Chapter 2: What's the story we're going to build?

Learning Bluemix & Blockchain

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The Plan: 30 minute Chapters with an hour or two of practice

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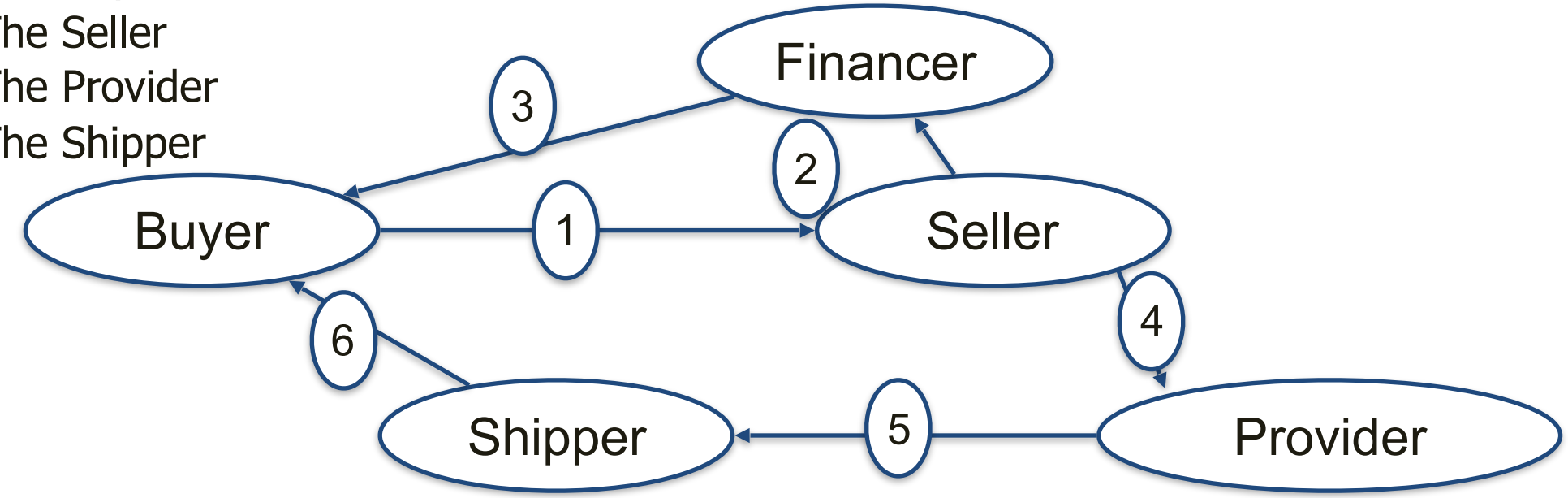
Dispute Resolution for a Finance Organization

- Dispute resolution requires gathering and correlating facts from multiple parties. This is a slow and labor intensive effort, which ties up over $100M at any point in time.
- In this example, those parties are:
  - The Finance Organization
  - The Buyer
  - The Seller
  - The Provider
  - The Shipper

1. Request Product
2. Request Payment
3. Debit Account
4. Request drop ship from Provider
5. Request Shipment
6. Deliver product



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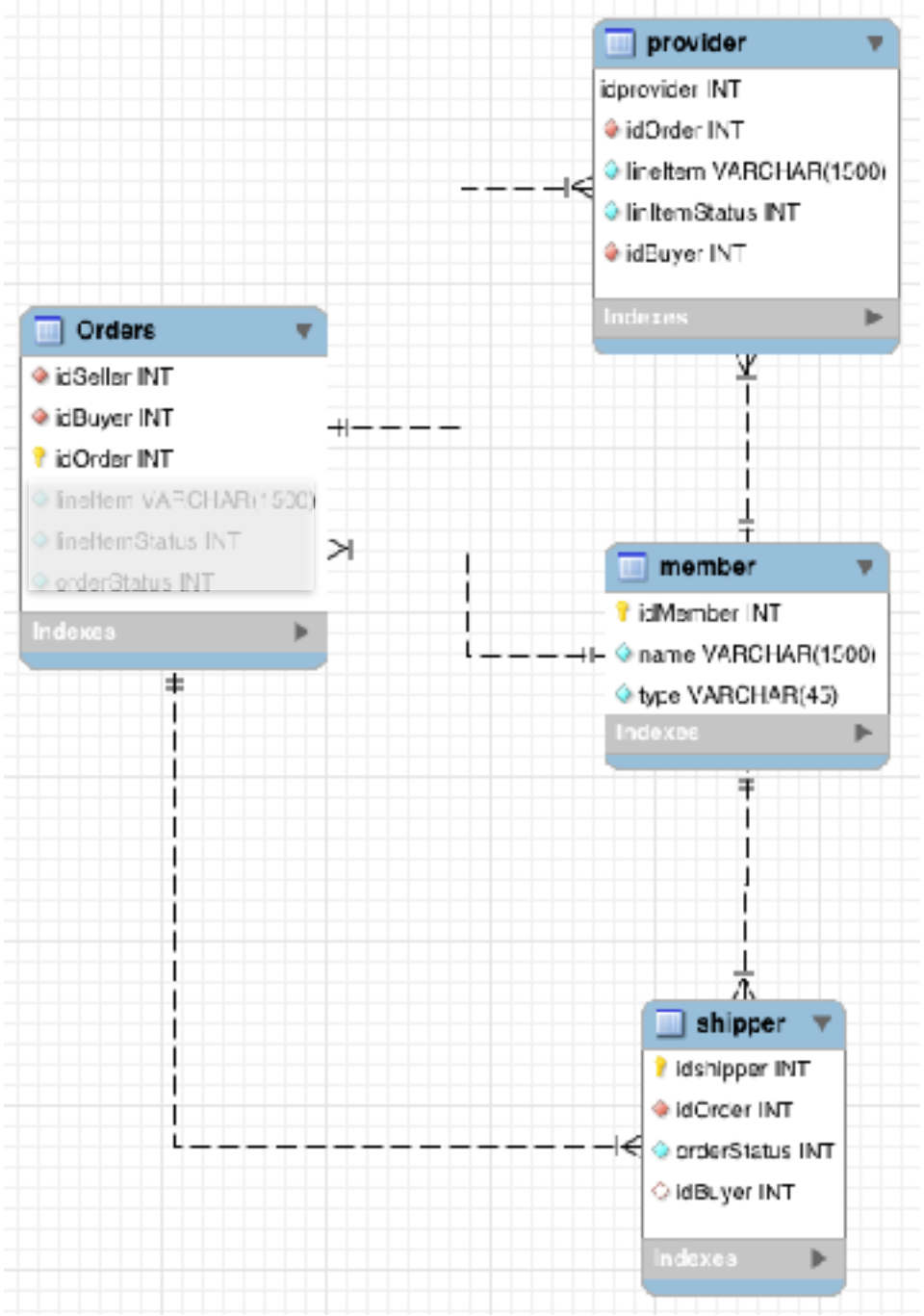
Data Model

- An order has a status of:
  1. Ordered
  2. toProvider
  3. toShipper
  4. Shipping
  5. Delivered
  6. Paid
  7. inDispute
- An item has a status of:
  1. Ordered
  2. toProvider
  3. toShipper
  4. Shipping
  5. Delivered
  6. Backordered



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The basic stories

- As a Finance Organization, I want to see the finance related status of every order executed by my clients when they are using my credit services instantly and in real-time
  - This will allow me to manage dispute resolution over the phone immediately rather than taking multiple weeks to resolve a dispute.
- As a seller, I want to see the order, shipping and finance status of every sale in the system.
- As a buyer, I want to see the real-time status of every order.
- As a buyer, I want to be able to initiate a dispute with the click of a single button and provide all required data automatically to my finance organization
- As a manufacturer, I want to be able to see all open orders and the shipment status on all orders.
- As a shipper, I want to be able to interact with this system with as little change as possible on my end.

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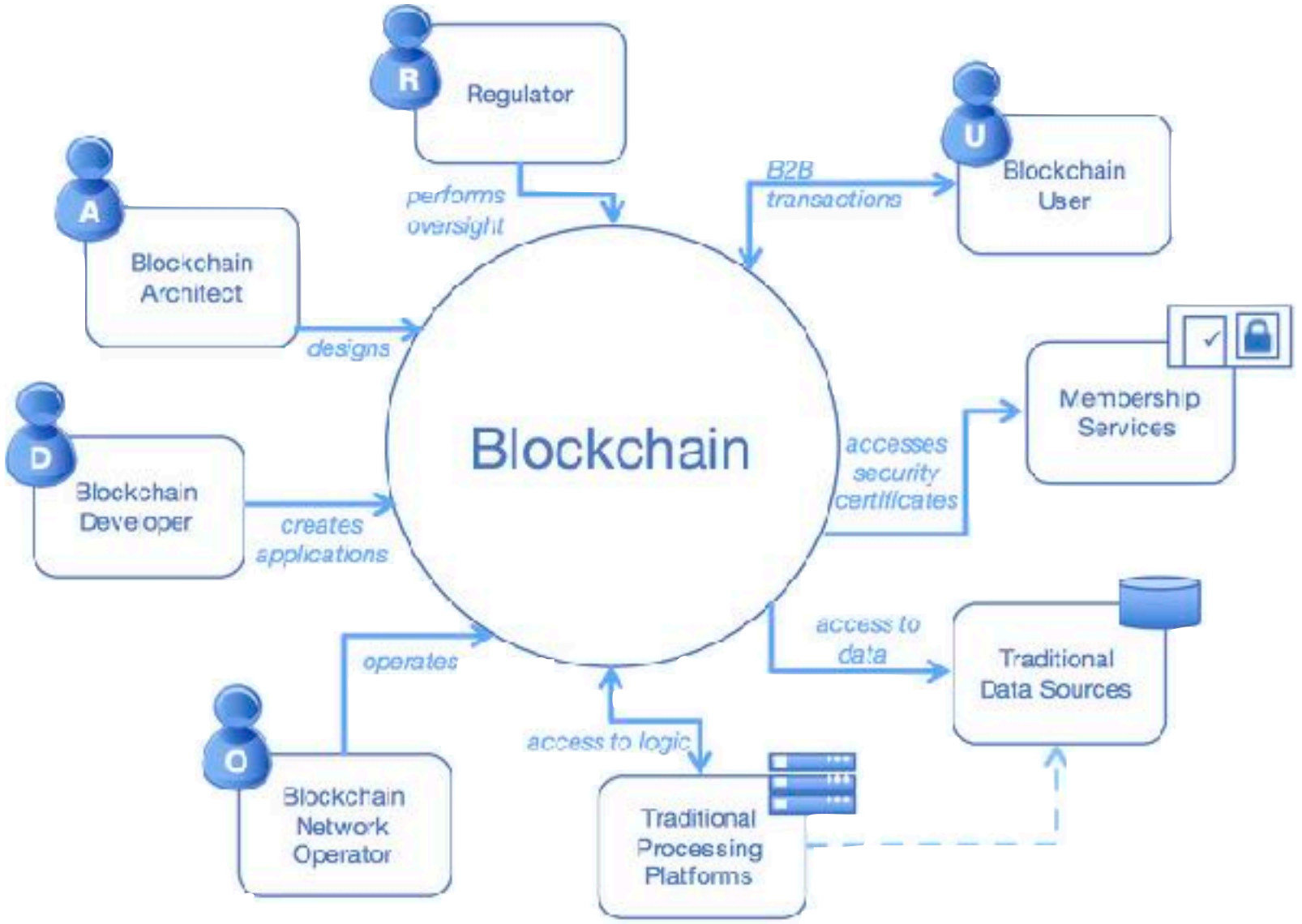
Actors in a blockchain solution



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Actors in a blockchain solution

Blockchain Architect		Responsible for the architecture and design of the blockchain solution	Chapter 1 & 2.1
Blockchain User		The business user, operating in a business network. This role interacts with the Blockchain using an application. They are not aware of the Blockchain.	Financing Co, Buyer, Seller, Shipper, Provider
Blockchain Regulator		The overall authority in a business network. Specifically, regulators may require broad access to the ledger's contents.	Finance Co.
Blockchain Developer		The developer of applications and smart contracts that interact with the Blockchain and are used by Blockchain users.	Chapters 3-12
Blockchain Operator		Manages and monitors the Blockchain network. Each business in the network has a Blockchain Network operator.	Chapters 4 & 5
Membership Services		Manages the different types of certificates required to run a permissioned Blockchain.	Chapters 4 & 5
Traditional Processing Platform		An existing computer system which may be used by the Blockchain to augment processing. This system may also need to initiate requests into the Blockchain.	Outside the Tutorial
Traditional Data Sources		An existing data system which may provide data to influence the behavior of smart contracts.	Supplied in Tutorial

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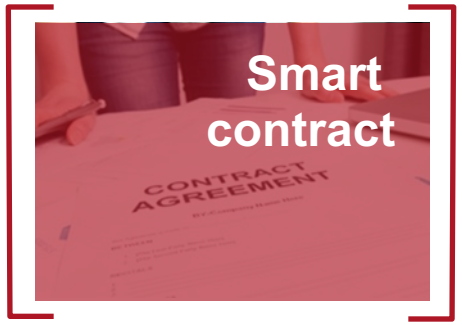
Blockchain in a Nutshell

Append-only distributed system of record shared across business network



Business terms embedded in transaction database & executed with transactions

Ensuring appropriate visibility; transactions are secure, authenticated & verifiable

Transactions are endorsed by relevant participants

Broader participation, lower cost, increased efficiency

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Industrial Blockchain – IBM's Perspective

Private & Permissioned (not public)

- Private = known set of participants in a business network, known identity
- Permissioned = members need to fulfill criteria to join
- (Public = open set of participants, anonymitiy)

Appropriate Consensus

- Mechanism by which participants agree on state of shared ledger.
- Public needs heavyweight consensus for anonymous participants
- Known participants opens up other forms (e.g. participant bonds)

Privacy through Cryptography

- Transaction privacy
- Participant identity & trading privacy

Compliance & Audit

- Current spend can be vastly reduced
- Automated processes possible

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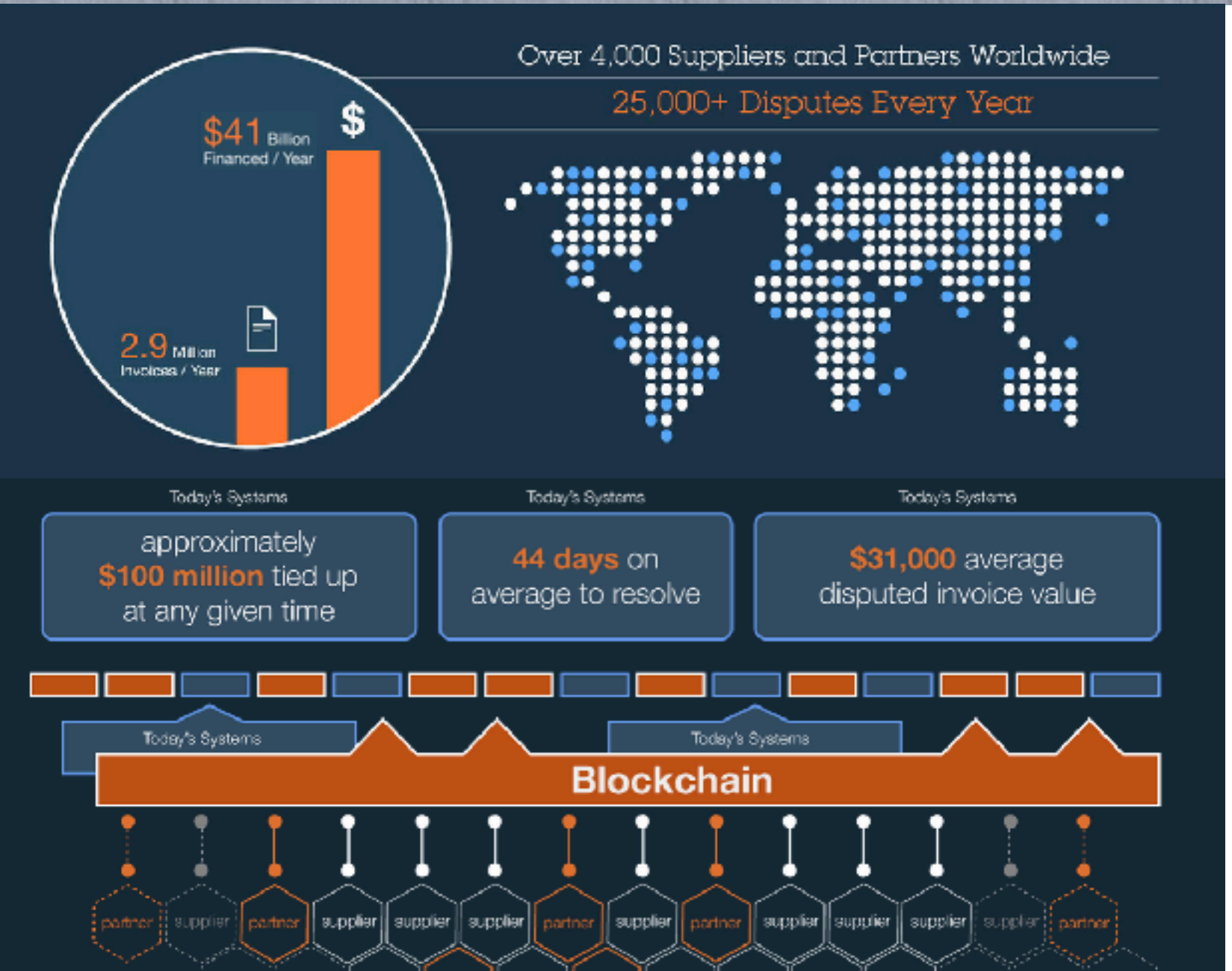
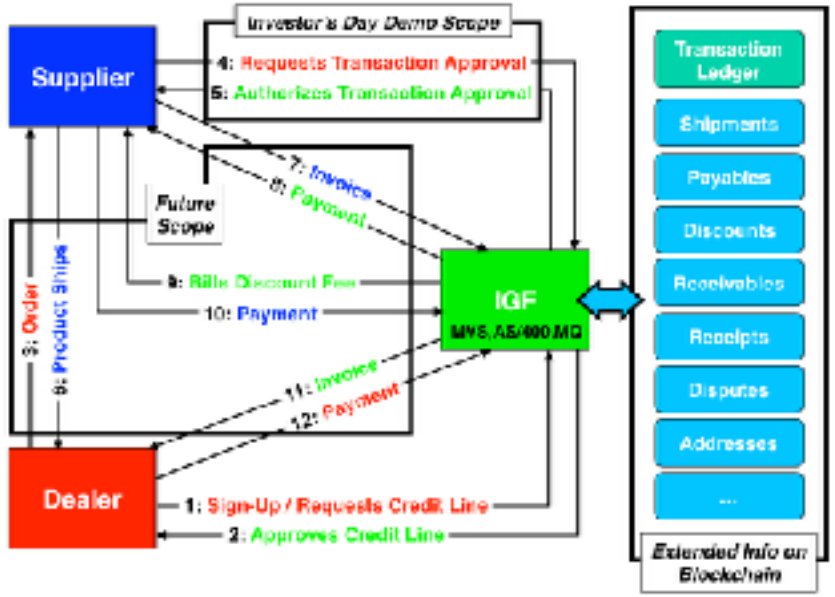
Blockchain for IBM Global Financing





- Immutability / Non-repudiability of blockchain ledger ➡ Comprehensive view of all operational data
- Less disputes, faster settlement ➡ Free flow of capital between parties
- Distributed & Replicated ➡ Less Outages, Highly extensible

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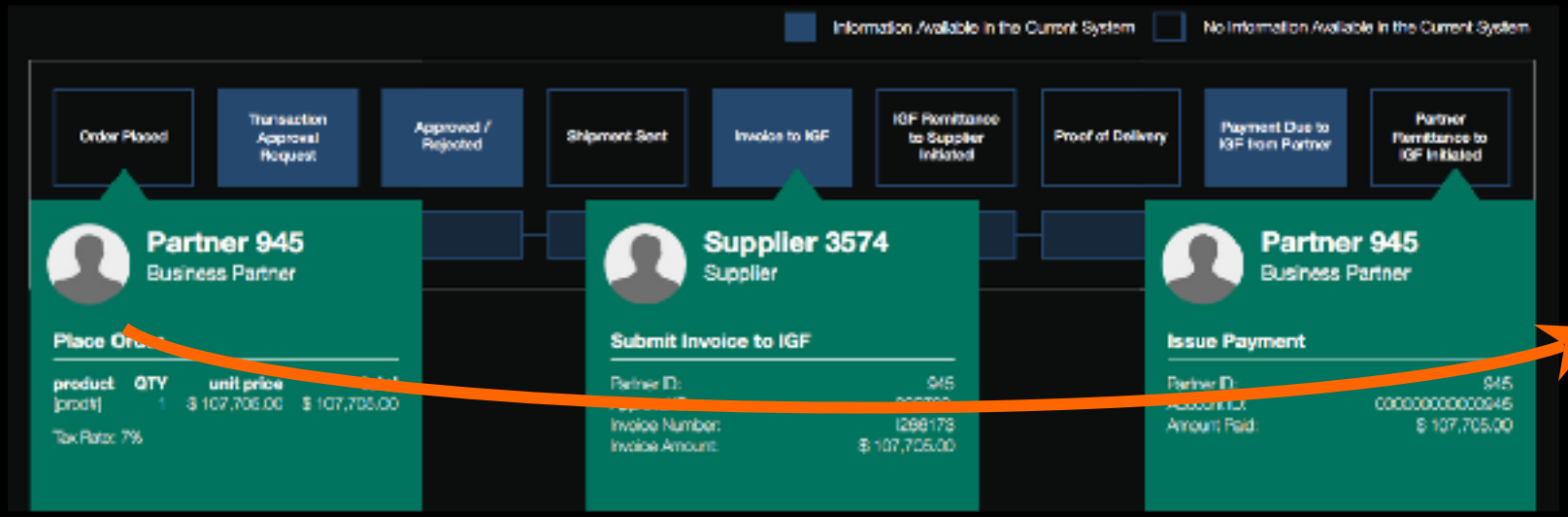
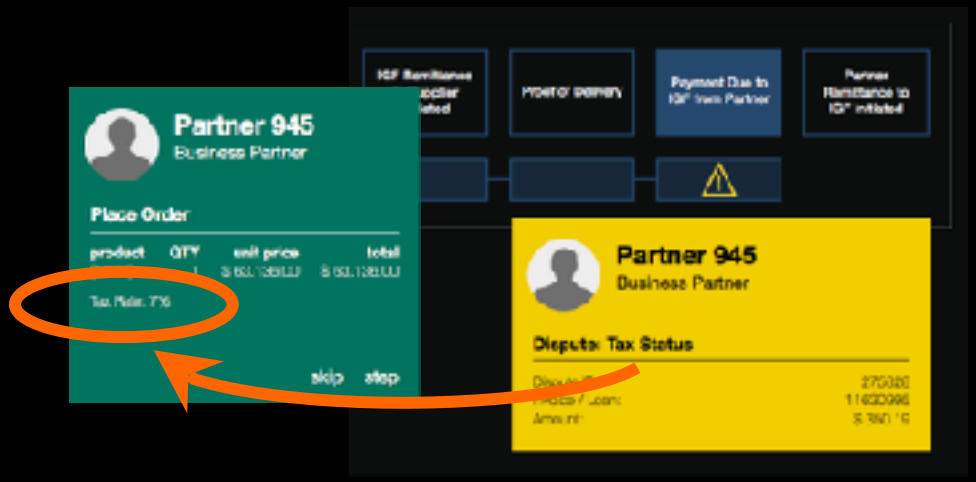
Blockchain for IBM Global Financing

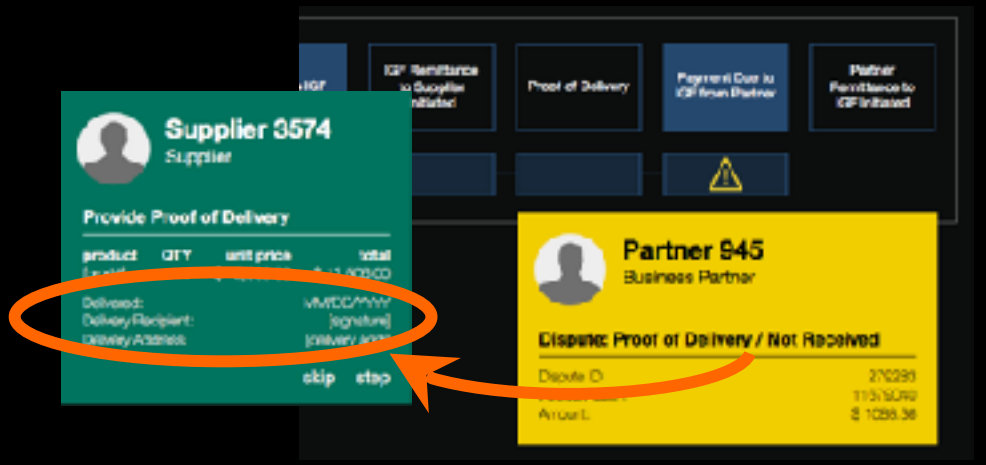
An immutable, non-repudiable record of events, shared between Partners, Suppliers and IGF…



…enabling a comprehensive view across the entire transaction lifecycle….

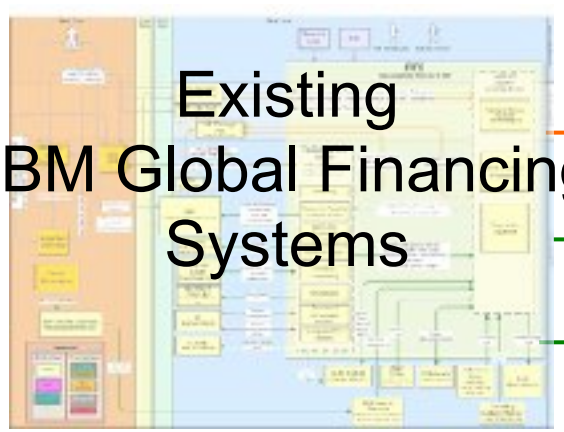
…with enhanced visibility to prevent or speed the resolution of disputes…





Demo Video: https://youtu.be/F0P7NM7d-ps

Blockchain for IBM Global Financing



Existing IBM Global Financing Systems

Transaction Approvals

Invoices

Remittances

External Data

UI

Application

Application

Validating Peer

Validating Peer

Validating Peer

Validating Peer

Application

Application

Validating Peer

Application REST APIs

TA Data Services

Invoice Data Services

Remittance Data Services

External Data Services

Indexing

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Blockchain Data for Dispute Resolution

Data recorded in the Blockchain can improve resolution time for common disputes

Dispute Reason	Data Recorded in Blockchain			
	PO	Shipment	Proof of Delivery	Invoice
Shortshipped Order by Part Quantity or by Box	Line item and quantity info	Shipment line items and quantities		
Proof of Delivery			Proof of Delivery	

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Potential Benefits

Reduction in Disputes and Dispute Resolution Cycle Time (initial estimates of 10%), leading to:

- better customer satisfaction
- differentiation from your competitors
- reduced costs associated with dispute resolution

What Can I Do to Get Ready?

Prepare for Availability of Data to be shared on the Blockchain:

- order information
- shipping information
- receipt of shipment
- additional information that would benefit your partners

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Buyer

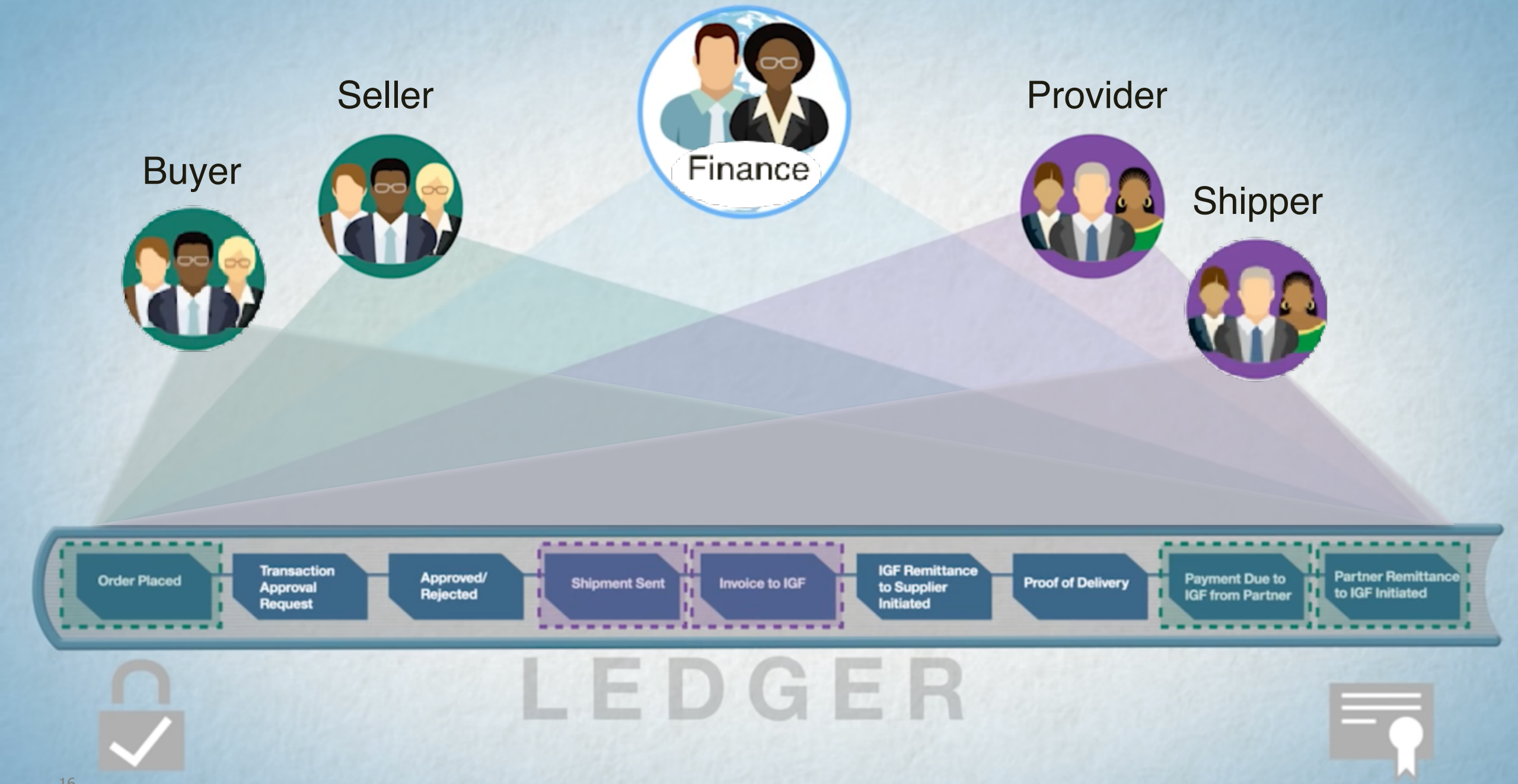
Seller

Provider

Shipper

Each participant has permissioned and secured access

LEDGER


Buyer
Seller
Finance
Provider
Shipper
Order Placed
Transaction Approval Request
Approved/ Rejected
Shipment Sent
Invoice to IGF
IGF Remittance to Supplier Initiated
Proof of Delivery
Payment Due to IGF from Partner
Partner Remittance to IGF Initiated
LEDGER

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Chapter 3: Set up local HyperLedger V1 development environment

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