

Blockchain - Principles and Practices

INTRODUCTION



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Overview



High level overview of Blockchain

Cryptography techniques

Storing transactions in blocks

Proof of work

Maintaining consensus

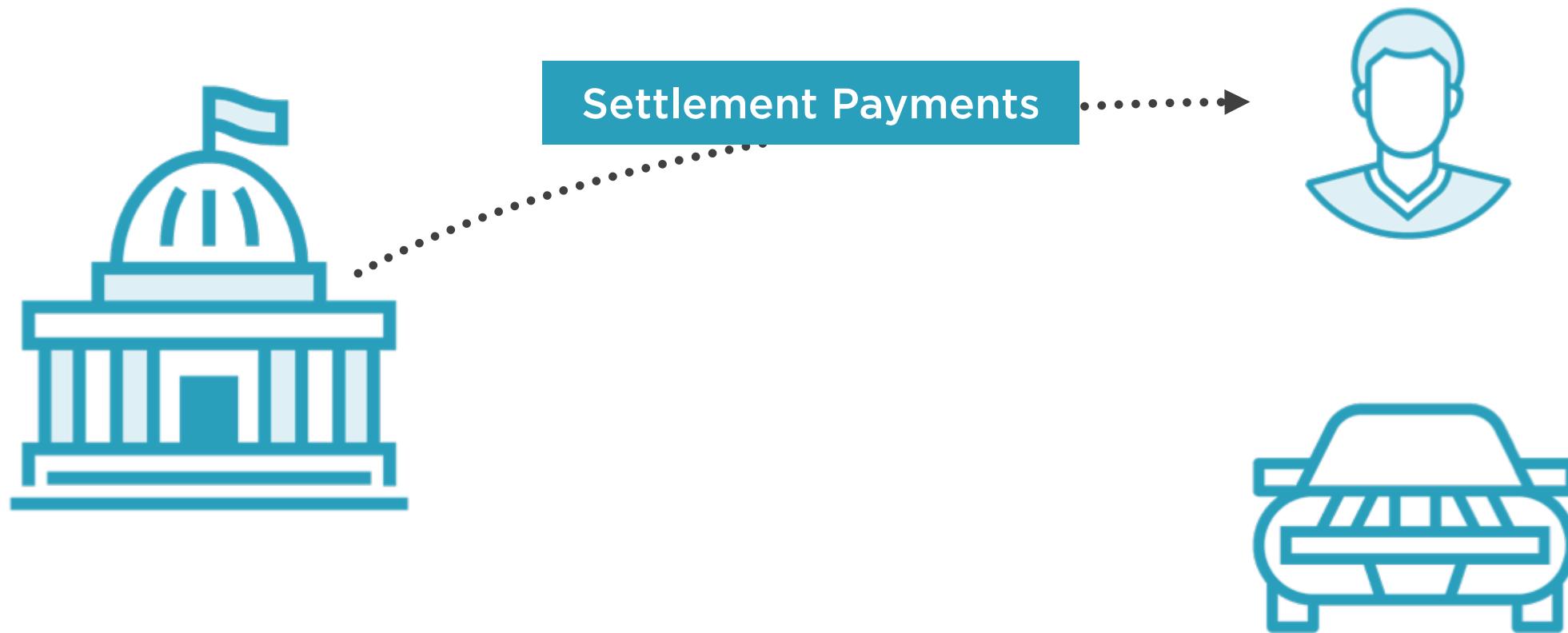
Course summary



Introducing Globomantics



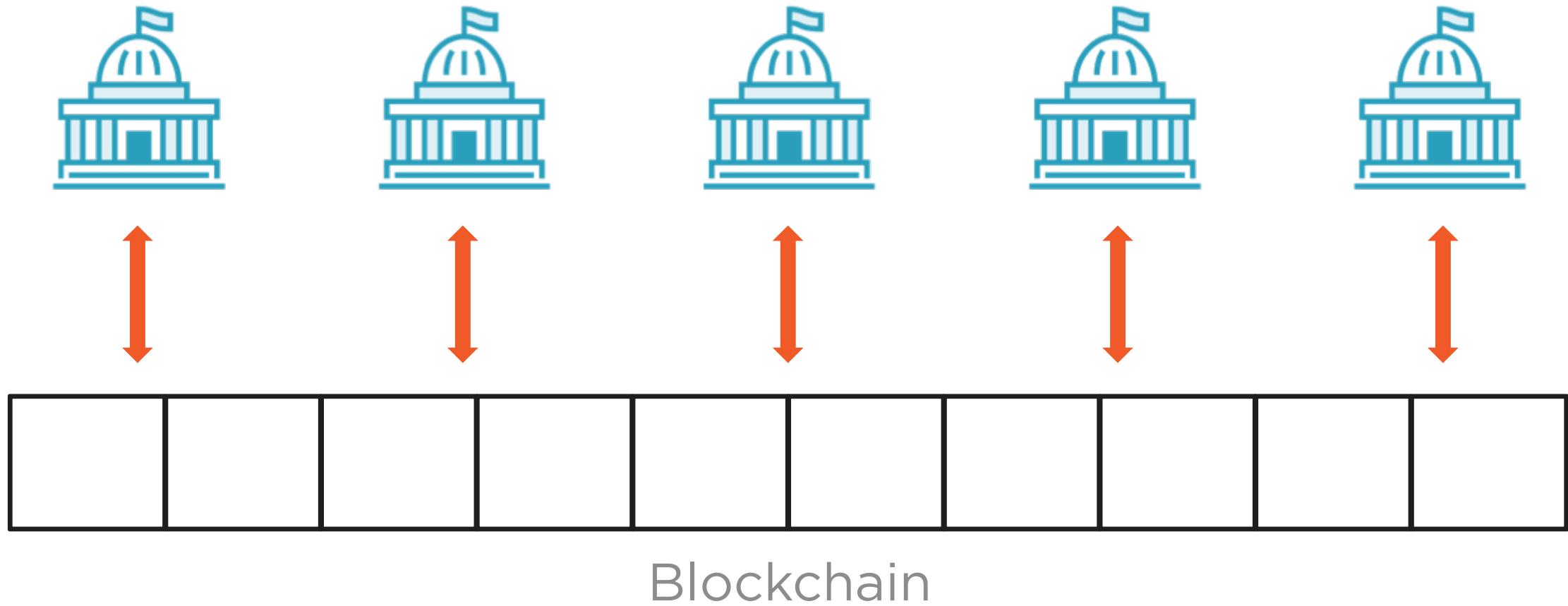
Introducing Globomantics



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Introducing Globomantics



Thinking About Trust



Thinking About Trust

"The blockchain is an incorruptible digital ledger of economic transactions that can be programmed to record not just financial transactions but virtually everything of value"

Don and Alex Tapscott : Blockchain Revolution



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Wikipedia



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Thinking About Trust

Incorruptible



Thinking About Trust

Incorruptible

Digital ledger



Thinking About Trust

Incorruptible

Digital ledger

Continuously growing list of records



Thinking About Trust

Incorruptible

Digital ledger

Continuously growing list of records

Linked and secured using cryptography



A father and son are playing outdoors on large, rounded boulders. The father, wearing a black t-shirt, stands on a boulder, reaching up towards his young son who is in mid-air, performing a cartwheel. The son is wearing a blue long-sleeved shirt and jeans. They are in a bright, sunlit environment with large rocks in the background.

TRUST





BANK



ERROR







<https://news.bitcoin.com/evolution-bitcoin-vending-machine/>





Satoshi Nakamoto





Satoshi Nakamoto



<https://bitcoin.org/bitcoin.pdf>





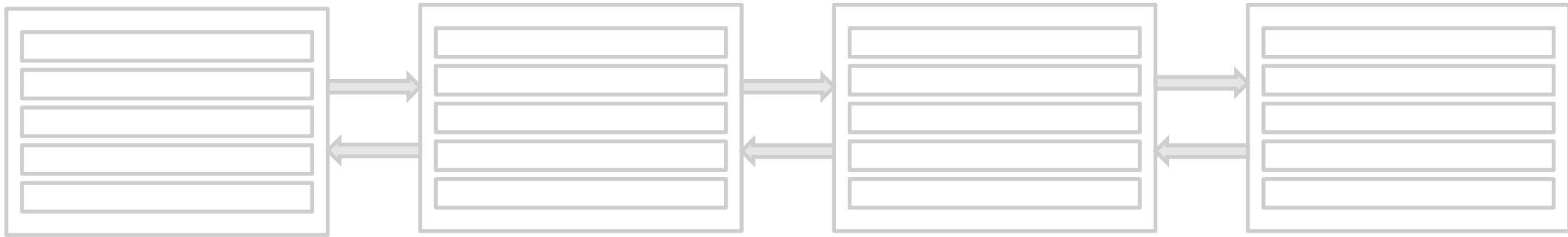
Introduction to BitCoin and Decentralized Technology

By Scott Driscoll

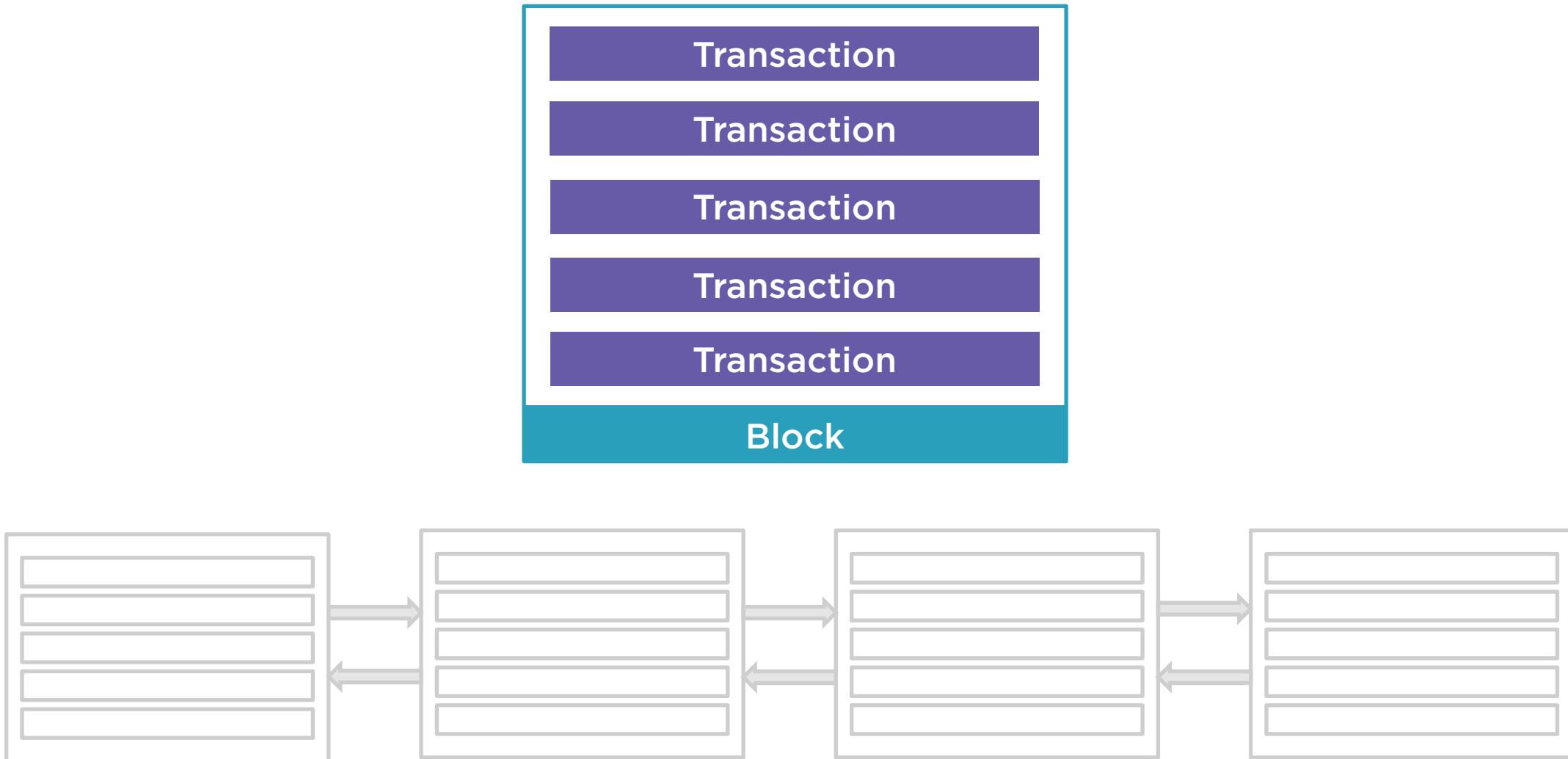
<https://app.pluralsight.com/library/courses/bitcoin-decentralized-technology/table-of-contents>



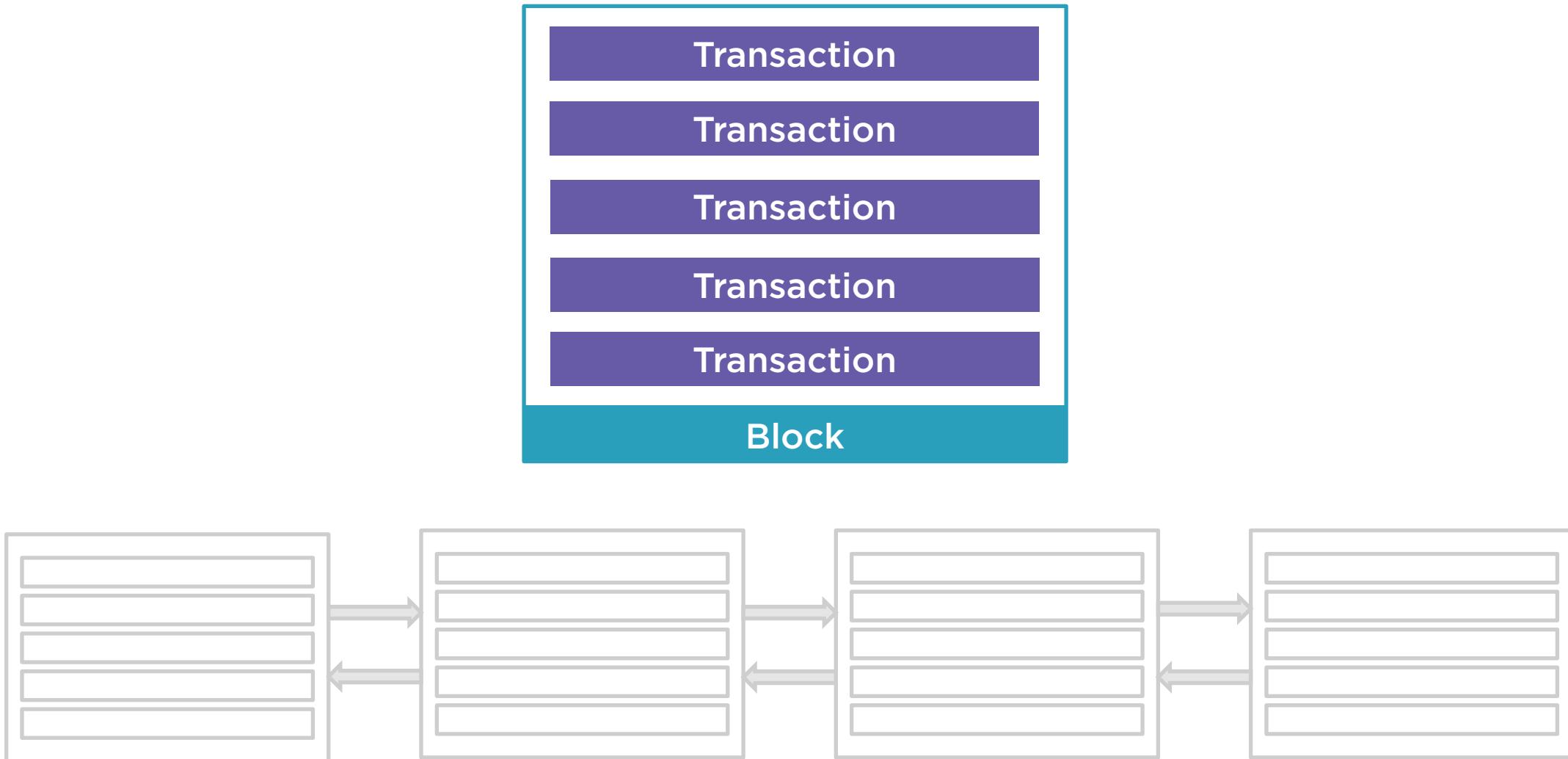
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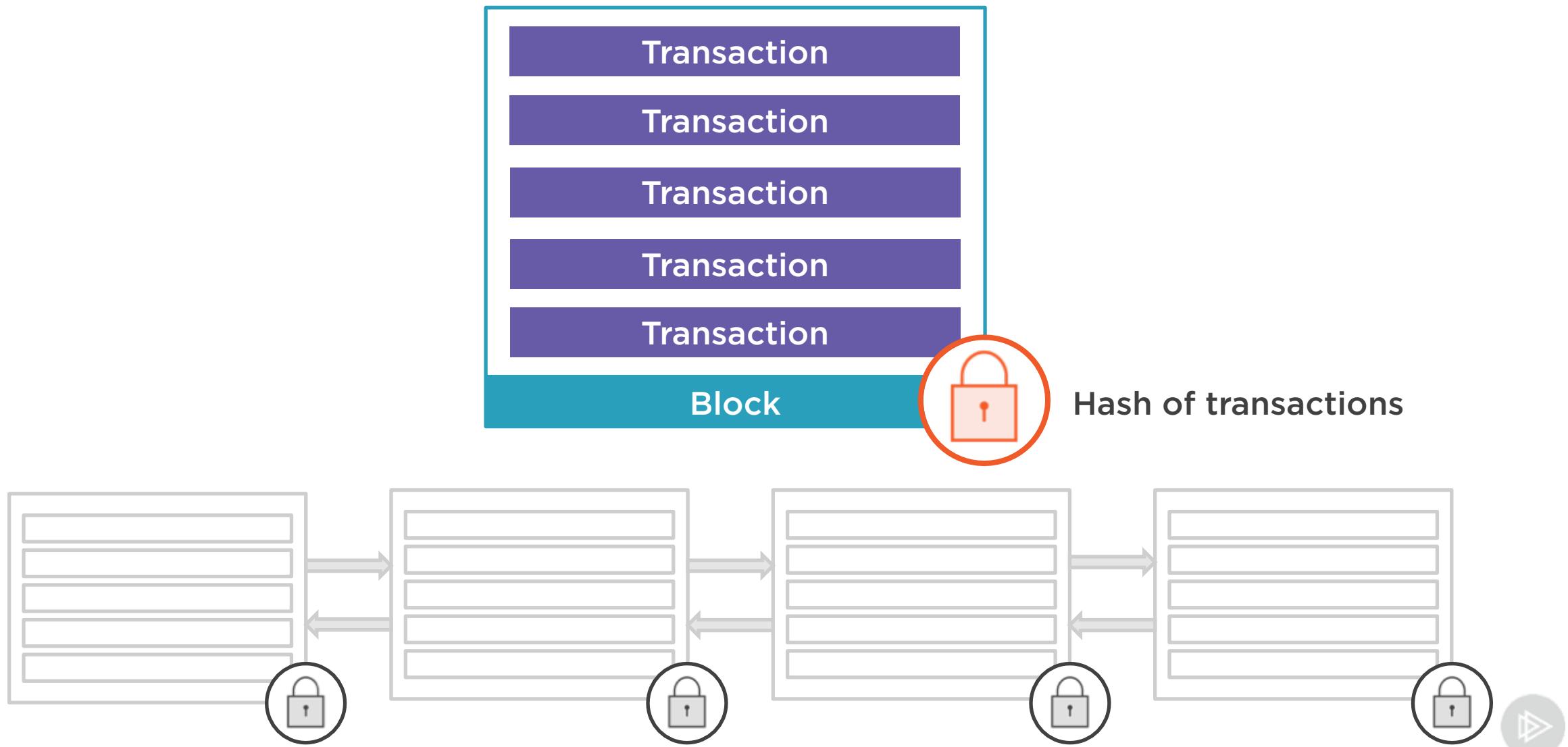
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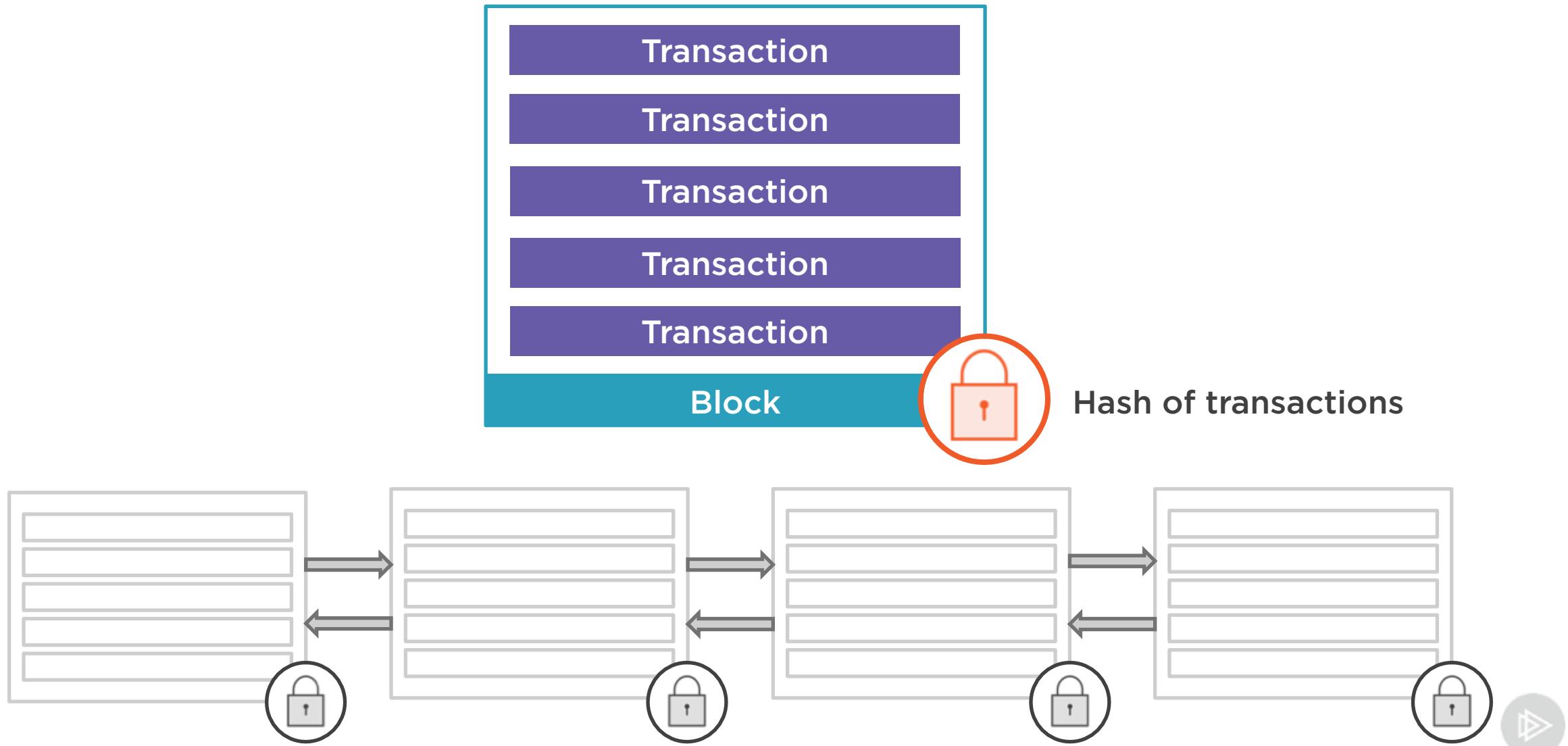
Introducing Blockchain



Introducing Blockchain



Introducing Blockchain



Introducing Blockchain

10 minutes to calculate each block



Introducing Blockchain

10 minutes to calculate each block
1000 blocks per chain



Introducing Blockchain

10 minutes to calculate each block

1000 blocks per chain

166 hours to calculate chain



Introducing Blockchain

10 minutes to calculate each block

1000 blocks per chain

166 hours to calculate chain

Nearly 7 days to recalculate chain



Public vs. Private Blockchain



Public vs Private Blockchain

Public Blockchain

**Anyone can write to
the blockchain**



Public vs Private Blockchain

**Anyone can write to
the blockchain**

Public Blockchain

**Every node contains
a copy of the
complete chain**



Public vs Private Blockchain

**Anyone can write to
the blockchain**

Public Blockchain

**Every node contains
a copy of the
complete chain**

**Best security
and trust
between peers**



Public vs Private Blockchain

Public Blockchain

Anyone can write to
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Every node contains
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Best security
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Hashing puzzles are
time consuming



Public vs Private Blockchain

Public Blockchain

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Best security
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Hashing puzzles are
time consuming

Some enterprises
nervous about
public blockchain



Public vs Private Blockchain

Private Blockchain

**Private blockchains
have been
controversial**



Public vs Private Blockchain

**Private blockchains
have been
controversial**

Private Blockchain

**Enterprises favour a
more controlled
blockchain**



Public vs Private Blockchain

**Private blockchains
have been
controversial**

Private Blockchain

**Enterprises favour a
more controlled
blockchain**

**An enterprise
writes transactions**



Public vs Private Blockchain

**Private blockchains
have been
controversial**

Private Blockchain

**Enterprises favour a
more controlled
blockchain**

**An enterprise
writes transactions**

**Doesn't have same
decentralized security
as public blockchain**



Public vs Private Blockchain

Private Blockchain

Private blockchains
have been
controversial

Enterprises favour a
more controlled
blockchain

An enterprise
writes transactions

Doesn't have same
decentralized security
as public blockchain

The company decides
who can read and
verify blocks



Blockchain Use Cases



Blockchain Use Cases

Digital Currency



Blockchain Use Cases

Digital Currency

Voting



Blockchain Use Cases

Digital Currency

Voting

Intellectual
Property



Blockchain Use Cases

Digital Currency

Voting

Intellectual
Property

AML and KYC



Blockchain Use Cases

Digital Currency

Voting

Intellectual
Property

AML and KYC

Identity
Management



Blockchain Use Cases

Digital Currency

Voting

Intellectual
Property

AML and KYC

Identity
Management

Public Record
Registries

