NASBA

Blockchain, Bitcoin and Other Transforming Technologies

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Moderator: W. Michael Fritz, Deloitte

Speakers:

Jeanette M. Franzel, PCAOB

Roger E. O'Donnell, KPMG

A. Michael Smith, PWC

A. Michael Smith

"Blockchain presents a challenge to the traditional audit approach, given there's no practical way to use point-in-time forensic analysis – the standard audit tool.

"Assurance in a blockchain environment derives from irrefutable transaction history and integrity. So in essence, you have a system that has full integrity, that's 100% accurate."

Blockchain is NOT Bitcoin

Bitcoin is an *implementation* of Blockchain; one of potential many use cases

What is Blockchain technology?

The use of advanced *cryptographic techniques* to implement a *distributed system*, and allow *rapid processing* of transactions in a *potentially trustless* environment.

Why the interest?

After 30+ years of software investments, & reorganizations; business processes, inside your own four-walls, are quite efficient, which creates challenges in developing and executing high ROI business cases, Blockchain technology offers the possibility of process optimization with significantly higher return characteristics.

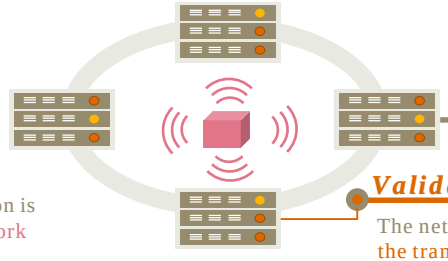
Bottom Line:

We are starting down a road to help companies re-engineer their business processes with a new type of technology. With the difference being an SAP-like project investment might generate a 10% ROI, a blockchain-based project might allow for a 30-90% reduction in a business unit's expenses for certain processes.

A look at Blockchain technology

How it works:

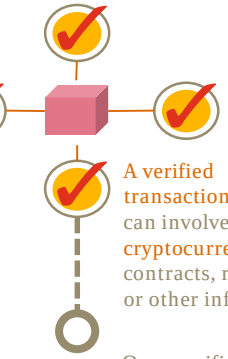
Someone requests a transaction.



The requested transaction is broadcast to a P2P network consisting of computers known as nodes.

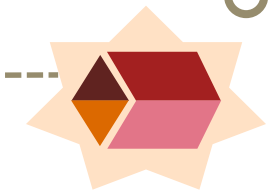
Validation

The network of nodes validates the transaction and the user's status using known algorithms.



A verified transaction can involve cryptocurrency, contracts, records, or other information

Once verified, the transaction is combined with other transactions to create a new block of data for the ledger.



The new block is then added to the existing blockchain, in a way that is permanent and unalterable

The transaction is complete.

Benefits

- Increased transparency
- Accurate tracking
- Permanent leadger
- Cost reduction

Unknowns

- Complex technology
- Regulatory implications
- Implementation challenges
- Competing platforms

Cryptocurrency

Cryptocurrency is a medium of exchange, created and stored electronically in blockchain, using encryption techniques to control the creation of monetary units and to verify the transfer of funds Bitcoin is the best known example

Has no intrinsic value in that it is not redeemable for another commodity. Such as gold

Has no physical form and exists only in the network

Its supply is not determined by a central bank and the network is completely decentralized

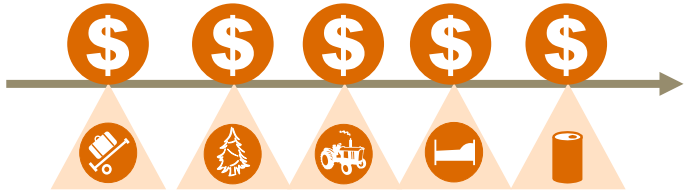
What can you do with a Blockchain?

The blockchain is a decentralized ledger of all transactions across a peer-to-peer network. Using the technology, participants can confirm transactions without the need for a central certifying authority. Potential applications include fund transfers, settling trades, voting, and many other uses.

- **Smart contracts:**
  Automatically executed/enforced contracts, self activated escrow.

(Smartcontract.com)
Real Estate Escrow 2.0
Release escrow when the asset's ownership is confirmed in the public county records. Greatly reduce any escrow or title insurance costs, while assuring prompt payment.

- **Colored coins:**
  Attach assets to transactions on the Blockchain.
- **Altcoin implementations:**
  Create your own coin: e.g. loyalty and rewards programs, PwC coin



Create Trust in trustless environments:
Safe environments for processing financial transactions in emerging markets or third world countries

Disintermediate Backoffice Functions in Financial Services:
Virtual markets or exchanges, Darkpools, certificateless equity activity, asset servicing, corporate trust

None of this is possible without the transparent audit, reporting and control that we in risk assurance can provide

Technical overview *– Permissionless distributed database networks*

A blockchain serves as a ***secure decentralized ledger*** *of information. Each user has a node which is able to write new information to the ledger, which is then cryptographically secured as a history.*

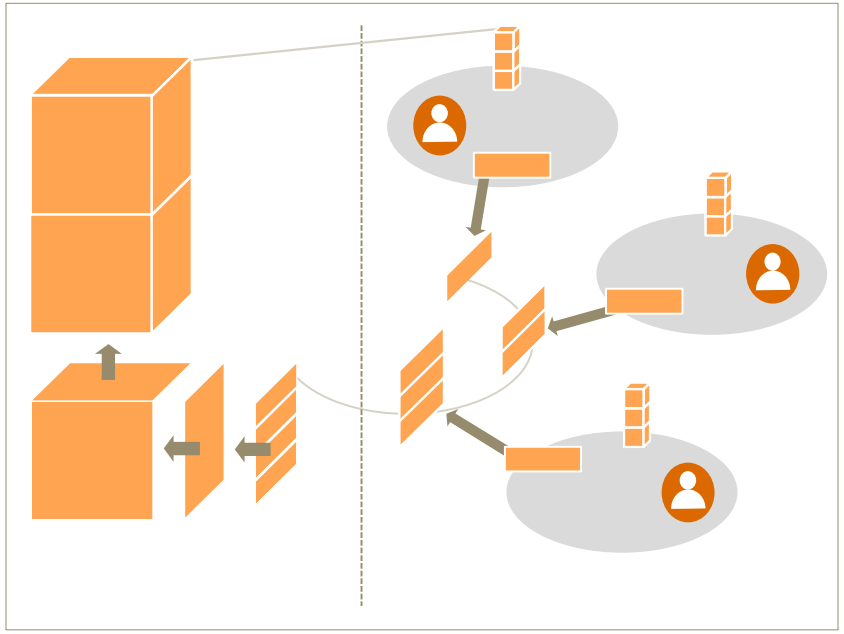
Each participant holds a ***private 'key'****, similar to a generated password, which algorithmically 'signs' data into a 'transaction'.*

By utilizing ***cryptographic functions****, other parties can certify the private key is held by the person who signed the transaction, and trust the transaction must have come from that party.*

*The other parties receiving transactions go through this verification process with each transaction, and then utilize a form of "****consensus*** *method" to ensure that other participants agree.*

Participants then combine a set of transactions into a "block" of transactions, which is appended to the official chain of blocks and re-circulated through the network to ensure all have the same set of records.

Blockchain **Node Network**



Legislation is already moving forward regarding the use of blockchain.

- State of Nevada passed a bill indicating that electronic signatures recorded on the blockchain are now protected.
- Arizona Governor has signed a bill that indicates a smart contract may not be denied legal effect or enforceability just because if is on the blockchain
- Illinois Legislative Blockchain and Distributed Ledger Task Force met 10/17/17 to discuss moving all state government recordkeeping to a blockchain based system.

Jeanette Franzel-Public Company Accounting Oversight Board

"The auditor's ability to identify material misstatements could increase or decrease, depending on the effectiveness of emerging audit approaches using various data analytic tools and other technologies and firms' quality controls over implementation."

At its May 2017, SAG meeting the PCAOB discussed the use of technology in audits and the potential implications for PCAOB auditing standards.

- PCAOB Inspections staff is working to understand the systems of quality control that firms have in place to provide assurance that (1) the tools used to analyze the data meet the audit objectives; (2) engagement teams are effectively using these tools and evaluating the results of screening large data populations; and (3) engagement teams are applying due care, including professional skepticism, when using these tools during the performance of the audit work, including the evaluation of results of that work.

Roger O’Donnell

“We have a critical need for talented people with a thirst for continuous learning who can cope with massive amounts of change.

“We’re investing heavily to change how we attract, train, and deploy students to have an immediate and lasting impact on our business.”

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Discuss