From Trough to Plateau: How Blockchain will Disappoint Before it Massively Disrupts HR

Rick Barfoot, HRNX Integrations
Mahesh Kharade, Harbinger Group
It started with this…

Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto
satoshin@gmx.com
www.bitcoin.org

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

1. Introduction

Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model. Completely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes. The cost of mediation increases transaction costs, limiting the minimum practical transaction size and cutting off the possibility for small casual transactions, and there is a broader cost in the loss of ability to make non-reversible payments for non-reversible services. With the possibility of reversal, the need for trust spreads. Merchants must
Blockchain 101

Transactions af583dfg...
... ...
... ...
... ...

Pseudo-anonymous via cryptographic hash

Executable code (Smart Contracts)
Data storage (e.g. IPFS)

Secure

Block
Header

Next block
Time stamp
Etc.
Blockchain 101

Block

Header

Transactions
...
...
...

Genesis Block
Blockchain 101

Validate or “mine” the next block

Consensus mechanisms:
• Proof of work
• Proof of stake
• Token economy

Decentralized
Block 101

- Block
- Header
- Transactions
- Genesis Block

Immutable
Blockchain 101

Block

Header

Transactions

... ... ...

Block

Header

Transactions

... ... ...

Block

Header

Transactions

... ... ...

“Global shared state”
Blockchain is an innovation, not an invention...

References


• Distributed, decentralized, peer-to-peer network
• Immutability
• Cryptographic hash
• Consensus mechanism

A Globally Shared State & Trust Layer for the Internet
“Not since the Web itself has a technology promised broader and more fundamental revolution than blockchain technology.”

- Hyperledger project
“Blockchain promises to **reshape industries** by enabling trust, providing transparency and **reducing friction across business ecosystems**. Blockchain forces enterprise architecture and technology innovation leaders to **rethink the notion of value exchange** in a world of decentralized trust.”

- Gartner
Will blockchain disrupt the HR technology landscape?

How Will Blockchain Transform HR?

Is HR Ready for Blockchain Technology?

How blockchain technology could impact HR and the world of work

How Blockchain Will Change HR Forever
“The thing that I often ask startups on top of Ethereum is, 'Can you please tell me why using the Ethereum blockchain is better than using Excel?' And if they can come up with a good answer, that's why you know you've got something really interesting.”

- Vitalik Buterin
HR Use Case: Candidate Verification

• If it happened, it only needs to be officially verified ONCE:
  • Identity verification
  • Employment and education history
  • Credentials
  • Criminal history

• Token-based system based on value creation
  • Pay to pull
  • Get paid to push
• Challenges in Traditional Workflow:
  • Expensive verification process
  • Ownership of employee data
  • Maintenance of data

• Management of employee data using blockchain – an example workflow:
  • Employer and Employee access
  • Blockchain to save employee data
  • Use of Smart Contracts
  • Who has access to what?
High Level Architecture

Solution Highlights
- Geth (Go Ethereum)
- IPFS 0.4.10
- Meteor
Start-ups are going it alone, finding early adopter partners to join their networks, or trying to propagate their blockchain as industry standard...
Credential Verification

Point solutions can be quickly adopted but how will they tie into broader blockchains?
Considerations

• Adoption – legacy systems with data silos; “chicken and egg”
• Industry coordination – currently there are no standards
• Technology – “normal” issues like scaling, etc.
• Legal (e.g., FCRA) – who has jurisdiction over a blockchain?

*This technology inherently needs an industry consortium approach*
Consortium Approach

- Blockchains are decentralized
- Blockchain networks are launched by anchor participants
- A consortium is needed to:
  - Bring together interested parties
  - Define a block standard
  - Determine how to interoperate with other blockchains
  - Provide best practices for implementation
Evolution

• We are in a period of transition:
  • Old Guard: centralized; “social waste”
  • Disruptors: will still need oracles and agents to feed data possibly even leveraging the Old Guard
  • Sources of Truth will publish directly to blockchain
RESISTANCE IS FUTILE
YOU WILL BE ASSIMILATED
Thanks!

Rick Barfoot
CTO, HRNX Integrations
rick.barfoot@hrnx.com

Mahesh Karade
Associate GM, Harbinger Group
maheshkumar@harbingergroup.com