



U.S. Customs and
Border Protection

Distributed Ledger Technology (DLT) Briefing

June 28, 2022

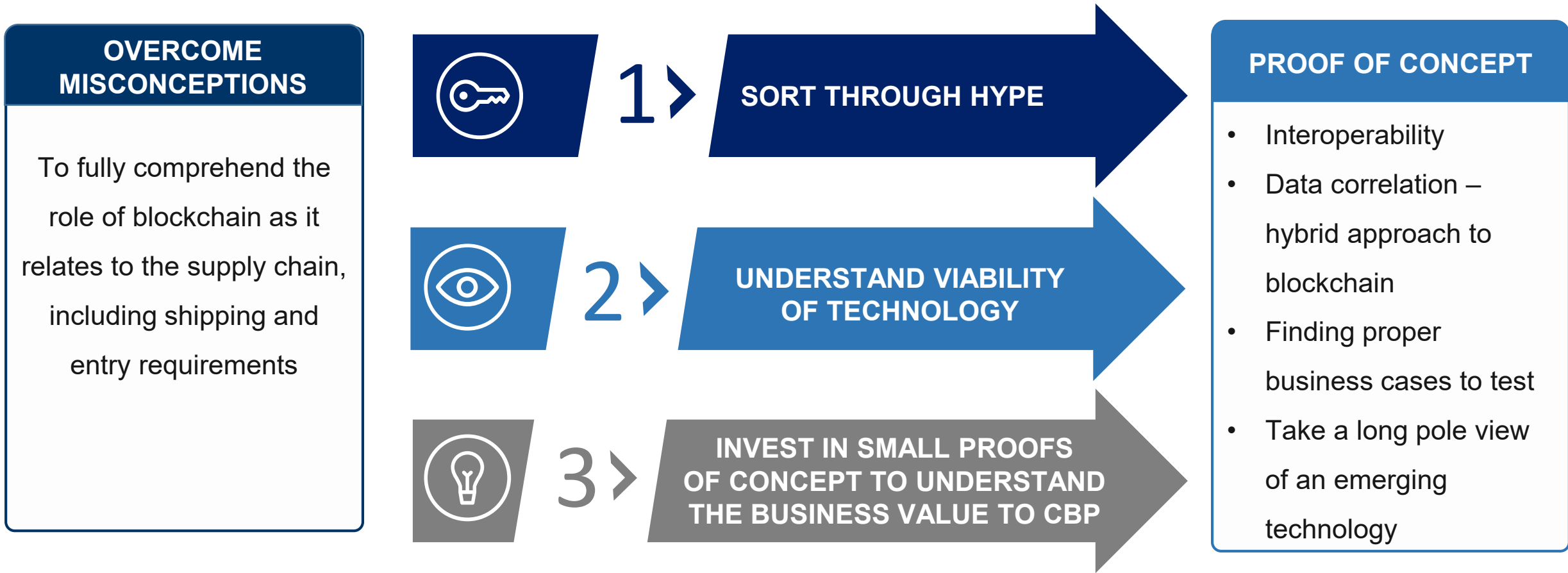
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What was Government's Interest in DLT?



Understanding what decentralized/distributed data means to an organization charged with keeping data safe.



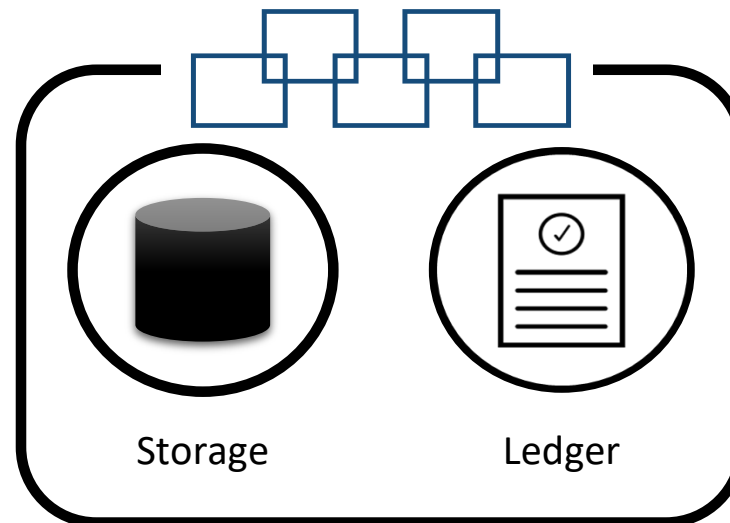
Interoperability



To Ensure End-to-End Supply Chain Visibility ...

Without Vendor Lock-In ...

... We need standards-based interoperability between systems using Blockchains, DLTs or any other technology!



An Interoperable System

Using Global Interoperability W3C Standards



Verifiable Credentials

- A set of claims made by an issuer about a subject in a manner that is:
 - Tamper evident
 - Cryptographically verifiable
- Digital version of physical credentials/attestations
 - Driver's Licenses
 - Passports
 - Certificates of Origin
 - ...

Verifiable Credentials Data Model 1.0

Expressing verifiable information on the Web



W3C Recommendation 19 November 2019

Decentralized Identifiers

- Globally Unique Identifier without the need for a central registration authority
 - Immutable over time
 - Globally resolvable
 - Privacy respecting
 - Cryptographically verifiable

Decentralized Identifiers (DIDs) v1.0

Core architecture, data model, and representations



W3C Candidate Recommendation Snapshot 18 March 2021

Privacy and Credential Lifecycle Management

- Tackling the hard challenges of scalable implementation
 - Confidential Storage
 - Data Portability
 - Selective Disclosure
 - Revocation with Herd Privacy
- Path to Standardization via IETF & W3C

Entry Current State

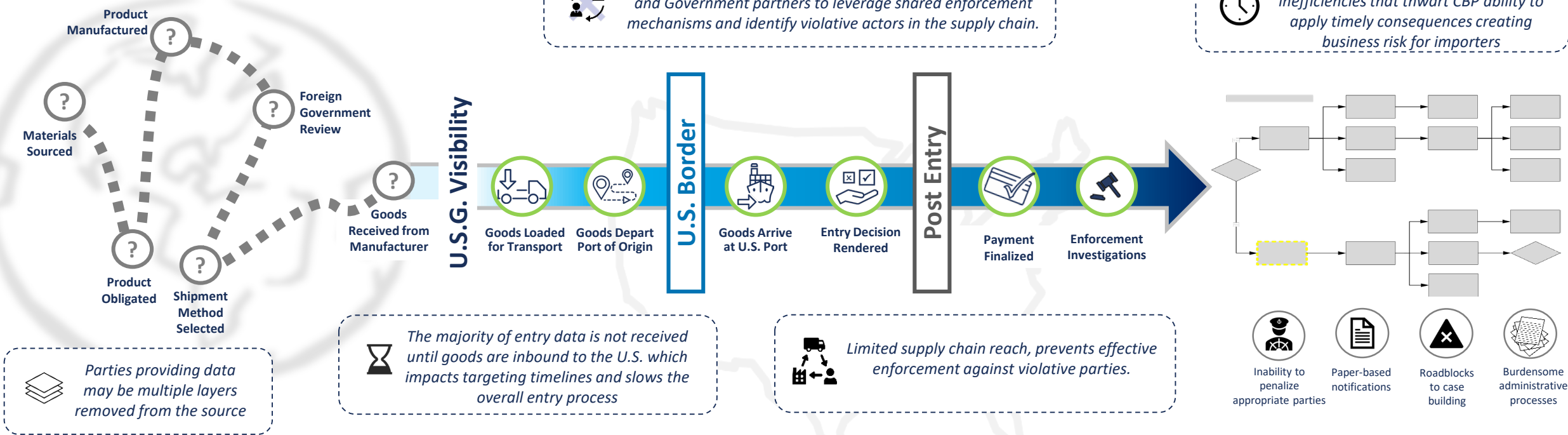


In the current entry environment, limited supply chain visibility and fragmented data submissions create a cap on how efficiently goods can enter the country.

Limited visibility into the global supply chain behind an import; data is disconnected, nonlinear, and bottlenecked

Restricted data usage inhibits ability to collaborate with Trade and Government partners to leverage shared enforcement mechanisms and identify violative actors in the supply chain.

Lengthy and complicated processes create inefficiencies that thwart CBP ability to apply timely consequences creating business risk for importers



Parties providing data may be multiple layers removed from the source

The majority of entry data is not received until goods are inbound to the U.S. which impacts targeting timelines and slows the overall entry process

Limited supply chain reach, prevents effective enforcement against violative parties.

Current systems can only be improved so far before becoming Band-Aids. New tech and better processes are needed to keep pace with consumer demand and changing environments.



What Governments Should be Focusing On – Tech Agnosticism through Interoperability

Digital Representation of the Physical World

- **Who?** Who is in control of the product
- **What?** What is in the box
- **Where?** Geographic location
- **Connected Systems:** Multiple systems/technologies providing data from Supply Chains without giving away proprietary data
 - I.e., Manufacturer data, shipping data

Importance of Data Standards in Business Scenarios

- **Earlier Data Submission:** Trade data sent in near real time
- **Data Quality:** Data evolution. Accuracy increases as we move closer to arrival
- **Multiple Sources:** Data is retrieved directly from all participants in the supply chain. Do away with single source control
- **3rd Party Verifications:** Truth is ascertained based on verifications from outside legitimate sources (UL Cert/Examination)



Outcomes of Standards Based Supply Chains

Make the World a Smaller Place - Technology Exists Today

- **Build Once Connect to All:** Community oriented standards remove the complications of data sharing and maintain a level playing field for all governments and industry. No one member nation gains an advantage
- **Technology Adaptive:** Integration of smart tech as well as new and emerging tech easily comply (legacy, all forms of ledger technology and beyond)
- **Interconnected Systems:** Seamless trading of outcomes over data between countries

Streamlined Business Processes Tighten Supply Chains

- **Business Truth Over Technology Truth:** Ascertained from the quality of data sent
- **Multi-Lingual (JSON LD):** No interpretative loss with data sharing
- **Product Tracking:** Origin to delivery is visible to principal parties on trade side as well as governments
- **Real Time Messaging:** Early government response to industry (multiple agencies send release/hold information trade can be confident in)
- **Connected Systems:** Systems that can take data from all Supply Chains without giving away proprietary data
 - I.e., Manufacturer data
- **Legitimacy:** Businesses, products, people
- **Facilitation Focus:** Risk based system allows legitimate companies to move legitimate goods quickly into economy

DLT Proof of Concept Overview



PROJECT OVERVIEW

Blockchain and Distributed Ledger Technologies (DLT) provide resilient registries capable of supporting issuance and verification at scale. The credentials enhance security while safeguarding privacy through standards that preserve flexibility and interoperability.

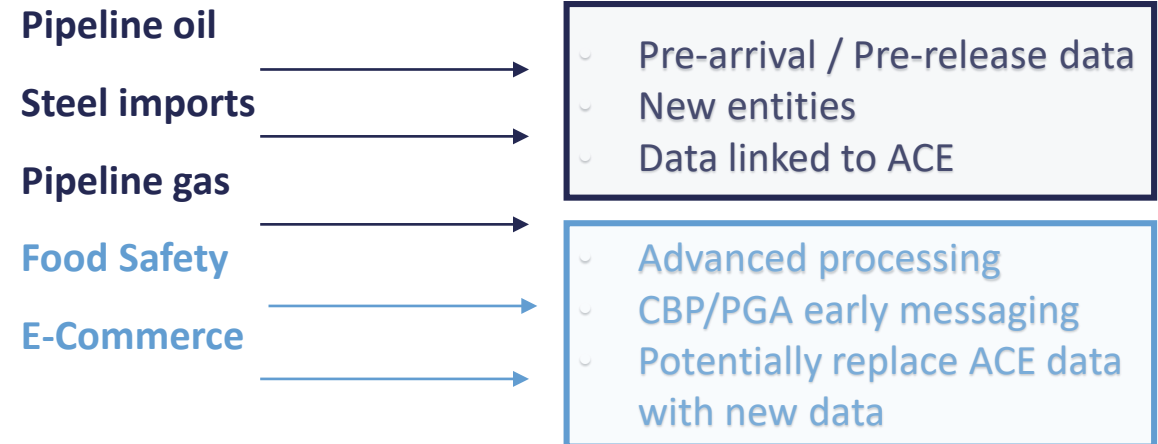
Timeline

- ✓ **Pipeline Oil/Steel/E-Commerce**
 - Integration with ACE 2022
 - Technical Demonstration 2023
 - Potential Production 2024
- ✓ **Pipeline Gas/Food Safety**
 - Integration with ACE/Single Window 2023
 - Technical Demonstration 2024
 - Potential Production 2025

KEY FEATURES

Partnership with DHS S&T - Silicon Valley Innovation Program (SVIP)

Distributed Ledger Technology (DLT) Pilots Overview



Key Benefits

- ✓ **Enhances supply chain security/facilitation** by providing verifiable data from origin to delivery
- ✓ Provides **greater transparency** into identity of corporations/products
- ✓ **Streamlines entry process** by providing necessary data prior to arrival

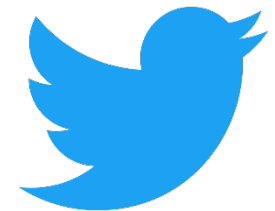
QUESTIONS



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www.cbp.gov/trade/ace/whats-new-innovation



@CBPTradeGov



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2018/2019 Blockchain Proofs of Concept



2018 - North American/Central American Free Trade Agreements

- Proved out early interoperability specs
- Interchange of data between multiple blockchain software
- Blockchain to blockchain exchange of decentralized identifiers and verifiable credentials
- On chain/off chain coordination - hybrid data to keep data safe both publicly and privately
- Industry and government unanimously asked for continued testing



Data-level interoperability
across multiple blockchains

2019 - Intellectual Property Rights

- Complicated business process
- Blockchain to blockchain exchange incorporated multiple blockchains acting as one
- Rights holder issues credential to licensed vendor
- Consumer test – can private sector communicate legitimacy of business or product?
- Testing led CBP to rethink the way we supply chains should work in the future



Cross blockchain interoperability
by the use of blockchain links



Standards-based method for trade
participants to register product
features