

TradeTrust: A Framework for Trade Document Digitalisation at scale

Kay Ren Yuh

Assistant Director

Infocomm Media Development Authority of Singapore

ROLES OF IMDA

DIGITAL CHAMPION



Drive digitalisation across industries

Supporting a digitally enabled workforce

INDUSTRY DEVELOPER



Develop the digital tech and media industries as an engine of growth for Singapore

Foster a data ecosystem for the digital economy

ENABLER



Master-planner for connectivity, digital infrastructure & standards

Prepare tech & media manpower, and segments of society to be digitally-ready

REGULATOR & PROTECTOR

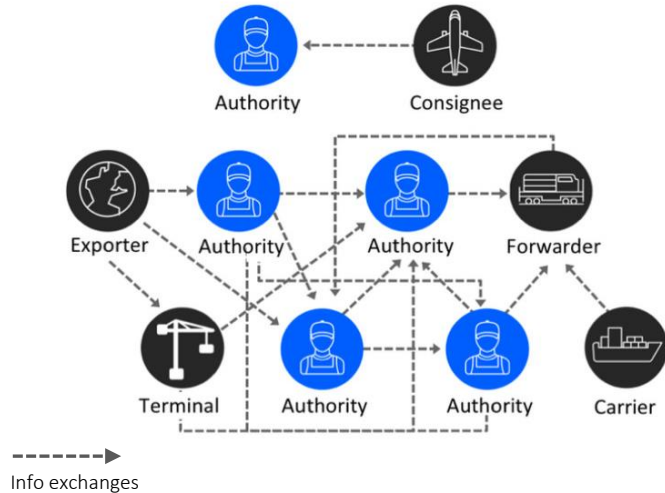


Ensure resilient telecom & broadcast networks

Govern market conduct and protect consumer interest through infocomm, media, postal and data protection regulation

DIFFICULTIES WITH PAPER IN CROSS BORDER TRADE

Current State



Just 1 shipment involves

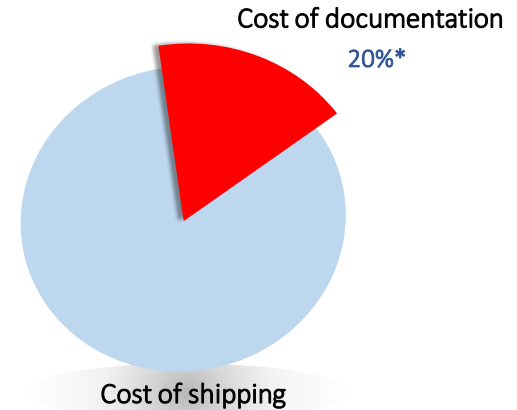
- Many parties across different sectors
- Many exchanges of information
- Many silo systems

Inefficient

- Manual handling
- Vulnerable to fraud

Fragmented Systems

- Costly connections
- No interoperability

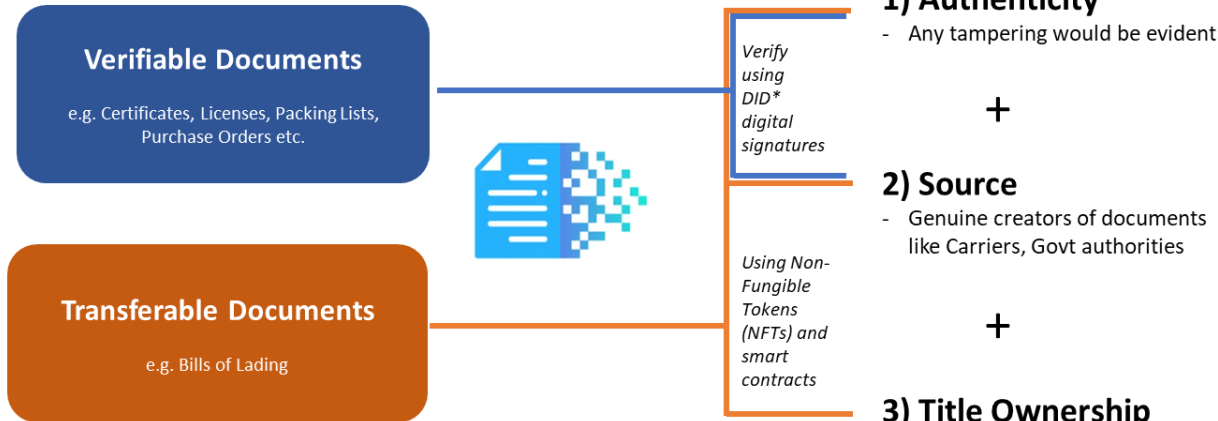


This inefficiency is costly

**Maersk and IBM's Paper Trail Research in 2014*

TRADETRUST'S 3 KEY FUNCTIONALITIES: AUTHENTICITY, SOURCE & TITLE OWNERSHIP FOR TRADE DOCUMENTS

- TT is designed to provide industry the means to verify the authenticity and source of a document, as well as enable the digitalisation of transferable documents into Electronic Transferable Records (ETR) that have the legal ability[^] to effect title transfers.



**Decentralized Identifiers (DID) are a new type of unique, cryptographically verifiable identifiers that are designed to be decoupled from centralized registries, identity providers and certificate authorities*

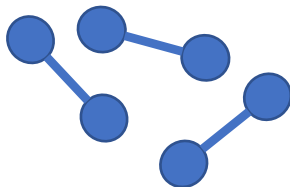
Core-Tech of TradeTrust

- Uses Decentralised Identifiers (DID) and digital signatures to verify the source and authenticity of documents.
- Uses Blockchain to create Non-Fungible Tokens (NFTs) to represent title ownership and enable transfers from one party to the next.

[^]Singapore's 2021 amendment of its Electronic Transactions Act (ETA), one of the first few internationally, enables the creation and use of ETRs such as electronic Bills of Lading (eBLs), empowering practitioners to reap the benefits of digitalisation more easily.

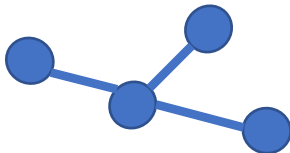
ARCHITECTURES FOR DIGITAL DATA EXCHANGE*

Peer to peer architecture



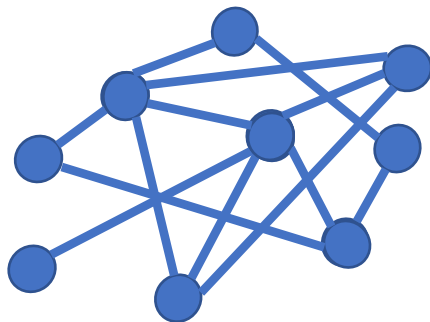
- Technologically mature parties must make some investment to set up connections
- Model works well for high volume exchanges between small number of parties that already know and trust each other
- More difficult for low tech mature parties and 3rd parties that need access to same data

Shared hub architecture



- Model works well where hub represents an existing identifiable community where the hub has a natural monopoly and each party can complete most of what they need on that hub
- Does not scale well for trade processes across geographic or industry sectors
- In Trade, such architecture results in duplicated memberships in many platforms

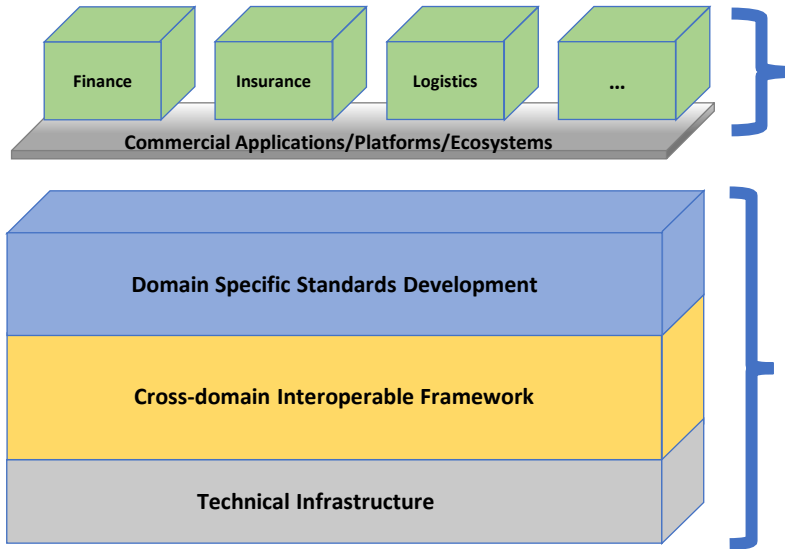
Decentralised architecture



- Documents are self-issued as “verifiable credentials” by trade parties or Competent Authorities
- Documents are digitally signed by the issuer using an identity created and owned by the issuer
- Documents can be exchanged using whichever convenient method because security is built into the document itself
- No dependency between issuer and verifier

THE TRADETRUST FRAMEWORK

The Framework **SUPPORTS** Platforms and Systems to achieve the 3 functionalities **ACROSS** Platforms and Systems. The technical methods are implemented in open-source software that has been made freely available to the international community



Business-led

- Digital Ecosystems Co-Development
- Enterprise Adoption & Digitalisation

Govt-led

TradeTrust Framework (Standards, Semantics, Legal)

- To legally recognise cross-border digital documents (e.g. eBL, eCO, einvoice, eSPS Certs, eBills of Exchange)
- To enable system interoperability of trusted digital documents exchange through standards



TradeTrust Digital Infrastructure

- Blockchain gateway that allows business apps to consume blockchain services through standardized APIs, achieving decoupling that eases the burden on them of enhancement and maintenance while blockchain technologies evolve.
- Published as open source for ease of industry adoption and for further enhancements by the open source community
- To be contributed as reference implementation to standards bodies to support standards development and accelerate TradeTrust usage

The 4 Key Components of TradeTrust



TRADETRUST FRAMEWORK IS ACCESSIBLE TO ALL

Application Layer



Basic UI



Sample
implementations
via PoCs



Finance



Insurance



Logistics



Platforms



Ecosystems

...

Commercial Applications/Platforms/Ecosystems



Payload
Agnostic
Documents



Document
Verification



MLETR
Compliant
Title Transfer



Distributed
file store



Seamless Exchange
Paper ↔ Paperless



Identity
Resolver
(Verifiable Claim)



Smart
Contracts



Connectors



API

...

Blockchain Layer



ethereum



Hedera
Hashgraph



Sidechain

...



UNCITRAL Model Law
MLETR, MLEC, MLES
Singapore ETA



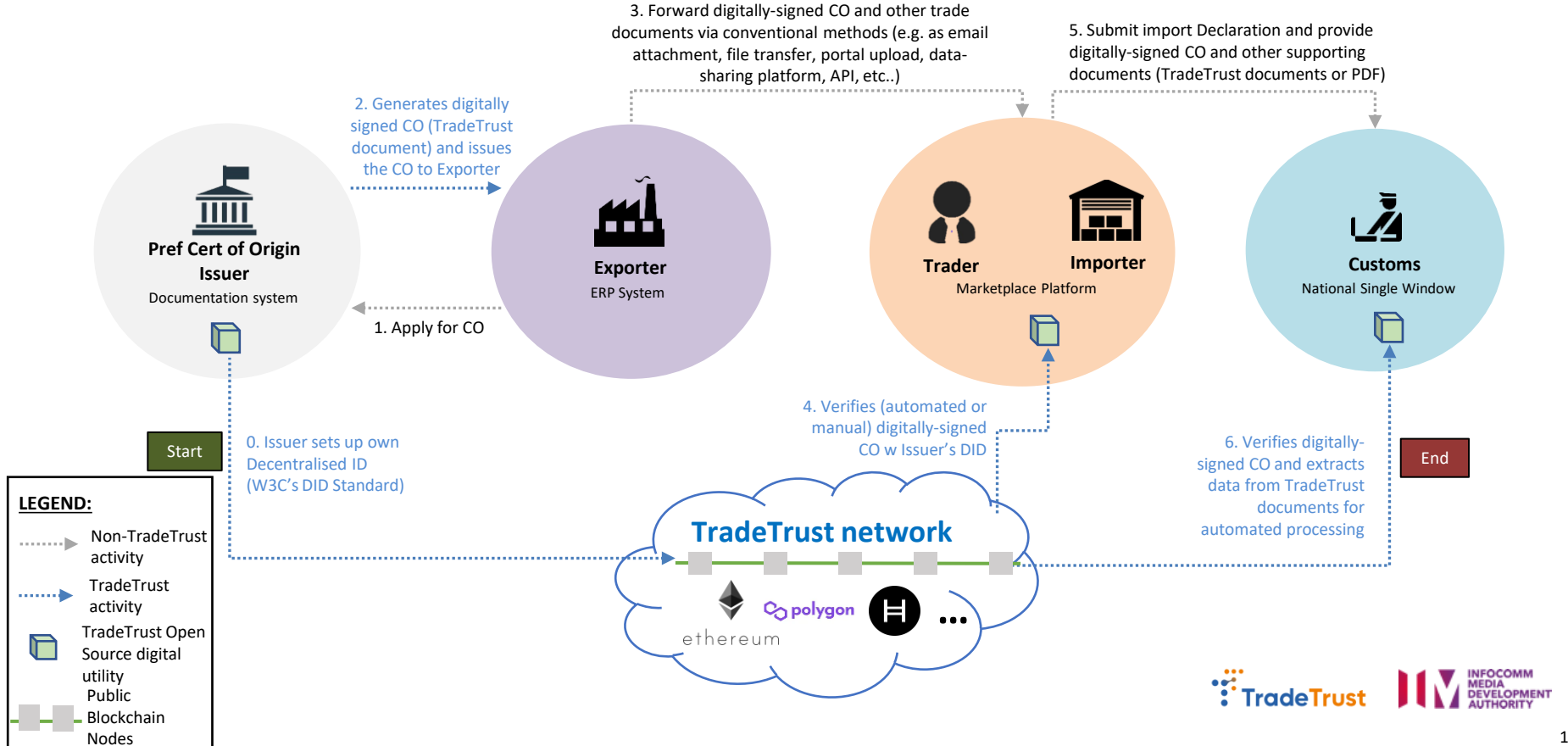
Standards Development



Pertinent highlights from the UNCEFACT White Paper

- Weaves together how Verifiable Credentials, Trust Anchors and Decentralised Identifiers enable a decentralized architecture for digital trade documents
- Documents are digitally signed by the issuer using an identity created and owned by the issuer (a.k.a self-sovereign identities).
- The digital documents can have a human friendly view that looks like the paper equivalent (but with a QR code that links to the encrypted digital version) and supports paper-friendly processes whilst being machine-readable (hence supports automation!)
- The documents can be exchanged via any convenient method (email attachment, portal upload, API automation, even as a QR printed on the corresponding goods!) because security is built into the document itself.
- No need for centralized hubs or EDI connections so every party can digitalise at their own pace.

NORMAL DOCUMENTS' INTEROPERABILITY



DEALING WITH TRANSFERABLE DOCUMENTS (BL AS EXAMPLE)

Paper Transferable Instrument

STX PanOcean BILL OF LADING

Shipper: ALMIGHTY INTERNATIONAL INC.
ILAMIN BUSINESS CENTER NO.108, 332-3
DANGSAN-DONG 6 GA YONGIN-CITY-GY,
SEOUL, REPUBLIC OF KOREA
TEL : +82-070-7918-6671
FAX : +82-2-2677-0130

Consignee: FNB COMPANY LIMITED
NO.6, 7 STREET, TAN KIENG WORD, DISTRICT 7,
HCM CITY, VIETNAM
TEL : +848. 37714606
FAX : +848. 37716653

Notify Party: FNB COMPANY LIMITED
NO.6, 7 STREET, TAN KIENG WORD, DISTRICT 7,
HCM CITY, VIETNAM
TEL : +848. 37714606
FAX : +848. 37716653

Pre-carriage by:

Ones Vessel: BANKIN VERA/CROE

Port of Loading: BUSAN, KOREA

Commodity: Ma
T00101802109
STX0180763

Quantity: 20
000
000
000
000
000

Weight: 20.00000000

Measurement: 0000000000

Freight Prepaid: SAY : ONE (1) CONTAINER ONLY.

Freight & Charge: Revenue Time Rate Prepaid Collected

AS ARRANGED

Origin: BUSAN, KOREA

Destination: BUSAN, KOREA

Place of Issue: BUSAN, KOREA

Date of Issue: APRIL 28, 2013

By: STX PAN OCEAN CO., Ltd AS CARRIER

By: STX PAN OCEAN CO., Ltd AS CARRIER

STX FORM No. BL-400 2039662

Title ownership

BL Data

Electronic Transferable Record

1) TITLE ownership

+

2) BL Data

Bill of Lading

Shipper:

Consignee:

Notify Party:

Ones Vessel:

Port of Loading:

Commodity:

Quantity:

Weight:

Measurement:

Freight Prepaid:

Freight & Charge:

Origin:

Destination:

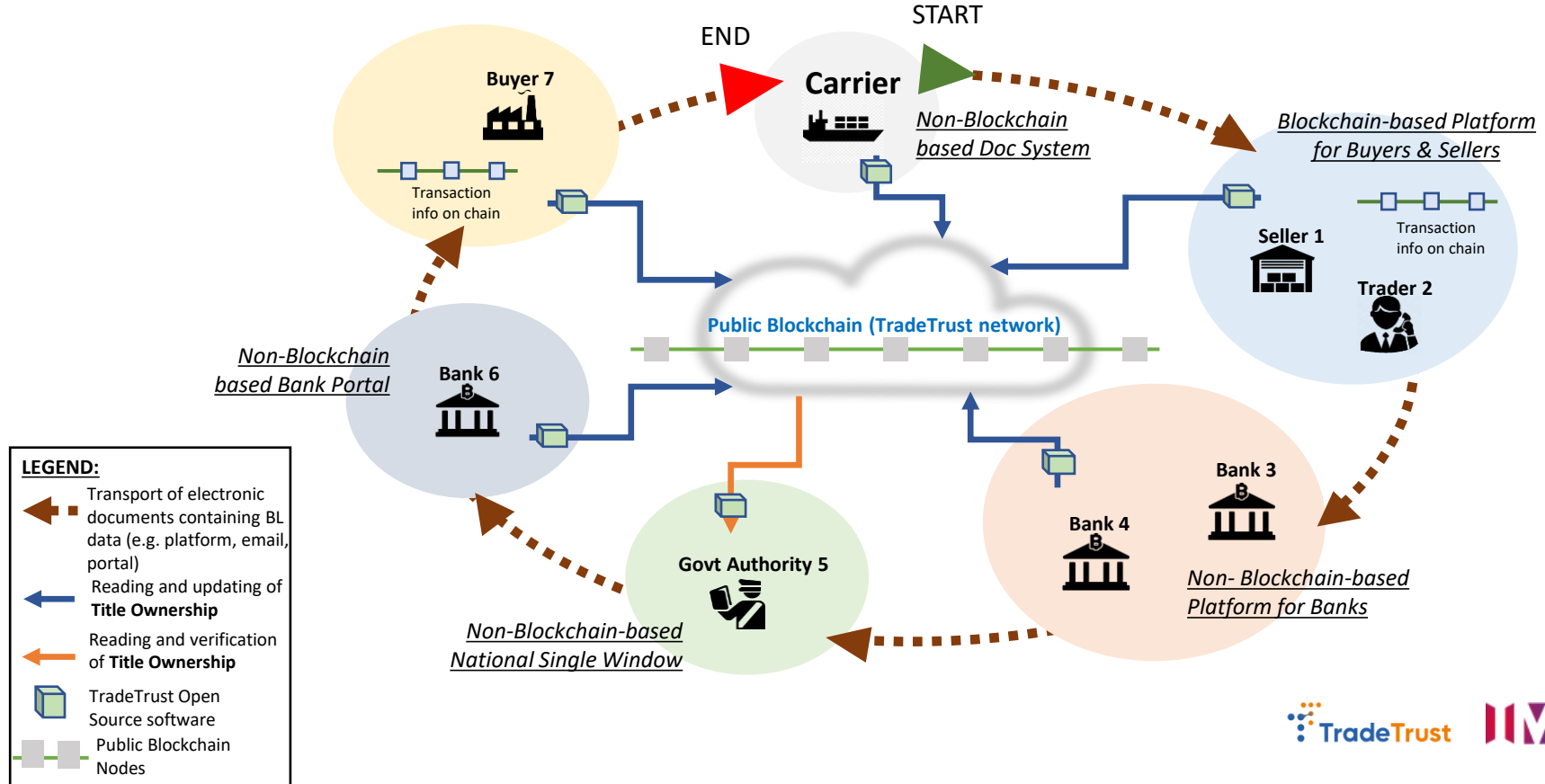
Place of Issue:

Date of Issue:

By:

By:

TRANSFERABLE DOCUMENTS' INTEROPERABILITY



TRADETRUST DESIGN PRINCIPLES



Public and Permissionless
No central governance authority



Data Off-Chain
Preserves data confidentiality



Payload Agnostic
No data format or standards restrictions



Open-Source
Full transparency for faster adoption



MLETR-Compliant
*Meet the requirements of the law
(for electronic negotiable documents)*

GLOBAL PARTNERSHIPS



Convening alongside the World Economic Forum Annual Meeting in Davos, the International Chamber of Commerce (ICC) has joined the Singapore Government and industry partners to accelerate the digitalisation of global trade and commerce.

Australia and Singapore to trial blockchain for cross-border trade

The trial will test digital verification platforms across both the ABF-developed Intergovernmental Ledger and IMDA's TradeTrust for electronic trade documents.

SWIFT and Singapore's IMDA Join Forces to Drive Global Trade Digitalisation

TRADE, 5 OCTOBER 2020

Collaboration combines the reach, scale and reliability of SWIFT with IMDA's efforts on technology and legal frameworks to accelerate trade digitalisation

FINANCIAL TIMES

Singapore charts its way to digital future for trade

Longer term, Singapore is working on a project called TradeTrust that aims to develop an "interoperability framework" for the exchange of digital trade documentation that would simplify and speed up procedures.

World's first digital trade financing pilot between MLETR-harmonised jurisdictions

Paves the way for wider adoption of IMDA's TradeTrust framework to facilitate the exchange of digital trade documents in global trade finance



Succesfull Proof of Concept Electronic Bill

In October 2019, IMDA (Infocomm Media and Development Authority) and the Maritime and Port Authority of Singapore (MPA) co-hosted a 2-day workshop for the delegates from Blocklab, Port of Rotterdam's blockchain centre to work together on the requirements of title transfer capability in relation to eBLs for cross-border trade transactions.



DBS and Tratigura collaborate with IMDA to launch open-sourced blockchain trade platform

Cuts end-to-end trade document transit time by more than half from 45 to 20 days



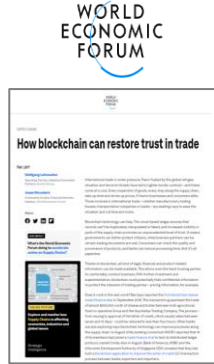
CHARTING GROWING INTEREST WITH NOTABLE INSTITUTIONS GLOBALLY



<https://mag.wcoomd.org/magazine/wco-news-94/tradetrust-accelerating-the-digitalization-of-international-trade>



www.wto.org/english/res_e/publications_e/wcotech22_e.htm



www.weforum.org/agenda/2017/02/block-chain-trade-trust-transparency



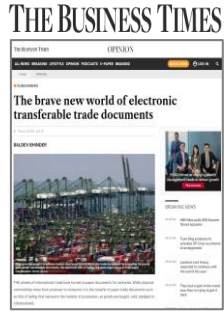
<https://iccwbo.org/publication/standards-toolkit-for-cross-border-paperless-trade>



www.unescap.org/events/2022/towards-globally-harmonized-standards-digital-trading-system



unece.org/sites/default/files/2022-06/010_Verifiable-Credentials-CBT.pdf



www.businesstimes.com.sg/opinion/the-brave-new-world-of-electronic-transferable-trade-documents



www.businesstimes.com.sg/opinion/singapore-at-the-helm-of-digital-trade



www.blackstonegold.com/bt-the-brave-new-world-of-electronic-transferable-trade-documents



www.tradefinanceglobal.com/posts/mda-tradetrust-interoperability-framework-road-to-achieving-cross-border-paperless-trade



CALL TO ACTION

1) Join us to co-create TradeTrust Proofs of Value

If you're from:

- a) Shipping lines
- b) Shippers/Consignees
- c) Logistics Service Providers
- d) Financial Institutions providing Trade Financing Service
- e) Govt Authorities involved in cross-border matters

2) Incorporate TradeTrust code into your Applications

If you're from:

- a) Tech Companies
- b) Platform Providers

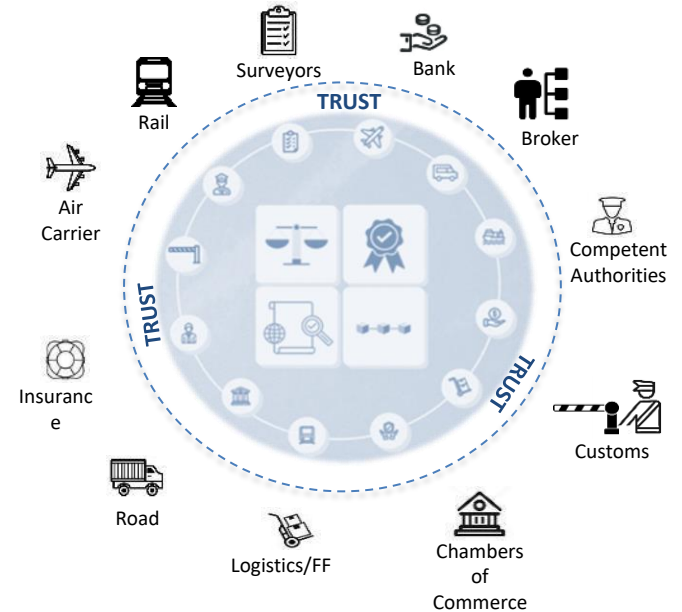
Useful URLs:

Reference Implementation Website: <https://tradetrust.io/>

Docs: <https://docs.tradetrust.io/>

Source code: <https://github.com/TradeTrust>

For more info, contact us at: tradetrust@imda.gov.sg



THANK YOU



**INFOCOMM
MEDIA
DEVELOPMENT
AUTHORITY**