FIND YOURS.

From Barcodes to Blockchain: Leveraging GS1 Standards for Your Enterprise

Presented by:
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Supply Chain Architect
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Objectives

• “Start with Why” - Why do we need blockchain?

• What can distributed ledgers do for our supply chain?

• How does GS1 take us from barcodes to blockchain?
Supply Chain “Go and See”

- WHY
- HOW
- WHAT
Supply Chain “Go and See”

• **PPT**
  • Process
  • People
  • Technology

• **C³**
  • Reduce Costs
  • Increase Cashflow
  • Improve the Customer Experience
It’s All About the Customer Experience

Value Add Activities
Create the Experience

The Progression of Economic Value

- Differentiated
- Competitive Position
- Undifferentiated

- Extract commodities
- Make goods
- Deliver services
- Stage experiences

FIND YOUR WOW
What This is Not:

Compliments of

IBM

Blockchain
for dummies

2nd IBM Limited Edition

Grasp blockchain fundamentals
Make blockchain real for business
Get started on blockchain

Manav Gupta
From Centralized to Distributed Ledgers

Single Source of Truth

Replicated Single Source of Truth
What is a Distributed Ledger?

- A collaborative virtual ledger of immutable records
  - Distributed & Decentralized
  - Trustless & Transparent
  - Ubiquitous & Actionable
  - Immediate
- Securely encrypted with various Permissions
- Validated by machine consensus
- Also known as, “Blockchain”
Why Do We Need Distributed Ledgers?

• Increased Transparency
• Realtime Data Reconciliation
• Streamlined Administration
• Automated Control and Feedback
• Reduced:
  • Duplication of Effort
  • Friction
  • …WASTE
Why Do We Need Distributed Ledgers?

- Smart Contracts

Diagram:

- Documents
- Business Rules
- Money

Diagram visualizes the relationship between documents, business rules, and money.
Distributed Ledgers Today / Future

Multiple Use Cases
Multiple Ecosystems
Multiple Blockchains
### Who Is Using Blockchain, Today?

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Symbol</th>
<th>Market Cap</th>
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<tbody>
<tr>
<td>1</td>
<td>Bitcoin</td>
<td>BTC</td>
<td>$60,213,550,152</td>
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<tr>
<td>2</td>
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<td>Ethereum</td>
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<td>4</td>
<td>EOS</td>
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<tr>
<td>8</td>
<td>TRON</td>
<td></td>
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</tbody>
</table>

**Cryptocurrency Exchanges**

**Net Value:**

$112,714,687,767 as of 1/30/2019
Who Is Using Blockchain, Today?
Who Is Using Blockchain, Today?
What is a Supply Chain?
What is a Supply Chain?
Supply Chain Simplified:

VALUE DELIVERY NETWORK

Supplier → Product Manufacturer → 3PL Warehouse → Retailer → Consumer

Inbound Logistics → Outbound Logistics → Distribution Logistics
What is a Supply Chain?

• Two or more parties CONNECTED by a flow of Information, Goods and Money that fulfills a customer request.

Product
Manufacturer

Retailer

Information: Order
Goods: Delivery
Money: Payment
What is a Supply Chain?

- Two or more parties CONNECTED by a flow of Information, Goods and Money that fulfills a customer request.

Information: Order
- Order Confirmation

Goods: Delivery
- Invoice

Money: Payment
- RMA Request
- RMA

Goods: Return
- Credit
What is the Purpose of a Supply Chain?

To satisfy customer needs

• One source of $ = the consumer
• Payments between parties = fund exchanges
• Division payments (%) = Fn (power, market conditions)

Total Value = [What consumer pays] - [Total effort to fulfill]
Problems in the Supply Chain = Waste

- Lack of End-to-End Visibility of Assets
  - Right Now: What? Where?
- Provenance / Traceability of Assets
- Security Issues and Fraud
  - Is that REALLY my asset?
- Authentication of Events
  - Did it ship? Did it arrive? Should I pay for it?
Waste in the Supply Chain

Product Manufacturer

3PL Warehouse

Outbound Logistics

Distribution Logistics

Retailer
Waste in the Value Delivery Network

Manufacturer

Outbound Logistics

Warehouse

Distribution Logistics

Retailer
Imagine the Same Activity with Blockchain…

• Increased Transparency
• Realtime Data Reconciliation
• Streamlined Administration
• Automated Control and Feedback
• Reduced Waste
Value Delivery Network of Partners

Manufacturer → Warehouse → Retailer

Outbound Logistics → Distribution Logistics
Every Partner Supplies Value

• Identify
  • Have and use physical and digital identities for products, logistics units, locations, assets, documents, relationships and events

• Capture
  • Capture, store, locate, retrieve and analyze data about the things identified

• Share and use
  • Collaborate and add blocks to the distributed ledger and share what you’ve captured
Every Partner Gains EAC

- Efficiency
  - Trustless Visibility
  - Automated Tasks
- Accuracy
  - Trustless and Transparent
  - Actionable Data
- Connectivity
  - Decentralized
  - Ubiquitous
  - Immediate
  - Secure
Multiple Blockchain Ecosystems
A Solid Foundation

“We expect that interoperability between blockchain ecosystems will demand a solid foundation built on:

1. Globally unique, persistent identification for organizations, locations and things
2. A standardized language for supply chain events
3. A scalable network governance model that crosses ecosystems

For supply chains, industry collaboration and the global language of business of GS1 are essential to this foundation.”

Ramesh Gopinath
Vice President, Blockchain Solutions and Research, IBM
Shared Standards

Ecosystem Interoperability

Industry Participants
Solution/Application
Choice of distributed ledger

Ecosystem 1

GS1

Ecosystem 2

Industry Participants
Solution/Application
Choice of distributed ledger

Find Your Wow
GS1 Standards: A Common Language

- Identify
  - Physical and digital identity for products, logistics units, locations, assets, documents, relationships and events

- Capture
  - Capture, store, locate, retrieve and analyze data about the things identified

- Share
  - Actionable data
  - Data sharing standards for interoperability
    - EPCIS + CBV

- Use
  - Automate your collaboration in the supply chain
Supply Chain Actions: Connected by Labels
... Supported by Global Standards

Identify

Capture

IoT

Share

Use
Opportunities in the Supply Chain

- Consumer Liability
- Increased Oversight
- Reduced Brand Image
- Financial Costs
- Loss of Trust
- Legal Costs
- Loss of Market Share
- Financial Costs
- Loss of Trust
- Legal Costs
- Loss of Market Share

Track & Trace Systems
EPCIS + CBV

- Electronic Product Code Information Services (EPCIS)
  - Global GS1 standard for creating and sharing visibility event data
  - Used in conjunction with the GS1 Core Business Vocabulary (CBV)

- The CBV defines the data values to populate the data structures in EPCIS
EPCIS + CBV Today

WHAT?
WHERE?
WHEN?
WHY?

EPCIS+CBV

GS1

FIND YOUR WOW
EPCIS + CBV + Blockchain
GS1 EPCIS: Benefits

- Identify
- Capture
- Share
- Use

Lack of Visibility
Lack of Provenance
Fraud
Unverified Events
Delays
How to Go from Barcodes to Blockchain

Identify

Capture

Share

Use
Blockchain Enabled Supply Chain
Key Features and Benefits

Value Add

- Digital Ownership Certificates
- Asset and Assembly Tracking
- Proof of Origin
- Trusted Maintenance Tracking
- Integrated Financial Transactions
- Collaborative Product Master Data

Enabler

- Integration in Manufacturing Processes
- Trusted IoT Devices
- Asset Management Systems
- In-Field Interfaces
Key Takeaways

• Blockchains (distributed ledgers) add trust and transparency to the supply chain

• Trust and transparency requires actionable data

• GS1 EPCIS standards are a foundation for actionable data to support the supply chain and blockchain ecosystems
For More Information

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