Trustworthy verification of digital identities in Global Supply Chains

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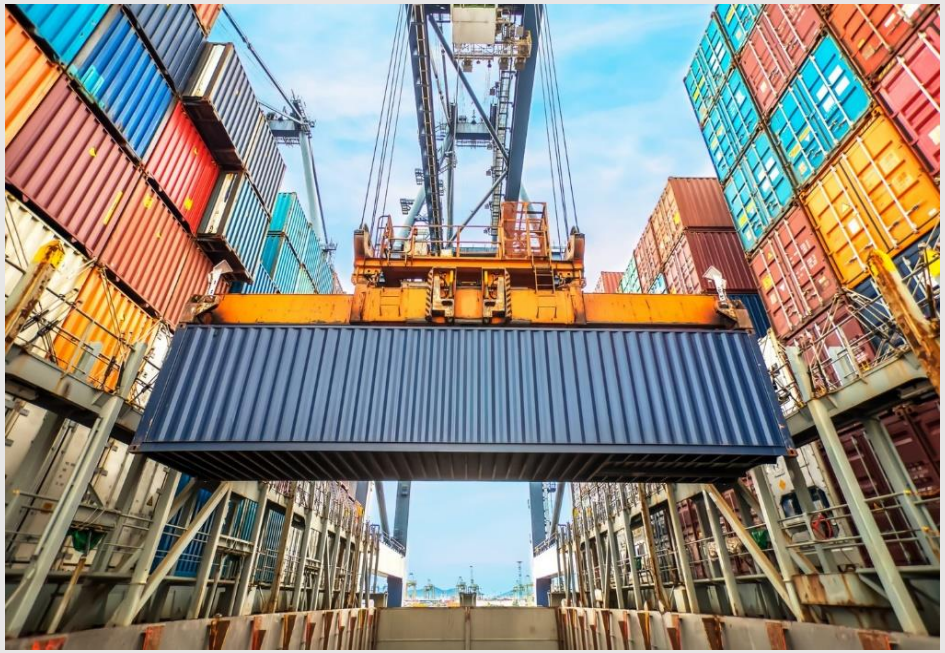

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Digitalization of global trade requires digital business/government identities

A digital identity is the digital equivalent of a person or entity’s real identity, used for identification in digital transactions and connections.

Digital identity ensures integrity in connecting the physical and the digital world.

In global digital supply chain transactions, it is essential for a business to prove its own and check other parties' identities which requires a unique, verifiable and authentic digital identity

Spans all types of actors – Legal entities, public authorities, Internet of Things, Autonomous Software Agents

We need to have a global recognizable digital identity to be used in global trade - One per digital service provider is not feasible

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Three archetypes of identity models

In a centralized identity system, the service provider (like a government's Trade Single Window or a business application) establishes and manages service consumers identities and related data in their systems

In a federated system, two or more centralized system owners establish mutual trust. Purpose is to reduce the burden of registering digital identity at each service provider.

Decentralized/Blockchain identity systems address the issue of having third parties controlling a legal entity's identity.

- Legal entities generate, manage and securely register their own self-sovereign digital identity independent of each service provider.
- Verifiable credentials are a critical component of decentralized identities

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Principles for an identity model for global recognizable digital identity of governments and businesses to be used in global trade

Global trustworthiness: Any government and business should be able to verify the trustworthiness of a particular identity and decide by itself how much trust it will place on the verification.

Self-sovereign: Each government and business must fully control its own identity. E.g. it will not be politically acceptable to have a third party issuing, managing and protecting a governments digital identity.

Support any digitization level: Countries and businesses can benefit from the digital identity irrespective of their level of technology and digitization readiness

Independent of jurisdiction: Each jurisdiction decides how much trust they will put into the digital identity

Cost-effective: The required investment must be affordable for any country irrespective of their economic development and for any business irrespective of their budget and technological readiness

Politically neutral: The infrastructure must be politically neutral and support national policy frameworks. Meaning that no single country/region/organization can control the infrastructure

Competitively neutral: The identity scheme should not give a competitive advantage to any one organization, and allows each entity to have internal rules for trust validation

Enable participation: Enable all types of companies, including small and medium-sized enterprises to more effectively participate in international trade and enhance their competitiveness

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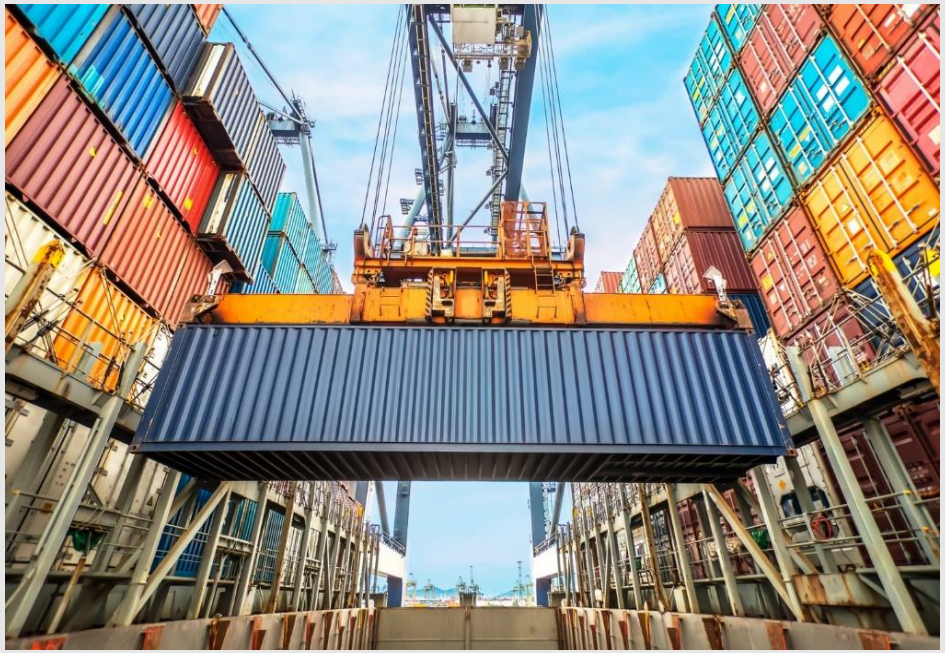
A Model for global supply chain identities

Establishing global verifiable trust between government to government (G2G), business to government (B2G) and business to business (B2B



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Start with global government to government digital identities

Facilitates trust in that a digital license, permit, certificate, or other authorization (LPCO) is issued in the exporting country by an authorized agency, that the document hasn’t been tampered with and that only authorized entities have access to the documents.

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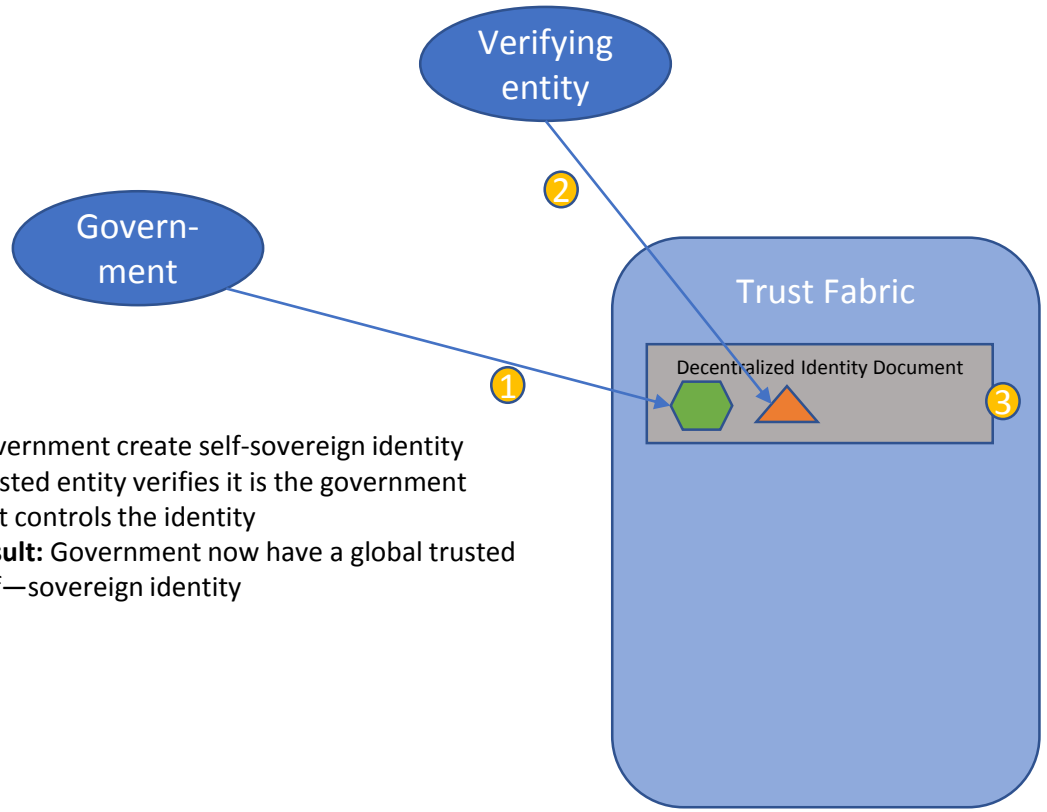
First and second Step: Verify the self-sovereign digitally identitfy of a country's government



1. Government create self-sovereign identity
2. Trusted entity verifies it is the government that controls the identity
3. **Result:** Government now have a global trusted self—sovereign identity

Globally standardized verifiable credential

Proof of existence

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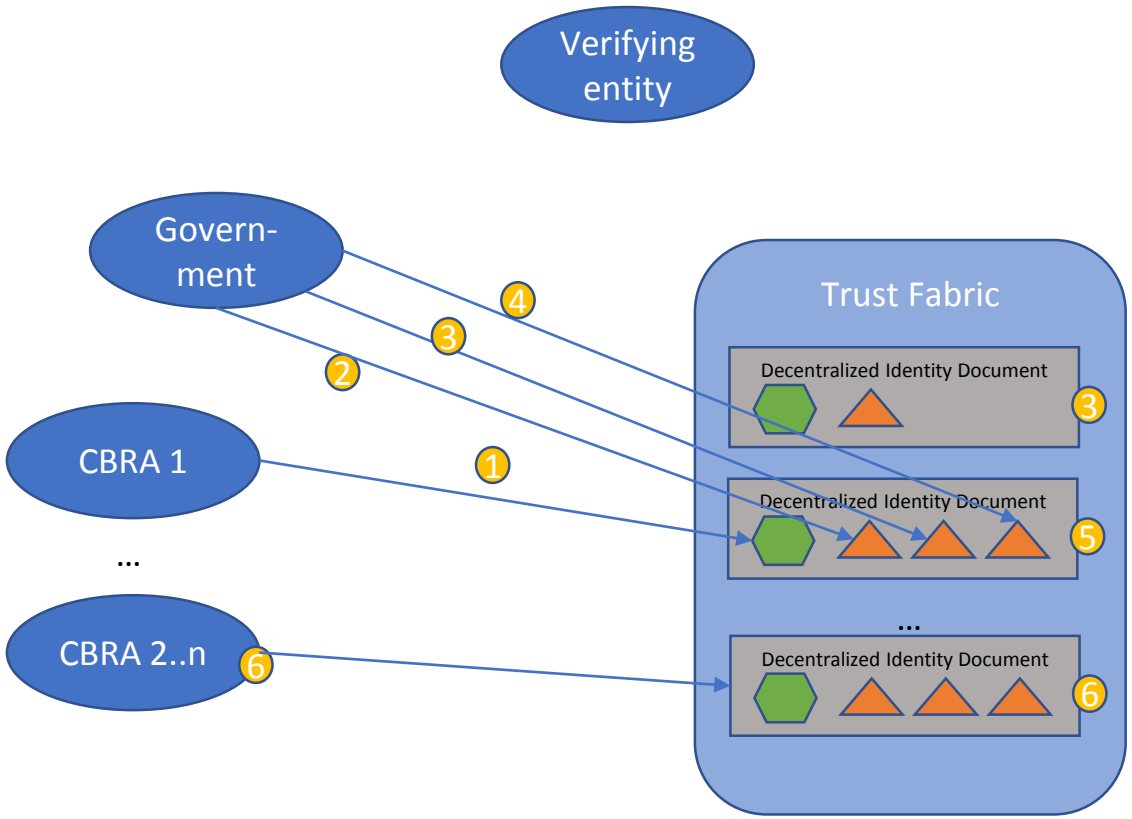
Third and forth step: Government digitally authorize public authorities to issue specific trade documents



Globally standardized verifiable credential

Proof of existence

1. Public Authority uses a proof of existence to create self-sovereign identity
2. Government issue credential that says it is a public authority
3. Government issue credential that says CBRA 1 is authorized to issue Phyto Certificate
4. Government issue credential that says CBRA 2..n is authorized to issue Export Declaration
5. **Result:** CBRA can now globally document that it is allowed to issue Phyto Certificate and Export Declaration under a specific governments jurisdiction
6. This is repeated for each CBRA and all licenses, permits, certificates, or other authorizations

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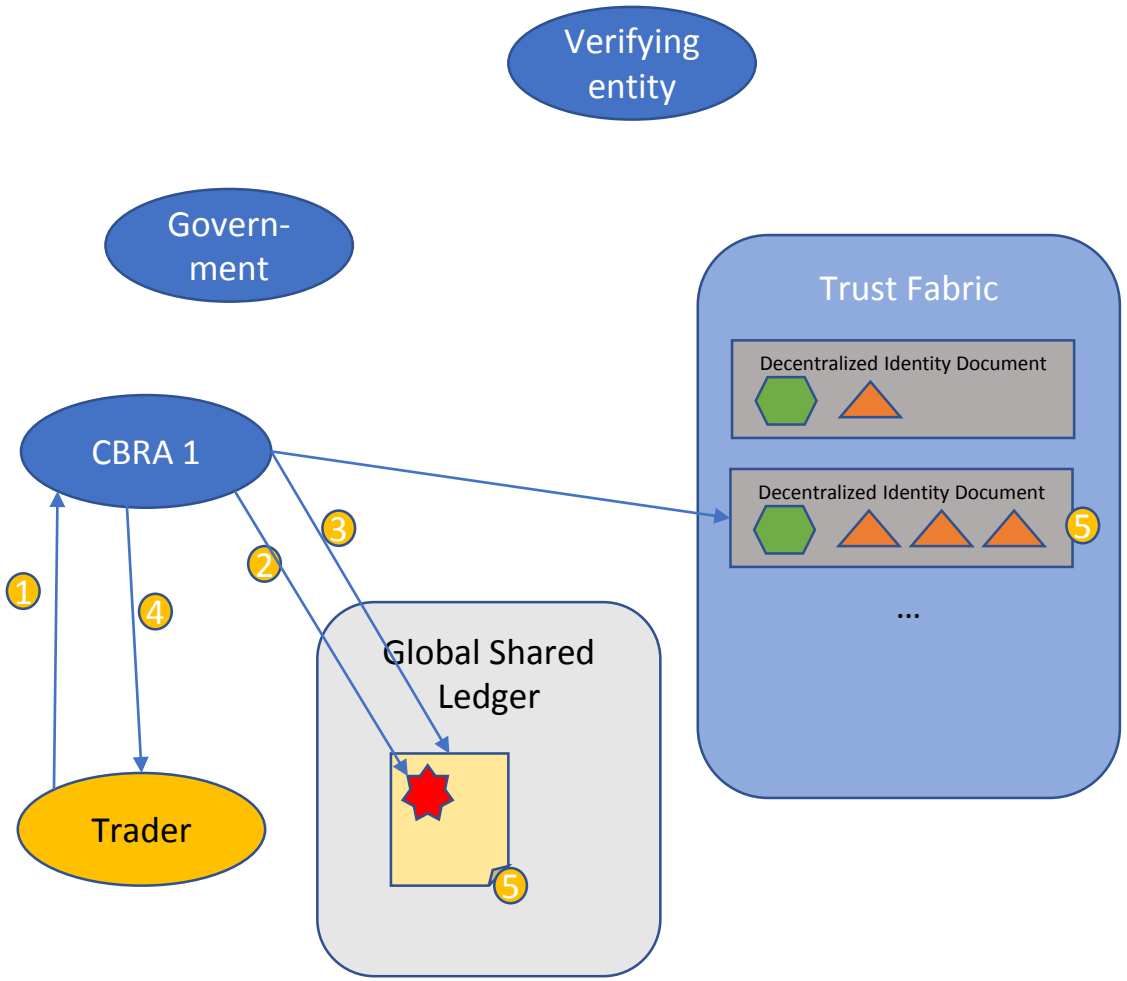
› CBRA: cross-border regulatory agencies'

CBRAs in the country are now authorized to issue TPCO within a government jurisdiction

The result are technically simple, cost-effective and politically neutral components that enables a government to:

- Confirm that an CBRA is a trusted authority under a specific jurisdiction,
- The CBRA can document through the credential, that it has been authorized, to issue a specific trade document
- The government and CBRA identities are controlled within their jurisdiction and the storage is not controlled by a single entity.
- Each government decides how must trust to place in the presented credentials

Fifth step: A trader request issuing a trade document



Globally standardized verifiable credential

Proof of existence

Digital signature

1. Trader request CBRA to issue a Phyto Certificate. (Notice that trader knows, through the Identity Certificate, that this is the CBRA that issues Phyto Certificate under this jurisdiction)
2. CBRA signs phyto certificate with digital signature
3. CBRA stores signed phyto certificate on global decentralized ledger
4. CBRA gives access control to Trader
5. **Result:** It can globally be validated that the phyto certificate is signed by the CBRA that is authorized within the exporting country's jurisdiction

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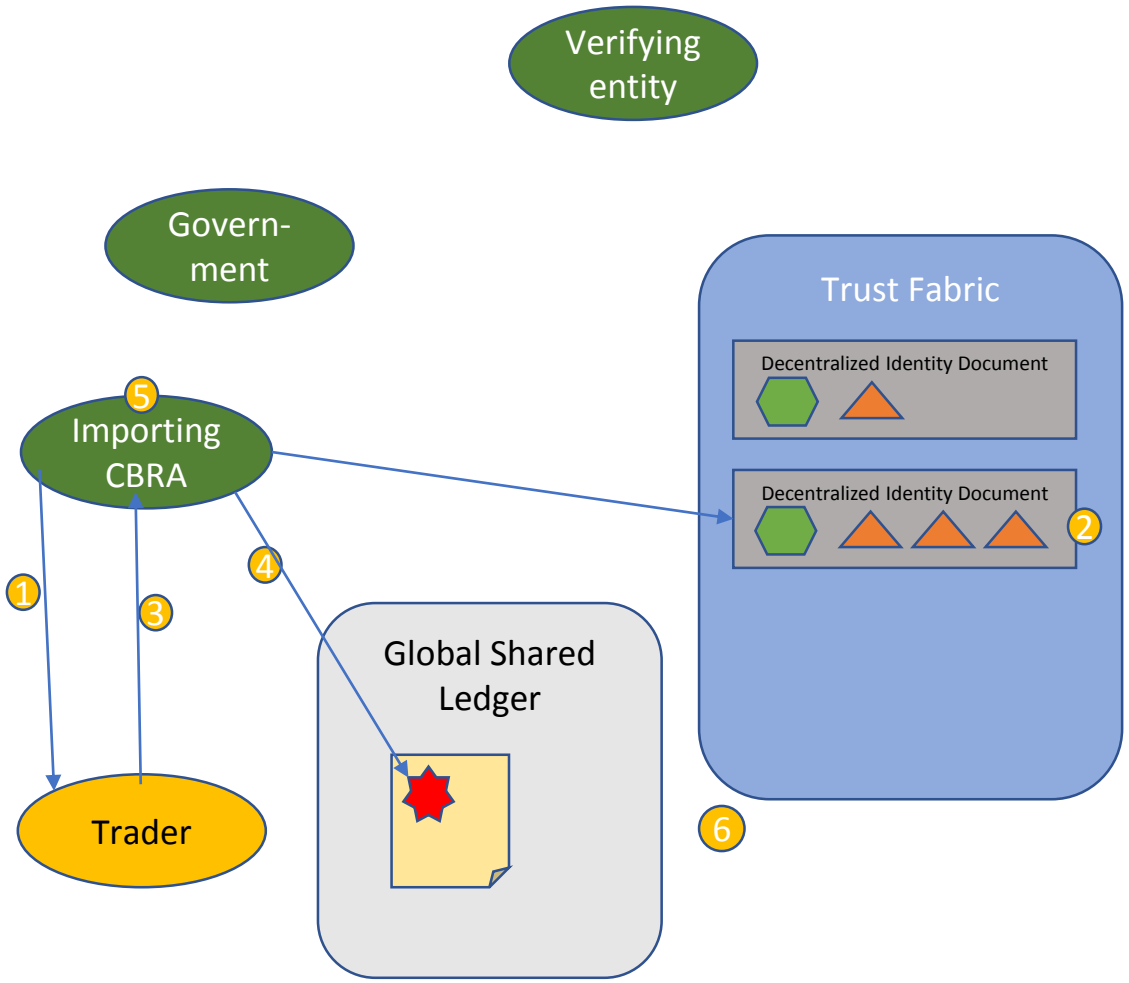
Sixth step: The importing CBRA verifies the signature



Globally standardized verifiable credential

Proof of existence

Digital signature

1. Importing country's CBRA request phyto certificate
2. Trader can verify that this CBRA is authorized to request phyto certificate within importing country's jurisdiction
3. Trader gives access to phyto certificate
4. Importing CBRA can verify that the document hasn't been changed, and that it is issued by a CBRA in the exporting country that is authorized to issue phyto certificate under that jurisdiction
5. It is the sole decision of the importing CBRA to decide how much trust it will place in these verifications
6. **Result:** A globally trusted self sovereign digital identity that is politically and competitively neutral and affordable for any countries

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Same model to be used for business to government and business to business

Government confirm this is a legal entity under certain jurisdictions

Business creates own self-sovereign identity

Verifiable credentials are added by third parties (e.g. Sea carrier, customs agent, NVOCC, forwarder, etc.).

Supply chain partners internal business rules determine individual trust decisions

End result – Any entity participating in global trade have a digital identity, that can be used across geographies and supply chains

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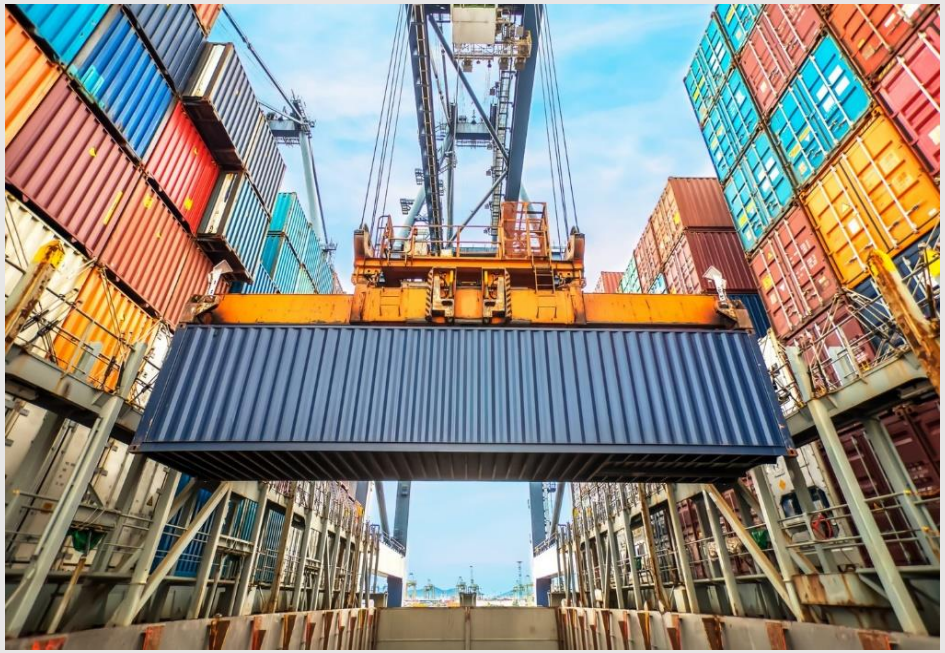
Thank you



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