Windows of Opportunity:
Facilitating Trade with Blockchain Technology

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NEXTRADE GROUP, LLC
World trade is changing. Are you?

Purpose

- IDB & WEF initiative
- Test a **working hypothesis:** blockchain can add new value to single windows
  - ✓ Analyze the **main pain points** facing trade single windows
  - ✓ Assess if and to what extent blockchain might **solve these pain points**
- Develop a **policy framework** for operationalizing blockchain in single windows

BID
Banco Interamericano de Desarrollo

WORLD ECONOMIC FORUM

Single window: success story in trade facilitation

Selected empirical findings

Digital single windows

- In Kenya, time to process applications cut 50%; number of documents halved
- In Colombia, time to import a container fell from 48 to 13 days
- Costa Rica scored $16 in economic gains from every $1 invested in the single window

Paperless trade

- Sub-Saharan African importers have 98 hours on paperwork for a consignment vs. 4 hours in Thailand, 1 hour in Canada and Sweden
- Costa Rica's paperless trade "lane" had 1.4% faster trade growth than "paper-lane"

Digital payments of duties and fees

- In Tanzania, digitization of customs clearance and duties cut import clearance from 9 days to 1 day

Trade information available online

- Reduces SMEs' processing time and obviates intermediaries

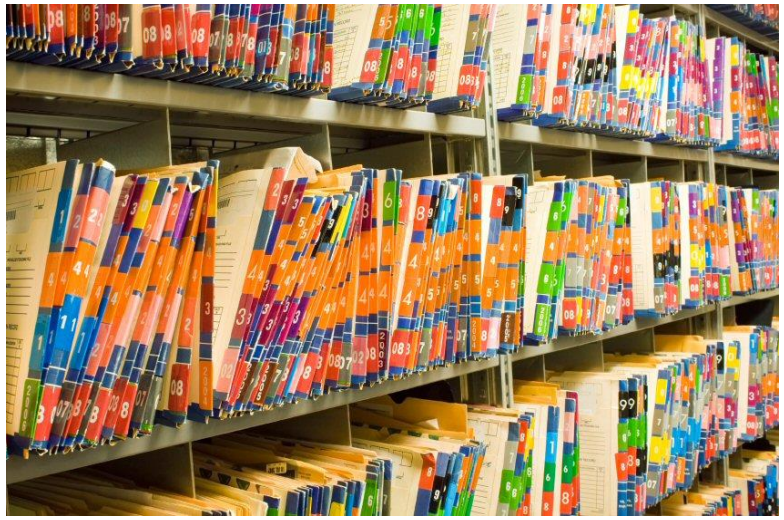
But pain points remain…

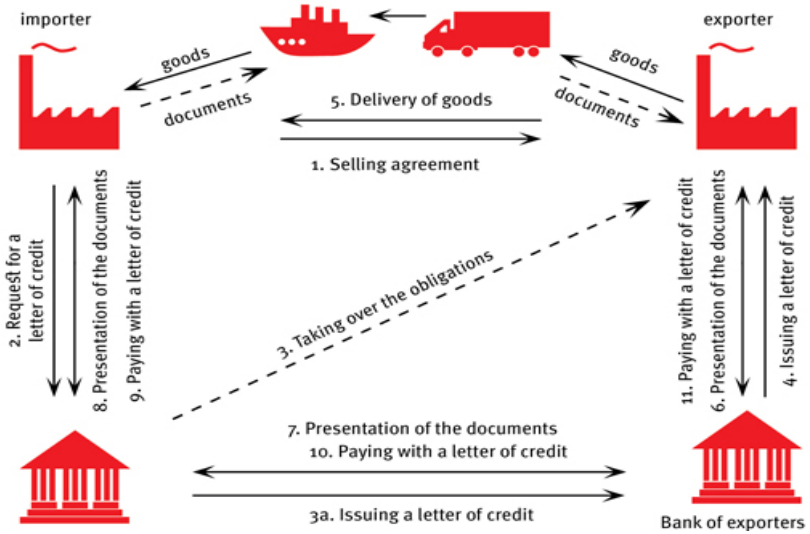
Paper refuses to die

Inefficient data share

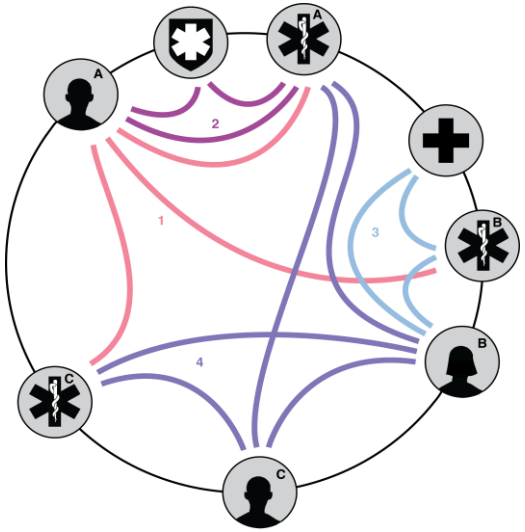
Concerns about quality of data

Could Blockchain help? Blockchain use cases proliferate





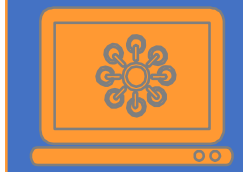
MEDREC
Blockchain for EMRs
pubpub.org/pub/medrec



we.trade

CaixaBank
Eurobank
HSBC
ERSTE Group
KBC
Nordea
NATIXIS BEYOND BANKING
Rabobank
SOCIETE GENERALE
Santander
UBS

Blockchain properties we examined, to solve SW pain points



Distributed database

Smart contracts

Auditability of data

Digital identity

Immutability of data

Other technologies –
IOT, AI, ML, RPA, etc.

- ***Note: this is NOT a "battle of technologies"***

Pain point	Use Case	Blockchain's Potential	Complementary solutions
Lack of interoperability among national SWs	• Data share among national single windows	• **Improve SWs' visibility into supply chains, risk-management, pattern recognition, pre-arrival processing**	• Harmonize document requirements, enable data share
Lack of interoperability among agencies in SW	• Coordination of actions among agencies in SW	• **Improve agencies' data share, coordination of inspections, 360° visibility into transactions** • **Enhance UX**	• Inter-agency collaboration • APIs for data-share
Limited traceability	• End-to-end visibility into shipments and supply chains	• **Enable more complete data on shipments and supply chains** • **Audit trails on traders**	• IoT • ML to predict anomalies • Data share with private sector
Inefficient manual processes and lack of automation	• Automation of processes to make and reconcile duty and fee payment	• **Automate payments and their reconciliation** • **Accelerate revenue collection**	• Robotic process automation • Deferred duty payments • Data-rich electronic payments
Limited trustworthiness of data	• Improved reliability of data in SWs	• **Make data entered into single windows immutable and unauthorized modification to the data traceable**	• Data standards • Data security protocols • AI to detect fraudulent entries
Limited portability of data	• Authentication of identities and portability of IDs and data across service providers, e.g. trade finance	• **Provide SW users a unique ID** • **Enable users use their transactional data to secure services**	• Global Trade Identity (GTID) • Regulations to encourage portability of data

Policy framework for operationalizing blockchain in Single Windows

	1 Create vision and business case	2 Create governance structure, implementation plan	3 Build technology architecture and integrate technology
Actions	• Ensure political support exists for trade facilitation • Establish a “grand vision” for blockchain in the single window and business case for stakeholders • Adopt blockchain in pilots and iterating to improve outcomes • Bring together a multidisciplinary team to pilot and apply blockchain • Define how to cover costs and how to engage development banks and donors	• Establish a governance structure with mandate, scope, responsibilities, and data-share rules • Standardize data entered on blockchain and data security protocols • Define reward systems for staff in agencies to implement blockchain • Define data storage needs • Assess compatibility of blockchain with existing regulations; consider regulatory sandboxes	• Develop the technology architecture, acquire blockchain technologies, and integrate blockchain with existing databases and technologies • Retrain agencies’ IT staff and acquiring of new capabilities with technical knowledge of blockchain
Who drives	• Head of state, agency heads, private sector users, focus groups	• Agency heads, IT leads, and users; int’l experts	• Agency IT leads, experts
Level of effort needed	● ● ●	● ● ●	●

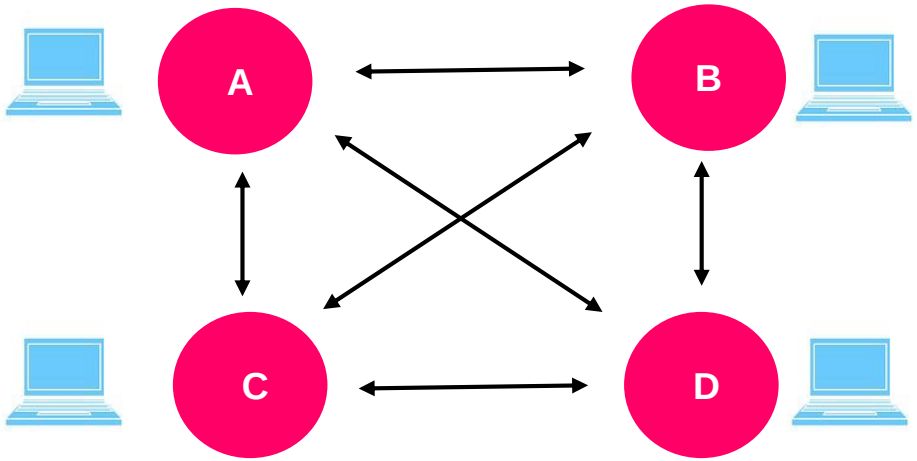
Operationalizing blockchain, cont.

	4 Manage user identities and data	5 Measure impact and report on it	6 Iterate
Actions	• Test a single, interoperable identity for single window users and enable them to make their data portable • Possibly develop a new identity for blockchain users, e.g. GTID • Communicate technology improvements to users	• Develop and track KPIs, e.g. time release indicators; operational efficiency in border agencies; and trade facilitation and SME trade growth • Reward agencies' staff for meeting targets defined in steps 1 and 2	• Assess the pilot and consider ways to improve and scale it • Consider blockchain's emerging capabilities and rethinking its governance • Assess governance structure built in step 2 • Consider range of applications in other niche areas in single windows
Who drives	• Agency heads, IT leads	• Agency frontline staff, report to head of state	• Implementors, private sector users
Level of effort needed	●	● ●	● ●

This methodology has already been applied, e.g. IDB's CADENA

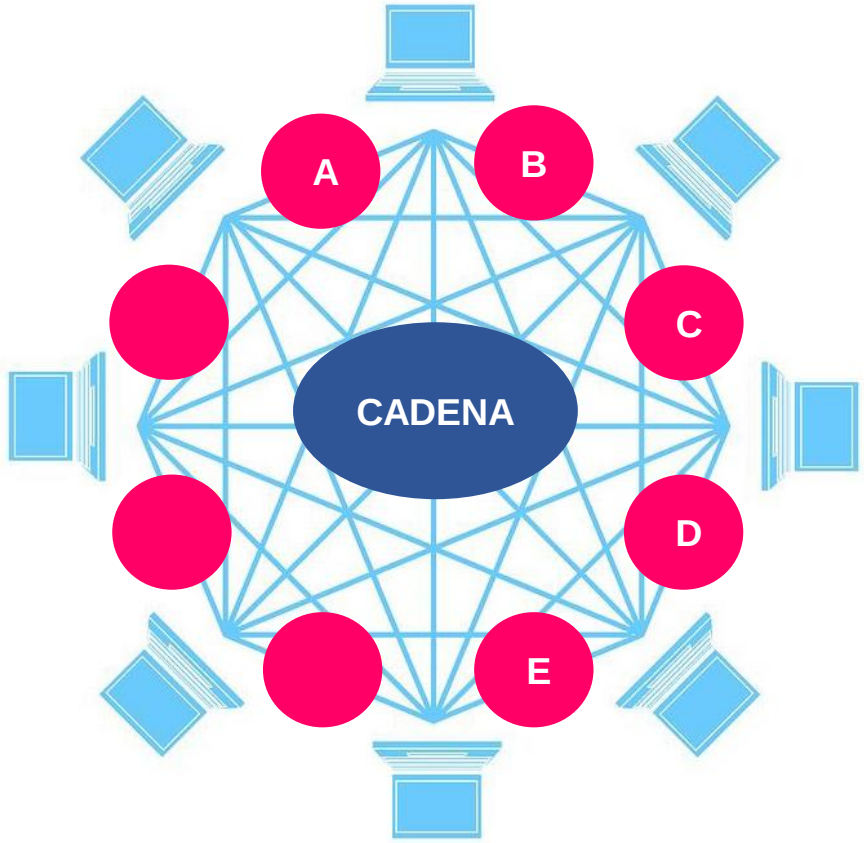
Before

Customs A, B, C, D exchange information on AEO certifications bilaterally (Chile, Costa Rica, Mexico, Peru)



After

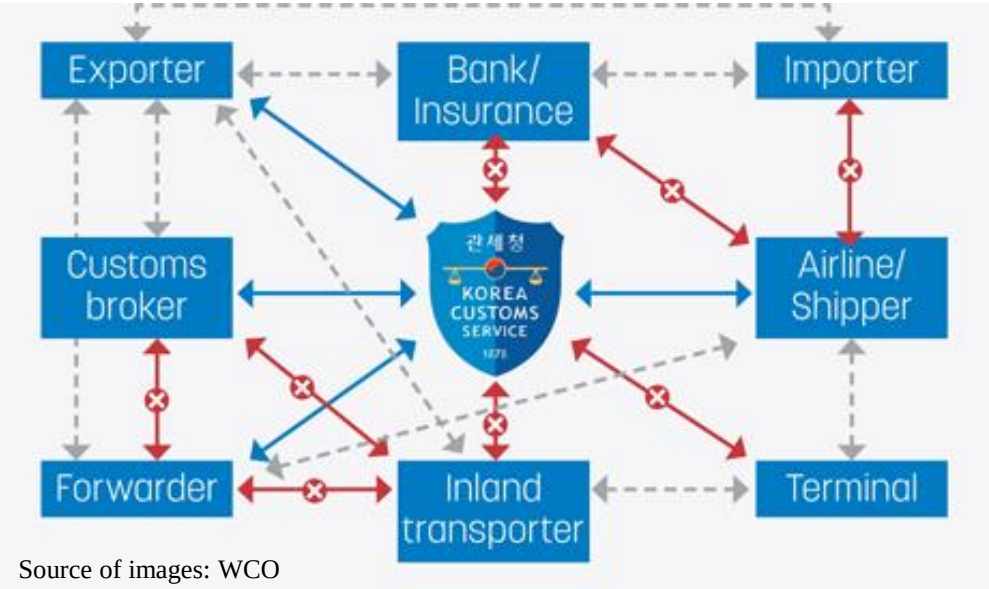
Cadena brings customs A,B,C, D on a common blockchain to access real-time data on each country's AEO certifications



This methodology has already been applied, e.g. Korean Customs Service

Before

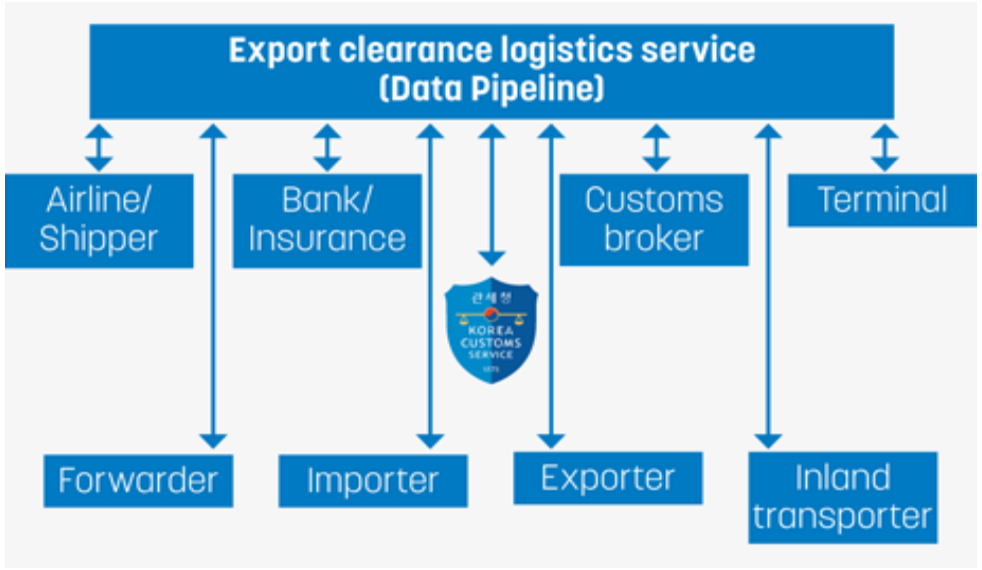
Logistics players and agencies struggled to validate and share data efficiently; manual entries and bilateral paper-based processes



Source of images: WCO

After

Real-time data share in trade logistics and clearance, minimizing manual work



Lessons-learned on 3 key preconditions for leveraging blockchain

1. Consensus-building on goals and use cases of blockchain with internal and external stakeholders

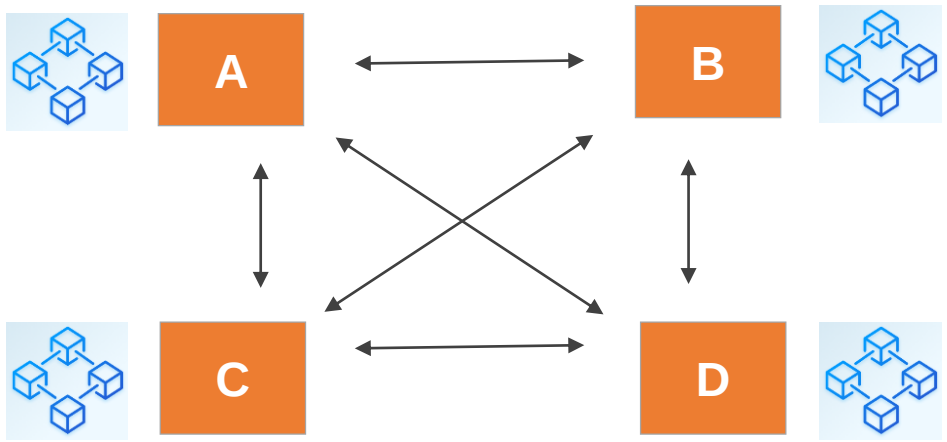
2. Dialogues on how stakeholders' business models need to be updated to leverage blockchain

3. Clear data and identity governance and access to data

What happens when everyone has a blockchain? Interoperability among ledgers just got easier: IDB's LACChain

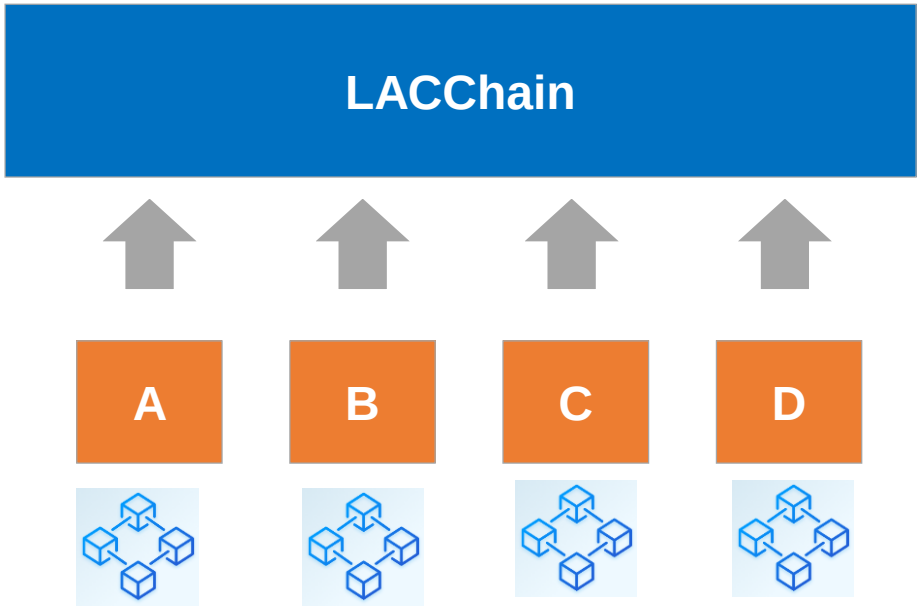
Before

To interoperate, blockchain ledgers A,B,C,D have to negotiate standards one-by-one



After

Motherboard to which ledgers can plug onto → interoperability across any number of ledgers



Want to consider applying blockchain and new technologies in SW?

- **Join us (Sandra Corcuera, Alejandra Radl, me) for lunch today**
- **Paper available at** http://www3.weforum.org/docs/WEF_Windows_of_Opportunity.pdf

Appendix: CADENA implementation

For more detail: IDB's CADENA

1 Create vision and business case

- In early 2018, IDB staged a workshop to identify with three Latin American countries' customs pain point: in sharing data on AEO certified companies
- IDB together with customs drafted a vision and business case to contribute to the facilitation and securing of trade by sharing each other's AEO certifications data in a secured and real-time
- Blockchain was identified as the technology to be validated to create efficiency and security in the exchange of information between customs
- Project was branded "CADENA" ("Chain")
- IDB funded the pilot project and created an interdisciplinary team with IDB's trade and technology experts and beneficiaries – customs administrations of Costa Rica, Peru and Mexico. Chile joined afterwards.

2 Create governance structure, including for data, and implementation plan

- The pilot project was crafted collaboratively during the workshop, by first learning about blockchain as the proposed technology, and then developing common understandings of the business challenges.
- This work resulted in definition of the functionalities, technical requirements, and data management requirements for the solution that were included in RFP specifications
- An *ad hoc* governance structure was defined for the pilot project which consisted on a private blockchain ecosystem of the customs administrations with the initial support and participation of the IDB and the technological vendor
- Interaction and constant feedback among the IDB, countries and technological vendor was established during the design and implementation phase throughout 2018.

3 Build technology architecture, integrate with other systems and manage user identities

- Together with the selected technological vendor an ad hoc blockchain architecture was adopted for validating the exchange of data
- Beneficiary customs opted out for integrating the solution CADENA with legacy systems during the project pilot to keep the focus on the exchange of data
- Customs agreed that the solution CADENA would be enhanced with a Power App that enabled customs officials and AEO-certified companies access the platform through mobile devices

4 Manage user identities and data

- Data privacy and user identities was managed to control access and functions in the blockchain enabling audit trails and preventing the deletion or alteration of data

5 Measure impact & report on it

- Approach developed in phases 1 and 2 allowed for a fast and measurable pilot over the pilot project. Among gains:
  - ✓ Accelerated process of granting benefits to new AEO-certified firms in the countries of destination for their cargo operations
  - ✓ Increased transparency and traceability of cross border data
  - ✓ Strengthened security of supply chains by facilitating access to data of new AEO certified companies and also to AEO suspensions and cancellations in real-time across countries' customs
  - ✓ Increased knowledge on the application of new technologies among customs and trade community

6 Iterate

- The pilot project resulted in innovation for customs management and in several lessons learned. These are related to the governance, data privacy and additional functionalities of the solution that will be tackled and enhanced during a second phase in CADENA v.1
- During phase 2, CADENA v.1 will catalyze synergies of LACChain, a region-wide initiative facilitates by the IDB to develop a regional blockchain ecosystem in Latin American and the Caribbean
- CADENA v.1 will evolved providing technological solutions for an autonomous and sustainable governance and for data privacy provisions benefiting from blockchain technological architecture provided by the LACChain infrastructure. This will further its capacity to scale to new customs like Colombia.