



# CargoX Platform for Blockchain Document Transfer (BDT)

## Overview





# Industry facts

## Fact #1

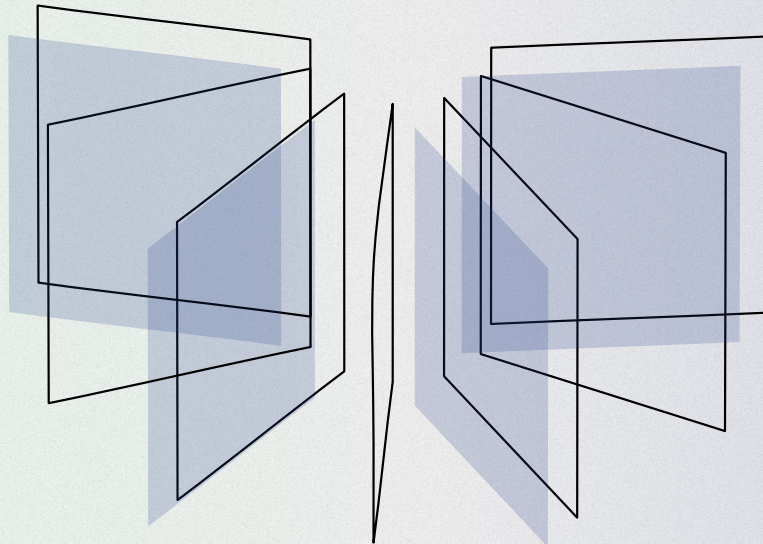
A single container shipment can generate **up to 200 communications**.

## Fact #2

The administrative **cost of processing** the accompanying documentation is estimated to be **15–20% of the overall cost** of transporting the goods.

## Fact #3

Delaying the release of a cargo shipment because of a loss of documents can incur **high damages to the company**, obliterate its business model, or even result in bankruptcy.



“

Ultimately, trade digitalisation will enable us to exchange data, not documents. The next step will be to identify a common set of data elements that we agree on across different paper-based documents, such as invoices, bills of lading, warehouse receipts, etc., so that the same data building block from the physical supply chain can be seamlessly exchanged, understood, and re-used by other supply chain actors.

*Hannah Nguyen*

*International Chamber of Commerce  
Digital Standards Initiative, Director Digital Ecosystems*

”



# Accelerating global trade modernization through secure digital solutions

*Blockchain is among the top 3 technologies, identified by WCO members to be looked at in focus, as reported in the WCO Smart custom Survey (July 2024). The survey included 116 submissions, representing 62% of the WCO membership. That is a very representative sample and it speaks volumes.*

As one of the leading development companies for blockchain in global trade, trade finance and customs solutions, we are not surprised by that. We can only say “Finally!”

The results of the survey are a testament to everything we have been doing in the past years - developing concepts, building solutions, talking to potential and existing customers, and providing some of the most revolutionary digital solutions for international trade.

The world is entering a new era of international trade, and CargoX stands at the forefront of this transformation. Our electronic bill of lading solutions for carriers, shippers, freight forwarders, workflows for trade finance institutions, and our Advance Cargo Information (ACI) solution are key components of this global transformation.

As we continue to drive innovation in global trade, it's clear that we are only scratching the surface of what can be achieved. Blockchain, once seen as a niche technology, has now emerged as a critical tool for ensuring secure, efficient, and transparent trade processes. But its real power lies in its potential to be a cornerstone for future advancements, as AI, big data, and analytics become integral to global trade, finance, and customs processing. This will all lead to smarter decision-making, enhanced security, and a faster flow of goods across borders.

The world of global trade is evolving at an unprecedented rate, and technologies like blockchain will not only drive this change—they will redefine it.

At CargoX, we are committed to being a partner in this evolution. Your partner! Together, we are not just solving the challenges of today—we are building the opportunities of tomorrow.

**Bojan Čekrić**  
CEO, CargoX



# About CargoX

CargoX is one of the leading providers of blockchain-based electronic trade document solutions, introducing trust in the digital economy. The CargoX Platform for Blockchain Document Transfer (BDT) is used to create, sign, and transfer electronic trade documents, and it facilitated the first blockchain-based electronic bill of lading being used in practice.

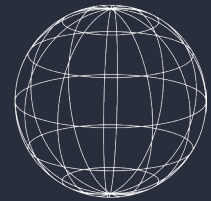
The CargoX Platform supports more than 65 different types of documents – titles, letters of credit, certificates, contracts, and invoices – facilitating efficient global trade processing with optimised document flows. This replaces slow, expensive, and error-prone paper document transfer through courier services.

This document encapsulates the platform's innovative use of **decentralisation**, **cryptographic security**, and user-centric solutions to streamline global trade processes. With rigorous Know Your Customer (KYC) checks, zero recovery point objective, and seamless API integration, CargoX is poised to enhance operational excellence and compliance across the trade documentation spectrum.

Used by

**135k+**

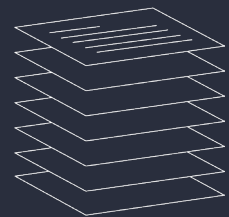
economic operators and governmental agencies globally



Processed

**8M+**

electronic trade documents as of October 2024



**+99.99%**

System **uptime** in 2023



# Paper dragons in global trade

Across the globe, the majority of the most important trade documentation is still processed on paper. The traditional bill of lading is the last remaining document of title that has not been digitised yet!

Consequently, most trade facilitation institutions, economic operators, and government entities across the globe only use partially digitised processes.

This causes delays, high costs, and risks of fraudulent behaviour. It also imposes obstacles and slows down the shipping, trade, finance, import/export processes, and impairs complex supply chain and logistics management.

## Specific trade & supply chain problems, based on paper documents



### **Risk of fraudulent behaviour**

Documents can be forged, damaged, as well as lost or stolen. Goods can be delayed or even released to the wrong recipient, resulting in unexpected damages.



### **Loss of time & delays**

Communication between business and governmental participants is fragmented, timeconsuming, prone to delays. If a document gets lost or delayed, this can manifest in demurrage cost and other charges.



### **Difficult to manage**

Paper is used as the main medium to transfer information. Documents are scanned, archived, and documents of title travel by slow courier services – the same as in the previous century.



### **Errors**

Data is not reused – it is copied and multiplied (prone to error).



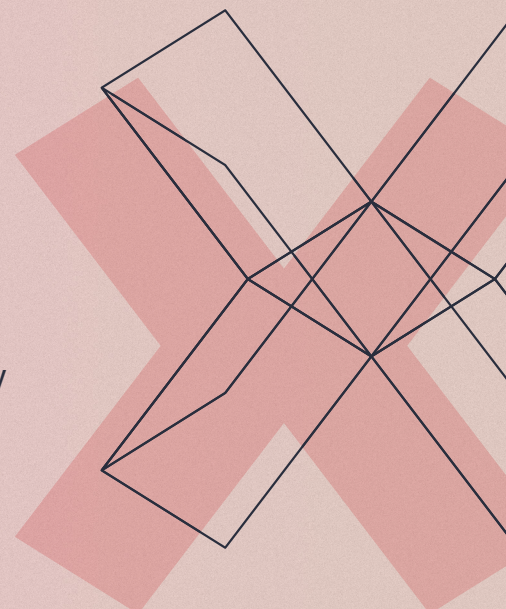
### **Mistakes and inefficiencies**

Registries and databases for specific purposes exist, but they are not well interconnected into the processes.



### **Friction**

Processes are not automatic where they could be.





# So, what is the CargoX Platform?

It is an electronic courier service for documents and data contained therein, with encryption and signing capabilities provided by public, neutral Ethereum blockchain technology. It utilises widespread concepts from email, e-banking, document creation, and document management. Users value the CargoX Platform's **ease of use** and **minimal initial** cost of participation in the **fastest-growing supply chain ecosystem**.

The platform offers easy access via a web browser. All available functions can be integrated into corporate or government information systems (ERP) via REST API. All information is securely stored in an encrypted distributed InterPlanetary File System, and all transactions and user action authorisations are performed with neutral, public blockchain technology.

The CargoX Platform leverages blockchain technology to transform the way electronic trade documents are created, processed, and transferred, ensuring unparalleled security, transparency, and efficiency. By addressing the critical challenges of information **confidentiality, integrity, and availability**, CargoX has set a new benchmark in digital trade documentation.



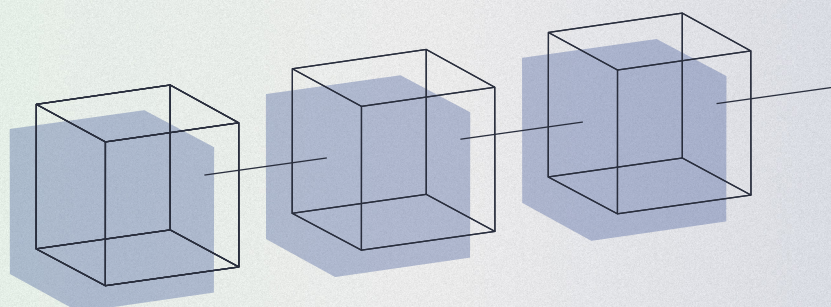
## Delivering authenticity & speed

Documents in international trade are created on the CargoX Platform or uploaded into its IPFS distributed storage system and encrypted with state-of-the-art secure encryption methods. Any change in the content of the document would result in its invalidation. The document's authenticity can always be verified by deriving a hash from its contents and comparing it to the storage system address. Documents can be transferred – control and possession – onto the recipient through blockchain within a matter of seconds.



## Total flexibility in implementation

The CargoX Platform offers flexible implementation options for governmental use – when deploying to customs processing – and for corporate and financial institutions' use in processing electronic bills of lading, letters of credit, and other highly important electronic trade documents.





# Major benefits

- Saves **time & money**.
- Eliminates the risk of **delays & document tampering**.
- **Easy to use** (just like email, e-banking, and document management).
- Can be used through a web interface or integrated in ERP solutions with **API integration**.
- Neutral, public blockchain provides **security and auditing features**.
- For **simple document transfer** (B2B) or **complex multi-point filing purposes** (B2G).

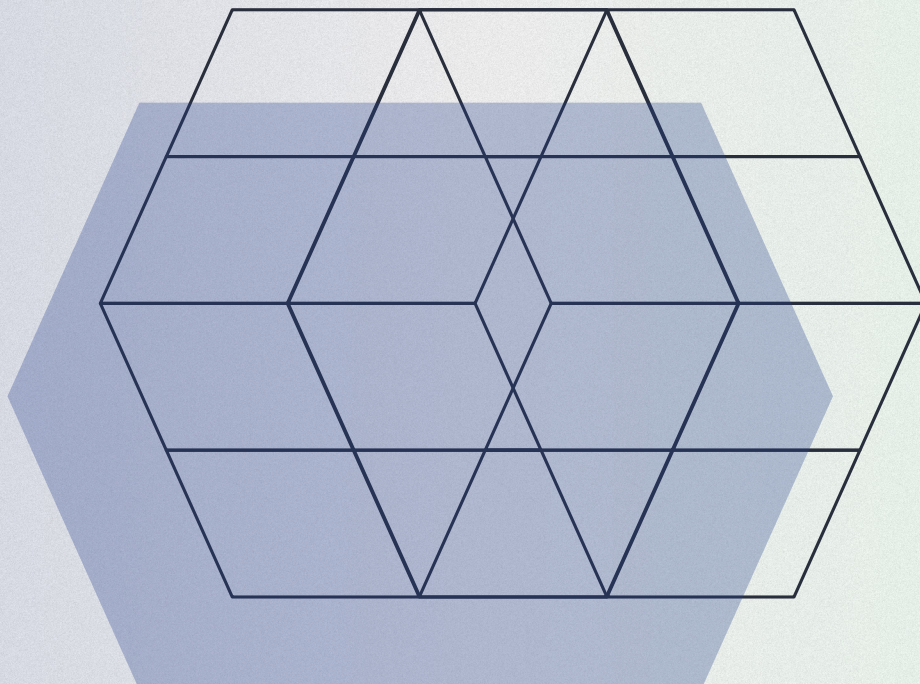
## Core features

- **Transfer documents** of title and other trade documents instantly.
- Encryption at the **highest confidentiality level**.
- **Irrevocable** transfer of possession of the documents.
- **Neutral**, public blockchain used as ledger.
- **Audit trail** of events only visible to the participants involved.
- Data and **business privacy**.
- **Advance Cargo Information** (ACI) processing for sea freight and air freight.

**Creation & management**  
of electronic documents  
or data

Simple **transfer** of  
documents/data to  
business partners  
(eBL, ...)

Complex multi-point  
document filings for trade  
finance and customs  
processing





# Information security on CargoX Platform

## **Trusted identities & verified entities**

The CargoX Platform includes a robust verification process integrating bank and third-party assessments to ensure the authenticity of companies on the platform.

## **Immutable document creation & management**

Using technologies such as blockchain and the InterPlanetary File System (IPFS) introduces authenticity and immutability of data at the technological level.

## **Complete API integration**

Anything available through the web interface is available in the REST-based and well-documented API, offering seamless integration into existing systems.

## **Fast disaster recovery & hardened resilience**

Data stored on the blockchain provides zero recovery time objective – it's instant and always available. CargoX ensures distribution of other data to at least three data centres worldwide.

## **High availability & scalability**

The CargoX Platform is always on and always available. By leveraging technologies such as Kubernetes and cloud offerings, it can scale to support any load.

## **ISO/IEC 27001:2002 compliance**

CargoX and the CargoX Platform have passed the ISO/IEC 27001:2022 certification audit, thus ensuring the highest commitment to information security.

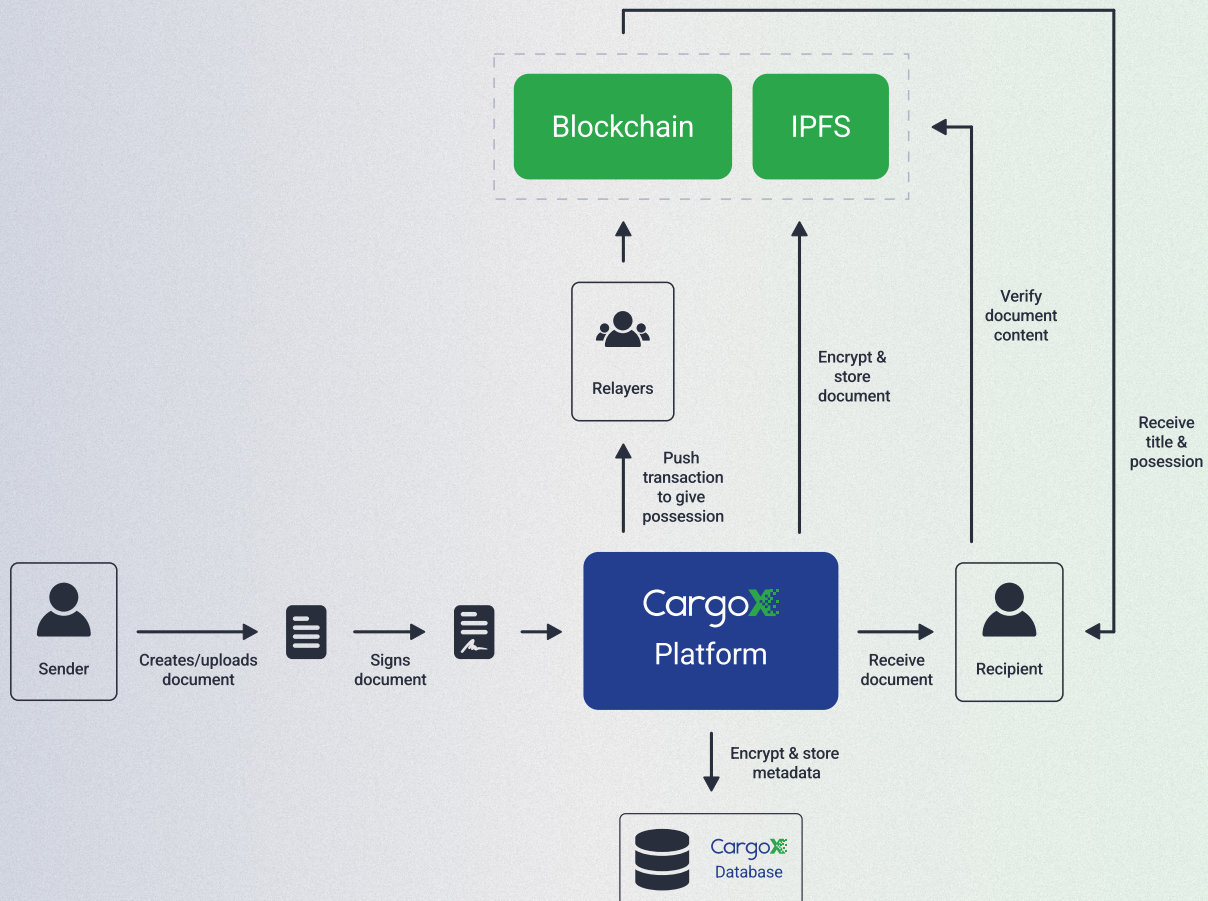
## **Multi-tier architecture & penetration testing**

Regular penetration tests ensure the strictest level of compliance. The multi-tier access architecture detects issues early on and prevents DOS attacks.



# CargoX BDT architecture: a combination of on-chain and off-chain data

CargoX architecture uses an approach that provides a balance between the benefits of blockchain technology and the needs of the industries involved. Off-the-chain data storage assures business confidentiality as personal and business details are not stored directly on the blockchain.



## On-chain data

Used for registering an original document with blockchain and tracking the document's ownership. This is the part where trust is the most important, as we do not want anyone besides the current owner of the document to have rights to change it (not even CargoX).

## Off-chain data

Stores all user data for mandatory customer identification and verification, including everything required by regulators, like KYC (Know Your Customer). This is also where the pairing of customers and their public keys is securely stored.

## Blockchain

The CargoX Platform utilises the public, neutral Ethereum blockchain network for tokenizing digital assets, such as electronic trade documents – bills of lading, letters of credit, contracts, other documents of title, and certificates – totaling more than 65+ types of documents in structured or unstructured formats (PDF, JSON, XML, etc.).



## **InterPlanetary File System**

All original documents are encrypted and stored on a decentralised IPFS. The principles of IPFS are similar to those of a blockchain in the sense that it is permanent and immutable, preventing unauthorised changes or loss of data. Encrypted documents are only available to the parties involved in the transaction.

## **Ethereum smart contracts**

Whenever we read/write on-chain (blockchain) data, the CargoX Platform smart contracts are used. The CargoX smart contracts are a suite of smart contracts deployed on the public Ethereum and Polygon networks.

## **Tokenisation**

Electronic trade documents are tokenized using the non-fungible CargoX ERC721 token on the Ethereum blockchain network. The tokens are used to transfer possession and control of electronic trade documents created on the CargoX Platform. Signing, transfer, and control are performed with the help of private blockchain keys.

# Digital ledger benefits

The CargoX Platform relies on a digital ledger called blockchain to ensure consistency, immutability, and authenticity of user identities and uploaded documents. CargoX firmly believes blockchain is the only technology that can tick all the boxes. Blockchain provides the following advantages:

## **Trust without central authority**

Blockchain provides inherited trust without the need for a central authority. This ensures that projects based on blockchain can survive independently of any political or business changes.

## **Decentralisation**

Distributed network structure ensures global availability and provides access to the data even if certain nodes are (temporarily) inaccessible or offline.

## **Distributed ledger**

Ensures data integrity by recording transactions across multiple nodes, making tampering practically impossible.

## **Increased security**

Utilises cryptographic techniques to store and secure data, making the system resistant to hacking and fraud.

## **Transparency**

Allows all network participants to view transactions, fostering trust and accountability.



### Traceability

Enhances the ability to track transactions and changes back to their origins, crucial for verifying the authenticity and preventing fraud in supply chains.

### Auditability

Provides a comprehensive and tamper-proof audit trail of all transactions, facilitating regulatory compliance and transparency for audits.

### Immutability

Once recorded, data cannot be altered, ensuring the permanence and accuracy of the transaction history.

## Document creation and management

The CargoX Platform offers advanced methods for creating or uploading, signing, transferring, and managing trade documents digitally.

Users can:

- **Create** structured or unstructured documents.
- **Convert** documents.
- **Sign** and transfer documents.
- **Store**, manage, and review documents.
- **Track** events on documents with a detailed audit log at any time.
- **Process** documents and information in their documents and workflows.

## Audit log

The combination of private keys, hashing techniques, and smart contracts makes it possible for CargoX to display a clear audit log for each document.

The audit log represents a document's history from its creation to the end of its lifecycle.

The audit log's claims can be independently verified while hiding sensitive business information, such as the content of the document and the details of the parties involved.

## Visibility

The approaches to storing and transferring documents imply that document visibility is limited only to the parties with whom the documents have been shared.

The contents of all documents are encrypted at rest and in transit, and the public attestations involve only hashes of documents and public keys of involved parties.



# Security

Security is at the heart of all activities and solutions at CargoX.

CargoX has passed the ISO/IEC 27001:2022 certification audit, one of the first in Slovenia to do so.

## Guarding user privacy: ensuring private key confidentiality

The CargoX Platform is designed with the highest security in mind. The CargoX Platform users use blockchain keys to sign, transfer, or authorise a document. CargoX can never obtain access to the users' private keys. The user must sign the action with their private key. Below is a brief explanation. The usage of private keys on the platform is simple, keys can be stored on a disc, in software, or in a hardware device (Trezor, Ledger, etc.). .

Users directly sign transactions on the blockchain; the process is simple and straightforward. The transactions are then evaluated and recorded by a smart contract automatically. This all happens automatically and is transparently handled by the CargoX Platform. Dealing with the technicalities of blockchain technology is minimised.

## GDPR compliance

No identifiable business information is stored on the blockchain. Corporate digital identity data is stored off-chain in a proprietary CargoX database.

## Company verification on the CargoX Platform

The CargoX Platform's company verification process is a fundamental component of its blockchain data transfer system, **ensuring the authenticity of actors on the CargoX Platform.**

By incorporating bank verifications and third-party assessments (e.g., through Dun & Bradstreet and other services), and by implementing **strict validation and re-verification protocols**, CargoX bolsters security and promotes a transparent, dependable environment for global business transactions. This meticulous approach ensures that all participating entities are verified, enhancing trust and reliability in digital trade.

To allow companies to use certain official features of the platform, CargoX uses a multi-layered company verification process.

**This process consists of several steps. These steps can be specific for each process and/or country.**



# ISO/IEC 27001:2022 compliance: enhancing data security and trust



## ISO/IEC **27001:2022**

International standard for information security

CargoX prioritises the security of the clients' data above all else.

By adopting ISO/IEC 27001:2022 principles, CargoX has committed to a globally recognised framework that ensures the confidentiality, integrity, and availability of all the data it handles.

ISO/IEC 27001:2022 does not focus only on computers or infrastructure. It extends beyond to encompass all operational processes, information, people, and systems within the company.

### **Benefits of ISO/IEC 27001:2022 for CargoX Platform users:**

- Enhanced data security.
- Improved risk management.
- Increased reliability and trust.
- Regulatory compliance.

## Based on standards, built for interoperability

CargoX is designed to cater to the needs of global players. By partnering with leading worldwide industry groups and institutions, we aim to offer a modern framework of standards and legislative adoption, ultimately eliminating barriers in global trade.

It is our goal for the CargoX Platform to be compliant with new and emerging industry standards and fully interoperable with other electronic trade document platforms. We collaborate with or closely follow the work of the following institutions.



# Awards and approvals

CargoX is a company focused on **providing blockchain-based document and business data** transfer solutions for logistics, trade, trade finance, manufacturing, energy, and service sectors on a global scale. Our portfolio of solutions and services is designed to meet the unique needs of corporate entities, government bodies, and regulatory agencies.



## Built on legal compliance and industry standards

We are on the frontlines with leading global industry bodies and organisations, paving the way towards a modern set of standards and legislation to remove friction from global trade.



Collaborating with international bodies



WORLD CUSTOMS ORGANIZATION

World Customs Organization  
(WCO)



DCSA

Digital Container  
Shipping Association (DCSA)



FIATA

International Federation of Freight  
Forwarders Associations (FIATA)



ICC

International Chamber of  
Commerce (ICC)



BIMCO

Baltic and International  
Maritime Council (BIMCO)



ITFA

International Trade &  
Forfeiting Association (ITFA)



DIGITAL  
TRANSPORT  
& LOGISTICS  
FORUM

EU Digital Transport &  
Logistics Forum (DTLF)



WORLD  
ECONOMIC  
FORUM

World Economic Forum  
(WEF)



United Nations  
UNCITRAL

UN Commission On International  
Trade Law (UNCITRAL)



UNECE  
UN/CEFACT

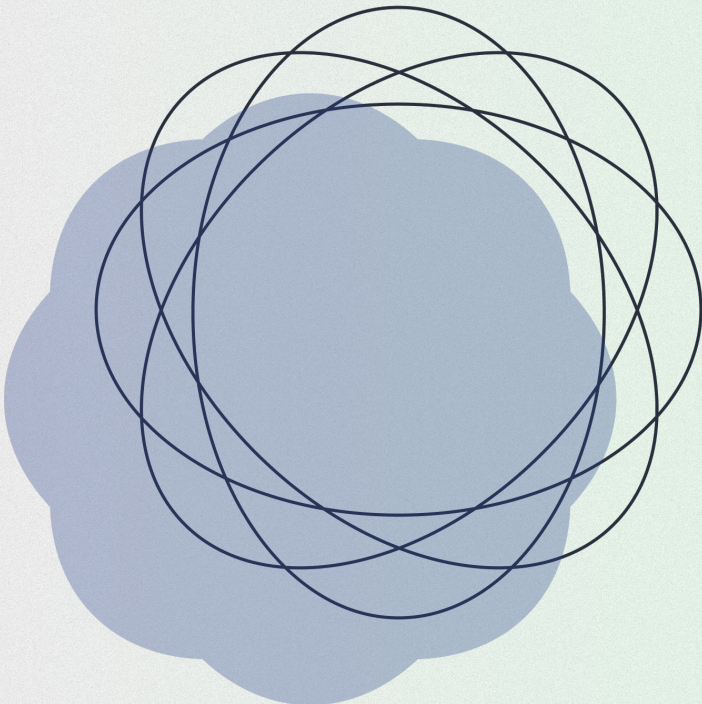
UN Centre for Trade Facilitation and  
Electronic Business (UN/CEFACT)

Approved by



IGP&I International  
Group of  
P&I Clubs

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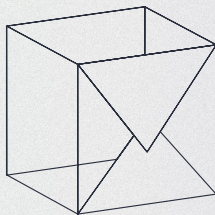




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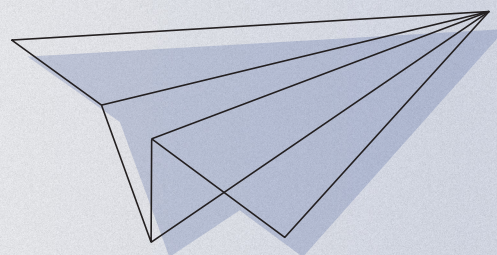
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ISO/IEC  
**27001:2022**  
International standard for information security



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