

Oracle Blockchain

Consensus to Boost The Business
February 2019

Ivan Delic
Solution Engineer

ORACLE

Copyright © 2019, Oracle and/or its affiliates. All rights reserved.

Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, timing and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.

Agenda

1. Blockchain Evolution
2. Enterprise Blockchain
3. Oracle Blockchain

1. Blockchain Evolution

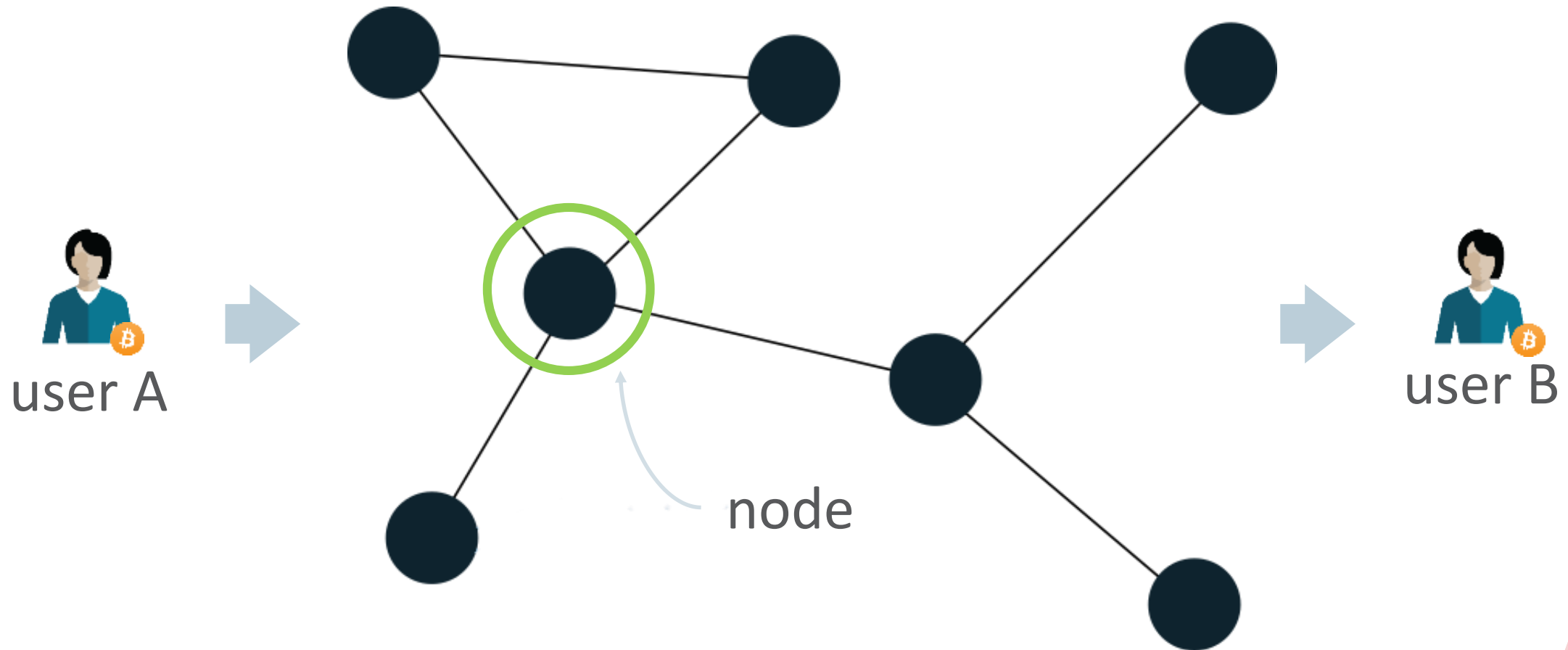
Blockchain Evolution



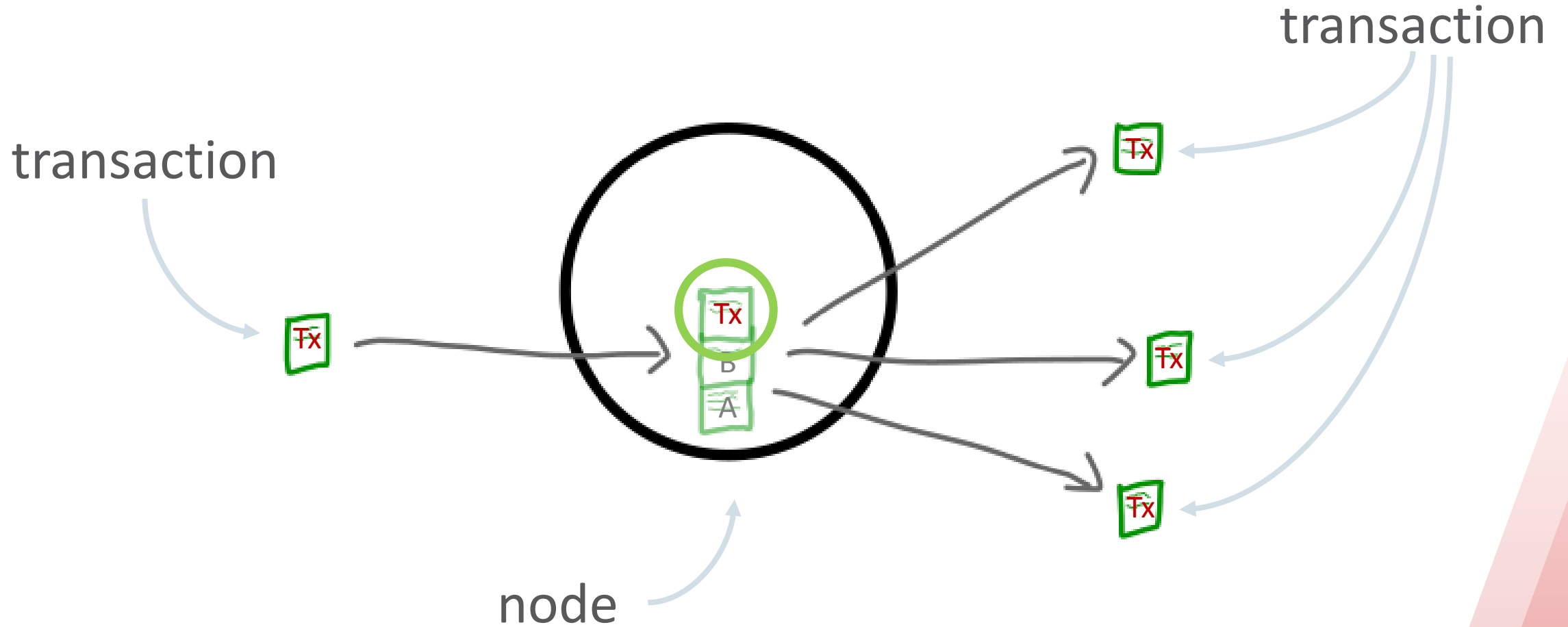
Bitcoin is a cryptocurrency, a form of electronic cash without a central bank that can be sent from user to user on the **peer-to-peer network**.

Blockchain is an open, distributed ledger that can record **transactions** between two parties efficiently and in a verifiable and permanent way.

Peer-to-peer Network





Node and transactions



The Transaction

25a80501bd77907e0ea054da7e4d4e20abd8118925c131e2d40e29579ff36d72

145TkJuQu9cdPD8weAtjgxXEraTc1mRD9m  user A → 3H5YUw5MCYMyfjdzv1BmDcjtrqUBSok3e4  user B

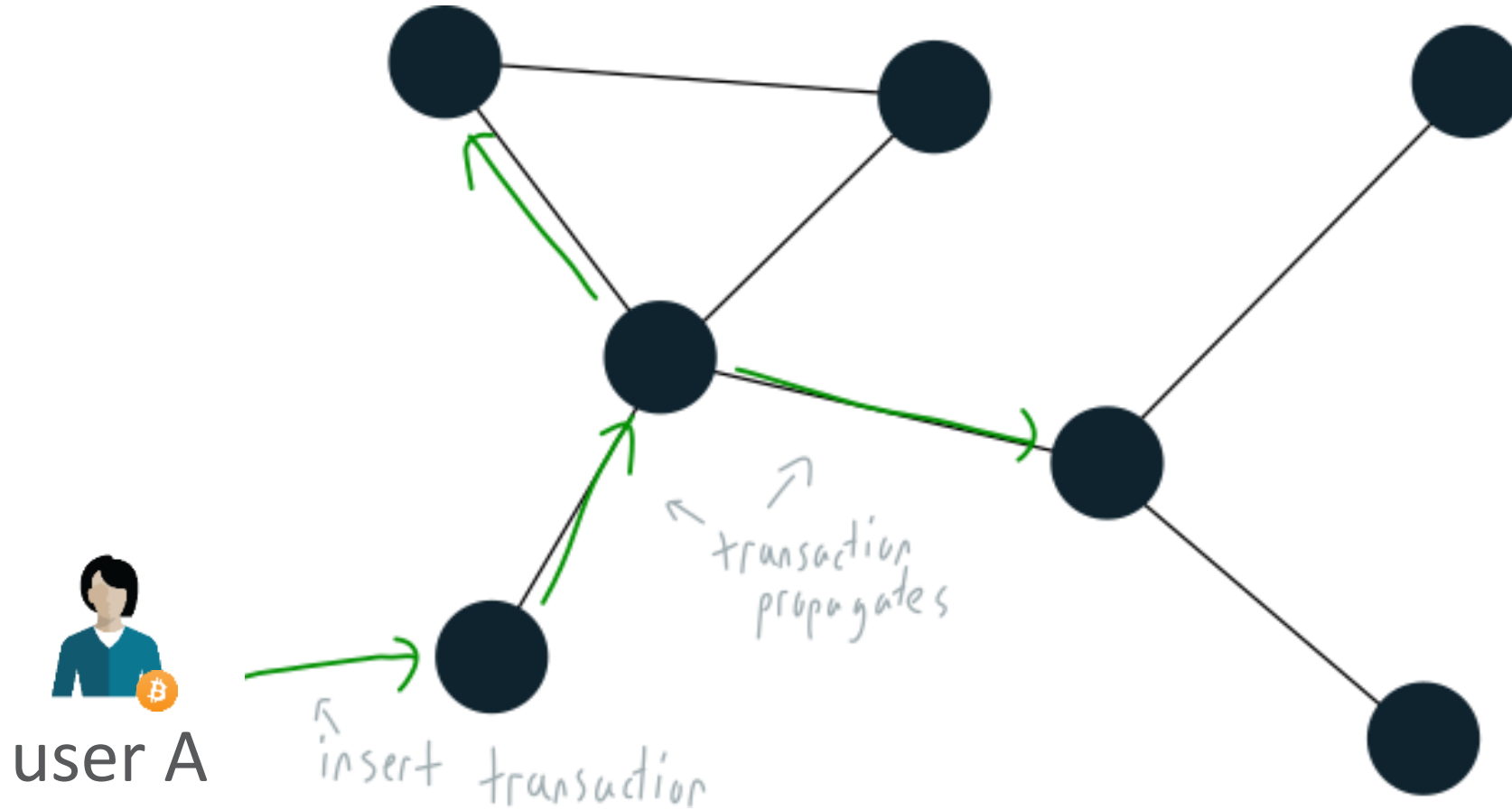
3 Confirmations 1.47821589 BTC

1.47821589 BTC

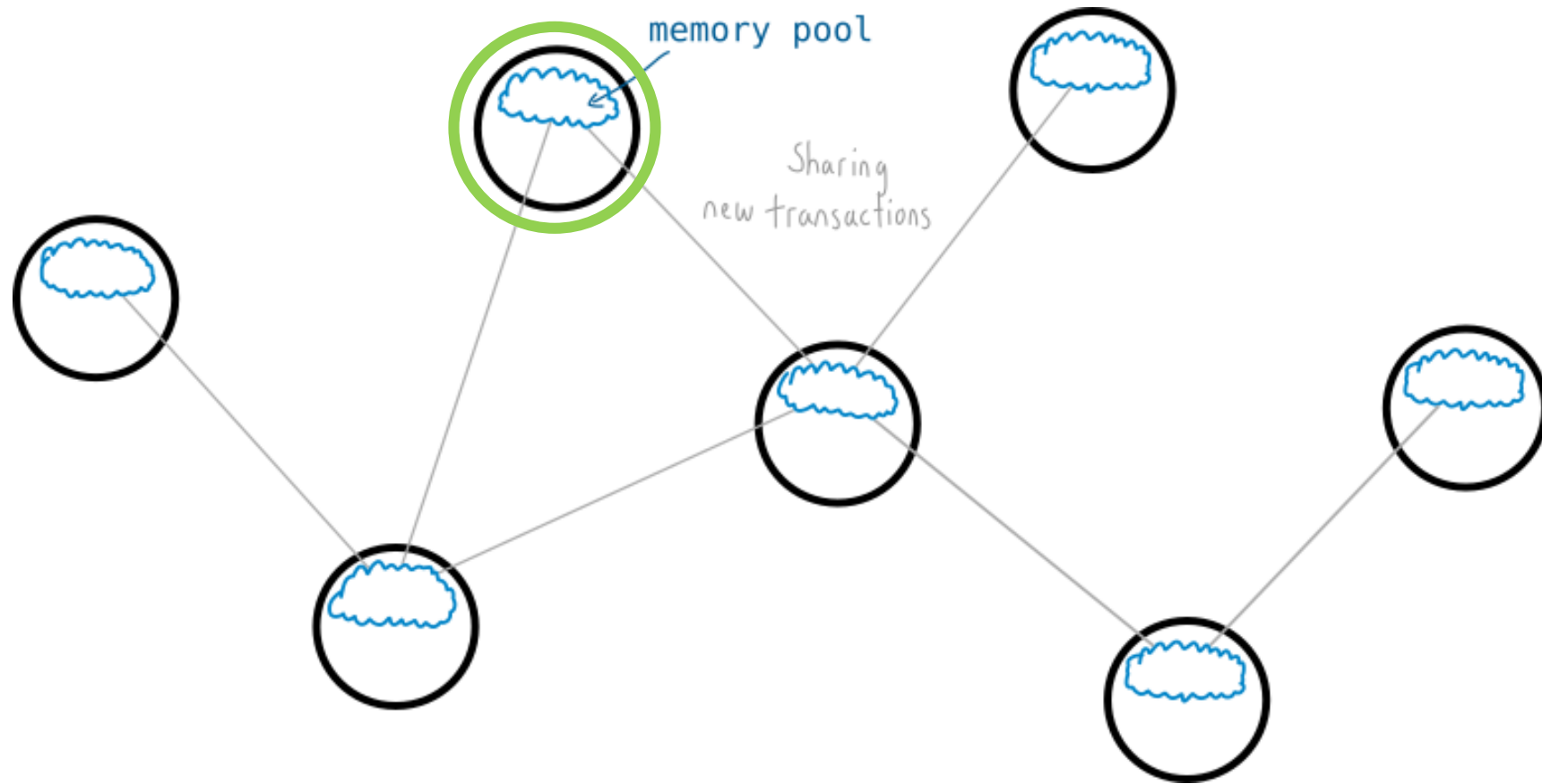
Summary	
Size	190 (bytes)
Weight	760
Received Time	2019-02-18 10:47:01
Included In Blocks	563580 (2019-02-18 10:48:21 + 1 minutes)
Confirmations	3
Visualize	View Tree Chart

Inputs and Outputs	
Total Input	1.47871589 BTC
Total Output	1.47821589 BTC
Fees	0.0005 BTC
Fee per byte	263.158 sat/B
Fee per weight unit	65.789 sat/WU
Estimated BTC Transacted	1.47821589 BTC

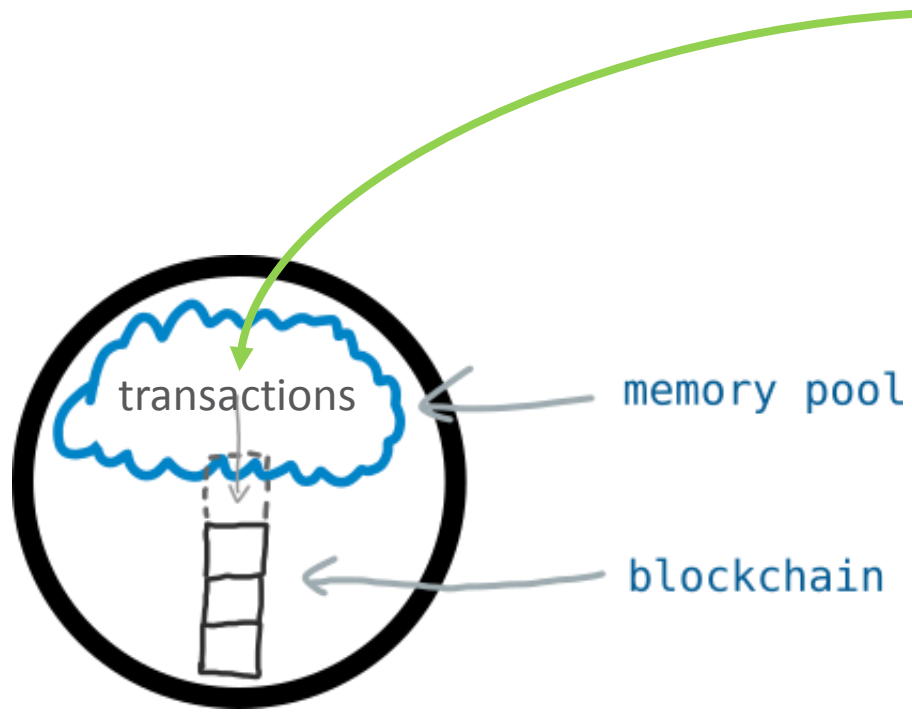
Transaction Gossip



Transaction Blocks

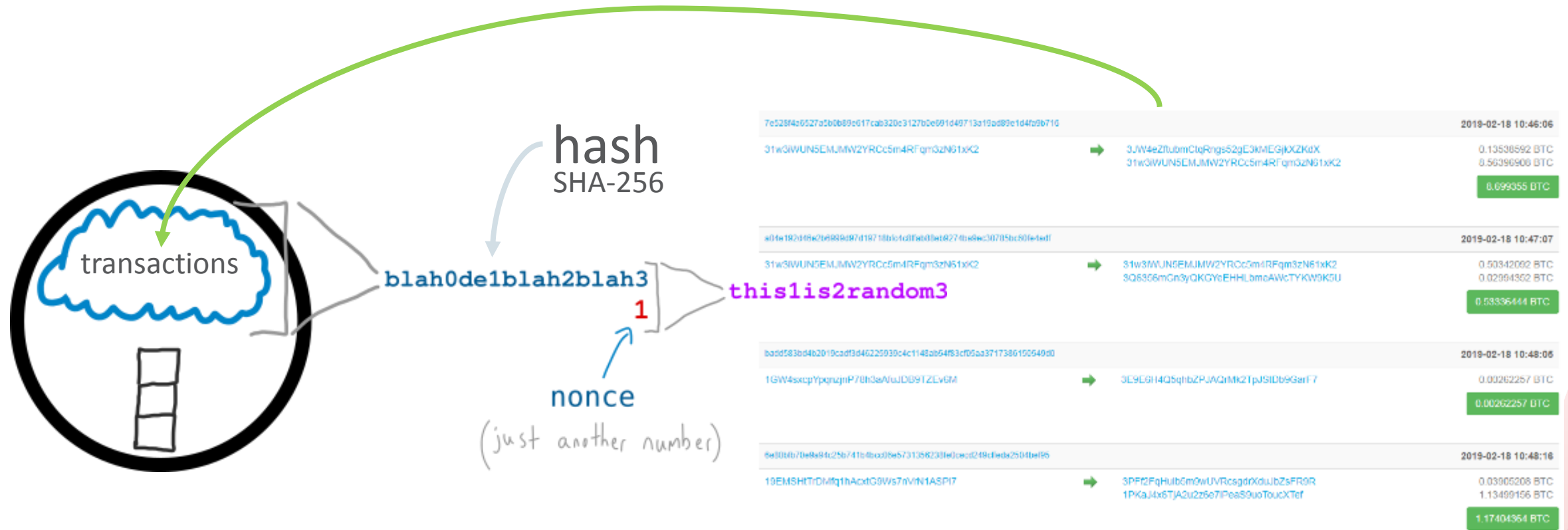


Creating Blocks

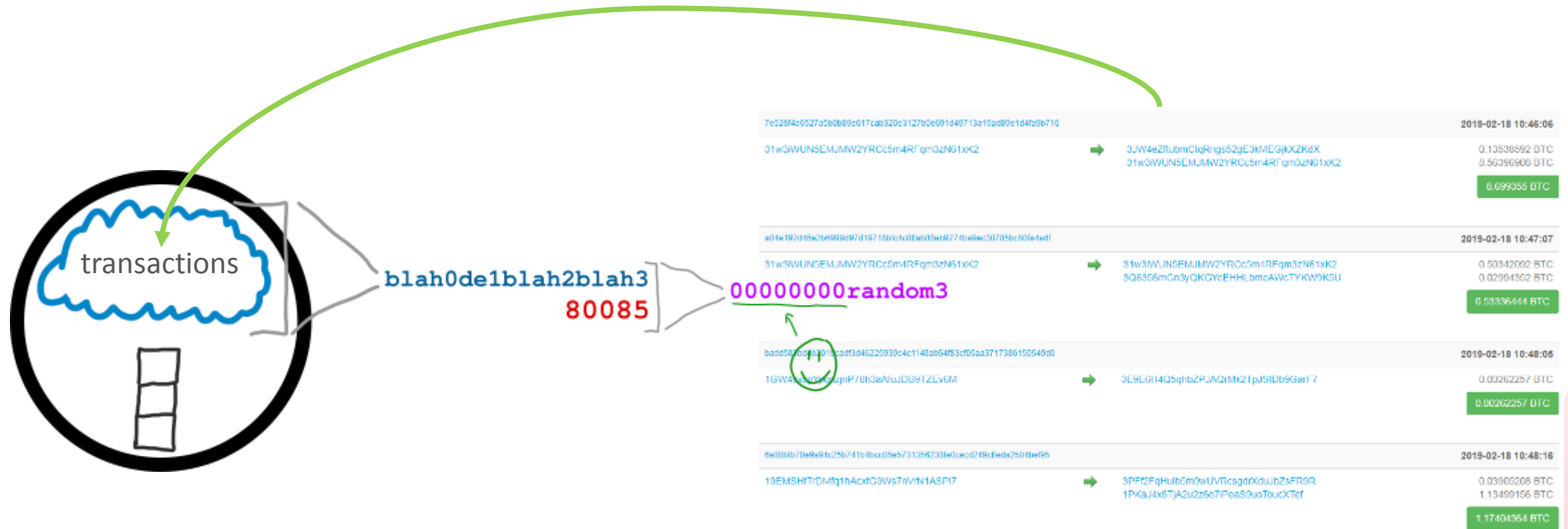


7e528f426527a3b0689e617cab320e3127b0e991d49713a19a089e1d4fb9b716		2019-02-18 10:46:06
31w3WUN5EMJMW2YRCc5m4RFqm3zN61xK2	➡ 3JW4eZtubmCtgRngs52gE3kMEGjKQZKdX 31w3WUN5EMJMW2YRCc5m4RFqm3zN61xK2	0.13530592 BTC 0.56396906 BTC 0.699355 BTC
w04w1R2d48w2b6889d97d18718b1c1dFw0Bw0274b8w30705bc80f4edf		2019-02-18 10:47:07
31w3WUN5EMJMW2YRCc5m4RFqm3zN61xK2	➡ 31w3WUN5EMJMW2YRCc5m4RFqm3zN61xK2 3Q6S06mGn3yQKGy6EHLbmcAWcTYKW9K5U	0.50342092 BTC 0.02994352 BTC 0.53336444 BTC
badd583bd4b2019cadf3d46225930c4c1142ab54f83cf05aa371738619c540d0		2019-02-18 10:48:06
1GW4sxcprYpqnqjnP70h3aWuJD09TZLvGM	➡ 3C9C9i14Q5qhb2PJ4QrMK2TpJ5IDb9Gan7	0.00262257 BTC 0.00262257 BTC
6e00bb70e8a94c25b741b4b0d8e5731356230e0cc0248c0ebc2504be06		2019-02-18 10:48:16
10EMSHtRDmfg1hAc0G0Ws7nVnV1ASp17	➡ 3PF2FqHulb5m0wUVRcsgd0KduBz5FR0R 1PKaJ4x6TJA2u2z5e7PeeS9uoToucXef	0.03005208 BTC 1.13499156 BTC 1.17404364 BTC

Creating Blocks



Creating Blocks

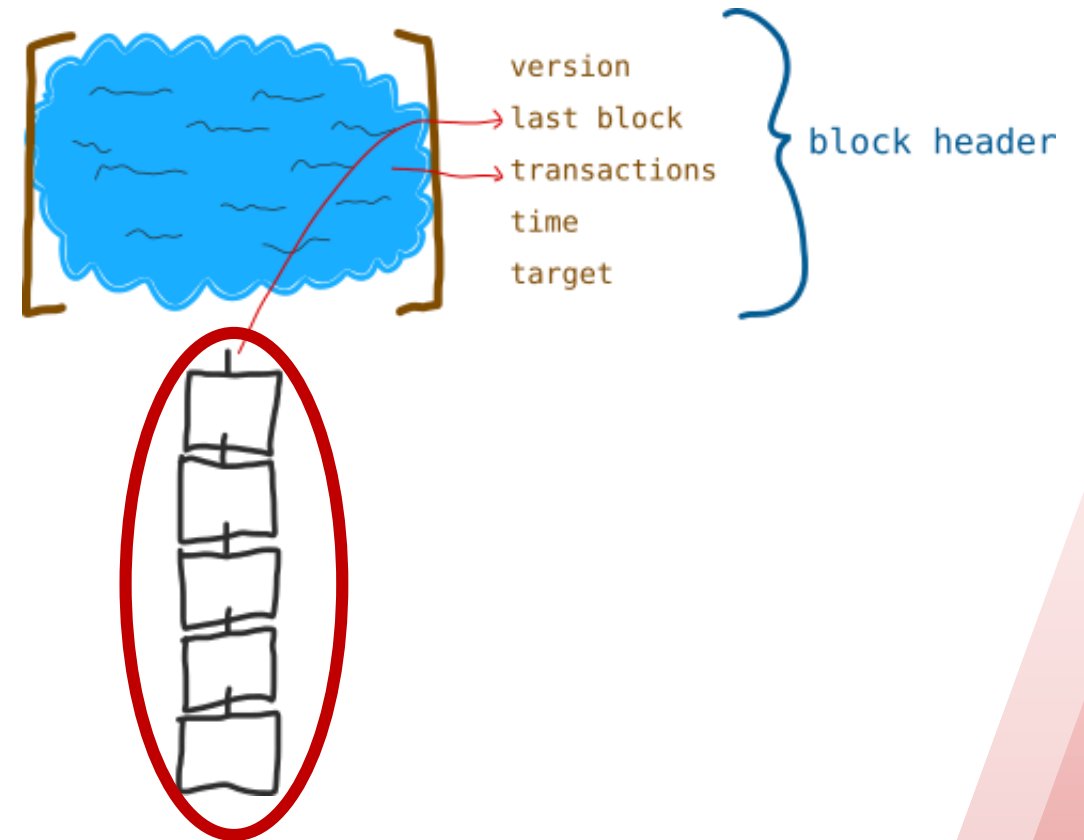


Consensus



Block sent to
other nodes

+12,5 BTC *Cha-ching*



Blockchain

BLOCKS

TRANSACTIONS

Height	Age	Transactions	Miner	Size (bytes)
563599	1 minute	141	SlushPool	106,251
563598	1 minute	2699	BitClub Network	1,005,684
563597	9 minutes	2303	BTC.com	1,020,812
563596	14 minutes	1521	AntPool	542,927
563595	16 minutes	2894	Bitcoin.com	1,244,236

The Result



2. Enterprise Blockchain

What is Enterprise Blockchain?

- System for maintaining distributed ledgers
- Asset maintaining ledger
- Allows multiple parties who may not fully trust one another to do business securely
- Reduces need for third-party intermediaries
- Near real-time and unalterable records

Types of Blockchain

Permissionless

- Anyone can join the network
- Bitcoin, Ethereum...
- Consensus: PoW (Mining)

Permissioned

- Closed ecosystem, members are invited to join
- Hyperledger Fabric, R3 Corda
- Consensus: SBFT

Public Permissioned

- Combination

Permissioned Blockchain Benefits



Trust

Ensure **data is reliable & tamper-proof**



Transparency

Parties have real time access to a **single source of truth** to avoid fraud.



Reduce Intermediary

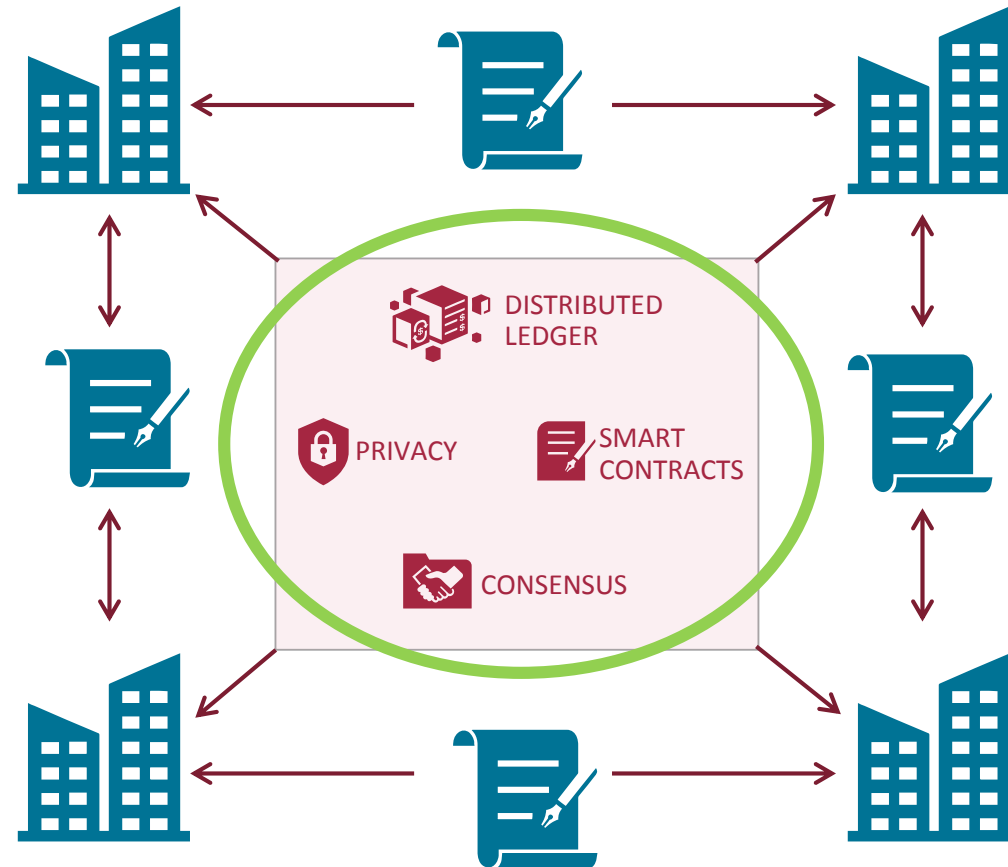
Avoid **unnecessary delays and transaction fees**.



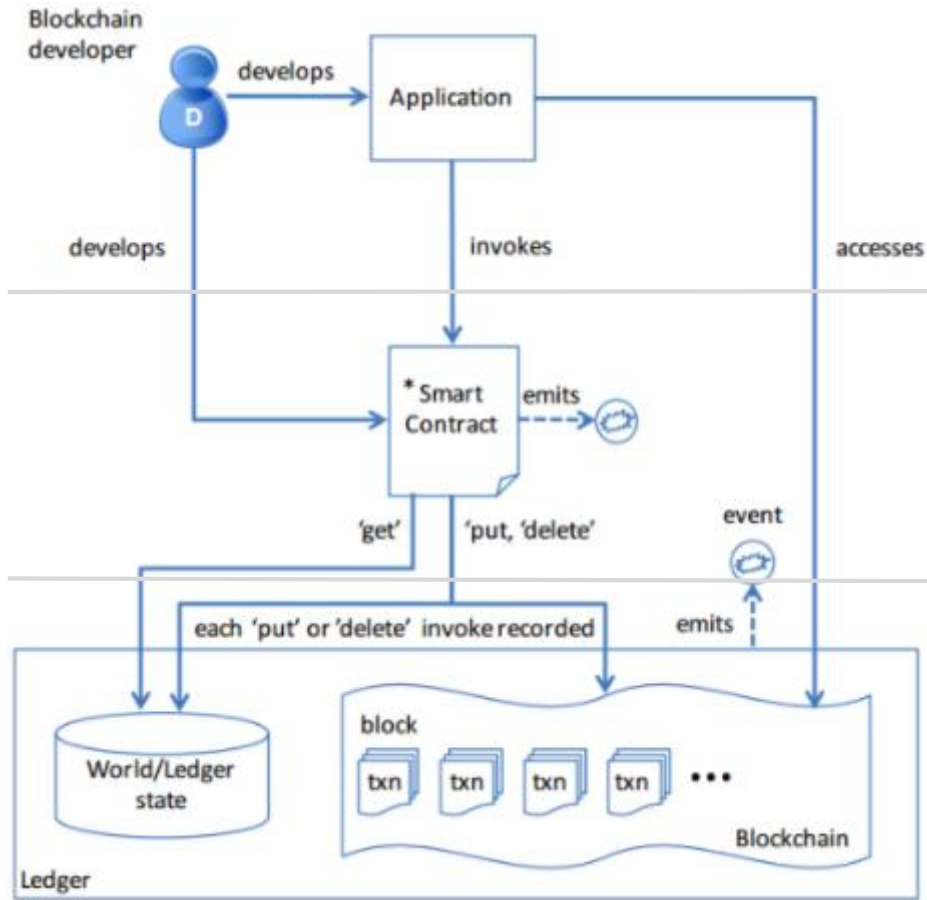
Eliminate Manual Processes

To reduce **risk of human errors** due to manual processes

How Does Enterprise Blockchain Work?



Key Components of Enterprise Blockchain



Applications

- Register users
- Invoke smart contracts
- Consume events

Smart Contracts

- Business logic to update the ledger
- Query data
- Optionally, publish events

Blockchain Infrastructure

- Network of nodes
- Distributed Ledger

Enterprise Blockchain in Action?

- **Trusted intermediary, e.g.: Visa/MC, SWIFT**
 - Issues: cost, latency, single-point-of-failure
 - Blockchain can remove the need for intermediary and replace it with secure protocols
- **Separate records stored by all the different entities**
 - Issues: reconciliation costly and error prone
 - Blockchain's distributed ledger is a single source of truth – no reconciliation needed

Oracle Blockchain

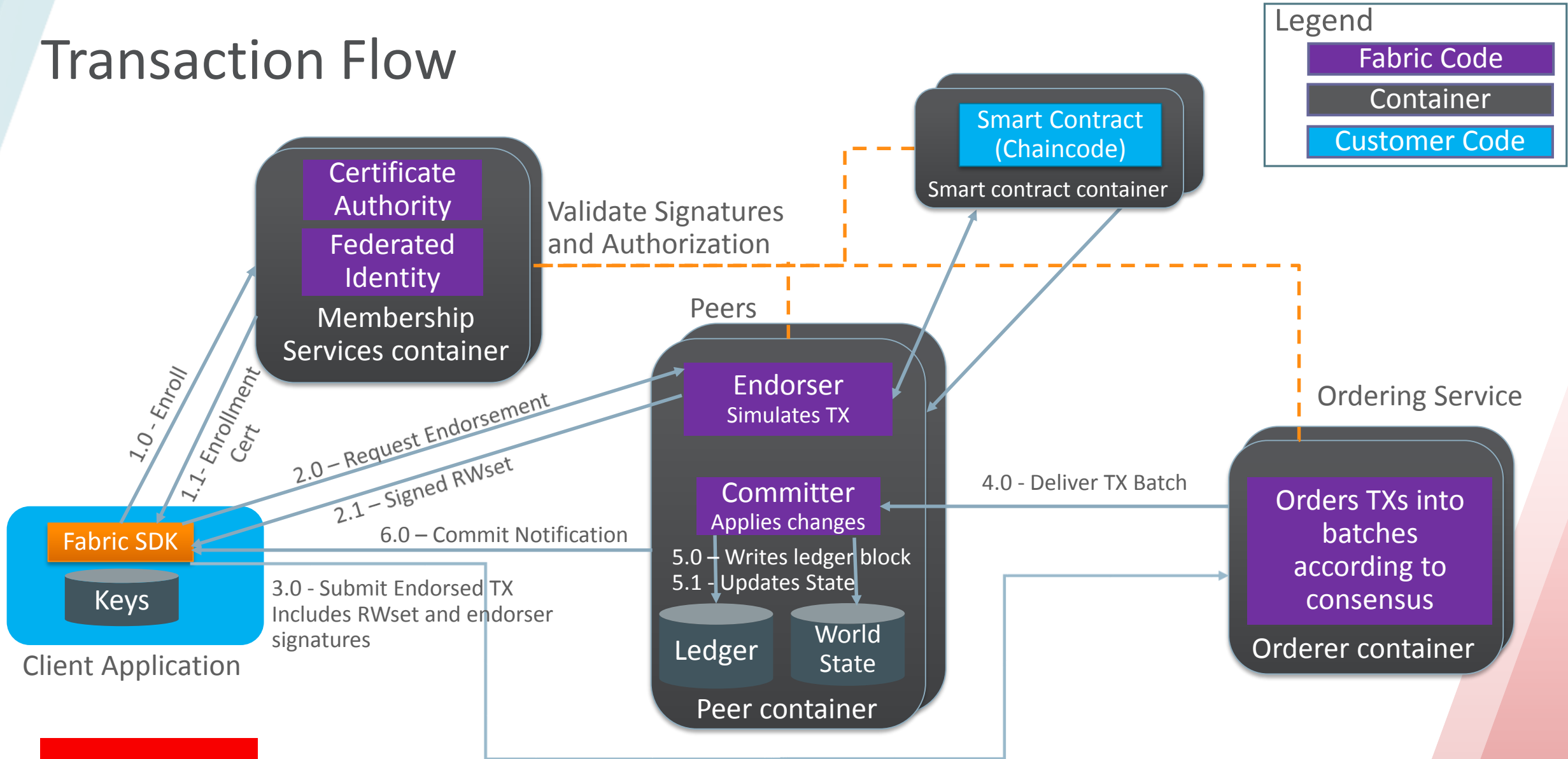
Oracle Blockchain

- Oracle Blockchain is based upon Hyperledger Fabric
- Provides a permissioned blockchain model with membership services
- Uses smart contracts for automating business processes
- Focuses on a scalable implementation with confidentiality/privacy provisions

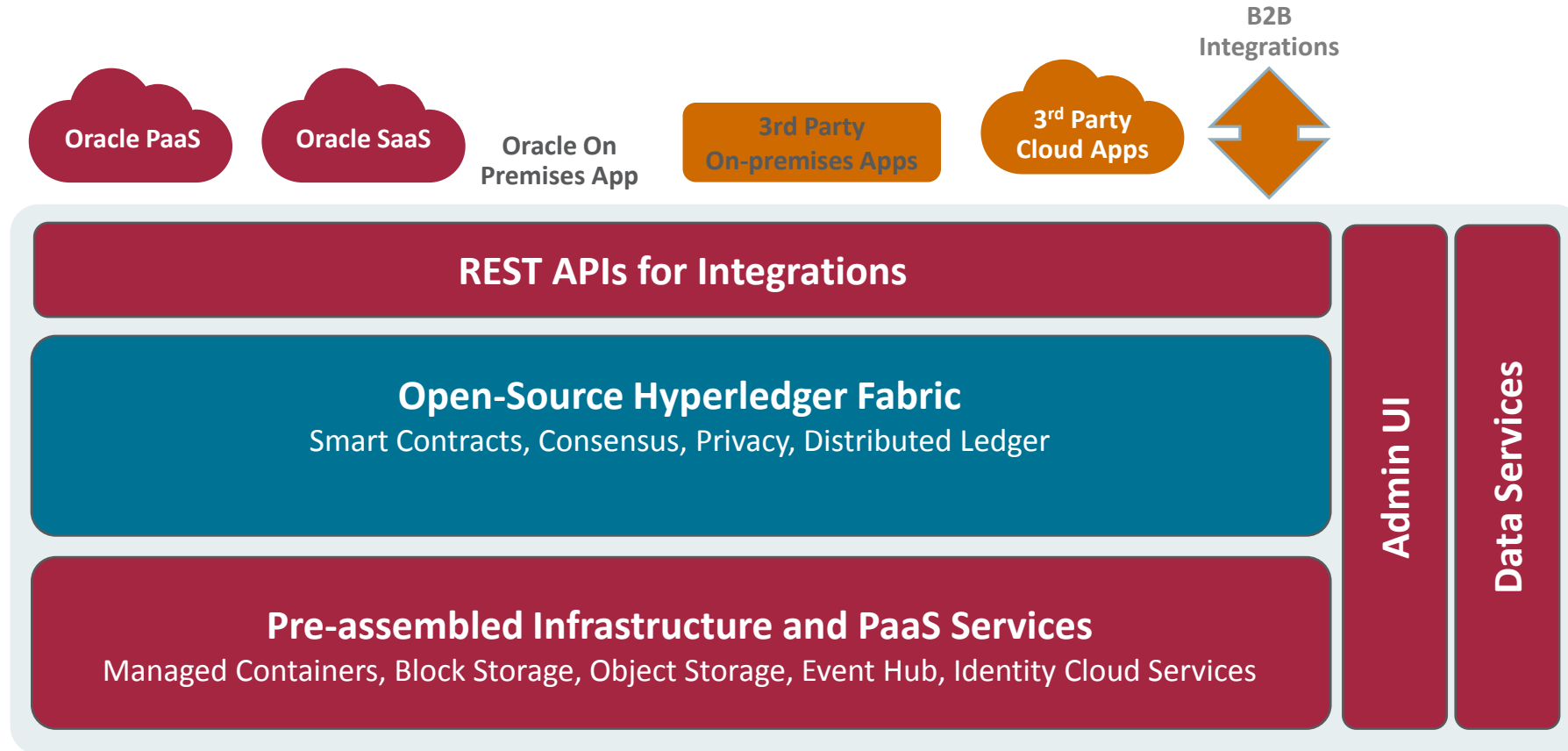
Consensus

- **Endorsement**
 - Determine whether to accept or reject a transaction
- **Ordering**
 - Sort all transactions within a time period into a sequence (Block)
- **Validation**
 - Verify endorsement satisfy policy

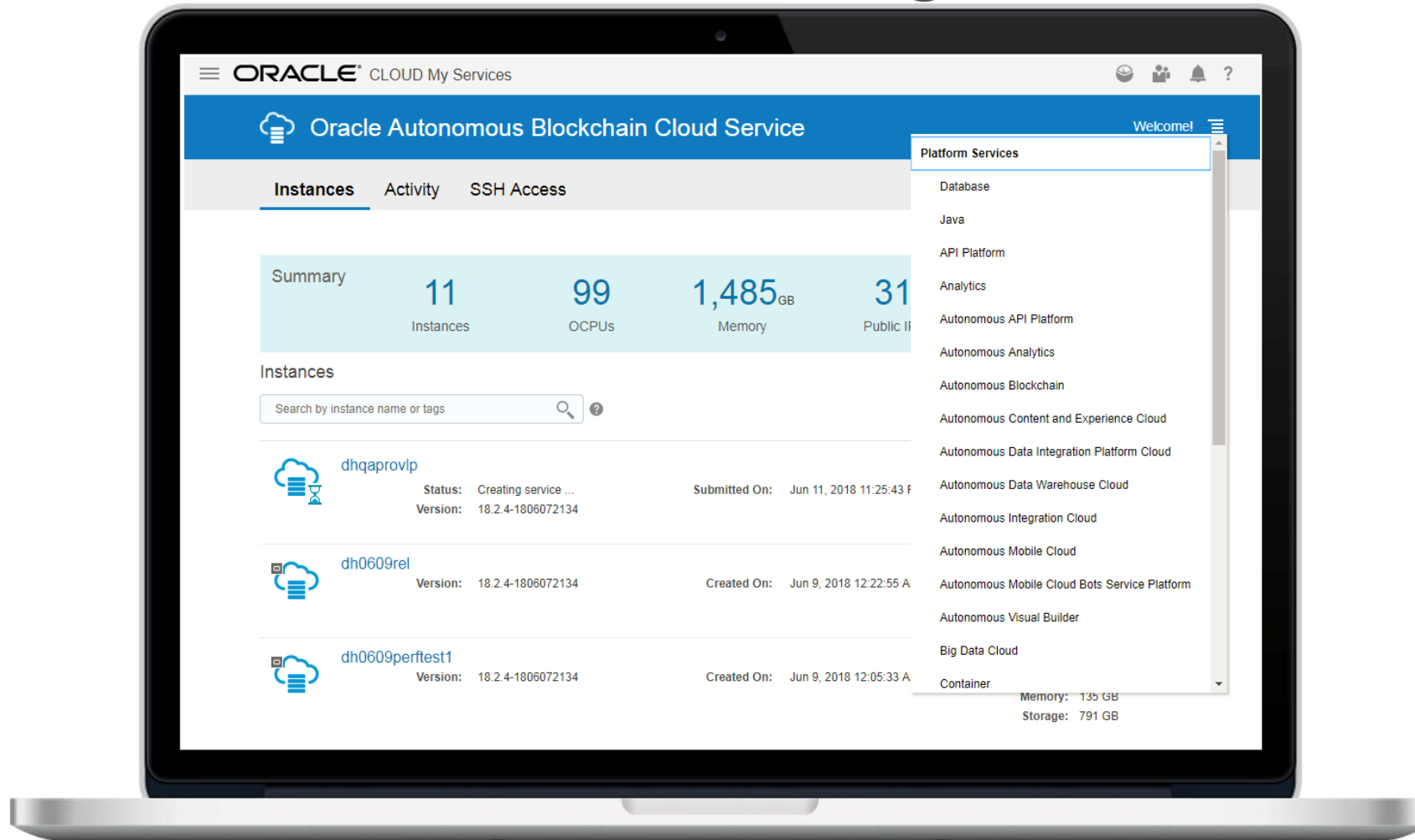
Transaction Flow



Oracle Blockchain Architecture



Oracle Blockchain Cloud Provisioning



Oracle Blockchain Nodes

ORACLE Autonomous Blockchain Cloud Service Console

test (Founder) Settings/Oracle.com

Dashboard Network **Nodes** Channels Chaintcodes

Nodes Summary Found 10 Nodes on 2024-05-07 15:08:02

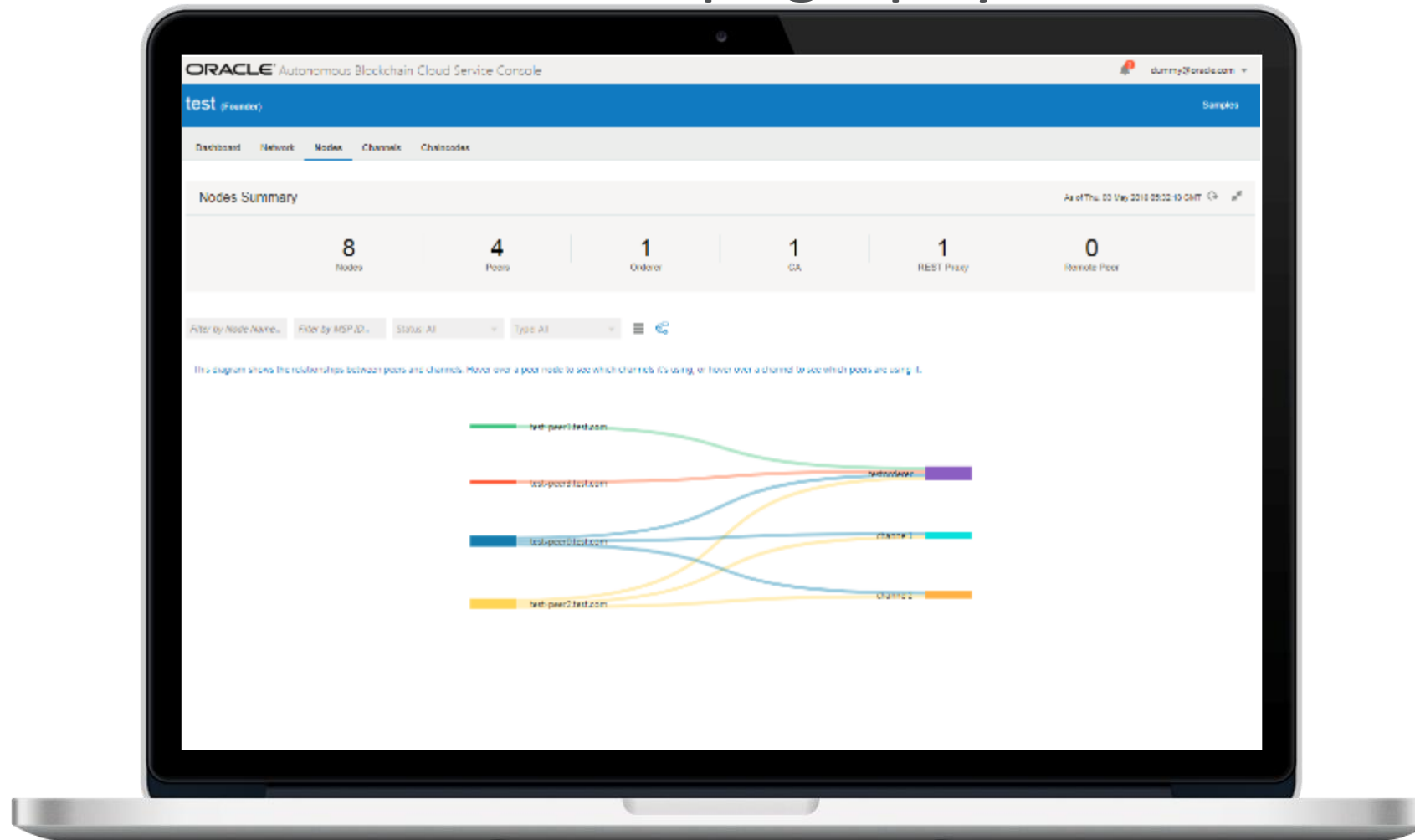
8 Nodes | 4 Peers | 1 Orderer | 1 CA | 1 REST Proxy | 0 Remote Peer

Filter by Node Name: Filter by MSP ID: Status: All Type: All Add Node Export/Import Peers

Name	Host	Type	MSP ID	Status
testcasnode	https://192.168.0.187:3110	Consensus	test	Up
peer0.test.com	grpc://192.168.0.107:10006	Peer(Member)	test	Up
peer1.test.com	grpc://192.168.0.107:10009	Peer(Member)	test	Up
peer2.test.com	grpc://192.168.0.107:10012	Peer(Member)	test	Up
peer3.test.com	grpc://192.168.0.107:10015	Peer(Member)	test	Up
orderer.test.com	grpc://192.168.0.107:1426	Orderer	test	Up
testca0.test.com	https://192.168.0.187:32770	CA	test	Up
gateway0.test.com	https://192.168.0.187:3100	REST Proxy	test	Up

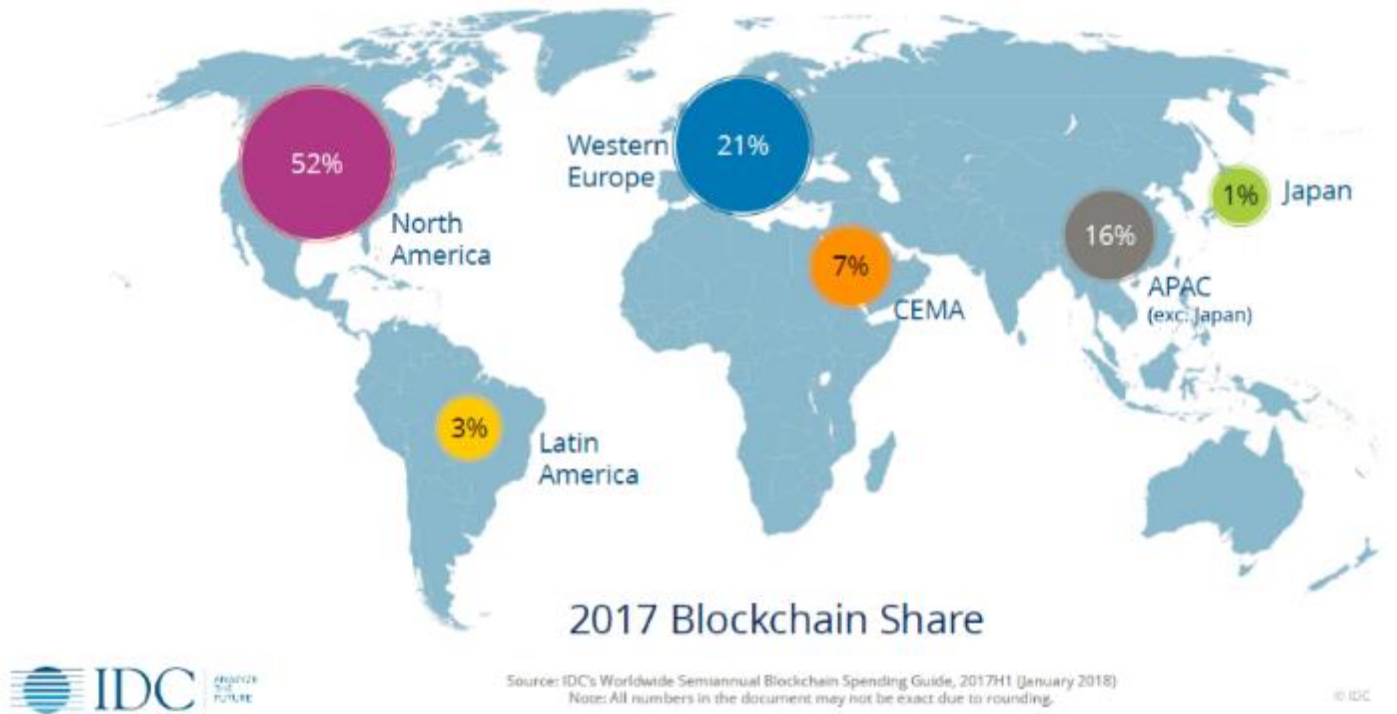
- Stop
- Restart
- Join New Channels
- Edit Configuration
- Remove

Oracle Blockchain Channel Topography



Blockchain Stats

\$945 Million spent in 2017 - Blockchain Technology Investments Will Reach \$9.7 Billion by 2021



\$2.1 billion: Global spending on blockchain solutions in 2019

42.8%: The expansion of the blockchain space every year to 2022

22%: of industry CIOs are in a planning stage or experimenting with blockchain, and another 43% have it on their radar but have not initiated plans

3x: The number of blockchain-related LinkedIn job postings more than tripled over the last year.

Where Can You Apply Blockchain?

- **Questions to ask to see if blockchain is applicable**
 - Does my business process crosses divisional or organizational boundaries?
 - Is there less than full trust among transacting parties?
 - Does it involve intermediaries, possibly charging expensive fees?
 - Is there a need to improve traceability or audit trail?
 - Do we need real time visibility of the current state across multiple organizations?
- <http://doyouneedablockchain.com/>

Global Loyalty Network



Enhance Customer Experience

- Can use your country points in other countries.
- Typical use cases – payments, offline/online shopping, remittance
- No complex transfers that take weeks or months to complete

Increase Operational Excellence

- All participating companies simultaneously store identical transaction data -> enables accurate settlement without additional reconciliations

Create Business Value

- Good way to consume debt
- New business model based on exchange of digital currencies between global financial institutions
- Your customers → My customers → Our customers

Thank You

- Learn More
 - oracle.com/blockchain
- Try
 - cloud.oracle.com/blockchain



ORACLE®