Blockchain – a potential **technological revolution** for increasing efficiency in **cross-border trade processes?**

Expectations of the disruptive nature of blockchain in supply chain

> Estimated revenue potential for blockchain in freight and transport industry is as high as $500 billion
>
> **Morgan Stanley**

> Reducing international trade barriers could increase worldwide GDP by 5% and total trade volume by 15%
>
> **World Trade Organization**

> Most executives in 2019 stated that they are working on blockchain solutions in supply chain in their companies
>
> **Deloitte**

> Blockchain is listed under the top 3 technologies transforming logistics industry, bearing large productivity and visibility benefits
>
> **Forbes insights**

Various potential use cases promise changes in the transport and logistics industry

Tracking
and (re-)tracing cargo

Complementing
IoT and AI applications

Assessment
of vehicle performance history

Eased onboarding
of new carriers

Facilitating
IoT based Vehicle2Vehicle communication

Display and sharing
of load board data

Smart Contracts
eliminating middlemen

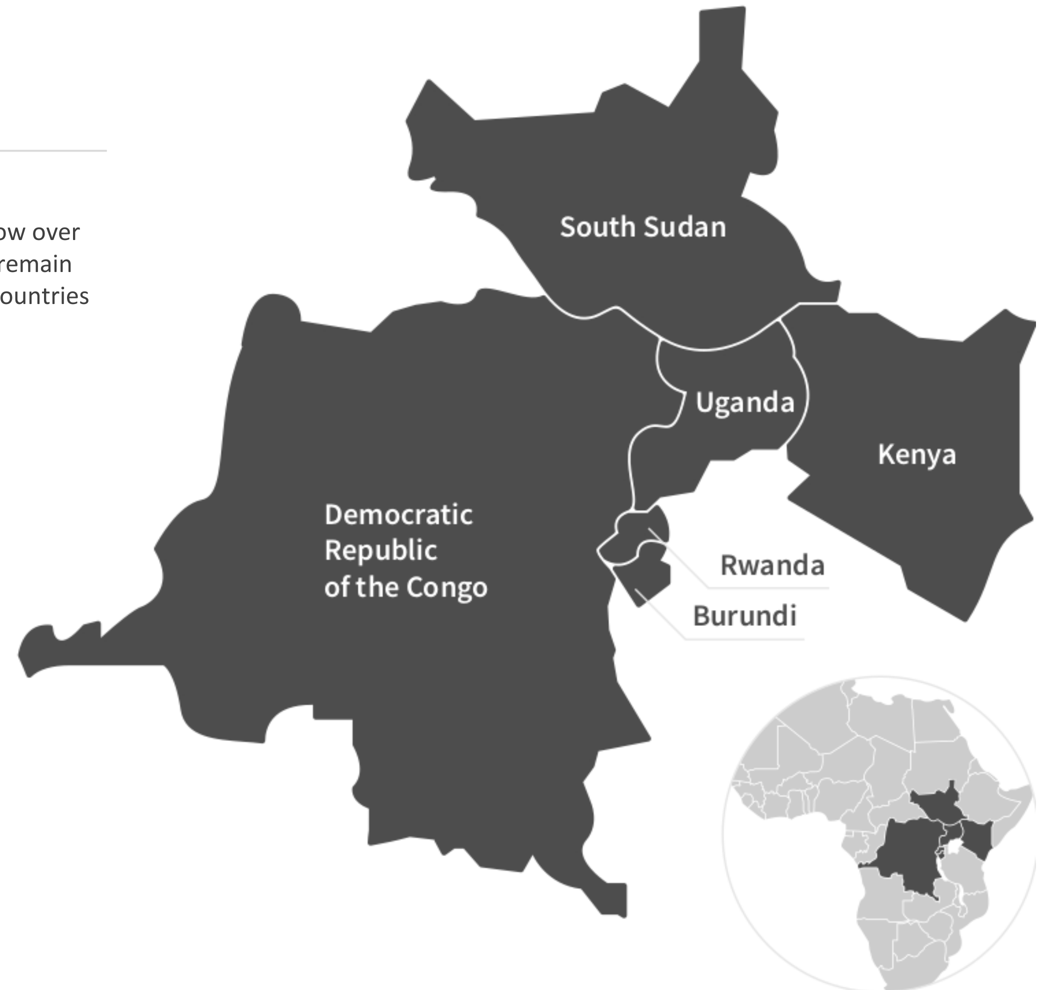
Efficient settlement
between parties

Deep-dive into a supply chain use case

How blockchain can change trade processes in practice:
A use case analysis of the African Northern Corridor

Situation

While trade cost growth in the Northern Corridor has been slow over the past years, total costs still remain high compared to developed countries



Logistics costs in Northern Corridor countries are high compared to developed representative countries:

Cost to **export** a container

Cost to **import** a container

Complication

Comparably high trade costs are not only causing first order effects but are in a broader context also translating into second order effects

First order effects

- High transportation & administration costs
- High replacement costs

Second order effects

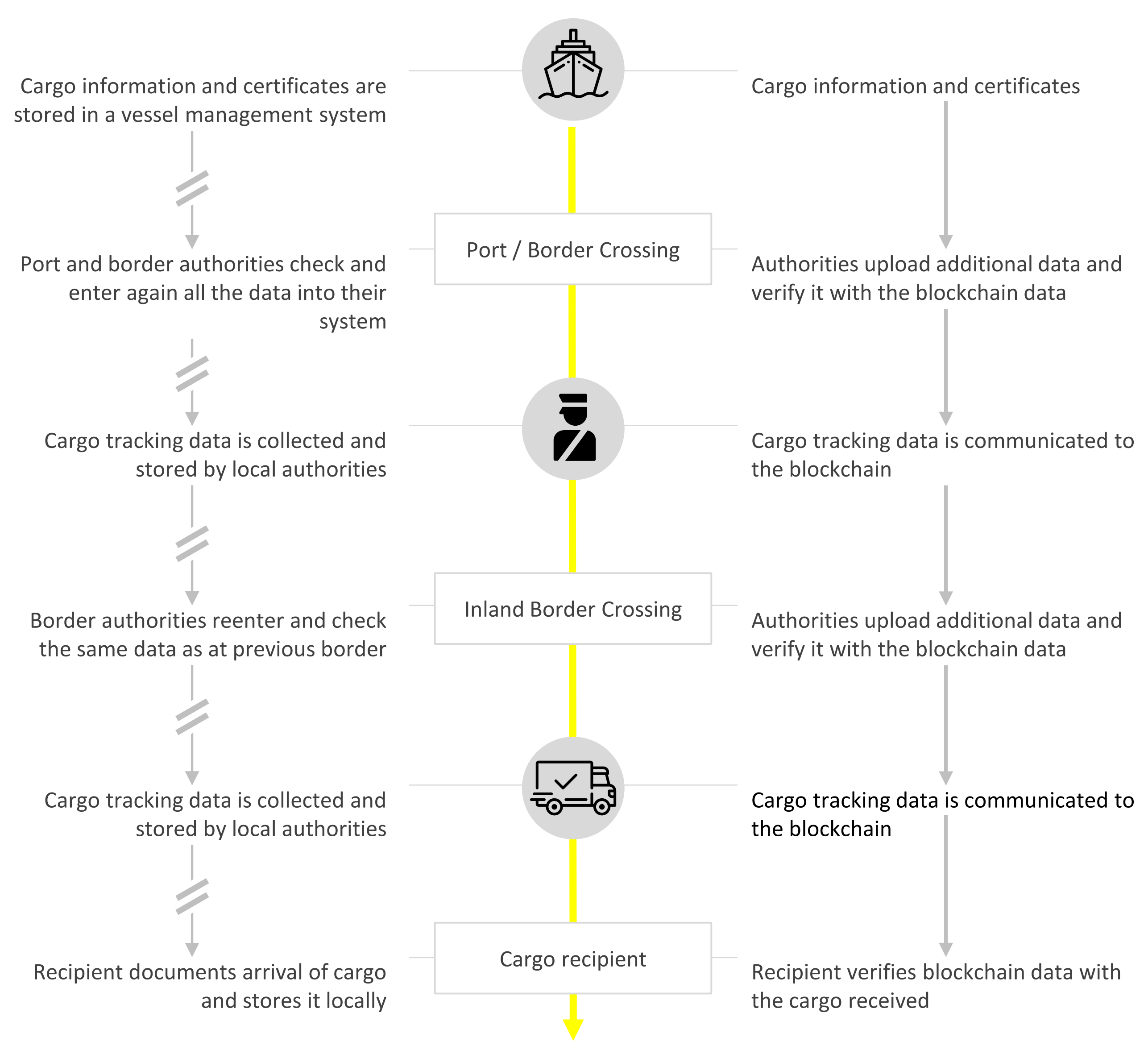
- Undersupply of goods
- Local conflicts

Solution

Conventional cross-border trade process
Data is not shared across parties transparently locking away information

vs.

Blockchain enabled cross-border trade process
Transparent and tamper proof sharing of data across all authorized parties



Conventional		Blockchain enabled
Cargo information and certificates are stored in a vessel management system		Cargo information and certificates
Port and border authorities check and enter again all the data into their system	Port / Border Crossing	Authorities upload additional data and verify it with the blockchain data
Cargo tracking data is collected and stored by local authorities		Cargo tracking data is communicated to the blockchain
Border authorities reenter and check the same data as at previous border	Inland Border Crossing	Authorities upload additional data and verify it with the blockchain data
Cargo tracking data is collected and stored by local authorities		Cargo tracking data is communicated to the blockchain
Recipient documents arrival of cargo and stores it locally	Cargo recipient	Recipient verifies blockchain data with the cargo received

Up to **70%** **of shipping documents data** can be replicated across these steps but is not transparently shared among parties

Potential of significantly reducing trade costs caused by redundancies of separate data storage and validation of shipping documents across the supply chain

Following procedures in the Northern Corridor could benefit from a blockchain enabled supply chain

Border procedures

Delays of payments across parties and their display in different systems

Synchronization delays due to the usage of two different platforms by the Kenyan Revenue Authority and the Kenya Port Authority causing overall transportation delays

Coordination and documentation of border post procedures in which different agencies interact (e.g. at One Stop Centers)

Mechanisms for pre-clearance of goods while still on the vessel and the processing of paper-based bills of landing at the port of Mombasa

Road related issues

Authorities and transporters mounting their own tracking devices on the vehicles or cargo leading to redundancies

Separate tracking systems and control mechanisms for monitoring the tracked have to be set up and maintained instead of a single system

Policies and regulatory issues

Non-transparency of official, unofficial, as well as asymmetric charges, causing miscalculations among transporters and leading to an increasing unpredictability of profits

Informal trade of goods causing a decline in revenue for authorities, regional price dumping as well as deluding the origin of goods

Read exec summary on **medium**

Read academic paper document **here**

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Blockchain Research Accelerator #1 batch

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