

Initial Coin Offering: An Accounting Information Systems Teaching Case

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Learning Objectives

1. Blockchain fundamentals.
2. Auditing problem in the online marketing industry.
3. Proposed auditing solutions using blockchain and their current challenges.
- 4. Introducing N+1 Accounting Entry Systems.**
5. ICO common structures and different types of tokens.
6. Teaching Case efficacy results

LO1 - Fundamentals

- ICO
- Hash
- Block
- Miners
- Blockchain
- Distributed Blockchain
- Digital Wallet
- Token Creation
- Auditing Transactions

Fundamentals

- <https://anders.com/blockchain/>
- <https://metamask.io/>
- <http://tokenfactory.surge.sh/>
- <https://ropsten.etherscan.io>

Fundamentals: HASH

SHA256 Hash

Data:	<input type="text" value="#aaaBC2018"/>
Hash:	<input type="text" value="20da052a5e8a792312baed0c42b816ae3da64707ad9a3b6af9dc0d0aeadd3eb9"/>

<https://anders.com/blockchain/>

Fundamentals : BLOCK

Block

Block: # 1

Nonce: 106048

Data: #aaaBC2018

Hash: 0000c88453e09fbf9aa1afdad1b09a773b2e91f4e3f55cf94228d3a98a1652b7

Mine

<https://anders.com/blockchain/>

Fundamentals : Blockchain

Blockchain

The image shows a simulation of a blockchain with three blocks. Each block is represented by a form with the following fields:

- Block #:** A text input field containing the block number (1, 2, or 3).
- Nonce:** A text input field containing a numerical value (11316, 35230, or 41135).
- Data:** A large text area for entering data. The third block contains the text "#aaaBC2018".
- Prev:** A text input field containing the previous block's hash. For the first block, it is a string of 32 zeros.
- Hash:** A text input field containing the current block's hash, which is a 64-character hexadecimal string.
- Mine:** A blue button at the bottom of each form.

The hashes for the three blocks are:

- Block 1: 000015783b764259d382017d91a36d206d0600e2cbb3567748f46a33fe9297
- Block 2: 000012fa9b916eb9078f8d98a7864e697ae83ed54f5146bd84452cdfd043c
- Block 3: 000ed84d3df69b76da107abd96ba0dc9b3594c

<https://anders.com/blockchain/>

Fundamentals : Distributed B\C

Distributed Blockchain

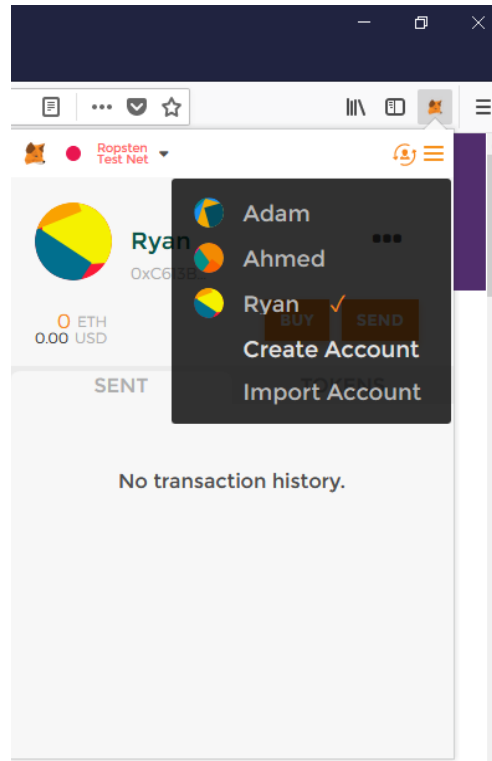
The image displays a simulation of a distributed blockchain with three peers, labeled Peer A, Peer B, and Peer C. Each peer has a local view of the blockchain, showing three blocks. The blocks are numbered 1, 2, and 3. Each block contains the following information:

- Block: # 1, # 2, or # 3
- Nonce: 11316, 35230, or 12937
- Data: (empty field)
- Prev: (previous block's hash)
- Hash: (current block's hash)

Each block also features a "Mine" button. The simulation shows that all three peers have identical copies of the blockchain, demonstrating a distributed state.

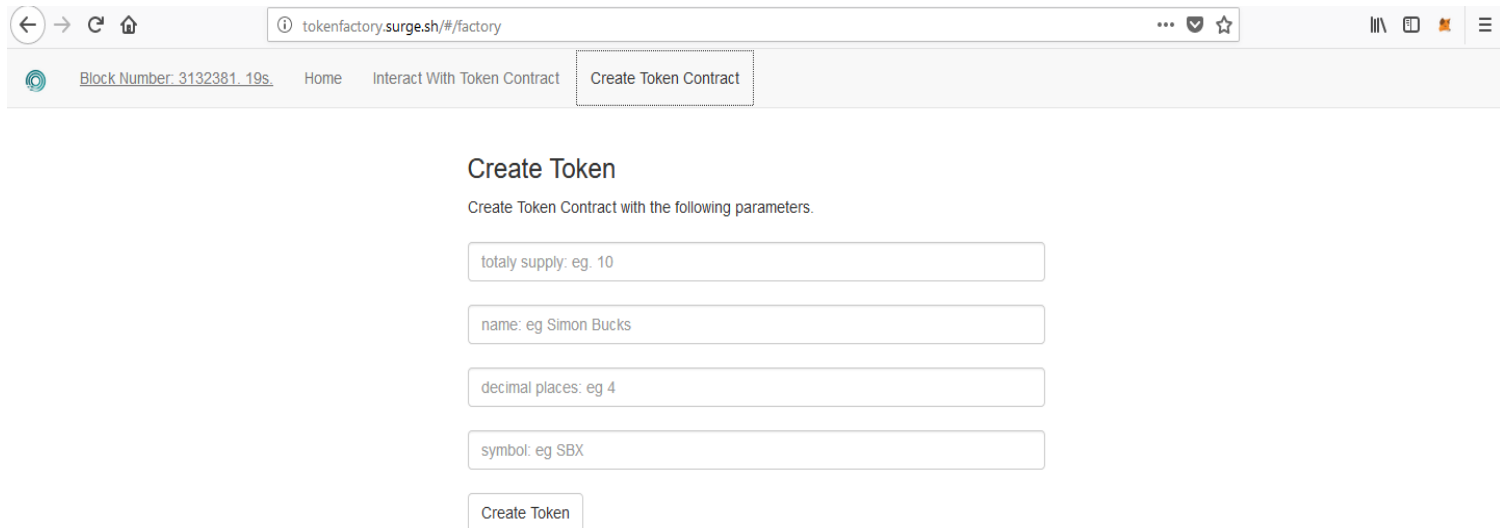
<https://anders.com/blockchain/>

Fundamentals : Install Digital Wallet



<https://metamask.io/>

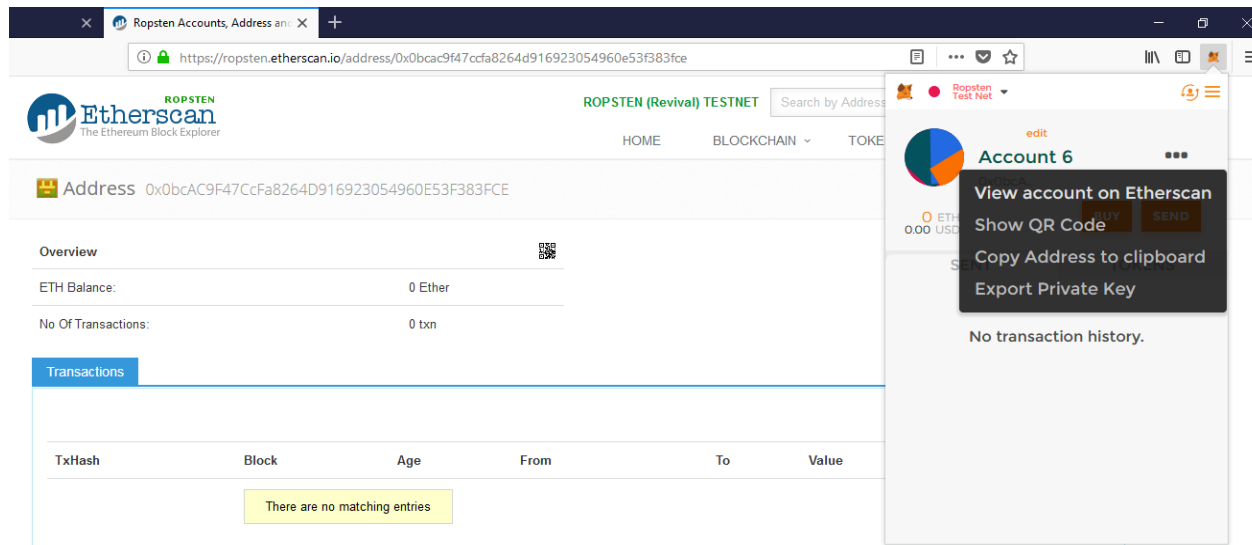
Fundamentals : Create a Token



The screenshot shows a web browser window with the address bar containing 'tokenfactory.surge.sh/#factory'. The browser's navigation bar includes a back button, a refresh button, and a home button. Below the address bar, there are navigation links: 'Block Number: 3132381.19s.', 'Home', 'Interact With Token Contract', and 'Create Token Contract'. The main content area is titled 'Create Token' and contains the instruction 'Create Token Contract with the following parameters.' Below this instruction are four text input fields with placeholder text: 'total supply: eg. 10', 'name: eg Simon Bucks', 'decimal places: eg 4', and 'symbol: eg SBX'. At the bottom of the form is a 'Create Token' button.

<http://tokenfactory.surge.sh/>

Fundamentals : Audit on Blockchain



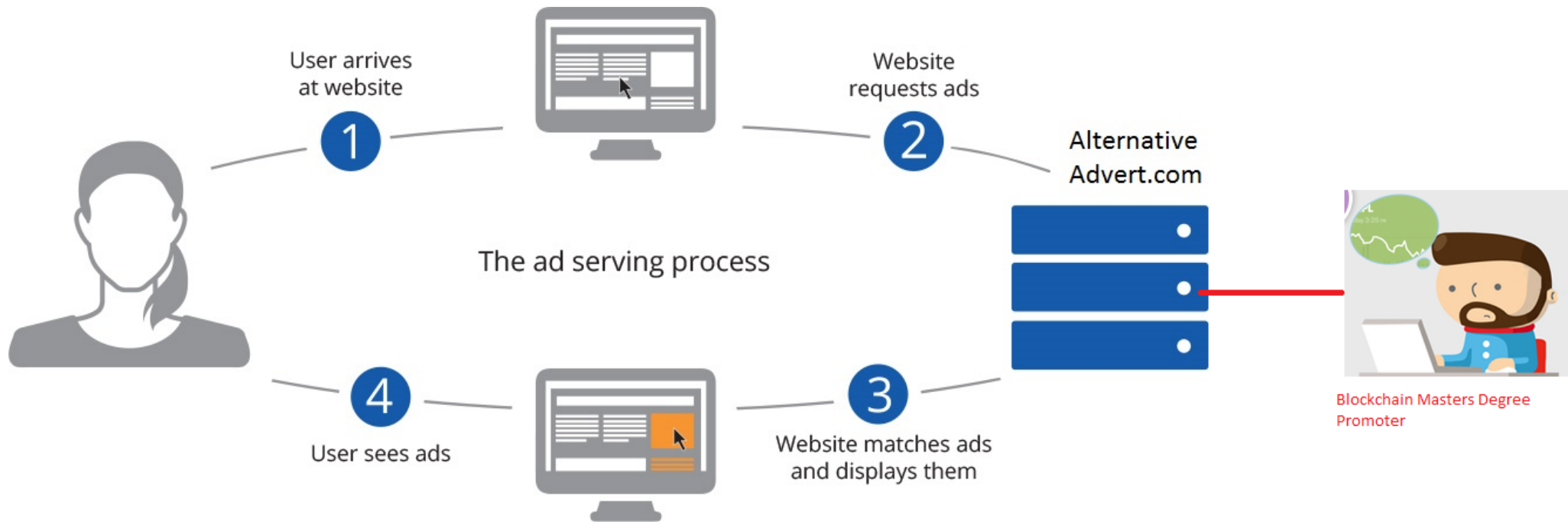
The screenshot displays the Etherscan Ropsten testnet interface. The browser address bar shows the URL: <https://ropsten.etherscan.io/address/0x0bcac9f47cfa8264d916923054960e53f383fce>. The page title is "ROPSTEN (Revival) TESTNET". The account address is "0x0bcAC9F47CcFa8264D916923054960E53F383FCE". The "Overview" section shows "ETH Balance: 0 Ether" and "No Of Transactions: 0 txn". The "Transactions" section is currently empty, displaying a message: "There are no matching entries". A context menu is open over the account information, listing options: "View account on Etherscan", "Show QR Code", "Copy Address to clipboard", and "Export Private Key".

<https://ropsten.etherscan.io>

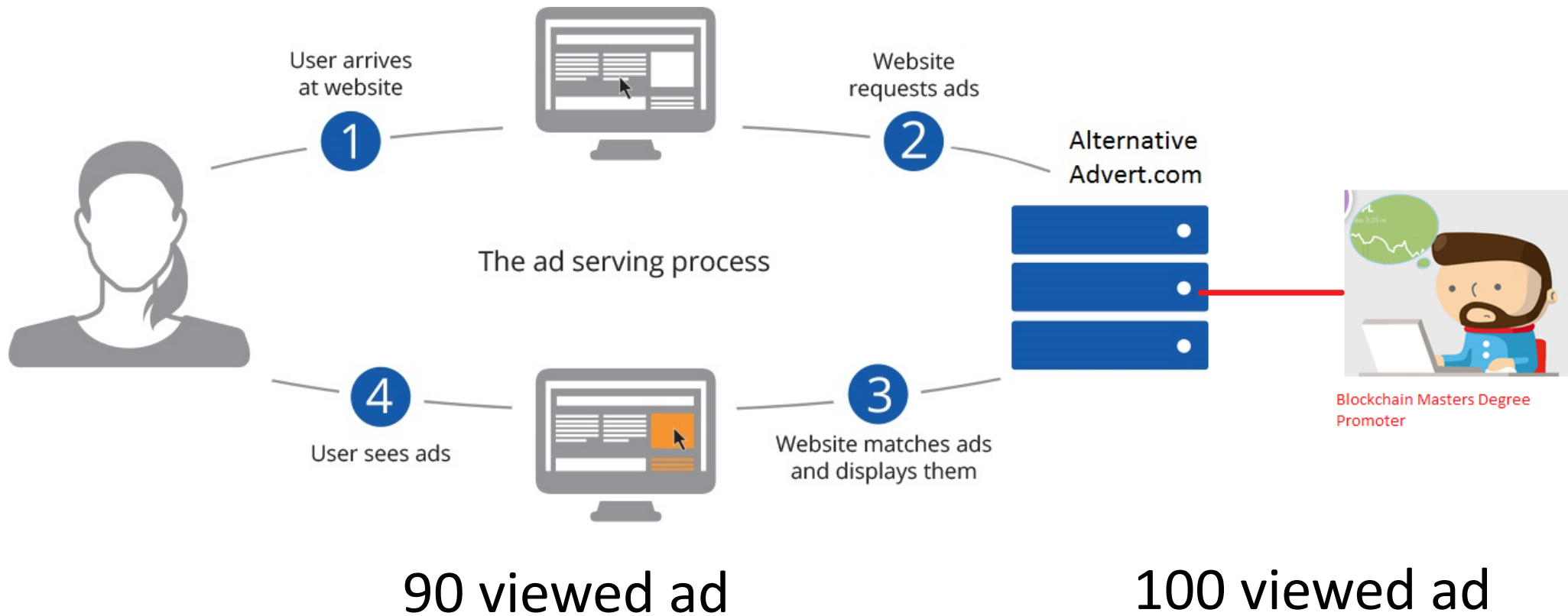
LO1 - Fundamentals

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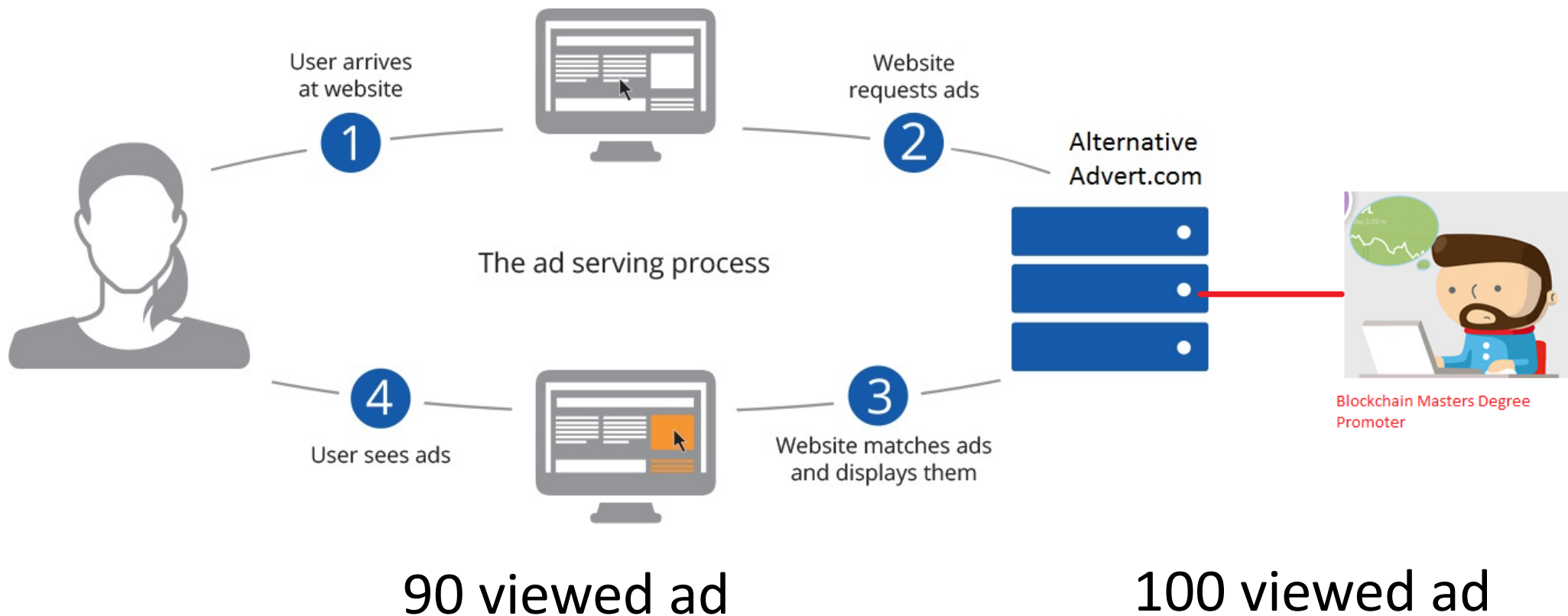
LO 2: Auditing problem in the online marketing industry.



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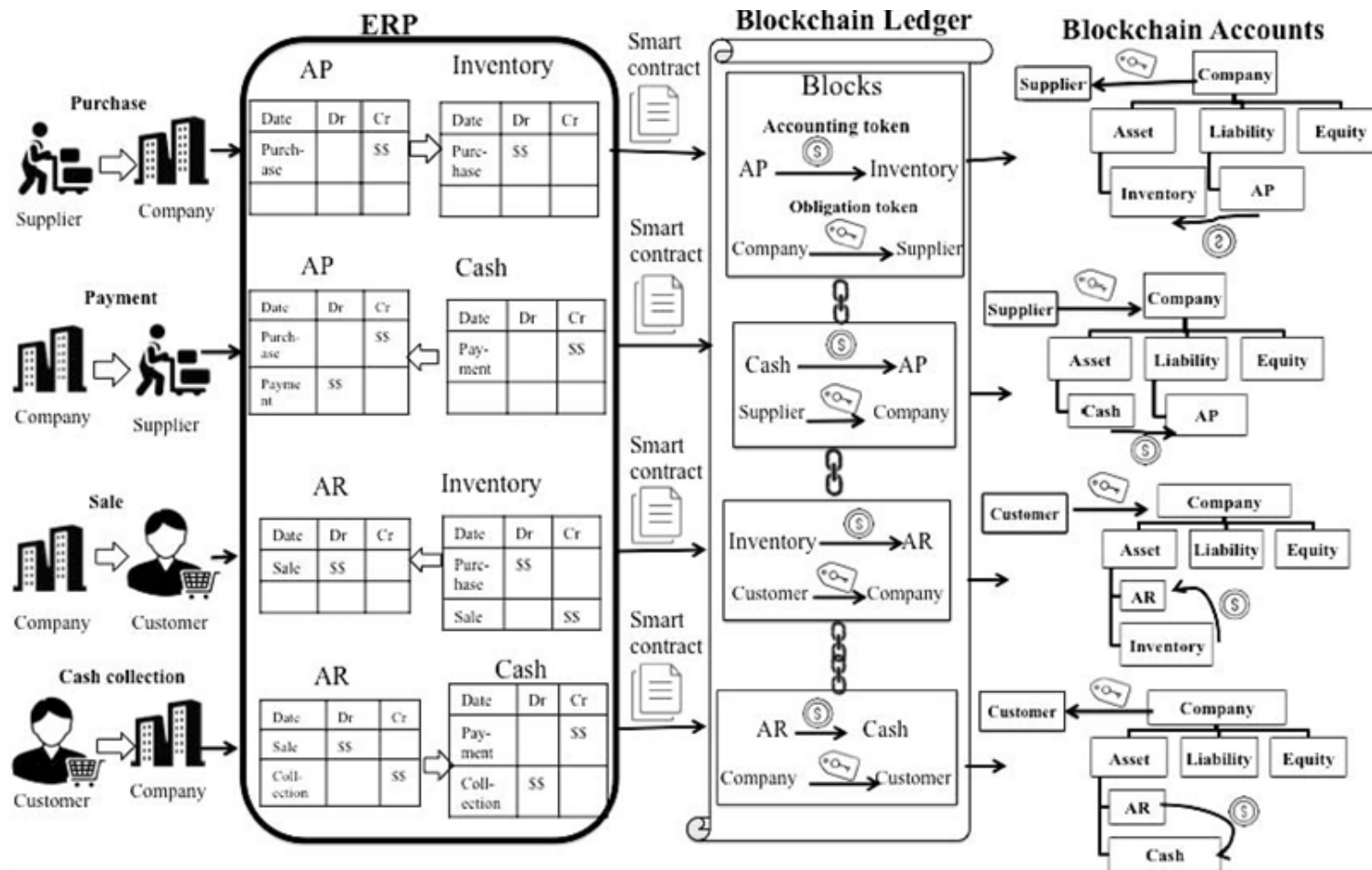


10% difference is an accepted Standard due to different accounting Systems

LO3. Proposed auditing solutions and their current challenges.

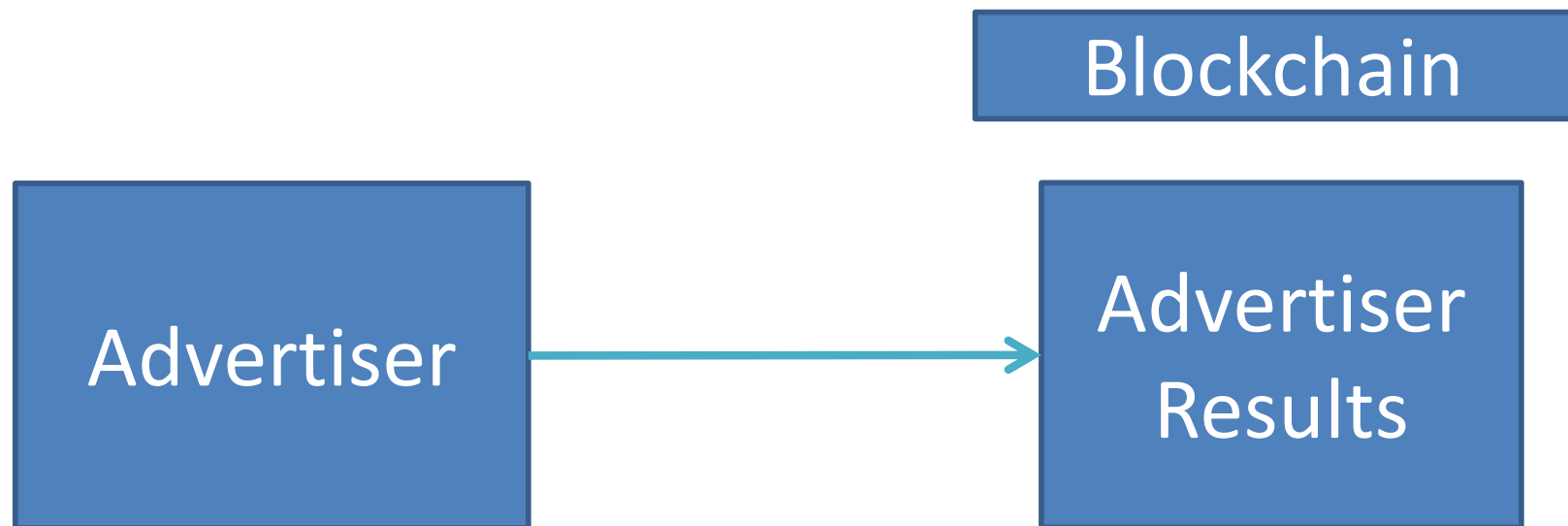
- A triple entry system has been discussed in the literature to provide a more reliable recording system where a neutral intermediary along with each party creates a record of a transaction.
- The neutral intermediary would be a blockchain because it would be distributing and automating the storage and verification process.

LO3. Proposed auditing solutions and their current challenges.

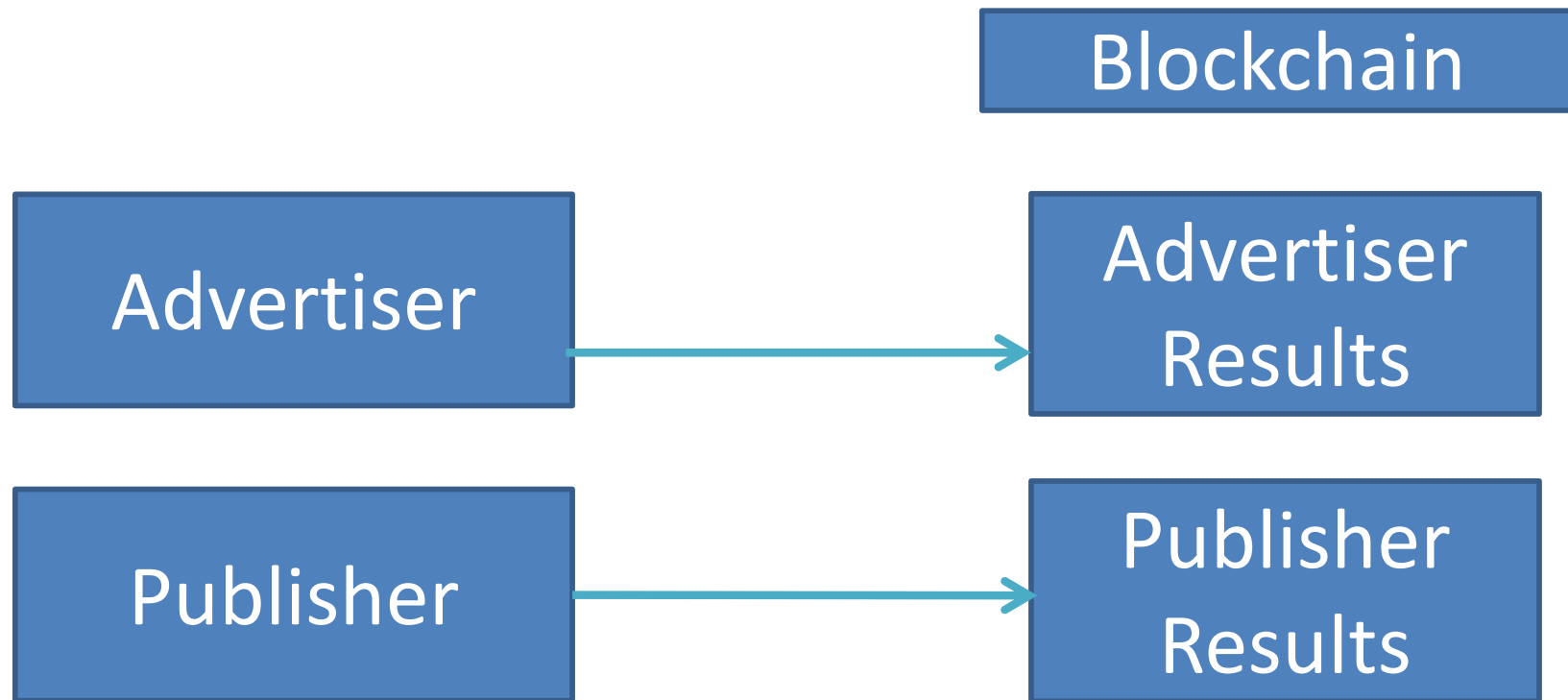


Dai, Jun, and Miklos A. Vasarhelyi. "Toward blockchain-based accounting and assurance." *Journal of Information Systems* 31.3 (2017): 5-21.

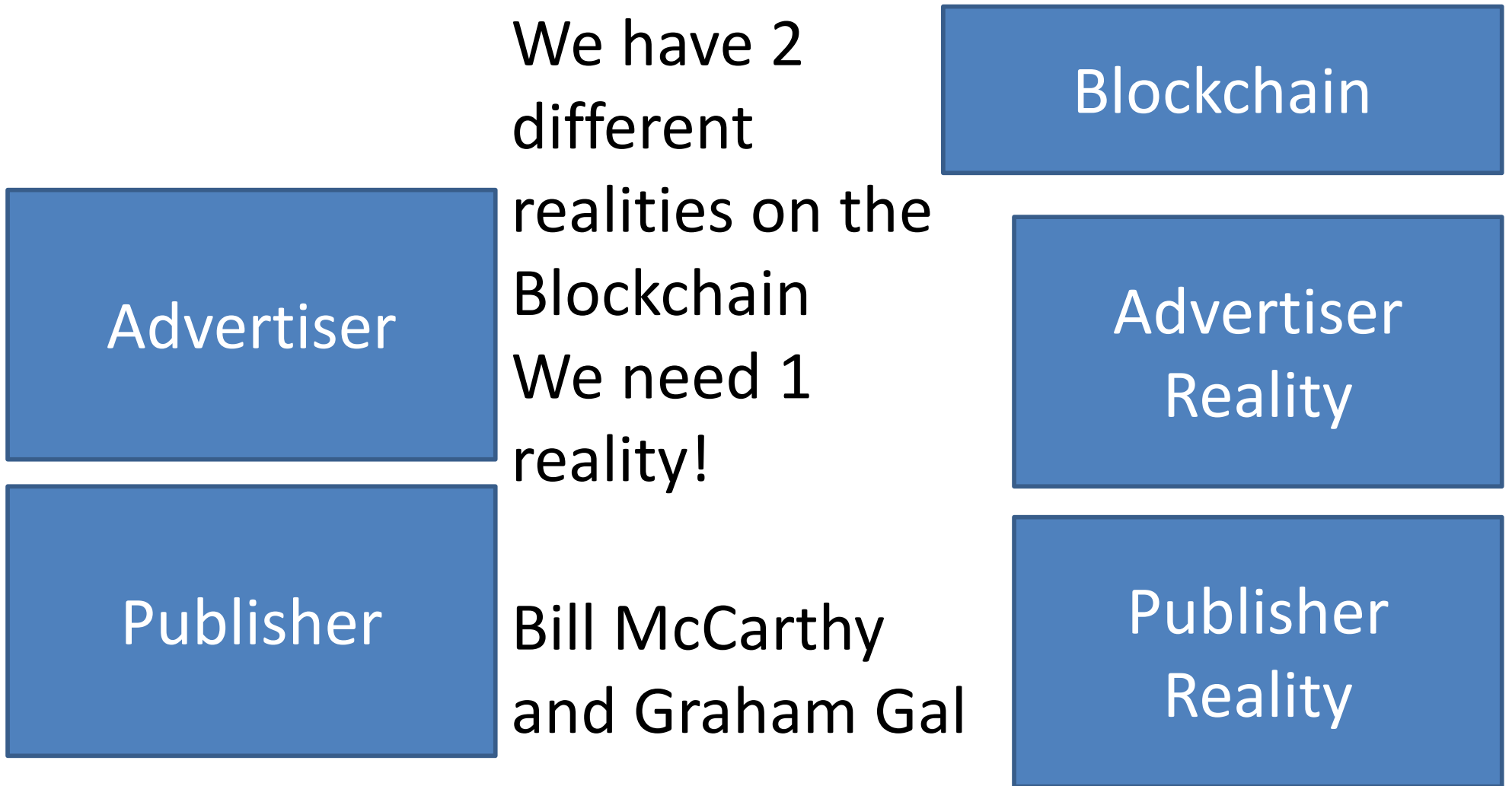
LO3. Proposed auditing solutions and their current challenges.



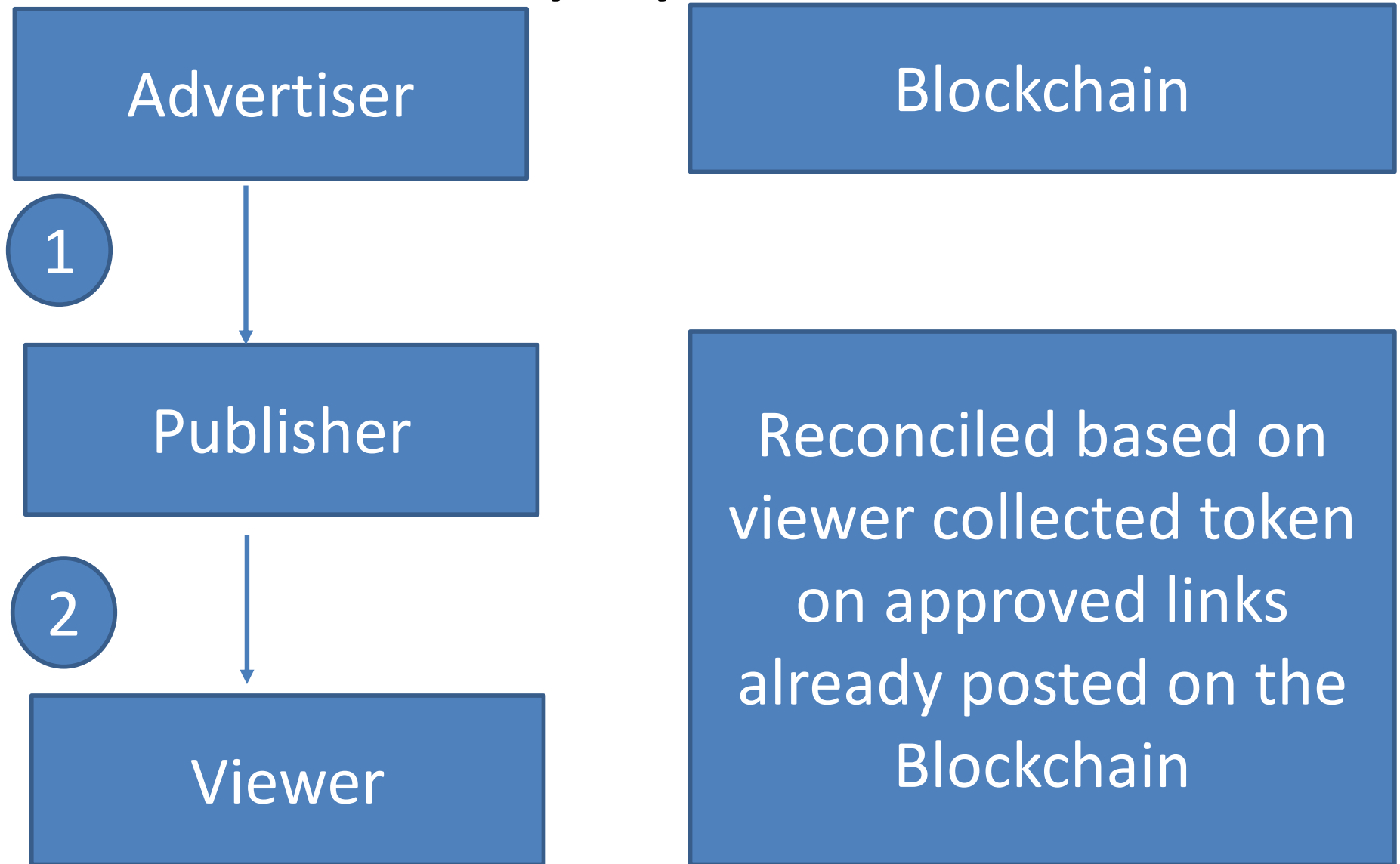
LO3. Proposed auditing solutions and their current challenges.



LO3. Proposed auditing solutions and their current challenges.



LO4. Introducing N+1 Accounting Entry Systems



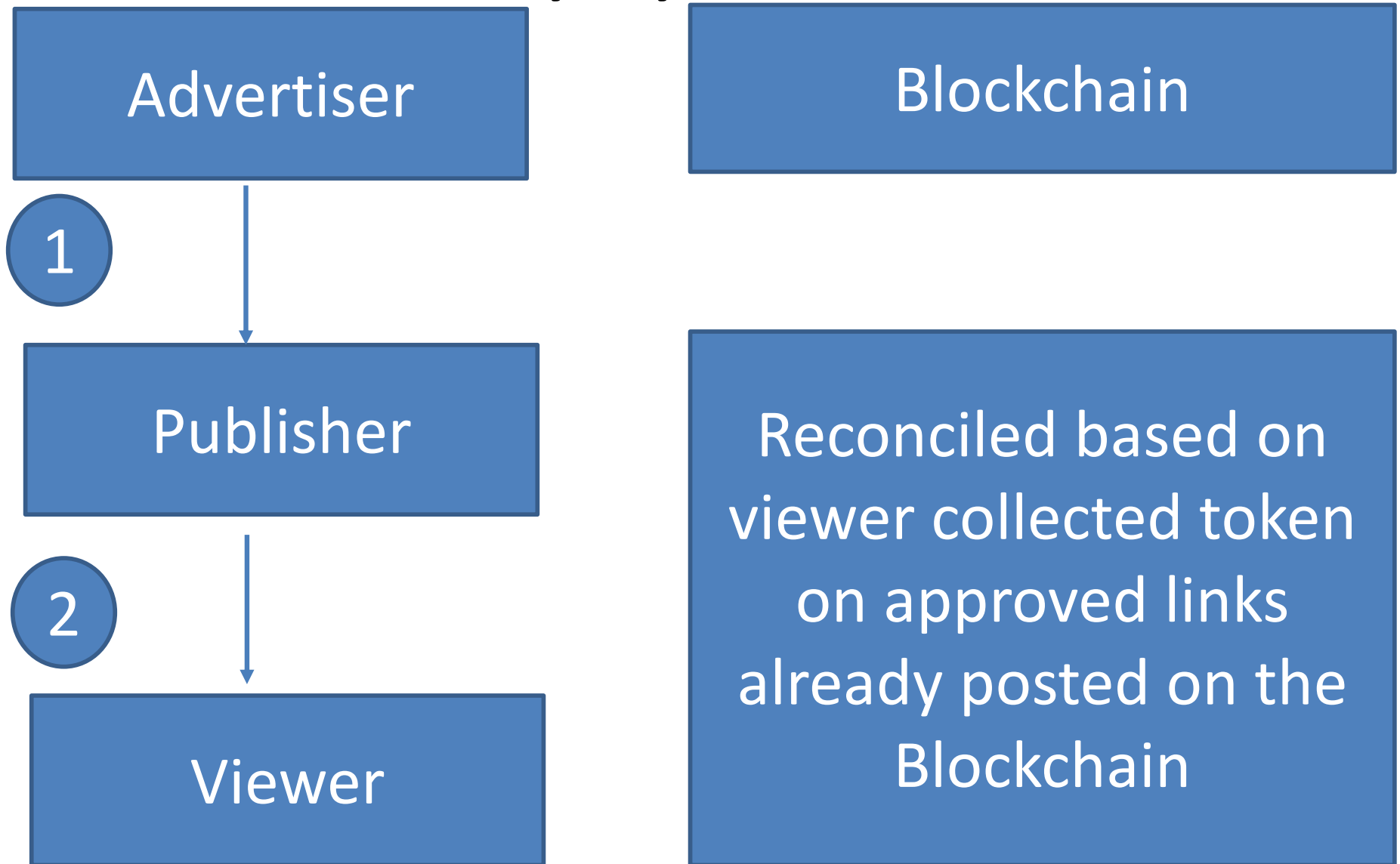
LO4. Introducing N+1 Accounting Entry Systems

- The model presented can not address the multiple reality scenarios.
- Views of blockchain based on role helps within the organization but it can not help when different realities exists between different organizations

LO4. Introducing N+1 Accounting Entry Systems

- In this case, a new notion of an N+1 Accounting Entry System is presented when multiple parties are needed to create ONE reality by closing the cycle.

LO4. Introducing N+1 Accounting Entry Systems



LO4. Introducing N+1 Accounting Entry Systems

Advertiser

1

Publisher

2

Viewer

Creating **1 reality**, where viewer continues to receive tokens every time she sees an ad on a pre-approved webpage, that is already published on the Blockchain.

Blockchain

Reconciled based on viewer collected token on approved links already posted on the Blockchain

https://youtu.be/lxORjqEt_c4

LO4. Introducing N+1 Accounting Entry Systems

- If three parties are involved in a transaction, a quadruple accounting entry system is needed (N+1), and again, blockchain technology can enforce the reliability and the authenticity of the transaction, while maintain the privacy of the parties' identity.

LO5. ICO common structures and different types of tokens.

- There are different strategies to structure an ICO. The number of tokens is not that important, as it can be subdivided, what matters is the percentage distribution of the tokens. In that event, a number of parameters need to be considered.

LO5. ICO common structures and different types of tokens.

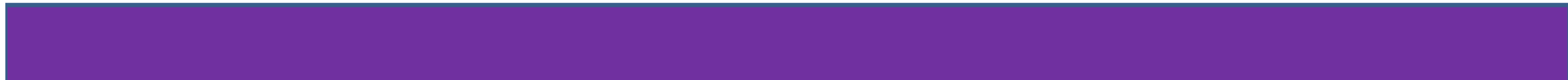
- It is a good practice to initiate the token selling into phases so that the entire selling process is concluded in 60 days.
- Having phases helps build the momentum and allows issuers to adjust the offering marketing strategy accordingly.

LO5. ICO common structures and different types of tokens.

- Setting a price for the tokens should be in fiat money due to the volatility of the different dominant cryptocurrencies (i.e. bitcoin).
- At least 70% of the token needs to be sold, and the remaining 30% are to be set aside for overhead and growth.
- The 30% can be distributed on referral programs, growth efforts and to the founders.

LO5. ICO common structures and different types of tokens.

- Tokens are an alternative for startups to raise funds for a given project and it is considered as crypto-assets.
- Depending on their capacity to influence in the investment of a company, they can be classified as follows :



LO5. ICO common structures and different types of tokens.

- **Security token:** Not exempt from Federal laws or any other governing security. It is also known as “investment token” which refers to traditional instruments that startups can use, such as: shares or bonds.
- **Utility token:** Exempt from Governing regulations and represents a future access of products and services which are not subjected to have an influence.

LO5. ICO common structures and different types of tokens.

- Learn from the others by looking at existing whitepapers
- <https://www.coinhills.com/ico>
- <https://icosource.io/ico-bounties/>

Teaching Case Efficacy

- What is an ICO? / What is a hashed string?
- Explain why is it hard to alter a blockchain?
- Provide an Example where blockchain can help solving an existing industry problem.
- Explain the N+1 Accounting entry system
- If you are starting your own ICO, how would you distribute the tokens among the developers, the investors, and the application.
- What is the difference between a security token and a utility token.

Thank you

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