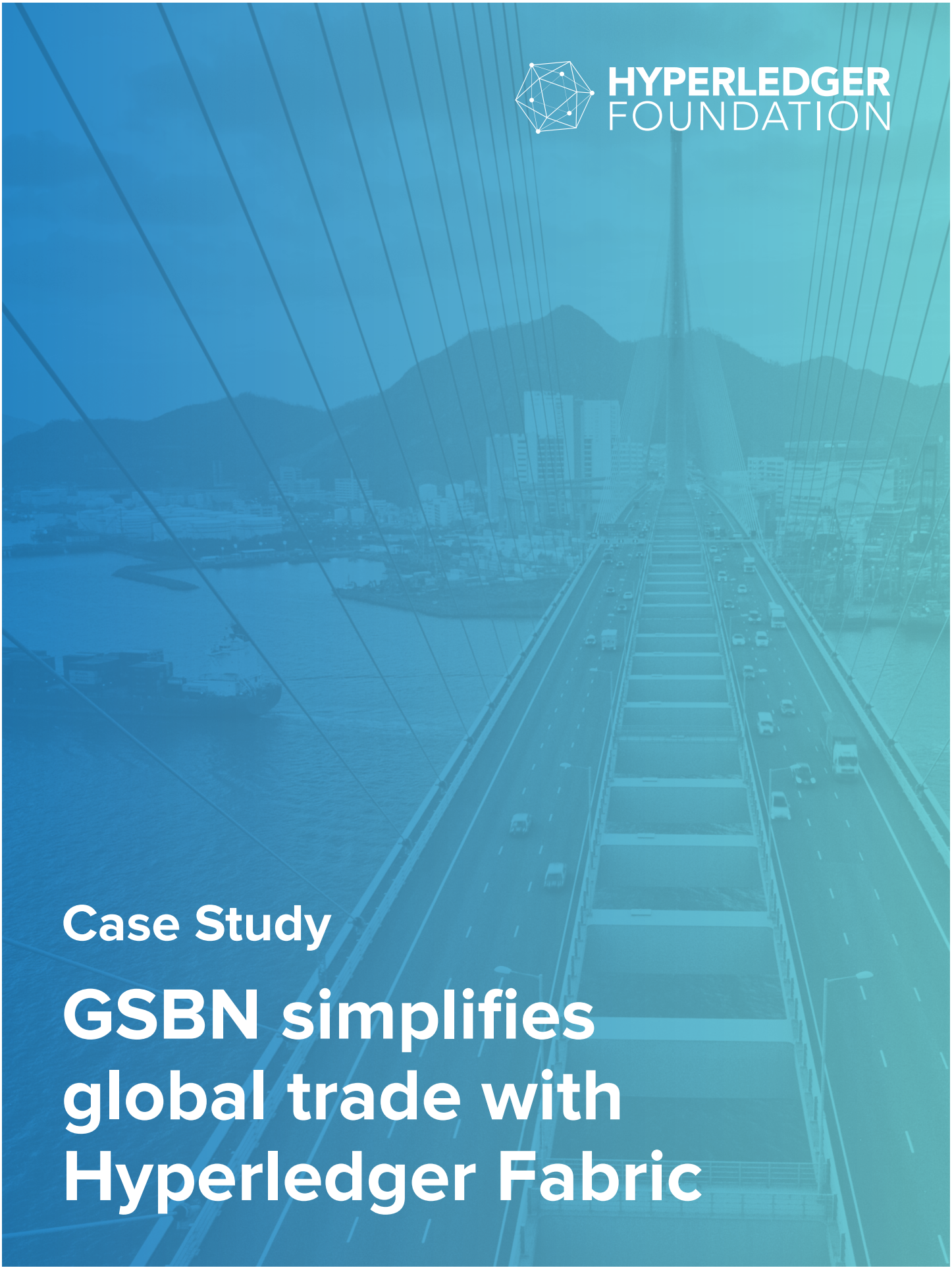

HYPERLEDGER FOUNDATION

Case Study

GSBN simplifies global trade with Hyperledger Fabric

GSBN: A New Global Trade Operating System

- GSBN allows a suite of solutions for some of trades biggest challenges, including cargo release, trade finance, and bills of lading
- Paperless, efficient, and transparent blockchain-based solution
- Provides a single, immutable source and record of data
- Harnesses trusted data directly from the shipping industry via GSBN
- Improves end-to-end operational efficiency and transparency

Goals

- Modernize the shipping industry with digital transformation
- Simplify global trade and supply chain
- Recruit a critical mass of shipping lines and terminals to the GSBN platform
- Remove barriers to collaboration among competing market participants
- Build solutions on top of GSBN to support and improve global trade

Approach

1. Recognize the risk of not digitizing
2. Build the operating system with Hyperledger Fabric
3. Design and deploy the first use case: Cargo Release
4. Work on second use case: Trade Finance
5. Enable the third use case: Electronic Bill of Lading (eBL)

Results

- Time for cargo release reduced from days to hours
- Improves shipping container turn-around time, reducing port congestion and pollution
- Served over 10,000 customers since March 2021 launch
- Speeds of over 100 transactions per second
- More than 1 million shipments handled

Summary

Global trade is systemically important to the world's economy. In 2021, it represented $28.5 trillion. Yet, it hasn't evolved along with the digital transformation of other industries.

Perhaps that's because evolution seems like an insurmountable task. Processes are complex. Documents and information flow continuously — but asynchronously — between parties across the globe. Many processes still rely on paper and legacy systems.

This lack of digital, on-demand data makes it difficult for the shipping sector to respond to global events, like the COVID-19 pandemic in 2020 or the supply chain disruptions in 2021. In short, existing global trade processes aren't efficient nor resilient enough.

GSBN wanted to remove barriers and friction in global trade. And it thought using blockchain could make that happen. Blockchains can span the globe and provide one standardized source of immutable data to all users in real-time. This helps prevent disputes and improves efficiency.

It was an appealing idea. But a solution to bring a traditional industry still relying on paper into the next digital era would take more than appeal. It had to be secure. It had to protect privacy. It had to work.

Could it?

Recognizing the risk of not digitizing

Recent years may have brought global trade inefficiencies to the headlines, but the industry knew about the challenges already. A few port and shipping groups began discussing these challenges — along with the risks of doing nothing — in 2018. The choice became clear: face an industry-altering digital disruption, or help their industry create a better future for their customers and themselves.

These industry leaders chose the latter, joining their forces to speed up the digital transformation of the shipping industry. But to transform an industry, they'd need collaboration within the industry. And for collaboration, they needed to address some of the industry's major concerns: privacy, trust, and incentives alignment.

Blockchain networks can ensure privacy and protect data. But the founders didn't want to build a mere data repository for the industry.

They envisioned a trusted data exchange. Data would come from trusted sources. Users would contribute and access data facilitated by the platform however they saw fit, while retaining the control of their own data.

Immutable records would enable trust in the data, but that wasn't enough. For this transformation to work, industry users would need to trust more than the data. They needed to trust the entire solution.

The leaders understood their competitors might be skeptical of a data sharing platform launched by major industry players. To overcome the skepticism, they needed to show fair and representative governance. And they needed a business model that accommodated the competitive nature of the industry.

They decided to create an independent not-for-profit consortium called Global Shipping Business Network (GSBN).

“Just like electricity transformed industries and rewired businesses, data is the fundamental resource to power digital transformation,” says Edmund To, Chief Technology Officer of GSBN. “We need a new digital utility infrastructure ‘grid’ to enable data sharing. As a digital utility infrastructure, GSBN’s goal isn’t profit, but rather increasing global trade powered by the platform.”

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GSBN would build and maintain the trusted data sharing infrastructure needed for efficient, digital and resilient global trade. Through its governance, it would represent different voices and backgrounds across the industry. Some of the funding would come from membership fees for joining GSBN.

GSBN’s management team would lead decisions related to strategy, product, and technology. The governing board would be made up of the eight founding members (COSCO SHIPPING Lines, COSCO SHIPPING Ports, Hapag-Lloyd, Hutchison Ports, OOCL, SPG Qingdao Port, PSA International and Shanghai International Port Group). The board would contribute subject matter experts to advise on new data products and to drive adoption of the platform.

In March 2021, GSBN was officially incorporated. Now, it was time to build.

Building the operating system with Hyperledger Fabric

GSBN built its operating platform in partnership with Oracle, Microsoft, AntChain and Alibaba Cloud and used Hyperledger Fabric as the foundation because it’s one of the leading distributed ledger frameworks for building an enterprise-grade, permissioned blockchain.

"We chose to join Hyperledger Foundation because it brings together resources and infrastructure required for open-source software blockchain projects," says To. "Joining this thriving and stable community helped us build our platform and ecosystem."

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To address concerns from members and users about data sovereignty and data localization, GSBN decided to deploy nodes across multiple jurisdictions, including China, the US and Singapore. These nodes all connect to form a shared enterprise blockchain network.

While each founding GSBN member has a dedicated Hyperledger Fabric instance, many members choose to leverage the shared instances provided and managed by GSBN.

GSBN doesn't just build and maintain the operating system. It also contributes standardized APIs for specific use cases. And, from the beginning, GSBN knew its first use case would be the cargo release process.

Deploying the first use case: Cargo Release

When a ship arrives at a port, there is a lengthy process all her cargo must go through before it's released. That time results in port congestion, higher prices, and elevated pollution levels.

Multiple parties from the shipping company and the terminal get involved in verification and reviews. Customs agents must perform their checks. Consignees need to make payments and arrange transport. The process can take days because much of it has to happen in person, with paper documentation.

This means for every cargo release, there is:

- Limited access to real time data
- Incomplete information exchange
- No single source of truth
- A high chance for human error
- Lost time and money

“That combination made it a perfect use case for blockchain technology,” says To. “The biggest challenge was integrating with legacy systems in the industry. We needed to make sure they connected smoothly with our application.”

The first use case is now Cargo Release, which runs on top of the GSBN platform. Cargo Release is paperless, efficient, and transparent. It connects everyone at the port of import, including shipping lines, terminals, consignees, and their agents.

GSBN rolled out Cargo Release over several months, beginning in China and Southeast Asia in August 2021.

“The launch of Cargo Release was a huge success,” says To. “By eliminating the need for paper, it simplifies data exchange and shortens operation time among parties with real-time updates. This cuts the time for cargo to be document ready for release from days to hours.”

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After the initial deployment, GSBN gained support from terminals across the globe. Cargo Release expanded its footprint into Rotterdam, the Netherlands, in March 2022. Four months later, Cargo Release launched in Latin America, starting with ports across Mexico and Panama.

As of September 2022, over 10,000 customers have used Cargo Release to get real-time updates on over 1 million shipments.

“It’s bringing real benefits to customers around the world,” says To. “After COVID-19 put extra pressure on people and demand on supply chains, simplifying the data exchange and reducing in-person interactions was even more important. And the gains from reducing the turnaround time is a significant benefit to shippers.”

With the first use case successfully underway, it was time to move on to the next use case: trade finance.

Designing the second use case: Trade Finance

The Trade Finance Gap measures the difference between applications to finance global trade and the applications financial institutions approve. An October 2021 report from the Asian Development Bank (ADB) estimates a trade finance gap of $1.7 trillion. The International Chamber of Commerce (ICC) reports a forecasted increase to $2.5 trillion by 2025.

Institutions reject 40% of applications by small and medium enterprises (SMEs), but SMEs make up almost 90% of trade companies. And nearly all trade requires some financing. This leaves a sizable percentage of companies in the global trade industry underserved.

The lack of access to digital information is too risky for banks, which contributes to this gap.

“Trade finance was the most logical use case to develop our second solution for,” explains To. “There is an obvious gap between the flow of goods and the flow of capital.”

To bridge this financing gap, GSBN partnered with leading Trade Finance banks. In September 2021, it formed the Trade Finance Advisory Group with Bank of China (Hong Kong) Limited (BOCHK), DBS Bank and The Hongkong and Shanghai Banking Corporation Limited (HSBC).

GSBN worked with institutions in the Advisory Group on digital solutions to help improve the financing process for banks. To break barriers in data sharing, GSBN created an application for consent collection. It allows banks to source data directly from shipping lines so they can verify information based on a single source of truth.

“Consent collection offers a new level of protection by allowing banks to get trusted data directly from the source,” explains To. “This facilitates approval processes and makes trade finance more accessible to SMEs.”

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“The main challenge with this use case was that multiple parties must collaborate — which means proper handling of sensitive data, facilitating smooth integration, and getting end users and data providers to understand their roles,” he says.

GSBN enabled that collaboration. In September 2022, it conducted a pilot transaction in under 20 minutes with Bank of China (Hong Kong), Hapag-Lloyd and A & W Food Service (Hong Kong) Ltd.

The Trade Finance Advisory Group will continue testing solutions that help improve the financing process for banks and SMEs. But to make the industry-wide changes it envisions, GSBN will need help. That help will come from application builders.

Enabling the third use case: Electronic Bill of Lading (eBL)

"Like other blockchain networks, GSBN provides APIs so others can build applications on our operating system," says To. "Our goal is for different industry participants and application builders to contribute to this digital transformation of global trade."

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One such application builder is IQAX, which created an electronic bill of lading (eBL) application to run on GSBN.

The bill of lading is one of the most important documents in trade. It's issued by shipping lines to acknowledge receipt of cargo from the shipper. Today the physical transferring of the original bill of lading still applies to 40% of all transactions in containerized shipping.

Documentation required for a single shipment can amount to 50 sheets of paper, which are exchanged with up to 30 different parties. Global management consulting firm McKinsey & Company estimates industry adoption of an electronic bill of lading could save $6.5 billion in direct costs. And it could enable nearly $40 billion in new global trade volume.

In June 2022, IQAX eBL application, built on top of GSBN, obtained approval by the International Group of P&I Clubs. The eBL application provides a digital channel for all parties to access real-time data on the shipping process. It also guarantees the security, accuracy, and authenticity of data. And it ensures the data on the blockchain network is traceable to a single source. This application has already been adopted by three shipping lines and one bank.

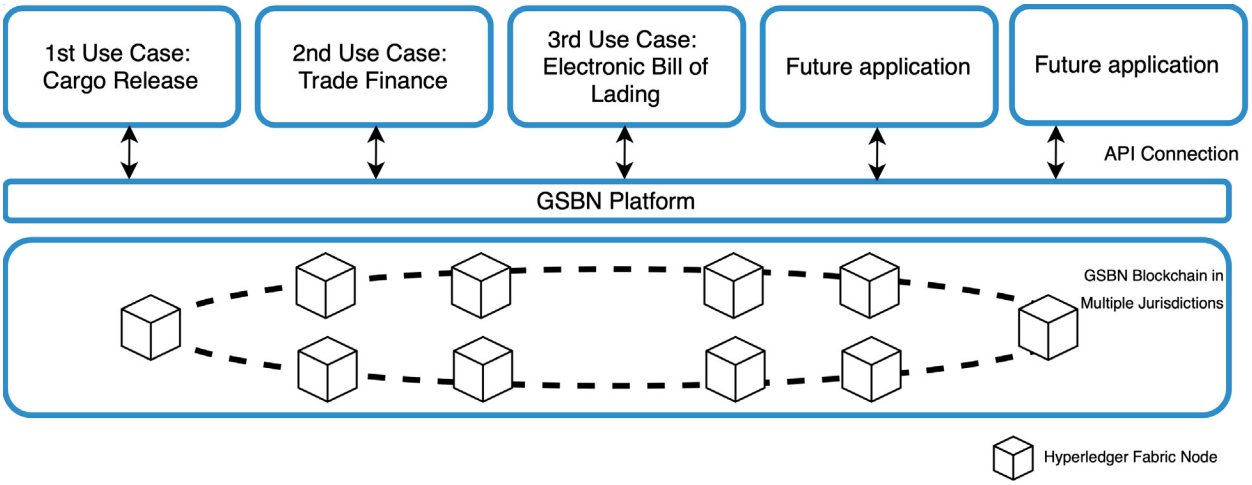
Like Trade Finance, the accurate, trusted data from eBL helps financial institutions better manage risk while giving SMEs access to financing opportunities.

“It’s another step in connecting logistics with financial institutions,” says To, “Which is important for streamlining the trade finance process.”

What’s Next

GSBN is working to get a critical mass of shipping lines, terminals and banks to join its platform. Then it can remove barriers to trusted collaboration among disparate and competing market participants. It will continue recruiting other global trade organizations to join the GSBN platform.

“Our platform will expand the global trade ecosystem by creating bridges to new market participants like banks, FinTech’s, and other consortia and launching new solutions,” explains To. “We’re excited to explore the different applications that could be built on top of GBSN with the Hyperledger community. That’s how we’ll jointly promote the digital transformation of global trade.”



About GSBN

GSBN is an independent, non-profit technology consortium. It's blockchain-powered trade data utility platform enables supply chain participants to work collaboratively to accelerate the digital transformation of the global trade industry. By leveraging immutability of the blockchain and data field level privacy through cryptography, supply chain participants like Terminals, Carriers, Shippers, Freight Forwarders, Truckers, Customs and Financial Institutions, can collaboratively design and enable industry wide, end to end, solutions. To learn more, visit https://www.gsbn.trade/

About Hyperledger

Hyperledger Foundation was founded in 2015 to bring transparency and efficiency to the enterprise market by fostering a thriving ecosystem around open source blockchain software technologies. As a project of the Linux Foundation, Hyperledger Foundation coordinates a community of member and non-member organizations, individual contributors and software developers building enterprise-grade platforms, libraries, tools and solutions for multi-party systems using blockchain, distributed ledger, and related technologies. Organizations join Hyperledger Foundation to demonstrate technical leadership, collaborate and network with others, and raise awareness around their efforts in the enterprise blockchain community. Members include industry-leading organizations in finance, banking, healthcare, supply chains, manufacturing, technology and beyond. All Hyperledger code is built publicly and available under the Apache license. To learn more, visit: https://www.hyperledger.org/