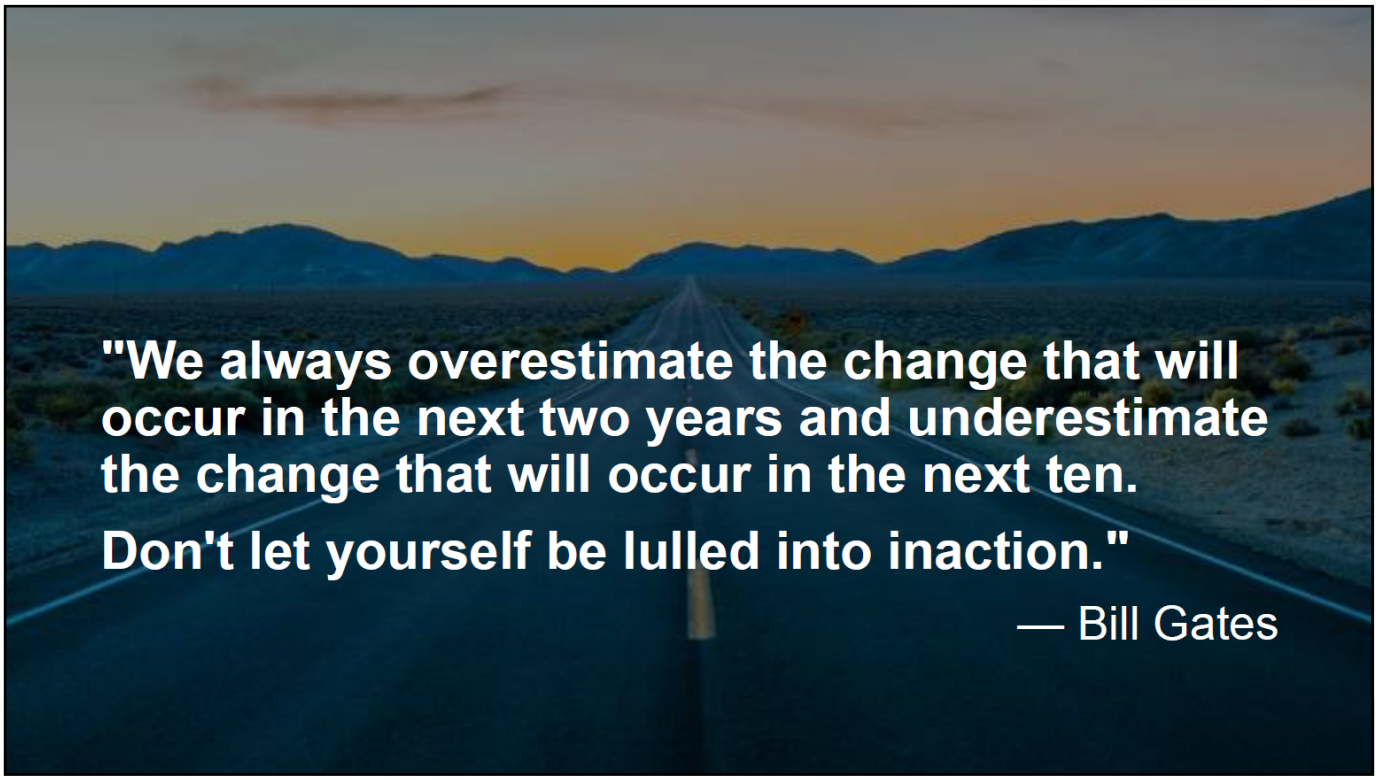
- Potential computing power constraints
- Achieving data standardization
- Costs of operating in a distributed ledger environment
- Regulatory considerations (PHI & PII security requirements)

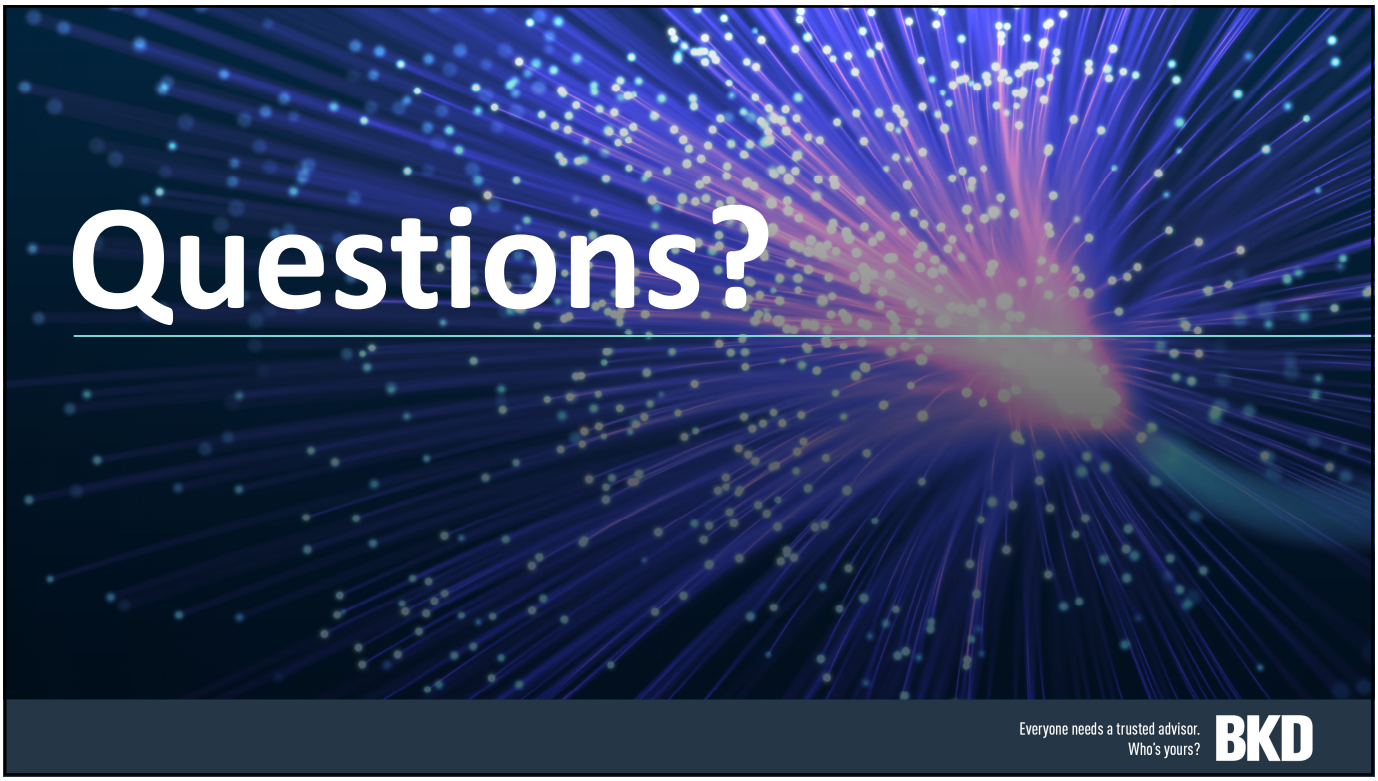
Considerations for Crypto Investment

- Holding cryptocurrency will bring volatility; be ready for the ride
- Stick to cryptocurrency that has liquidity & market cap
  - Bitcoin, Ethereum & Binance coin are actively traded & observable
  - Stay away from unknown tokens
- Intangible asset treatment (mentioned this before – just a reminder ☺)

Resources

- AICPA practice aid for digital assets
- BKD Blockchain Storefront Site
- https://www.bkd.com/services/cryptocurrency-blockchain




Questions?
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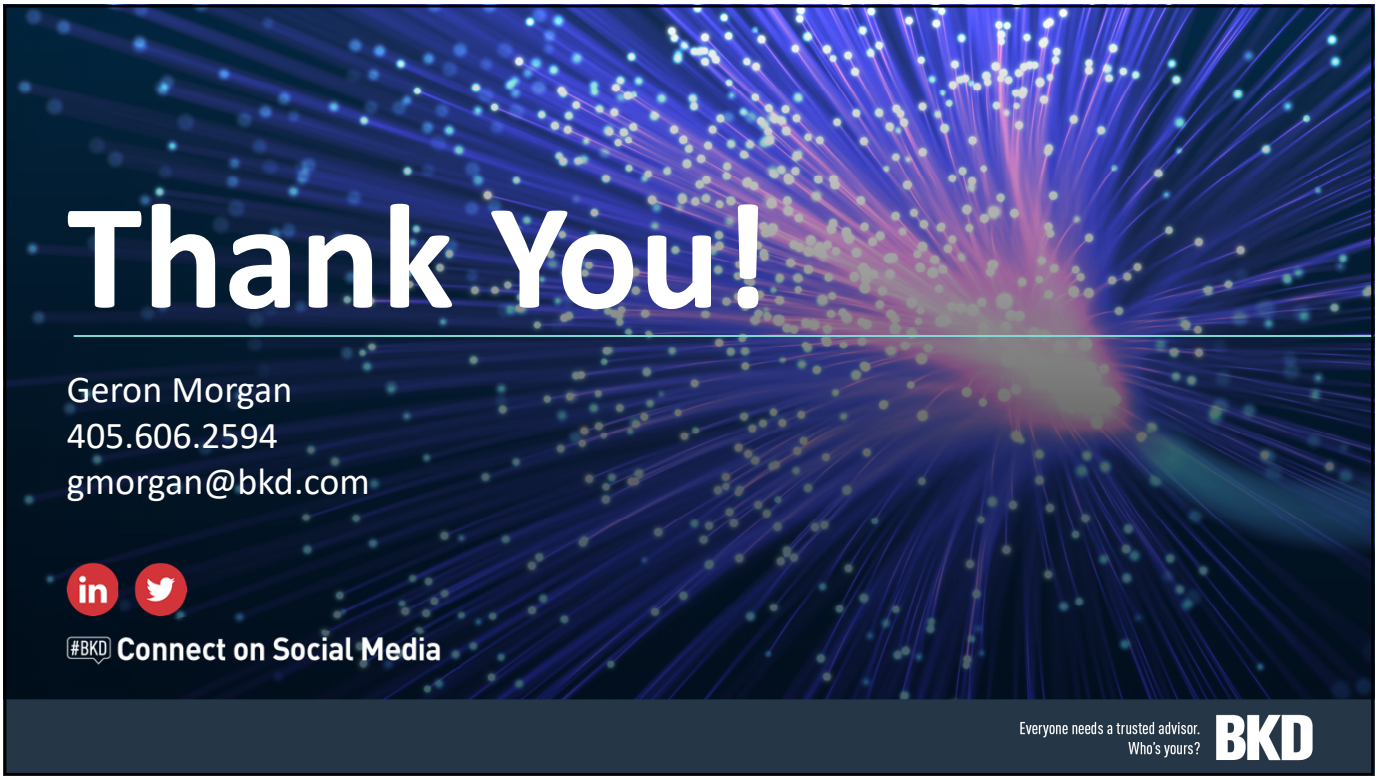
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