

1. Blockchain - Enterprise and Industry Perspective

1. Defining the terms – what is a blockchain?
2. Four core building blocks of blockchain frameworks
 1. Additional capabilities to consider
3. Fundamentals of the secure transaction processing protocol
4. Where blockchain technology has been and where it's going
 1. The great divide
 2. An economic model for blockchain delivery
 3. Learning as we go
 4. The promise of trust and accountability
5. Industries putting blockchain technology to work
6. Blockchain in the enterprise
 1. What applications are a good fit?
 2. How does the enterprise view blockchain?
 3. Litmus testing to justify the application of blockchain technology
 4. Integrating a blockchain infrastructure for the whole enterprise
7. Centralized vs. Decentralized Systems
8. Centralized Systems
9. Decentralized Systems
10. Layers of Blockchain
11. Application Layer
12. Execution Layer
13. Semantic Layer
14. Propagation Layer
15. Consensus Layer
16. Why is Blockchain Important?
17. Limitations of Centralized Systems
18. Summary

2. Exploring Hyperledger Fabric

1. Building on the foundations of open computing
 1. Fundamentals of the Hyperledger project
 1. The Linux Foundation
 2. Hyperledger
 3. Open source and open standards
2. Hyperledger frameworks, tools, and building blocks
 1. Hyperledger frameworks
 2. Hyperledger tools
 3. The building blocks of blockchain solutions

3. Hyperledger Fabric component design
 1. Principles of Hyperledger design
 2. CAP Theorem
 3. Hyperledger Fabric reference architecture
 4. Hyperledger Fabric runtime architecture
 5. Strengths and advantages of componentized design
 4. Hyperledger Fabric – the journey of a sample transaction
 5. Hyperledger Fabric explored
 1. Components in a blockchain network
 2. Developer interaction
 6. Understanding governance in business networks powered by blockchain
 1. Governance structure and landscape
 2. Information technology governance
 3. Blockchain network governance
 4. Business network governance
 7. Summary
3. Setting the Stage with a Business Scenario
1. Trading and letter of credit
 1. The importance of trust in facilitating trade
 2. The letter of credit process today
 2. Business scenario and use case
 1. Overview
 2. Real-world processes
 3. Simplified and modified processes
 4. Terms used in trade finance and logistics
 5. Shared process workflow
 6. Shared assets and data
 7. Participants' roles and capabilities
 8. Benefits of blockchain applications over current real-world processes
 3. Setting up the development environment
 1. Designing a network
 2. Installing prerequisites
 3. Forking and cloning the trade-finance-logistics repository
 4. Creating and running a network configuration
 1. Preparing the network
 2. Generating network cryptographic material
 3. Generating channel artifacts
 4. Generating the configuration in one operation
 5. Composing a sample trade network
 4. Network components' configuration files
 5. Launching a sample trade network

6. Summary
4. Designing a Data and Transaction Model with Golang
 1. Starting the chaincode development
 1. Compiling and running chaincode
 2. Installing and instantiating chaincode
 3. Invoking chaincode
 2. Creating a chaincode
 1. The chaincode interface
 2. Setting up the chaincode file
 1. The Invoke method
 3. Access control
 1. ABAC
 1. Registering a user
 2. Enrolling a user
 3. Retrieving user identities and attributes in chaincode
 4. Implementing chaincode functions
 1. Defining chaincode assets
 2. Coding chaincode functions
 3. Creating an asset
 4. Reading and modifying an asset
 5. Main function
 5. Testing chaincode
 1. SHIM mocking
 1. Testing the Init method
 2. Testing the Invoke method
 3. Running tests
 6. Chaincode design topics
 1. Composite keys
 2. Range queries
 3. State queries and CouchDB
 4. Indexes
 5. ReadSet and WriteSet
 6. Multiversion concurrency control
 7. Logging output
 1. Configuration
 2. Logging API
 3. SHIM logging levels
 4. Stdout and stderr
 5. Additional SHIM API functions
 8. Summary

5. Business Networks

1. A busy world of purposeful activity
 1. Why a language for business networks?
2. Defining business networks
 1. A deeper idea
3. Introducing participants
 1. Types of participant
 1. Individual participants
 2. Organizational participants
 3. System or device participants
 2. Participants are agents
 3. Participants and identity
4. Introducing assets
 1. Assets flow between participants
 2. Tangible and intangible assets
 3. The structure of assets
 4. Ownership is a special relationship
 5. Asset life cycles
 6. Describing asset's life cycles in detail with transactions
5. Introducing transactions
 1. Change as a fundamental concept
 2. Transaction definition and instance
 3. Implicit and explicit transactions
 4. The importance of contracts
 5. Signatures
 6. Smart contracts for multi-party transaction processing
 7. Digital transaction processing
 8. Initiating transactions
 9. Transaction history
 10. Transaction streams
 11. Separating transactions into different business networks
 12. Transaction history and asset states
 13. A business network as a history of transactions
 14. Regulators and business networks
6. Discussing events from the perspective of designing a business network using Composer
 1. A universal concept
 2. Messages carry event notifications
 3. An example to illustrate event structure
 4. Events and transactions
 5. External versus explicit events

- 6. Events cause participants to act
 - 7. Loosely coupled design
 - 8. The utility of events
 - 7. Implementing a business network
 - 1. The importance of de-materialization
 - 2. Blockchain benefits for B2B and EDI
 - 3. Participants that interact with the blockchain
 - 4. Accessing the business network with APIs
 - 5. A 3-tier systems architecture
 - 6. Hyperledger Fabric and Hyperledger Composer
 - 8. Summary
6. A Business Network Example
- 1. The letter of credit sample
 - 1. Installing the sample
 - 2. Running the sample
 - 1. Step 1 – preparing to request a letter of credit
 - 2. Step 2 – requesting a letter of credit
 - 3. Step 3 – importing bank approval
 - 4. Step 4 – exporting bank approval
 - 5. Step 5 – letter received by exporter
 - 6. Step 6 – shipment
 - 7. Step 7 – goods received
 - 8. Step 8 – payment
 - 9. Step 9 – closing the letter
 - 10. Step 10 – Bob receives payment
 - 3. Recapping the process
 - 2. Analyzing the letter of credit process
 - 1. The Playground
 - 2. Viewing the business network
 - 3. A description of the business network
 - 1. The participant descriptions
 - 2. The asset descriptions
 - 3. The transaction descriptions
 - 4. The event descriptions
 - 4. A model of the business network
 - 1. Namespaces
 - 2. Enumerations
 - 3. Asset definitions
 - 4. Participant definitions
 - 5. Concept definitions
 - 6. Transaction definitions

7. Event definitions
5. Examining the live network
 1. Examining a letter of credit instance
 2. Examining participant instances
 3. Examining transaction instances
 4. Submitting a new transaction to the network
 5. Understanding how transactions are implemented