BLOCKCHAIN – INTERNATIONAL TRADE IMPLICATIONS

6/5/19

GRIIT
GLOBAL RESEARCH INSTITUTE OF INTERNATIONAL TRADE

GROUP 50®
Align + Integrate + Optimize = Execute

International trade is under pressure. Fears fueled by the global refugee situation and terrorist threats have led to tighter border controls – and these come at a cost. Every inspection of goods, every stop along the supply chain and every tariff eats up time and drives up prices. It harms businesses and consumers alike. Those involved in international trade – whether manufacturers, trading houses, transportation companies, governments or banks – are seeking ways to ease the situation and *cut time and costs*.

Blockchain technology can help

World Economic Forum 2/1/17

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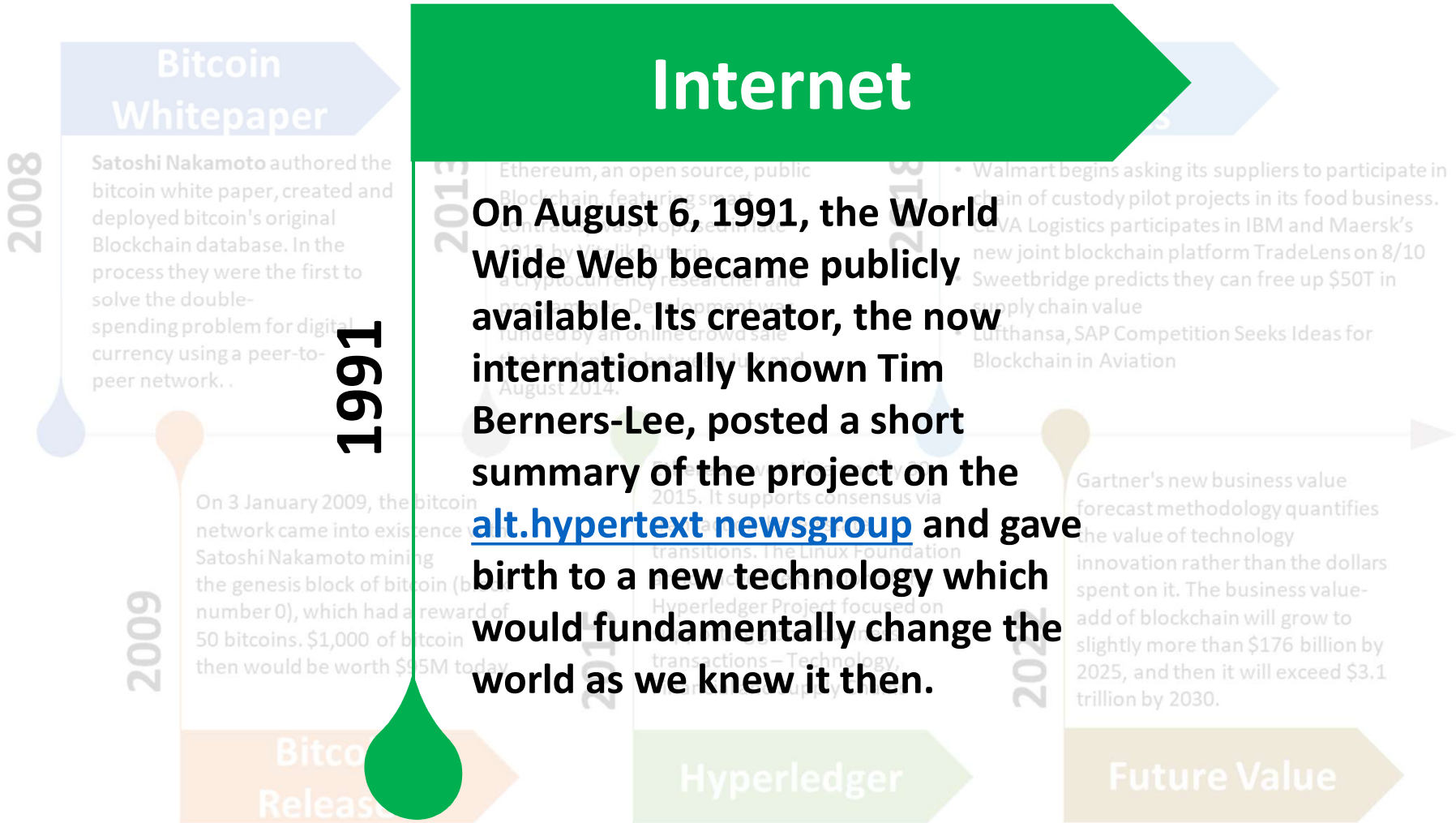
Blockchain History



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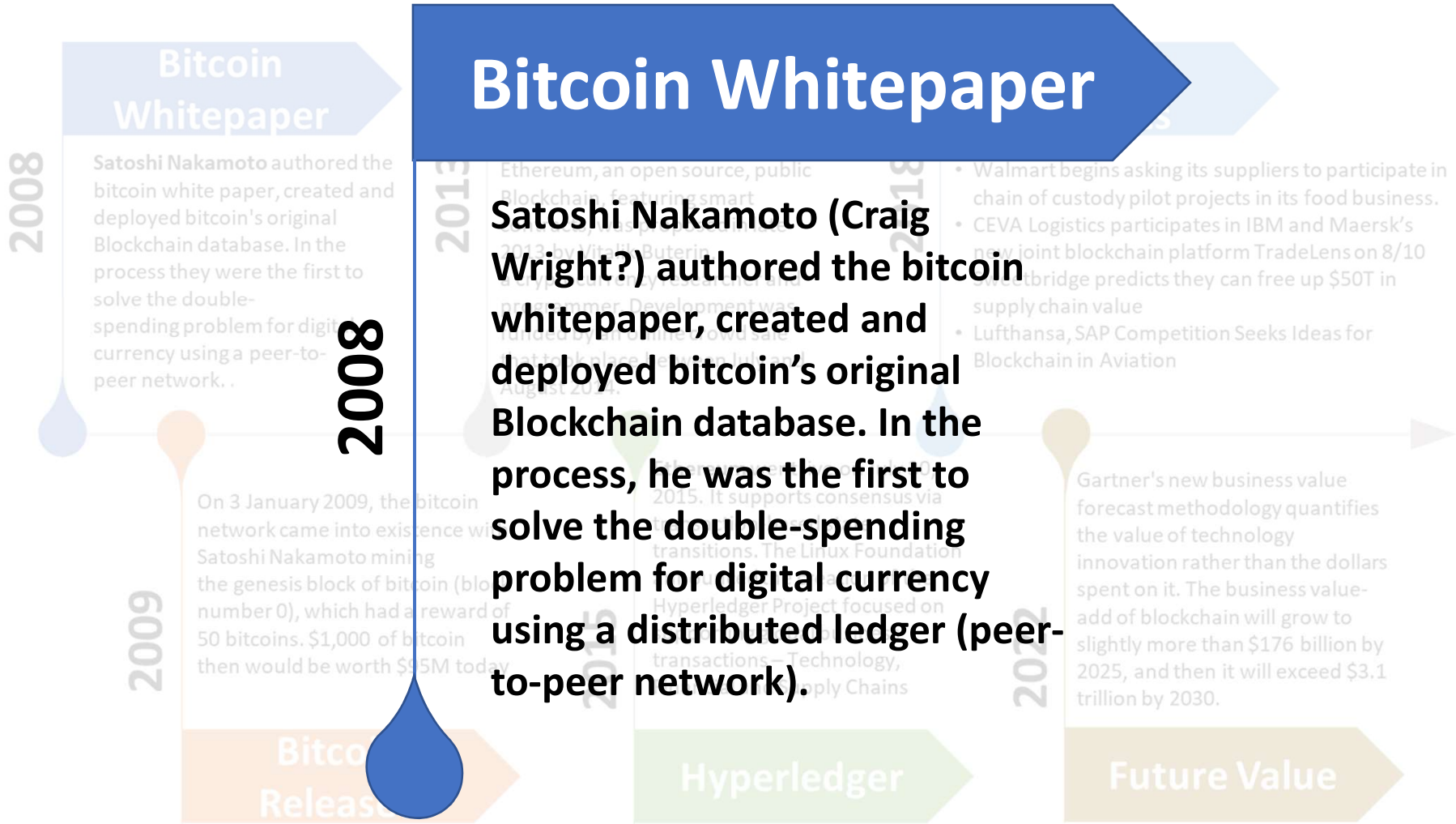

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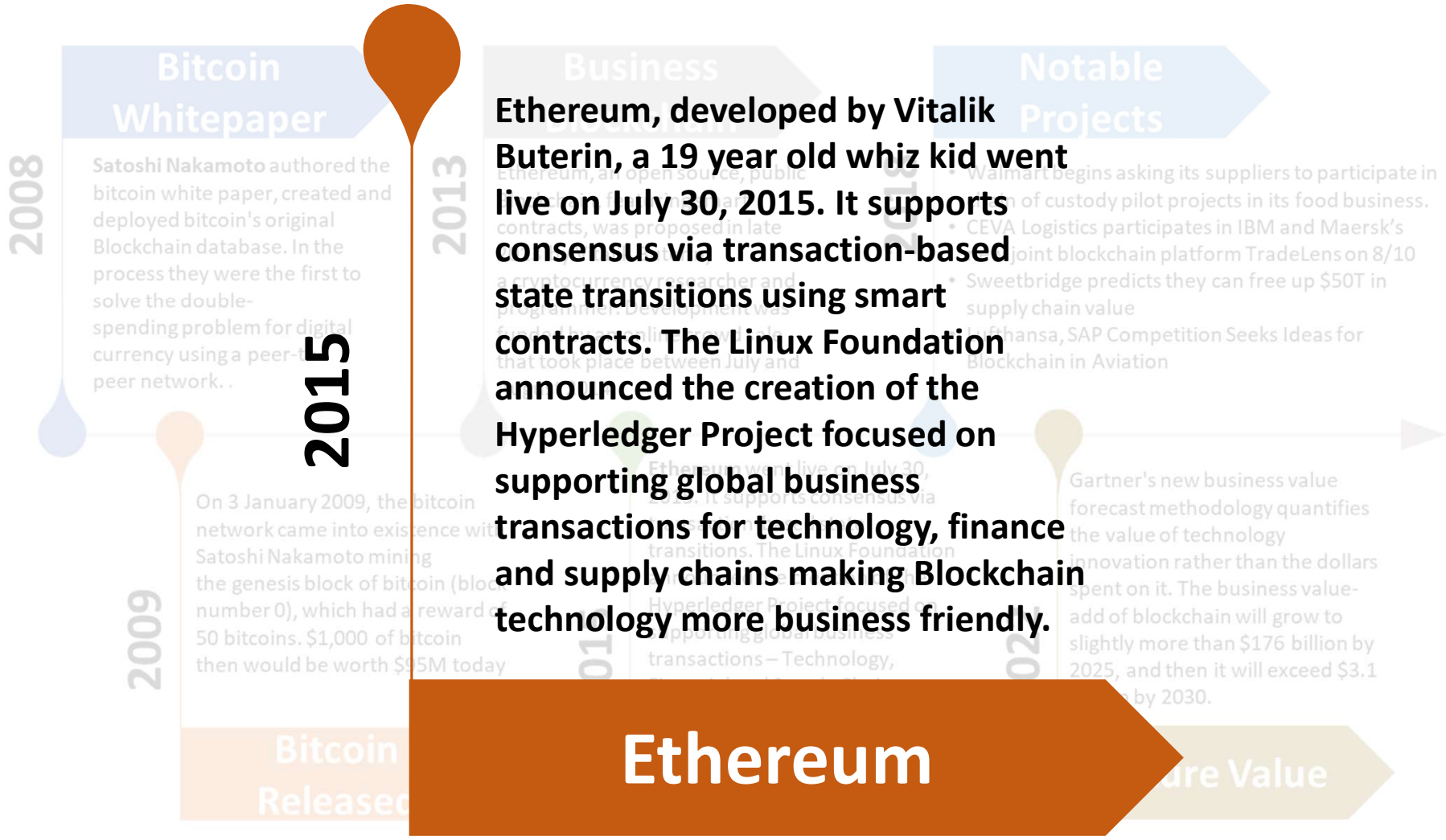
Blockchain Timeline



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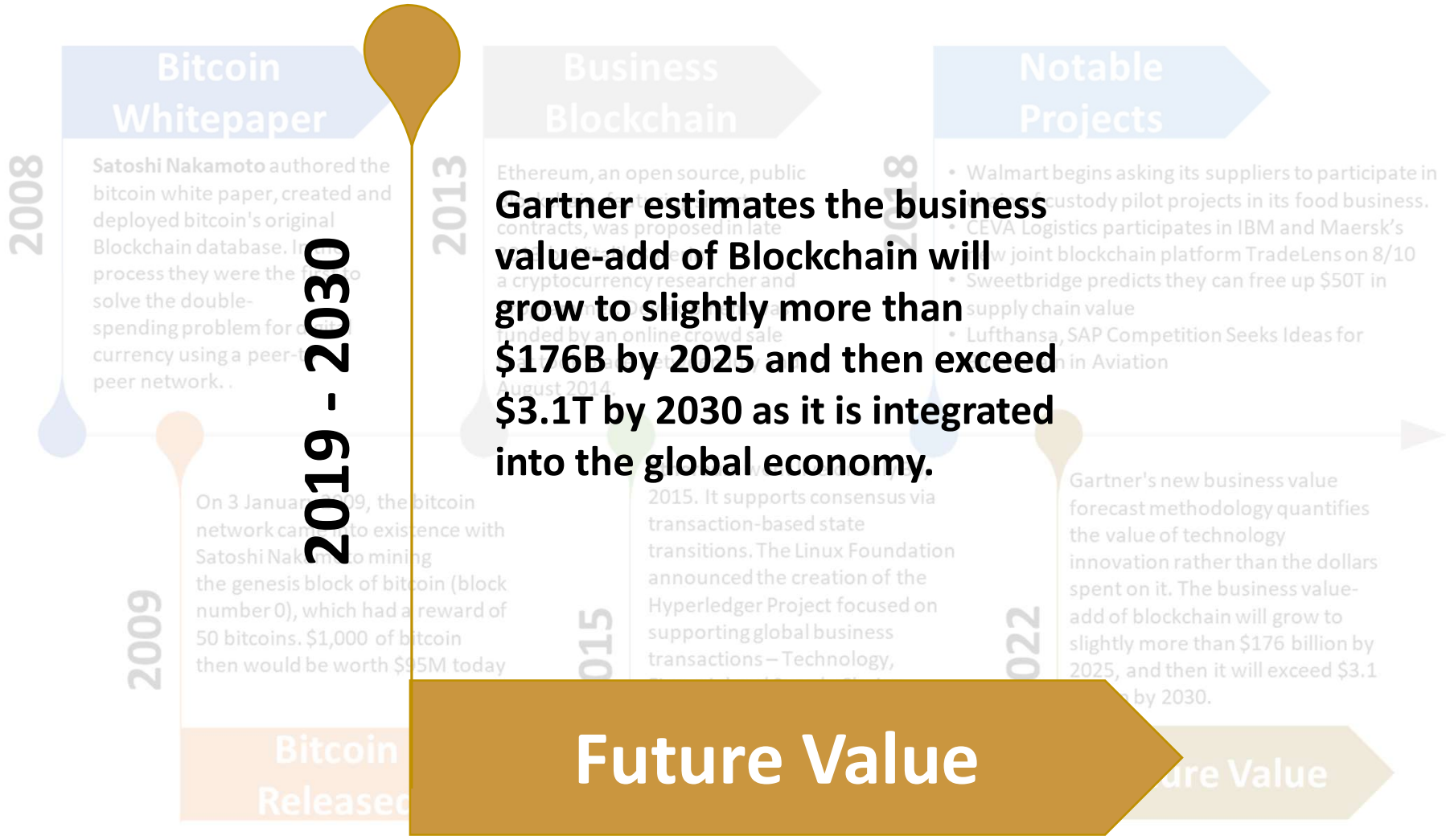

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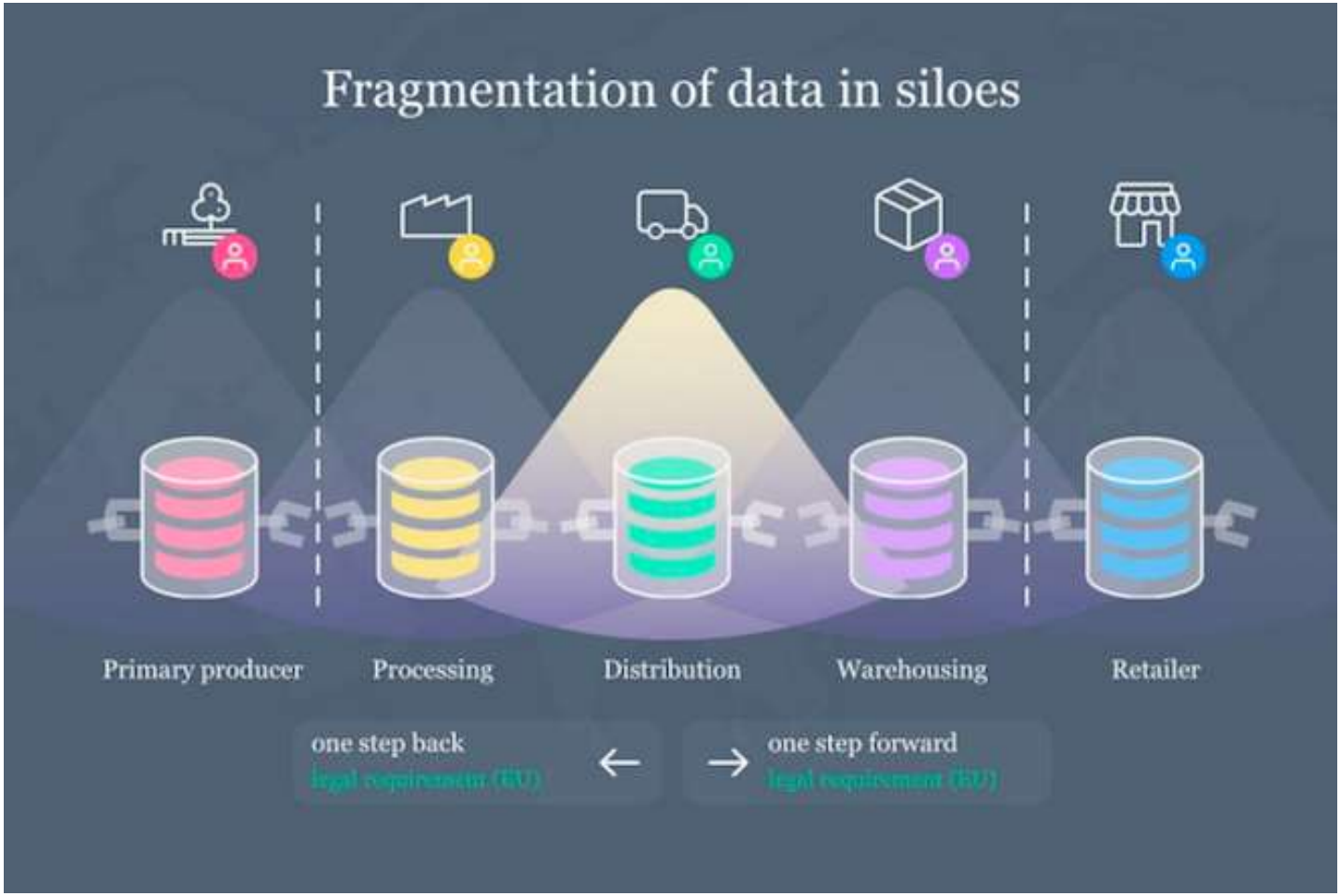
Why Use Blockchain?



- Disparate databases are hard to manage, can be forged, require significant maintenance and are a RISK to every business
- How often have you been tied up for days or weeks dealing with the manual processes of international trade?

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What is Blockchain

"Blockchain technology is a tamper-proof, decentralized record of transactions that allows participants to collaborate and build trust with one another"

- The underlying technology for Bitcoin and Ethereum
- Blockchain is an aggregating technology… Think of a chain with additional links being added
- It provides full chain of custody and provenance delivering *trust, transparency and traceability*
- Blocks are stored in a public or permission based digital ledger where everyone involved owns a copy
- Relies on established cryptographic techniques to allow each participant in a network to securely interact (i.e. store, exchange and view information) utilizing a public private key
- Smart contracts validate that the requirements of a contract have been met
- When coupled with IoT, Blockchain can provide full provenance to the entire lifecycle of a product or service

Transactions are:

- Irreversible
- Anonymous
- Globally Accessible
- Built to be secure

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Supply Chain Opportunities for Blockchain and IoT

Millions of companies and governments will benefit from the application of blockchain with significant International impact

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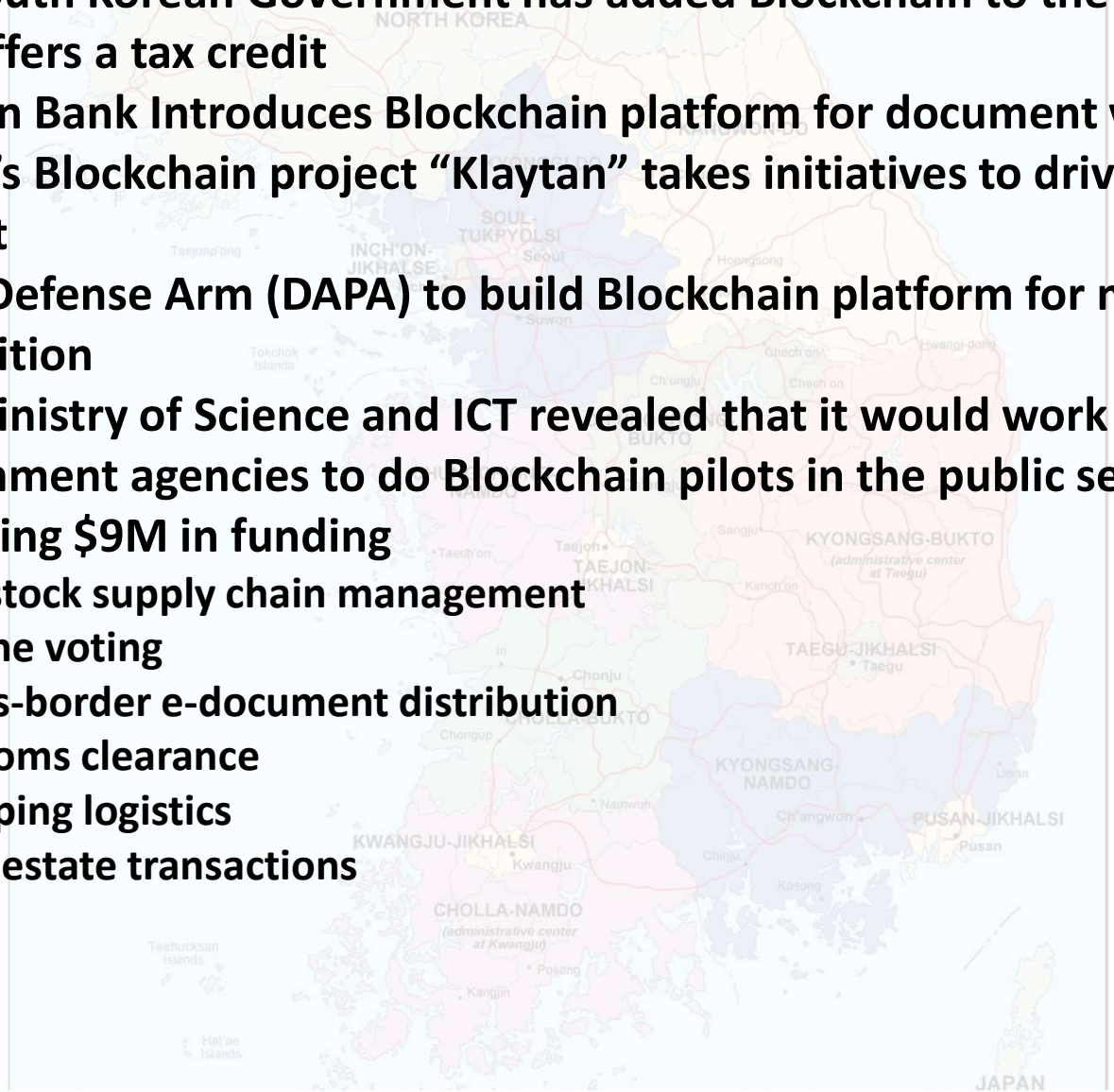
Notable Blockchain Projects in South Korea

- **The South Korean Government has added Blockchain to the list of R & D that offers a tax credit**
- **Shinhan Bank Introduces Blockchain platform for document verification**
- **Kakao's Blockchain project "Klaytan" takes initiatives to drive social impact**
- **State Defense Arm (DAPA) to build Blockchain platform for military acquisition**
- **The Ministry of Science and ICT revealed that it would work with government agencies to do Blockchain pilots in the public sector providing $9M in funding**
  - ✓ **Livestock supply chain management**
  - ✓ **Online voting**
  - ✓ **Cross-border e-document distribution**
  - ✓ **Customs clearance**
  - ✓ **Shipping logistics**
  - ✓ **Real estate transactions**



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Notable Blockchain Projects in China

- **China Wuyri is using Blockchain technology to build an innovative tourist city in Malaysia using cryptocurrency (DM1-coin) to make payments to retailers, hotels, restaurants, etc.**
- **New World Development construction company is developing a Blockchain property trading platform in partnership with the Institute of Applied Science and Technology Studies of Hong Kong (ASTRI)**
- **The joint Blockchain project of Tencent Holdings and the Shenzhen Tax Service aims to optimize the tax collection procedure and combat tax evasion**
- **The largest P2P lending platform, Lufax, has launched a Blockchain system intended to verify the identities of borrowers and lenders and keep track of transactions between parties**
- **Insurance company ZhongAn is building Blockchain chicken farms in poor rural areas of China. The project is part of the National Poverty Reduction Program**

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Notable Blockchain Projects in India

Indian Prime Minister Narendra Modi recently hailed Blockchain's transformative potential and emphasized the need for "rapid adaptation," a rare instance of a head of state publicly praising the technology.

- **The Blockchain-based solution, termed IndiaChain, will be used to issue digital certificates of education degrees**

- **BankChain, a consortium of banking majors including SBI, ICICI Bank and DCB Bank are working on:**
  - ✓ **Clear-Chain (c2) is a permissioned Blockchain for integrated and shared, Know Your Customer and Anti-Money Laundering focused on countering the finance of Terrorism**
  - ✓ **Syndication of loans**
  - ✓ **Cross border payment**
  - ✓ **Peer to peer payments, Asset registry**

- **The Maharashtra government is finalizing five to six pilot projects in the areas of financial inclusion, land records, supply chain financing, goods and farm insurance and motor vehicle registration**

- **Andhra Pradesh has become the first state in India to adopt Blockchain for governance for land records and vehicle registrations**

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Notable Blockchain Projects in the Philippines

- **UnionBank of the Philippines is developing an i2i (island-to-island) Blockchain to allow rural banks to gain access to the central banking network and provide financial access to millions of unbanked rural Filipinos**
- **The Philippines will use Blockchain in its procurement process and is tracking major projects from space to reduce corruption. They are using it for warehousing and tracking and claim it is less expensive than a big data system**
- **Sustainable Organic Farming will connect farmers directly with buyers**
- **MediXServe offers one of the world's first electronic medical records (EMR) services powered by Blockchain to provide permanent medical records of patients**
- **Traxion aims to bring financial inclusion to millions of farmers and farm workers in the southern Philippines through electronic wallets**
- **The Philippines' Pasig River Rehabilitation Council (PRRC) is working with a group of local and South African environmentalists and entrepreneurs to apply Blockchain technology to save a 27 km long section of the Pasig River outside of Manila. The idea is to ultimately put to use the know-how suitable to clean the globe's rivers and seas using IoT sensors in the water to measure pollution**

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Other Notable International Applications of Blockchain

- ***Dubai - healthcare records for all citizens***
- ***Singapore – tracking all monetary transactions***
- ***Estonia - deployments in healthcare, judicial system, security and legislation***
- ***Georgia - system implementation for land titling***
- ***UK - tracks welfare paychecks and disbursement of student loan grants***
- ***IBM - Food Trust Blockchain project***
- ***TradeLens - started by Maersk and IBM now includes half of the world's cargo container shipments focused on eliminating the $1.8T of shipping costs tied up in administrative costs and making it quicker, cheaper and more reliable***
- ***Starbucks - launched a "bean to cup" Blockchain based traceability project to focus on sustainability and financial payments in Cost Rica, Columbia and Rwanda***

❖ ***A team from Stanford has identified over 240 International Projects***

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Blockchain Solution for Food

- **Full chain of custody and provenance**
- **Provides real time auditability using a state-of-the-art permission based private Hyperledger Blockchain**
- **Smart Contracts transfer state and relationship while strictly adhering to regulatory requirements. Change of State Authentication**
- **Rules based alerts provide immediate notice of deviation from process and requirements**

IoT Interface | Interfaces to Internal/External Business Systems

- Monitoring of geo positions, dates, pallet dwell times in the field, ownership, growth history, processing, testing, etc.
- Tracking of equipment utilization, harvesting yields, maintenance, asset tracking, time of day factors, testing and validation, etc.
- Lot tracking of sandwich ingredients, testing protocols, etc.
- Temperature and other environmental factors during shipments, arrival, truck identification, scheduling, etc.
- Temperature, humidity and other environmental factors during manufacturing
- Testing
- Process performance
- Lot tracking from farm to finished goods
- Pallet movement and ageing in warehouse
- Asset tracking, etc.
- Temperature and other environmental factors during shipments, arrival, truck identification, location, etc.
- Store location, delivery dates, time in storage, time on shelf, shelf life, temperature variation, etc.

- **Full traceability across the entire global supply chain: Farm to Table**
- **Wal-Mart requiring their green leaf produce suppliers to input information into the "IBM Food Trust Network" which is Blockchain based by the end of this year**

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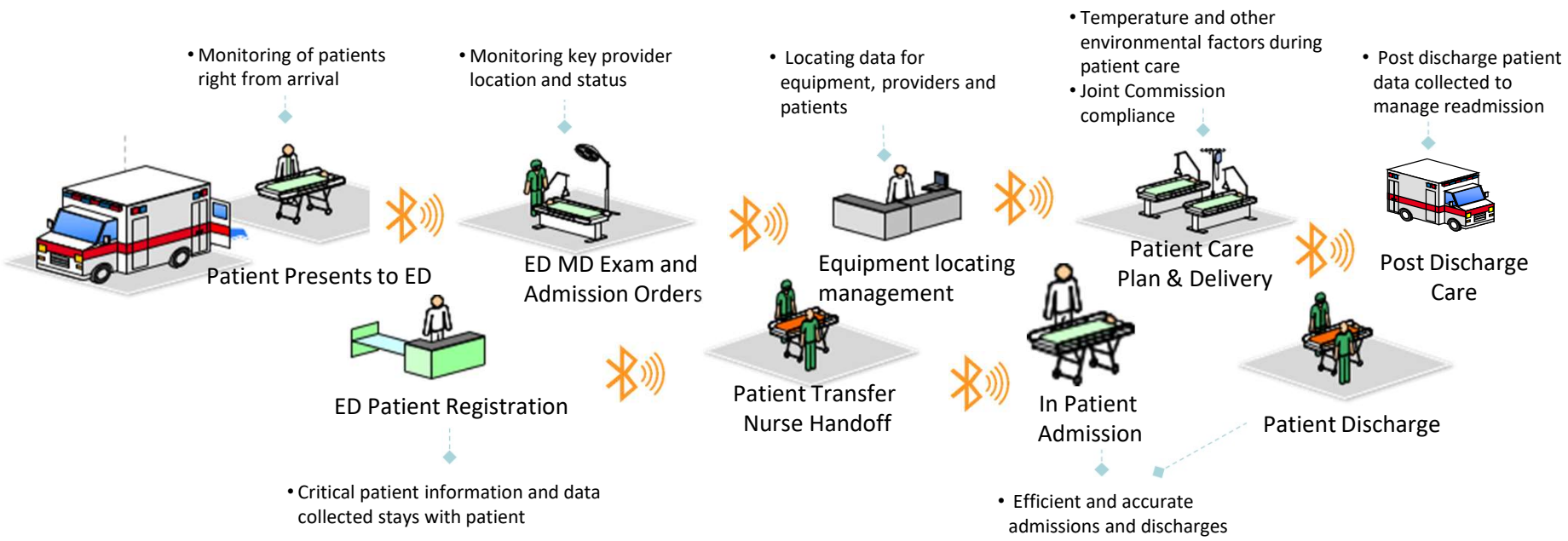
Blockchain and IoT Solutions for Healthcare

IoT Interface | Interfaces to Internal/External Business Systems



- **Full traceability across the entire Healthcare Ecosystem: Admission to post discharge care**
- **Continuous tracking of patient location**
- **Real time feedback of vital signs**
- **Other Applications**
  - ✓ **Drug traceability**
  - ✓ **Clinical Trials**
  - ✓ **Patient data management: Hospital, Personal**
  - ✓ **Claims and Billing**

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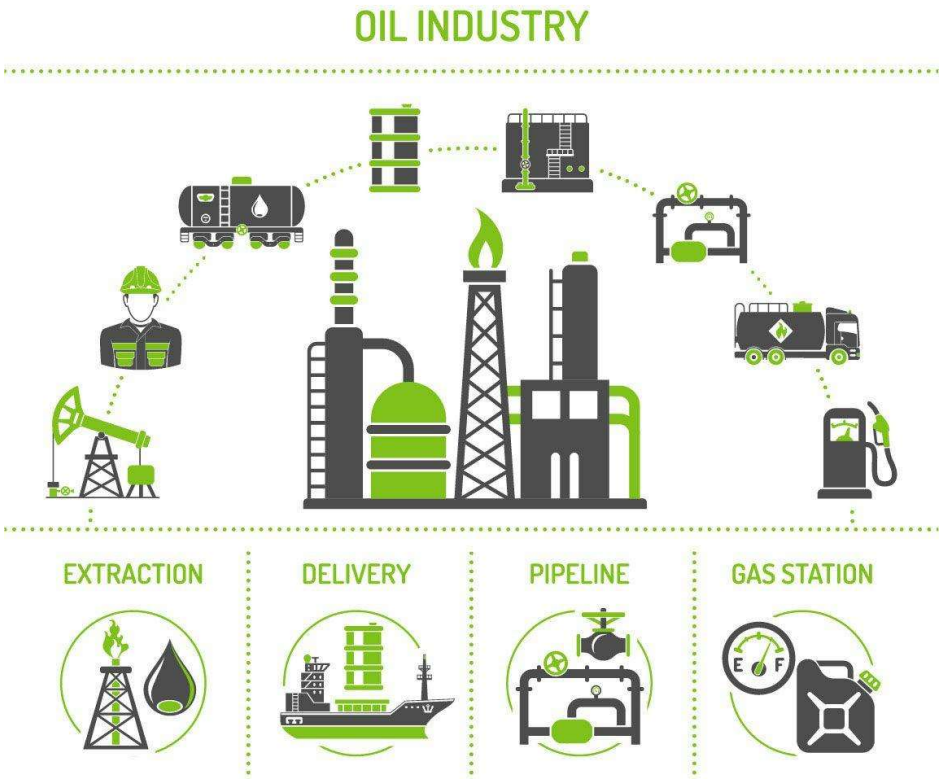
Oil and Gas Industry Use Case

- The World Economic Forum estimates that the digitization of the industry could unlock $1.6T of value globally and $140B in Productivity
- Currently 9% of oil transactions are disputed
- 15% of assets in the industry are counterfeit
- Reduces transaction friction – third parties



Near Term

- Environmental and regulatory compliance monitoring and reporting
- Performance based smart contracts
  - ✓ Transaction validation
- Proof of Reputation
- Supply Chain Management
  - ✓ Provenance, Chain of Custody
- Asset Tracking, management across the performance lifecycle (BC and IoT)
- Counterfeit component avoidance
  - ✓ Component integrity validation
  - ✓ Certification assignment
- Integrate suppliers
- Sample tracking (BHP Billiton)

Longer Term

- Implement transactional protocols
  - ✓ Tokenization
- Integrate with suppliers
- Manage full asset lifecycle
- Production/resource/asset sharing
- JV/Royalty accounting
- Land Management

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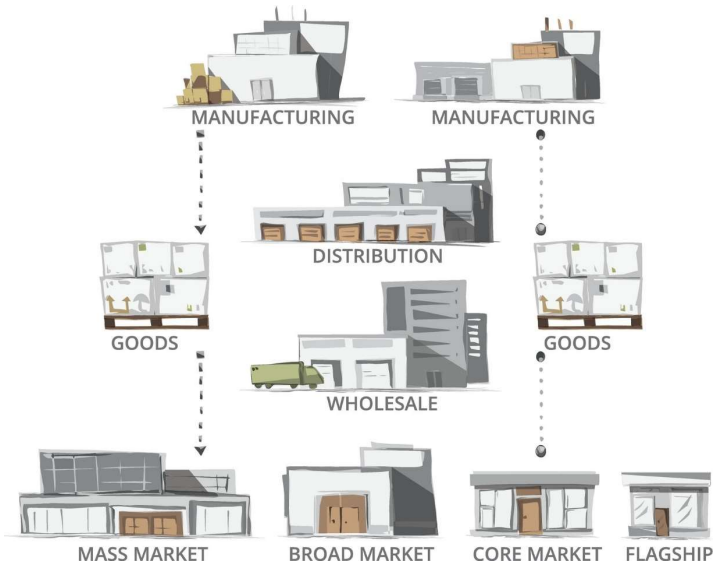
Blockchain and IoT in Retail

- Counterfeiting amounted to $1.8T in 2018
- Counterfeiting and piracy will drain $4.2T out of the global economy by 2022 and put 5.4M jobs at risk
- Target, Saks, Wal-Mart, Penney's sold fake Egyptian cotton linens for 3 years: multiple lawsuits and millions in refunds
- Alibaba and Wal-Mart fighting food fraud and contamination throughout their supply chains
- Maersk/IBM improving international shipping and reducing costs by 20%



Near Term Retail Applications

- ***Proof of Ownership***
- ***Counterfeiting***
- Logistics management and monitoring
- Inventory validation
- Proof of authenticity
- Accuracy of shipments
- Loyalty programs
- Advertising and consumer data
- Customers checking provenance (i.e. organic vs regular milk)
- Product lifecycle management

Future Retail Applications

- Payments and eCommerce
- Micro payments
- Ticketing after sales services
- Couponing
- Warranties
- VOC

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Global Aviation Use Cases

When coupled with IoT, Blockchain technology provides the supply chain with all the information required for immutable proof of the full chain of custody and provenance of a product during its entire lifecycle.

- *The life cycle of flight safety parts*
- *Maintenance logs: 90% are on paper*
- Location of equipment such as tow bars, tow trucks, baggage trailers, service vehicles, etc.
- Parts tracking
- Customer loyalty programs
- Engine and parts leasing through smart contracts
- Interlining and revenue recognition
- Airport slot management
- Ticketing
- Security and Identity
- Exchanging real-time flight information to avoid conflicts among airports and partner airlines
- Baggage tracking for connecting flights and airports

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What Does This All Mean?

1. Blockchain is where the internet was in 1996
2. The Blockchain business fabric is being woven
   a) Financial
   b) Legal
   c) Trade
   d) Personal
   e) Manufacturing
   f) IoT (Internet of Things)
3. It will be 3-5 years before Blockchain is pervasive in international trade… but no more than that
4. A worldwide system of a single point of truth and immutability

❖ A system that has the potential to make the word's GDP $5+ Trillion more efficient, a 6% improvement

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