

TRADING COFFEE WITH BLOCKCHAIN

BUILDING TRUSTED BUSINESS NETWORKS

AN IBM VOLUNTEERS ACTIVITY



DISCOVER 
ENGINEERS WEEK
FEBRUARY 17-23, 2019

DEE

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MAR 15 2019

DORSEYVILLE MIDDLE SCHOOL

TODAY'S SESSION

Join us for an hour to learn about Blockchain - what it is, what roles it can play in the future, and how it will change the manner in which we exchange goods and services.


Students will work through a hands-on exercise allowing participants to start a mock coffee business and buy/sell products on the blockchain network.

Bring your iPads!



LET'S GET TO
KNOW EACH
OTHER!

Introductions

- Name
 - Grade
 - Favorite App
- 

TRADING BASICS

Supply Chain

System of organizations, people, activities, information, and resources involved in moving a product or service from supplier to customer

Ledger

Documented recording and totaling of economic transactions with debits and credits that can either be on paper or in electronic format

Contracts

Legally-binding agreement which recognizes and governs the rights and duties of the parties to the agreement

Intermediaries

Conduit for trading goods and services between suppliers and buyers – the middle-man

EXAMPLE: VEHICLE OWNERSHIP

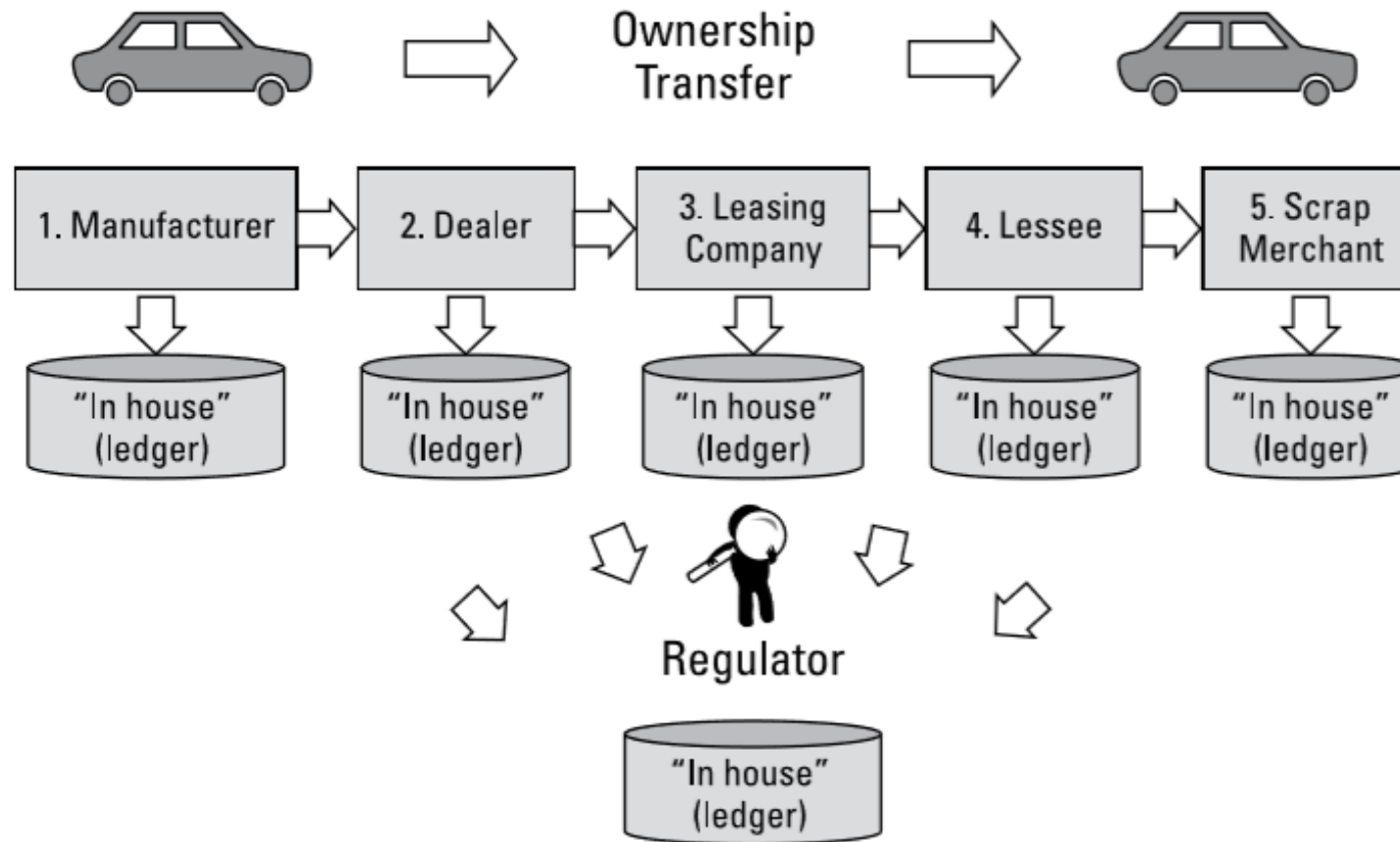
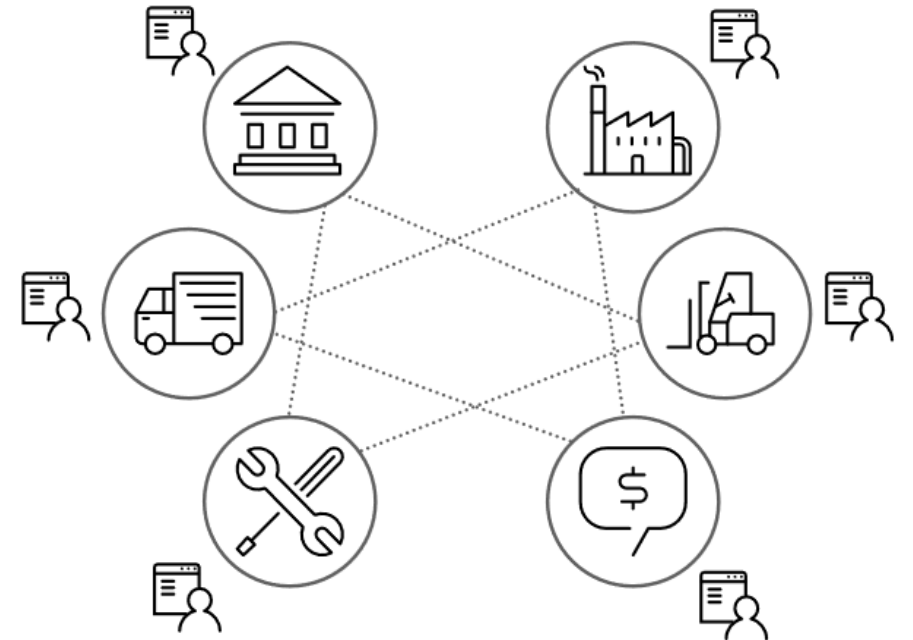


FIGURE 1-1: Tracking vehicle ownership without blockchain.

THE OLD WAY

Ordinary transactions are complex

- Each participant has his own, separate ledger – increasing the possibility of human error or fraud
- Reliance on intermediaries for validation creates inefficiencies
- Can become a paper-laden process, resulting in frequent delays and potential losses for all stakeholders



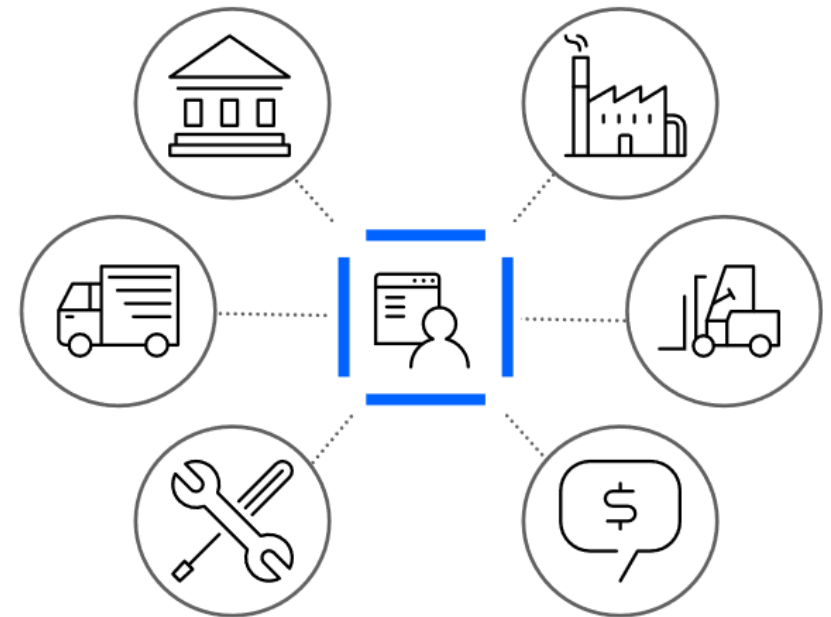
WHAT IS BLOCKCHAIN?

Blockchain is a **shared, immutable ledger** that facilitates the process of **recording transactions and tracking assets** in a business network. An asset can be tangible (a house, a car, cash, land) or intangible (intellectual property, patents, copyrights, branding).

THE BLOCKCHAIN WAY

Blockchain reduces that complexity

- Single, shared, tamper-evident ledger — once recorded, transactions cannot be altered
- All parties must give consensus before a new transaction is added to the network
- Eliminates or reduces paper processes, speeding up transaction times and increasing efficiencies



HOW BLOCKCHAIN WORKS

Source: <https://www.youtube.com/watch?v=ID9KAnkZUjU>



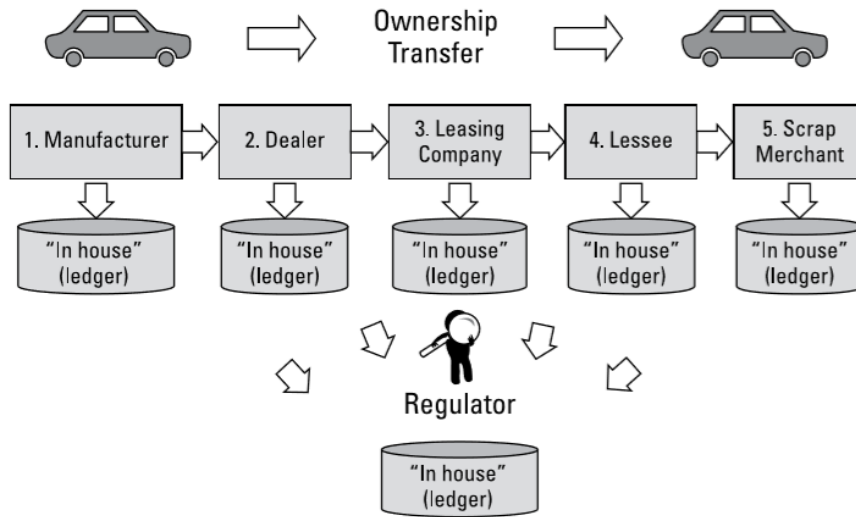


FIGURE 1-1: Tracking vehicle ownership without blockchain.

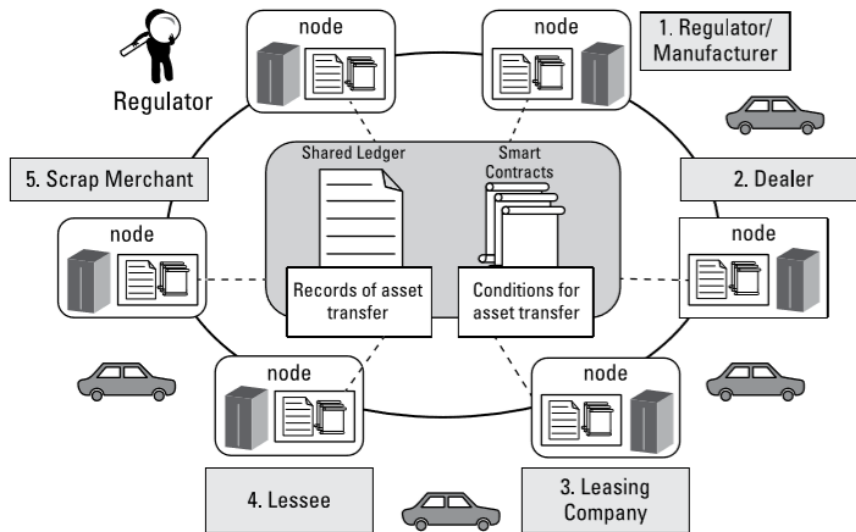


FIGURE 1-2: Tracking vehicle ownership with blockchain.

BLOCKCHAIN CHANGES HOW WE DO BUSINESS

Source: Blockchain for Dummies,
2nd Ed., Manav Gupta, John Wiley

HOW BLOCKCHAIN WORKS



As each transaction occurs – and the parties agree to its details – it's encoded into a block of digital data and uniquely signed or identified.



Each block is connected to the one before and after it – creating an irreversible, immutable chain.



Blocks are chained together, preventing any block from being altered or a block being inserted between two existing blocks.



WHY IS BLOCKCHAIN BETTER FOR BUSINESS?

It's distributed

Blockchain creates a shared system of record among business network members, eliminating the need to reconcile disparate ledgers.

It's permissioned

Each member of the network must have access privileges. Information is shared only on a need-to-know basis.

It's immutable

Consensus is required from all members and all validated transactions are permanently recorded. Even a system administrator can't delete a transaction.

WHY BLOCKCHAIN?



**Saves
time**



**Removes
cost**



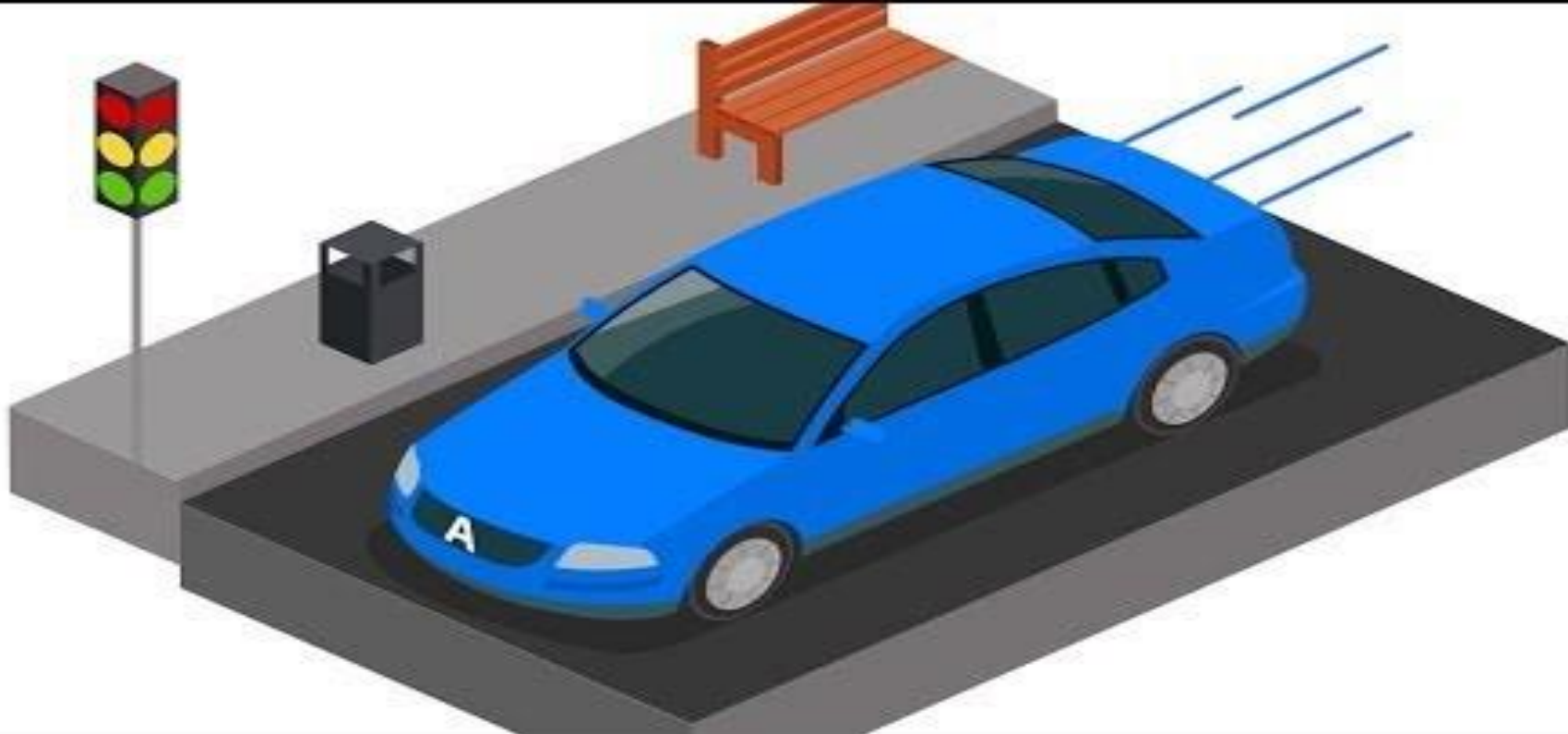
**Reduces
risk**



**Increases
trust**

CAR BUYING & REGISTRATION

Source: <https://www.youtube.com/watch?v=ZAQVx324mfk>



TRUST IN THE FOOD ECO-SYSTEM

Source: <https://www.youtube.com/watch?v=gor0DE7bjqQ>



READY TO TRADE COFFEE?

Source: <https://www.youtube.com/watch?v=-VQsMwNCqZ8>



VALUE OF BLOCKCHAIN FOR COFFEE TRADING

- **Automation and trust through Smart Contracts**

Reduce friction and improve efficiency by automatically executing business logic agreed upon by the participants

- **Provenance**

Guarantees of coffee bean quality and lineage via the immutable ledger

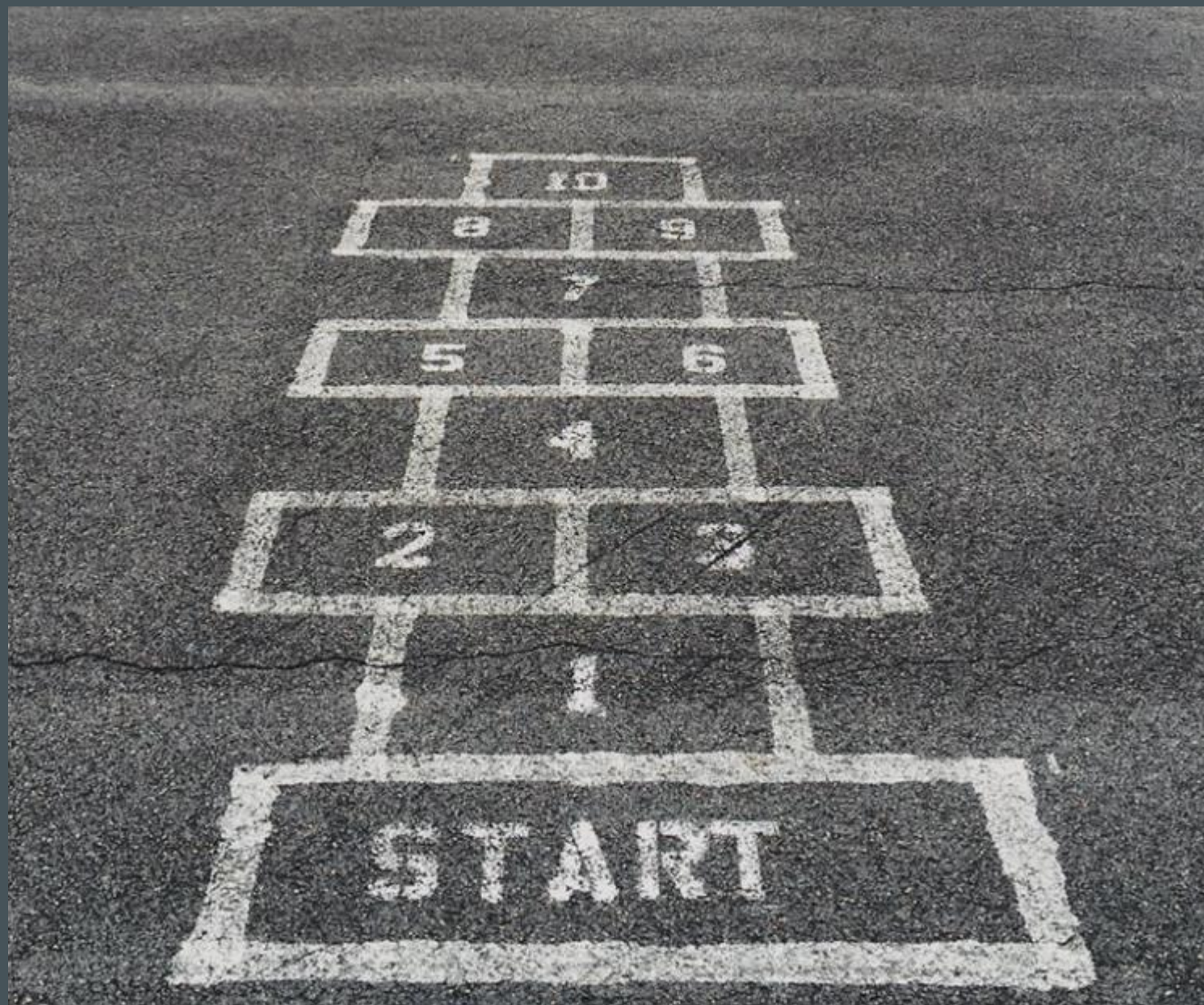
- **Privacy**

Participants have visibility into transactions that is commensurate to their role in the network

- **Growing the Business Network**

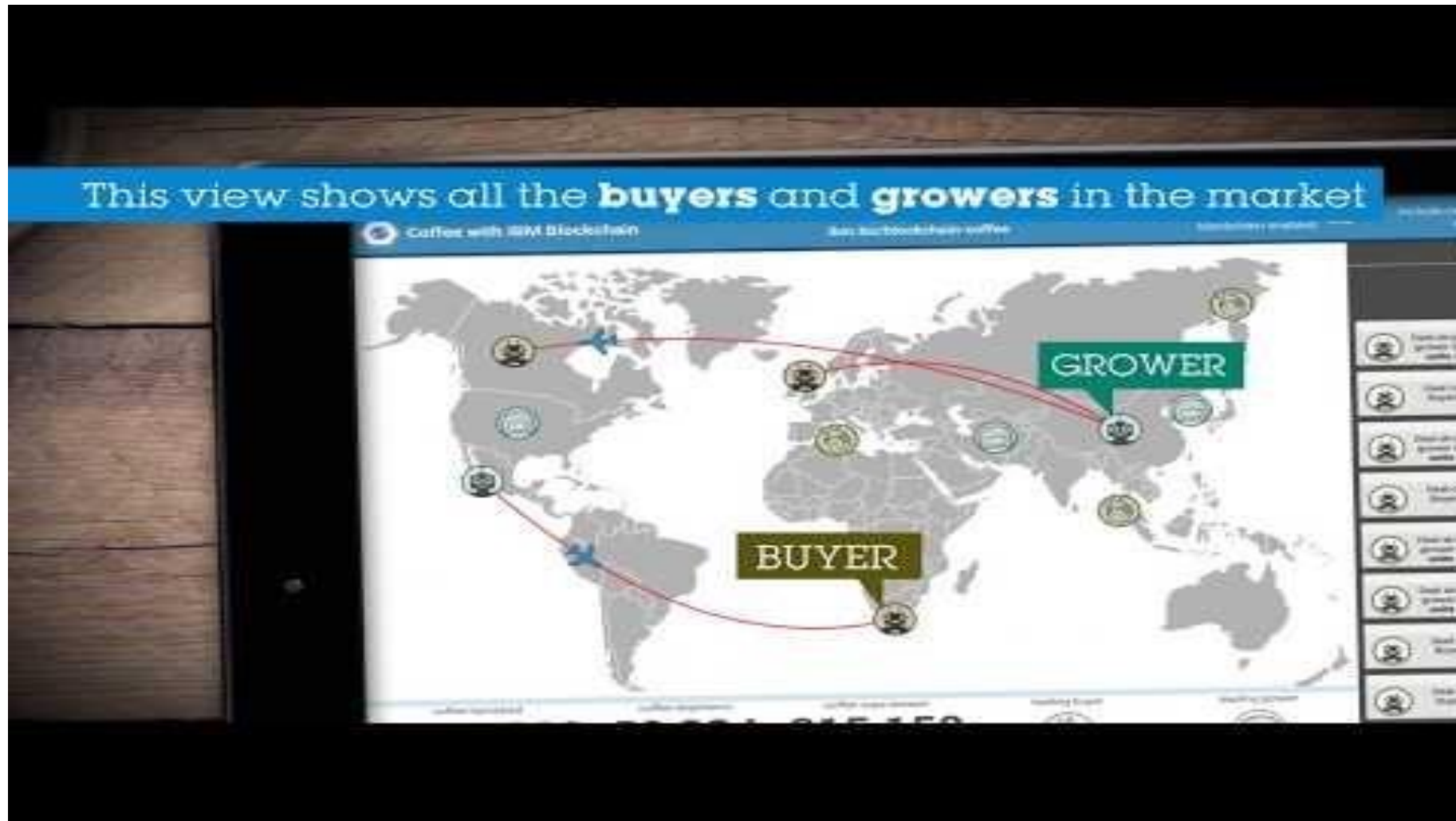
New participants of different types (buyers, growers, certification authorities) can join the network and provide value and new possibilities

LET'S GET
STARTED!



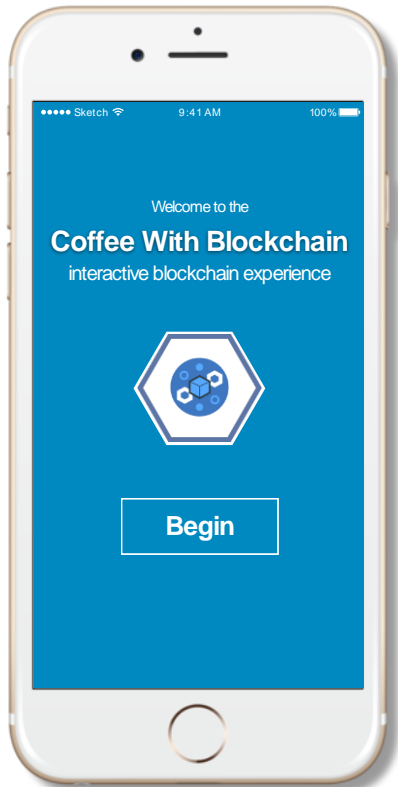
DEMO VIDEO

Source: <https://www.youtube.com/watch?v=suE5KHkESF4&feature=youtu.be>

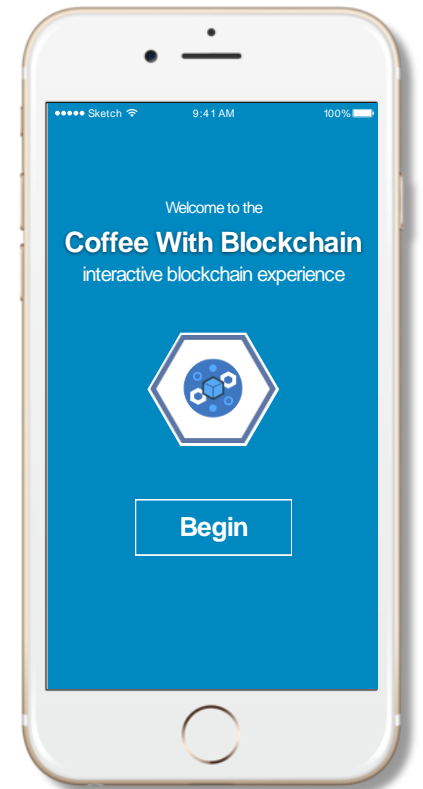


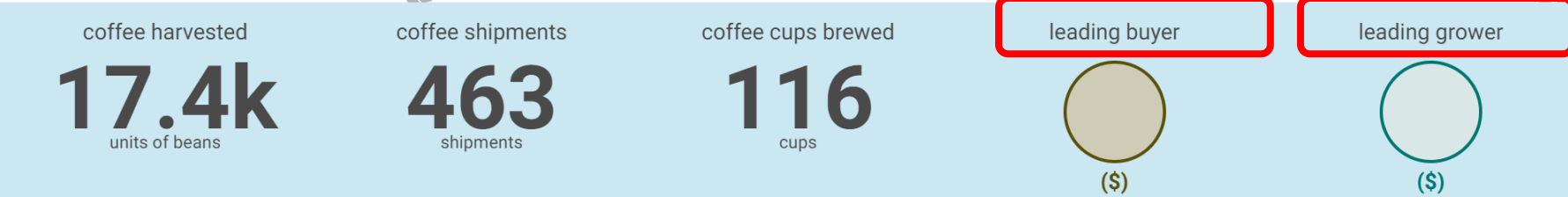
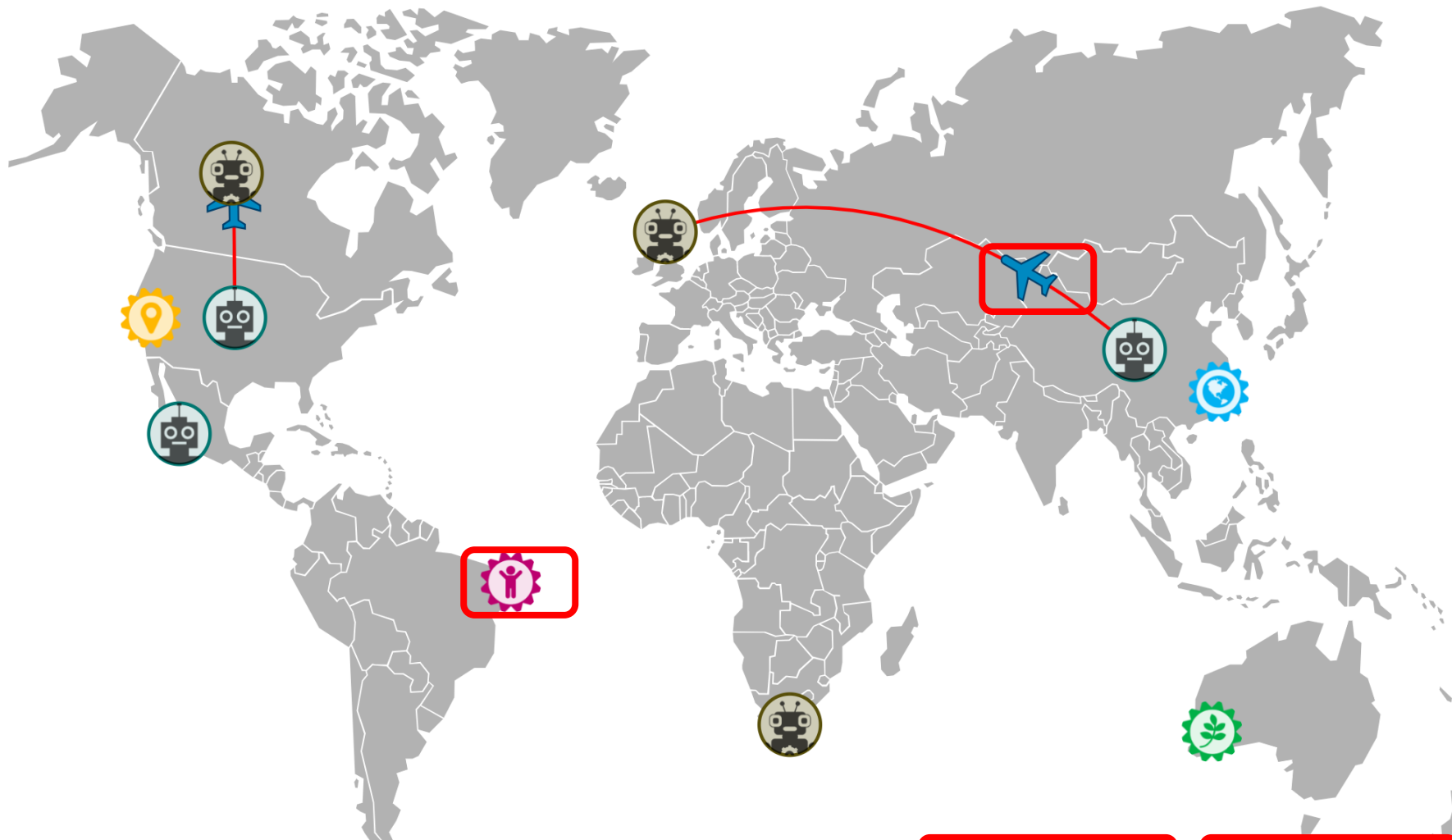
SHALL WE PLAY THE GAME?

Buyers



Growers

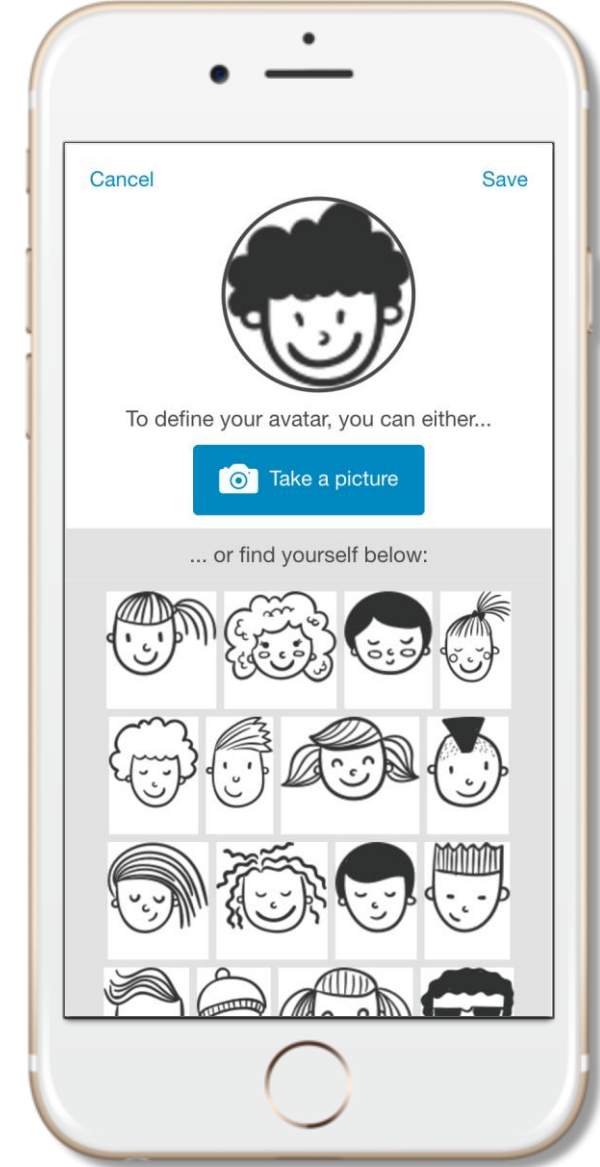
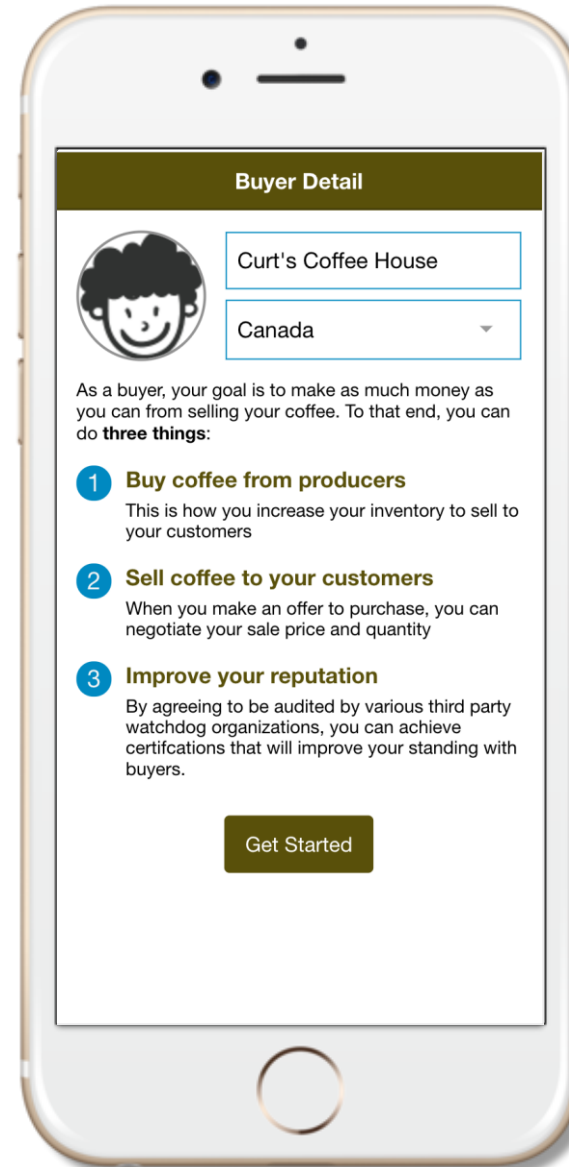
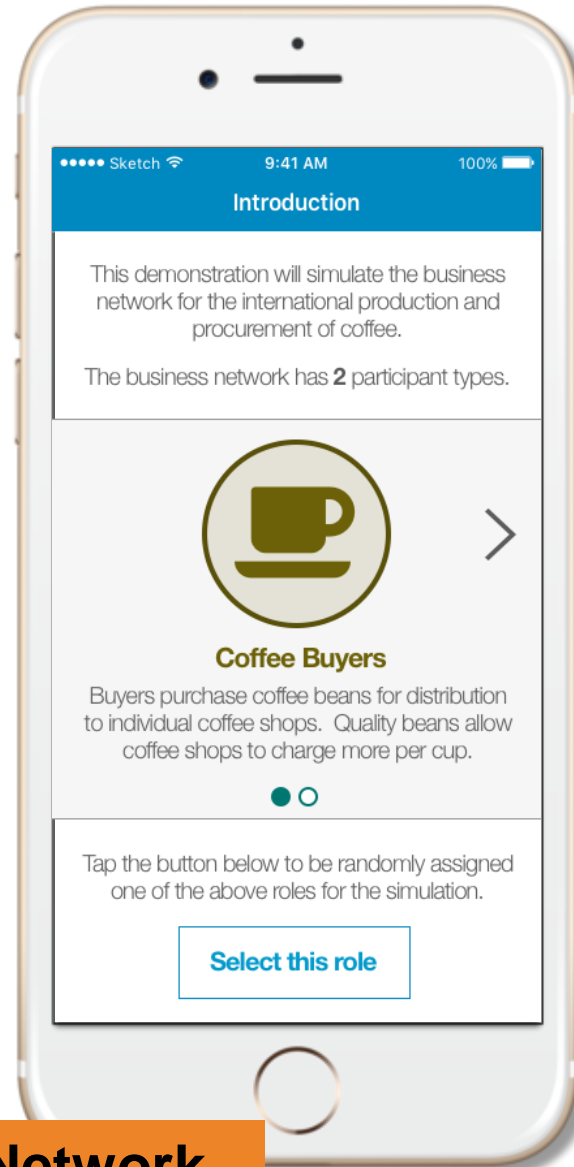




Shared Ledger

- Feb 17 @ 7:46:45 pm
Grower GrowerBot1 harvested 100 units of **best** beans.
- Feb 17 @ 7:46:44 pm
Deal complete - shipment received by BuyerBot3 and payment received by GrowerBot1
- Feb 17 @ 7:46:43 pm
Deal struck between buyer BuyerBot2 and grower GrowerBot2 for the purchase of **2 units** of **good** beans for **\$4.50/unit**
- Feb 17 @ 7:46:36 pm
Deal complete - shipment received by BuyerBot2 and payment received by GrowerBot1
- Feb 17 @ 7:46:33 pm
Deal struck between buyer BuyerBot1 and grower GrowerBot1 for the purchase of **2 units** of **better** beans for **\$5.50/unit**
- Feb 17 @ 7:46:26 pm
Deal complete - shipment received by BuyerBot1 and payment received by GrowerBot1
- Feb 17 @ 7:46:14 pm
Certification authority **Greenpeace** has joined the network

1. Go to <https://ibm.biz/bc-coffee>
2. Choose a Role: Buyer or Grower
3. Enter your company's name
4. Choose a country (not USA to keep it interesting)
5. Pick an avatar



Network: Deep Stem Network
Password: !CantWait4Summer

BITCOIN VS. BLOCKCHAIN

Source: <https://www.youtube.com/watch?v=MKwa-BqnJDg>



Compliments of



Blockchain

for
dummies
A Wiley Brand

2nd IBM Limited Edition



Grasp blockchain
fundamentals

—
Make blockchain real
for business

—
Get started
on blockchain

Manav Gupta

FREE E-BOOK

<https://www.ibm.com/blockchain/what-is-blockchain.html>



DEVELOPERWORKS Blockchain Essentials

Understand blockchain technology and how it can solve business problems. Learn the basics of developing applications with chaincode.

Start the Free Course

NEXT STEP: TAKE THE COURSE, EARN YOUR BADGE

<https://cognitiveclass.ai/courses/blockchain-course/>

ABOUT THIS BLOCKCHAIN COURSE

Blockchain is an emerging technology that can radically improve banking, supply chain, and other transaction networks and can create new opportunities for innovation. Businesses contain many examples of networks of individuals and organizations that collaborate to create value and wealth. These networks work together in markets that exchange assets in the form of goods and services between the participants.

Blockchain technology provides the basis for a dynamic shared ledger that can be applied to save time when recording transactions between parties, remove costs associated with intermediaries, and reduce risks of fraud and tampering.

The video lectures and lab in this course help you learn about blockchain for business and explore key use cases that demonstrate how the technology adds value.

TELL YOUR FRIENDS

[f](#) [t](#) [G+](#) [in](#)

COURSE CODE:
BC0101EN

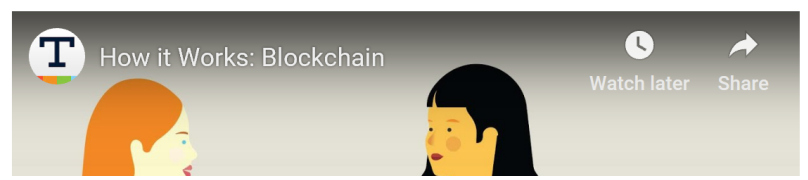
AUDIENCE:
Anyone interested in Blockchain

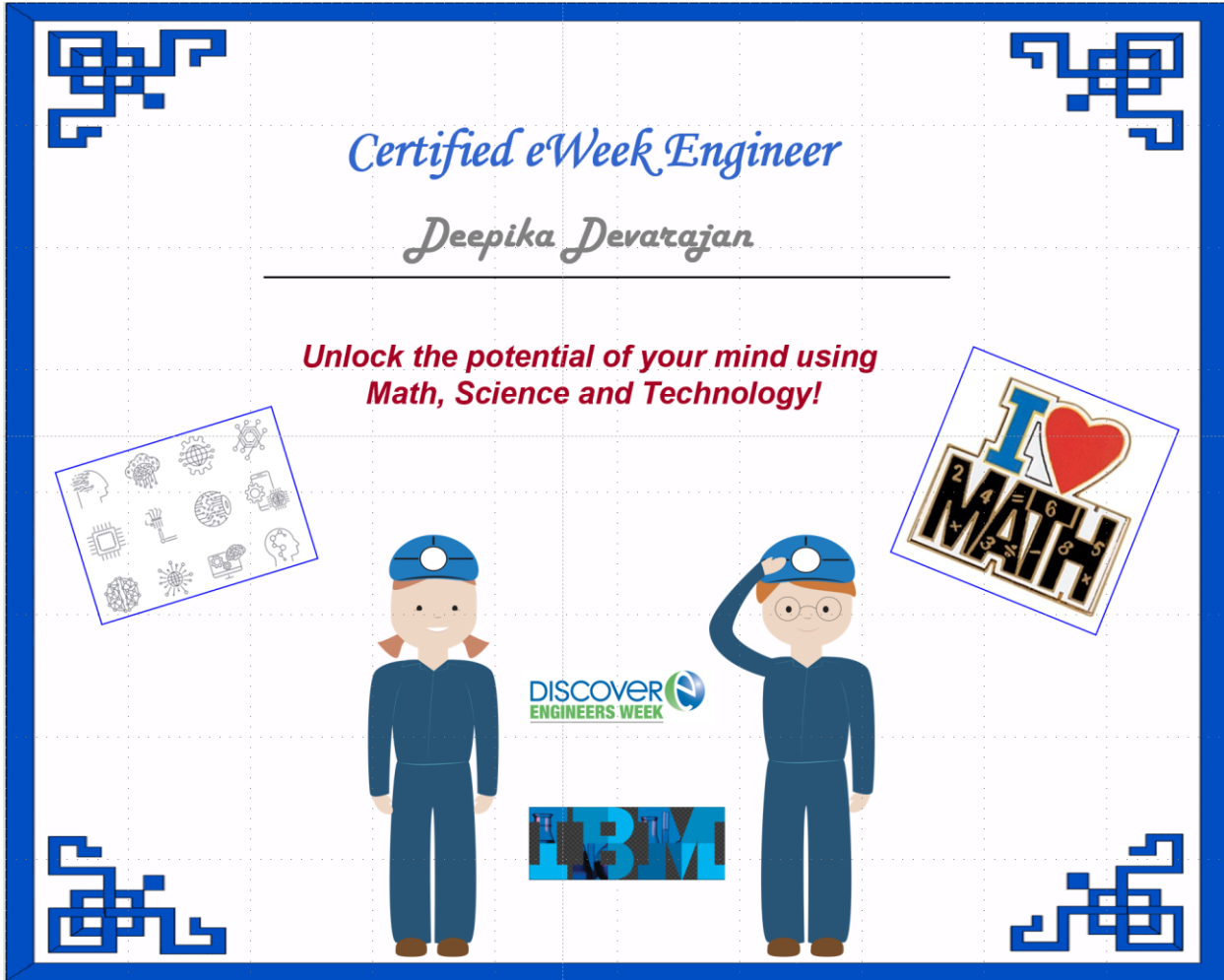
COURSE LEVEL:
Beginner

TIME TO COMPLETE:
3 Hours

LANGUAGE:
English

BADGE:
[Blockchain Essentials](#)





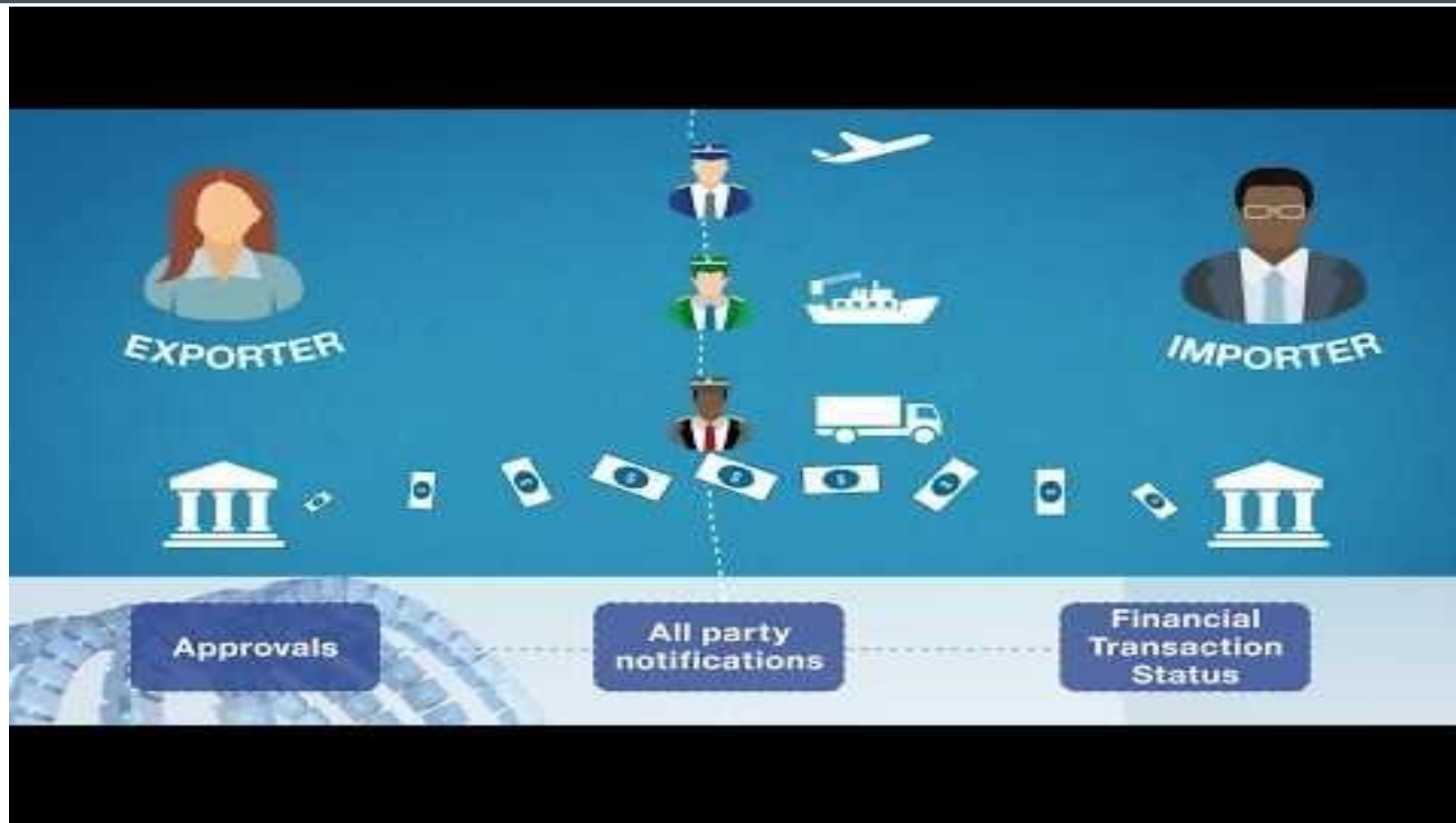
NATIONAL ENGINEERS WEEK CERTIFICATES

A photograph of a stage with red curtains. The text "Thank You" is written in white cursive across the center of the curtains. The stage floor is dark, and there are two black speakers on the floor in the foreground.

Thank You

TRADE FINANCE

Source: <https://www.youtube.com/watch?v=JEYO8RuS4fM>



BLOCKCHAIN IN ACTION

Source: <https://www.youtube.com/watch?v=hHkc-DH0ep4>

