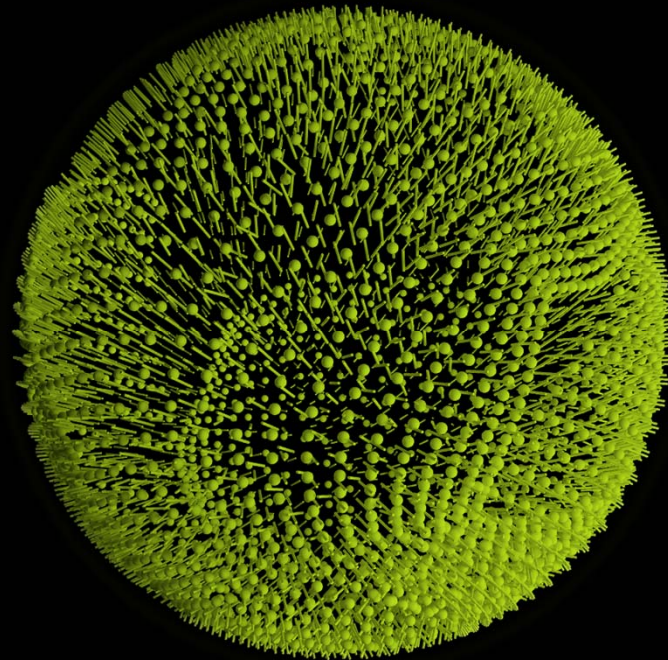


**Deloitte.**



## **Blockchain Technology & Transportation**

Mid America Association of State Transportation Officials

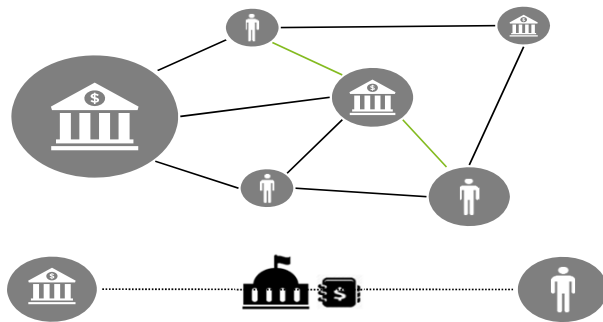
August 2018

# WHAT IS BLOCKCHAIN?

Essence of blockchain technology

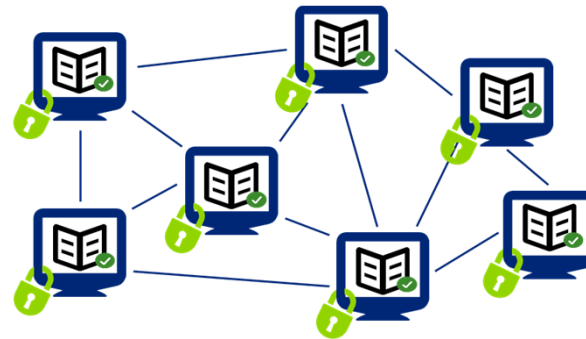
- A blockchain is a record, or ledger, of digital events
- It's "distributed" between many different parties
- It is only updated by consensus of the participants in the system
- Once recorded, information can never be changed
- The blockchain contains a certain and verifiable record of every single transaction ever recorded

Current System



- **Central authorities** transfers actual value between two parties
- **Multiple intermediaries** and **record-keeping** are required to create trust

Blockchain System



- **Distributed** network of computers (nodes) that maintains a shared source of information
- Transaction data is **immutable**
- **Trust** is enabled by **cryptographic** algorithm

# FUNDAMENTALS

Blockchain's unique value proposition can be best captured in solutions where multiple independent parties need to interact with, update, or reference common set of data

## Typical characteristics of blockchain use-cases:



### Shared Data

Structured repository of information for multiple independent parties



### Multiple Writers

More than one entity generating transactions that modify the database



### Immutable

Un-editable records provide strong auditability



### Need for Trust

Level of mistrust between the entities writing to the database (e.g., one user will not accept the "truth" as reported by another user)



### Transaction Interaction

Interaction or dependency between the transactions created by different entities

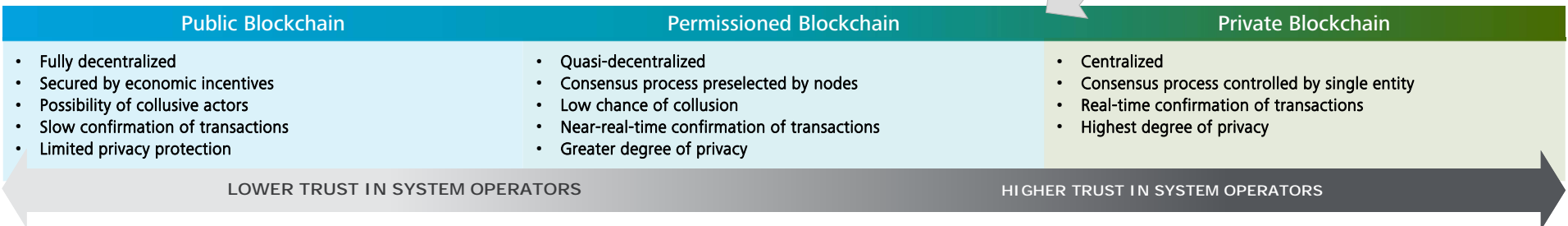


### Opportunity for Disintermediation

Lack of trusted intermediary or central gatekeeper to verify transactions

The level of trust or mistrust helps determine the network structure

## Blockchain network structures:



# WHAT CAN BLOCKCHAIN DO FOR YOU?<sup>wjh2</sup>

A blockchain solution can be initiated as a store or transaction record, serve as a transaction platform and automate business processes



## Record Keeping

- A blockchain solution can offer automated, high fidelity and low-cost mechanisms for record keeping
- Requires user-specific encryption keys – records are kept in the ledger but only accessible by authorized users



## Transfer of Value

- A blockchain solution enables secure, near real-time, low-cost transfer of value without an intermediary
- Records and value can be transferred to other parties
- Allows transfer of value between two parties, removing the need for a trusted intermediary



## Smart Contracts

- A blockchain solution transforms how contracts are executed
- Protocol is programmable to trigger transfer of value and information under certain conditions
- Smart contracts can be developed, exchanged, and automatically executed on decentralized systems

## Slide 4

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wjh2

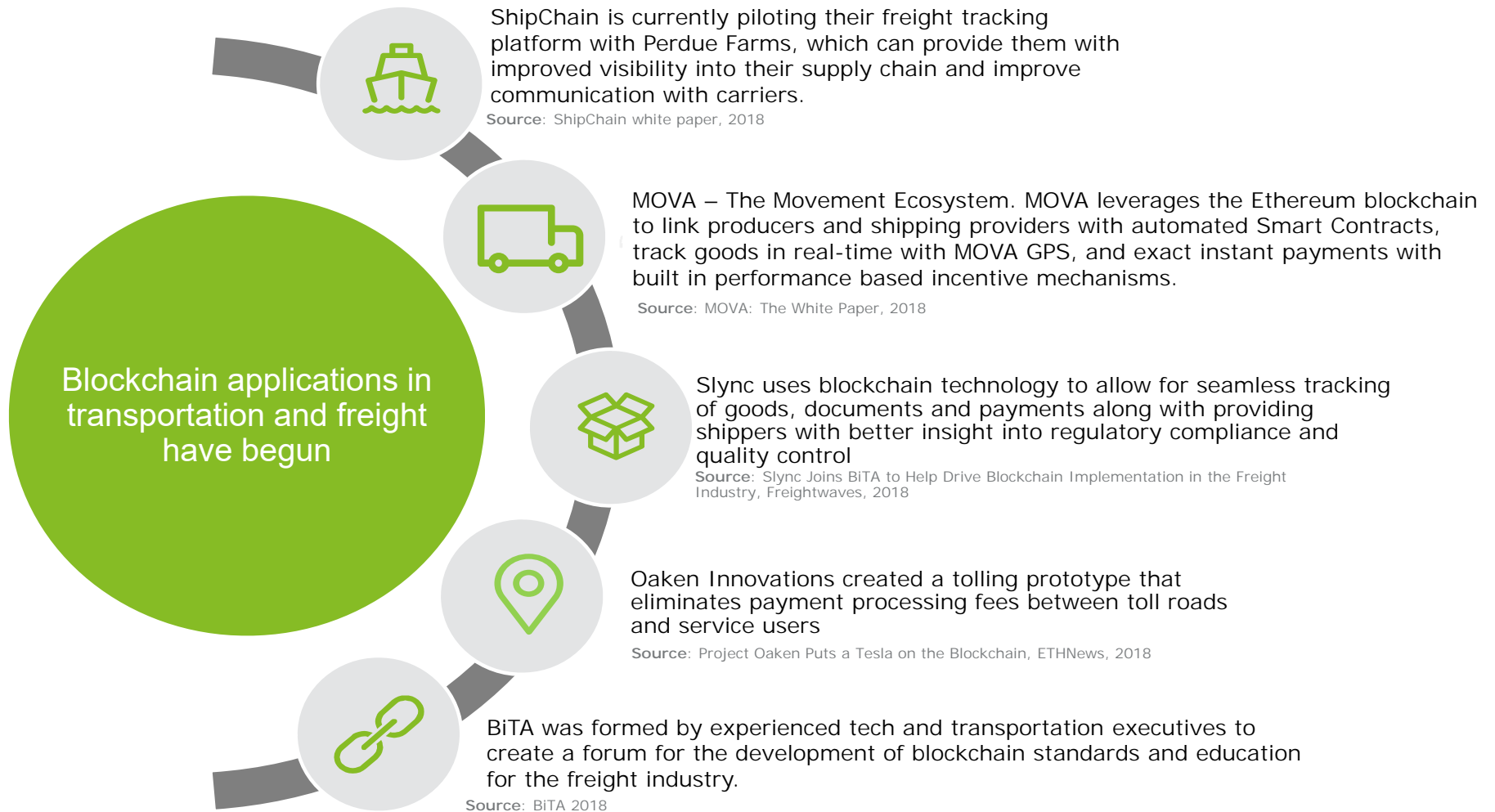
Let's put readiness framework here

Wendy Henry, 8/1/2018

# BLOCKCHAIN IN LOGISTICS

wjh1

Distributed ledger technology has begun to be applied in many distinct areas



## Slide 5

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**wjh1**

Look at last years presentations and see if we can find some good examples in the marketplace

Wendy Henry, 8/1/2018

# LOOKING FORWARD

Where can blockchain technology take us in the future of transportation?

Public transportation payments such as tolls could be securely processed via a distributed ledger technology; integrated across all public transportation systems

Contactless Payment

Usage Based Insurance

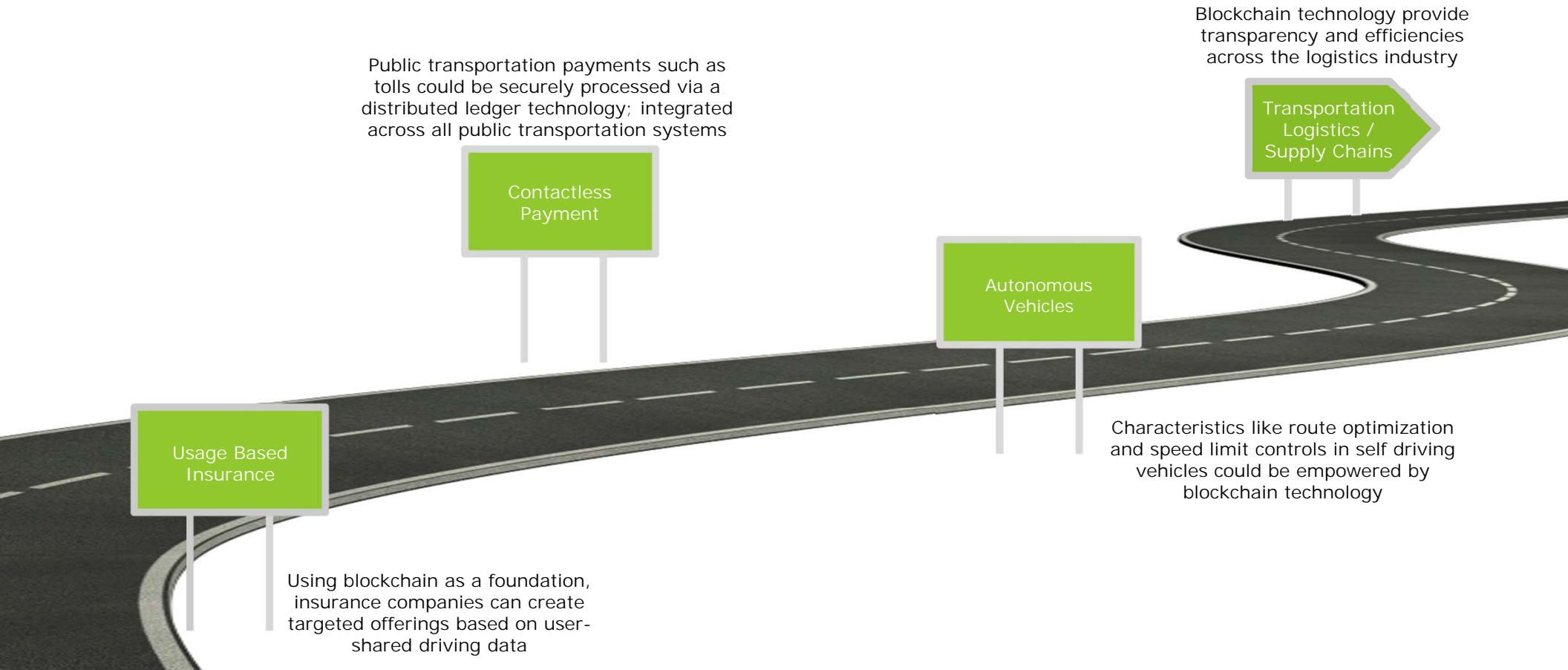
Using blockchain as a foundation, insurance companies can create targeted offerings based on user-shared driving data

Autonomous Vehicles

Characteristics like route optimization and speed limit controls in self driving vehicles could be empowered by blockchain technology

Blockchain technology provide transparency and efficiencies across the logistics industry

Transportation Logistics / Supply Chains







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