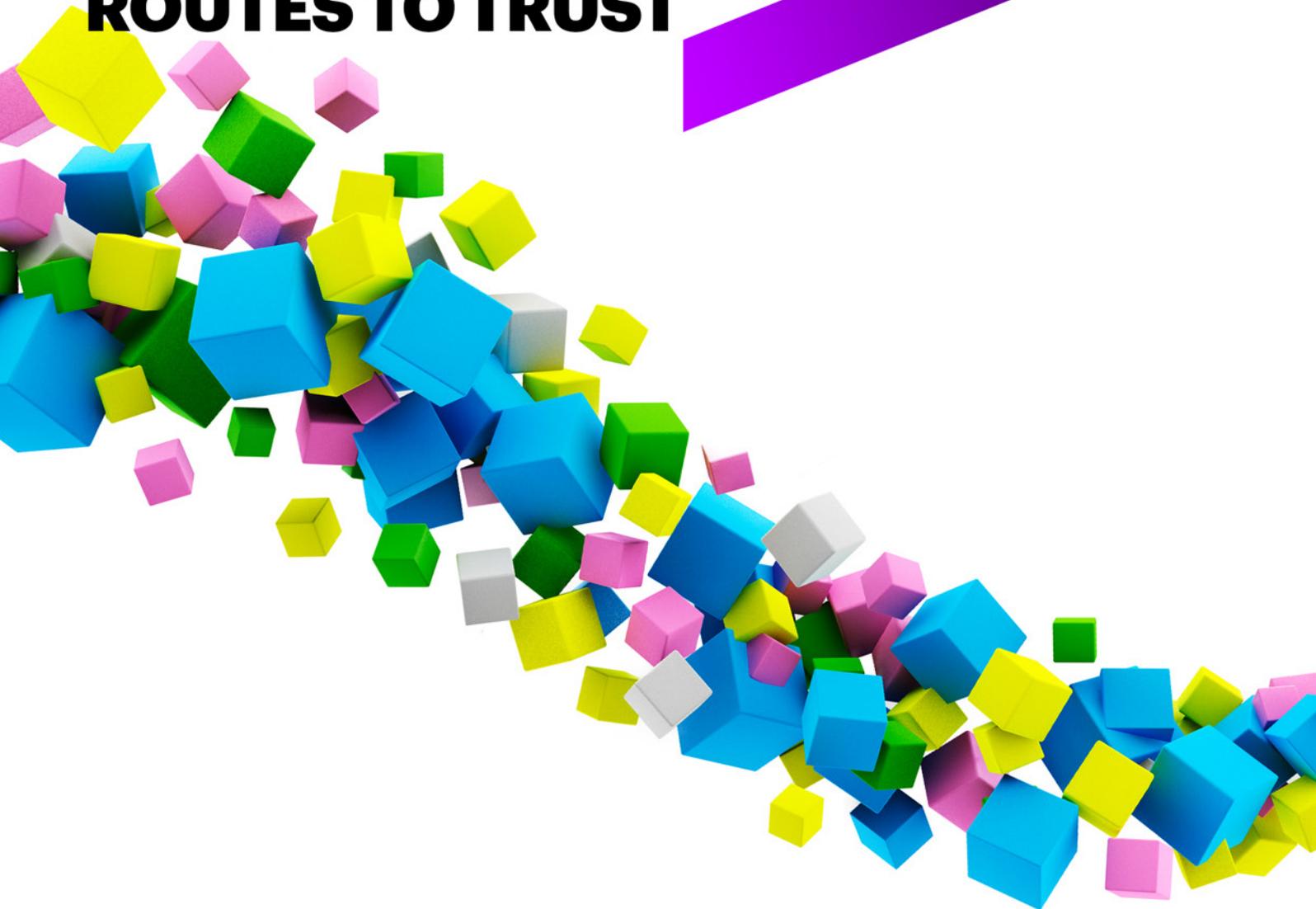


# BLOCKCHAIN: MAPPING NEW TRADE ROUTES TO TRUST



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**The border is a national asset. To boost national competitiveness, facilitating legitimate cross-border trade must be high on every government's agenda. E-commerce has doubled between 2013 and 2017, from \$1.1 billion to \$2.4 billion and continues to increase. The World Trade Organization estimates that ratification of the Trade Facilitation Agreement could boost global cross-border trade by up to \$1 trillion and reduce total trade costs by 13 percent for upper-middle income countries.**

Put simply, making cross-border trade more efficient offers a sizeable pay-off for governments and citizens.

But international trade is complex and typically plagued by inefficiency. Despite digital advances, most cross-border trade administration remains largely paper-based and even a single transaction involves a network of multiple stakeholders including exporters/importers, carriers, freight forwarders, banks, customs authorities and buyers. Research indicates that 90 percent of cross-border trade declarations involve a broker<sup>1</sup> and 75 percent of traders use third-party logistics providers.<sup>2</sup>

Governments have a key role to play in reducing cross-border trade friction, yet government-to-government initiatives are plagued by similar complexity. Bilateral and multilateral agreements take considerable time to negotiate. For example, the Comprehensive Economic and Trade Agreement between European Union (EU) and Canada took almost 10 years to negotiate.<sup>3</sup> Adding to this complexity are the various government agencies with interests at the border. Today, clearing a single shipment across a border involves on average 15 agencies and sometimes as many as 40.<sup>4</sup>

## It all boils down to trust

At the heart of this complexity is an inherent lack of trust between buyers, sellers, supply chain participants, agencies and governments. That's where blockchain comes in as the potential game changer for international trade. This technology's three key characteristics - distributed (shared dataset), consensus-based and security - all build trust. In short, if stakeholders can collectively use blockchain to overcome the fundamental lack of trust, the trade ecosystem will become more efficient, secure and adaptable for the future. That will be good news for traders, governments and citizens as it will drive revenue and help effect more trade.

## Blockchain: A new perspective for cross-border trade

As few as 18 months ago, blockchain was still largely a buzzword. Today, it's high on the agenda of most leading customs and trade organizations. The World Economic Forum estimates that more than 25 countries are looking to blockchain technology, filing more than 2,500 patents and investing \$1.3 billion.<sup>5</sup> Rather than asking whether blockchain should be applied, the questions are now when and where.

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But with so much buzz about the potential of blockchain, it's easy to see how customs agencies may feel swamped by all the different examples where the technology is or could be applied. The temptation is to lead with blockchain as the solution and then go in search of a suitable problem.

Accenture's view is different. By creating a framework comprising four key areas affecting trade activities - **Proof of Identity, Asset Transfer, Pathfinder and Border Collaboration** - we aim to provide a new way to assess blockchain's potential based on the challenges that customs agencies and traders need to address to foster greater trust, reduce complexity and secure economic growth. In essence, this is about using the right technology in the right way to solve the inherent problem and create flexibility for the future. It is not about the widespread IT-driven implementation of a single technology that will provide all the answers.

## What is Blockchain?

Blockchain is a technology platform that uses cryptography and a distributed messaging protocol to create a shared ledger between counterparties to a transaction. The data on the ledger is pervasive, persistent and creates a reliable "transaction cloud," as this transaction data cannot be lost or corrupted by any of the participants.

# PROOF OF IDENTITY – WHAT YOU SEE IS WHAT YOU GET

The era of e-commerce has exposed many people to the conundrum of buying something from a person they have never met, nor are likely to ever meet. How can you trust that the person on the other end of the transaction is who they say they are? Once a purchase is made, goods may not arrive, they may not be as specified or may be otherwise deficient in quality or safety standards. The seller looks legitimate – but there’s no way of telling whether they are the real thing or not. Trust has to be based on faith rather than evidence. But a digital identity based on blockchain could eradicate those misgivings once and for all. And this is just as relevant for large trading companies as it is for individual consumers.

Such digital identities would be beneficial for traders, goods, containers or even documents as their “identity” must also be proven at various points along the supply chain. By using blockchain, relevant entities in a trade supply chain would have an identity on a string, parts of which could be shared based upon a handshake principle, guaranteeing veracity.

Blockchain bridges the trust gap between countries and can revolutionize multilateral agreements. An added benefit is that documents do not need to physically travel with the goods or be exchanged between parties, which decreases the paper trail and reduces cross-border trade friction.

Blockchain can also play a crucial role in proving where goods come from. Establishing the origin of imported diamonds, for example, is essential to ensure they are ethically sourced. That’s what Dubai is seeking with “Operation Kimberley”: a blockchain-based project to modernize the verification process of diamond sources and their trade mechanisms, issuing global certificates related to the diamond industry by coordinating the activities of 81 member countries.<sup>6</sup>

Tracing goods’ origins can also be critical to addressing global health, disease and contamination issues in a timely way. According to the Center for Disease Control, it took more than two months to identify the original farm source of contaminated papayas in a 2017 salmonella outbreak. Blockchain’s transparency could also increase detection of fraud in shipment of pharmaceuticals, which is a huge global threat, with the estimated size of the counterfeit drug market thought to be in the region of \$75-200 billion.<sup>7</sup> Even centuries old industries such as fishing could benefit from blockchain’s ability to track their origin and onward journeys to help eliminate illegal activities.<sup>8</sup>

# ASSET TRANSFER – MAKING CROSS-BORDER TRADE **SIMPLER**

In essence, a cross-border trade transaction is the same as a simple transaction such as buying a loaf of bread. At the moment the seller hands over the bread and the buyer the coins, a change of ownership and risk has been effected. But distance, time and a lack of trust make international trade far more complex. Goods change hands – physically but also in terms of accountability and responsibility – between multiple stakeholders. In the best-case scenario, the seller of the goods is paid a little after their arrival at the final destination. But, in, practice it often takes much longer and, naturally, trust plays a big role.

The key to solving this is to identify the ‘triggers’—key events—that should prompt follow-up actions. For example, the arrival of goods at their destination should ideally trigger payment. Blockchain enables this business logic to be built into “smart contracts”, that automatically and legitimately trigger the right action. As an illustration, look at the mandatory fines airlines operating in the EU are required to pay when delays exceed certain number of hours. Having this logic built on a blockchain could automatically trigger a payment, rather than requiring the passenger to make an often time-consuming and laborious claim.<sup>9</sup>

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## **Combatting cross-border trade finance fraud**

The risk and associated cost of goods being damaged, lost or stolen in transit is one reason why trade finance is required. But the risk of trade finance fraud is unfortunately quite significant. Blockchain has the potential to tighten the net on trade finance fraud, estimated globally at \$4 trillion,<sup>10</sup> and potentially result in huge cost-savings for the private sector. Not surprisingly, nine out of 10 US, European and Canadian commercial banks are exploring the use of blockchain for payments.<sup>11</sup> And it’s the aim of a project that Hong Kong and Singapore are working on: a cross-border blockchain solution to combat trade finance fraud.<sup>12</sup>

# PATHFINDER – TAKING TRACK AND TRACE TO A NEW LEVEL

As goods travel from origin to destination, they change hands frequently, requiring considerable processing and exchange of documents and data. A Pathfinder ledger built on blockchain could act as a pipeline of goods information throughout their journey, building up an entire record of every supply chain movement of entities, goods, packages or containers. It would ensure accurate information about the condition of goods at every point in time, taking 'Track & Trace' to a whole new level.

## Container integrity

Maintaining an accurate record of the goods in a container is essential to address theft, which the Federal Bureau of Investigation (FBI) estimates to result in annual losses in the US alone of approximately \$30 billion per year. In effect, these costs are passed on to consumers who pay an increased price for their goods as a result. And addressing it is why, for example, United Parcel Service (UPS) is investing in blockchain as a member of the Blockchain in Trucking Alliance, a forum for the development of blockchain technology standards and education for the freight sector.<sup>13</sup>

By using a blockchain in combination with Internet of Things (IoT) technologies, relevant data such as temperature, location or whether a container has been opened (and even for how long) can be maintained with complete integrity. For food or perishable goods, keeping track of conditions such as temperature or humidity is critical. Transport companies need to know when and why a container is opened in order to preserve perishable goods or to ensure truck drivers do not transport illegal goods or people.

## Documents and data submission along the supply chain

Goods in transit today will require frequent and voluminous exchange of documents and data. These processes are duplicative and inefficient. But by using blockchain, workflows and data submission could be truthfully shared between stakeholders in the ecosystem with far greater efficiency. Work done by a Supply Chain Industry Consortium shows that up to 70 percent of shipping documents can be populated using

existing data.<sup>14</sup> For example the Bill of Lading, a document describing cargo. Today this document is usually submitted by the carrier, who manually collates the data from others in the supply chain. This is enormously time-consuming, leads to poor data quality and raises questions about accountability. Another example is the security declaration, provided in advance of goods' arrival. The Union Customs Code (UCC) – the EU's new Customs legislation – already allows for the various stakeholders along the goods' journey to provide a subset of the data at different points in time (multiple filing of Entry Summary Declaration data<sup>15</sup>), but a supply-chain Blockchain could facilitate this even more efficiently in practice.

If governments are given access to the relevant blockchain, customs can see exactly what is in each container and whether anything has been added to it or removed from it during its progress. This could identify fraud and security threats early, and enable timely risk assessment and planning of controls. Such segmentation allows compliant shipments from trustworthy traders to pass the border smoothly and border resources to focus their time and attention on questionable packages.

Legitimate traders are usually very willing to share data, especially if doing so reduces friction at the border. For EU trusted traders, the UCC caters for "Entry into declarant's records" (EIDR),<sup>16</sup> which means the "data of the customs declaration are at the disposal of the customs authorities in the declarant's IT system". A Pathfinder offering government access would offer an effective technical solution – and crucially without governments having to build their own solution.

# CROSS-BORDER COLLABORATION

A much less explored, but no less important, area for blockchain is its potential to facilitate collaboration between governments or government agencies. It could enable governments to share data and have accurate sight of usage of certificates and licenses, without revealing intelligence or sensitive information.

A customs agency flagging a certain trader or case as malicious, could share this via the relevant blockchain with other collaborating countries. Different government agencies perform risk analysis controls based on their own confidential risk rules. Using blockchain to share the control decisions and results, would benefit the other agencies and contributes to more holistic and accurate risk assessment. Various countries already have agreements in place in this area such as “Single Declaration”<sup>17</sup> or the WCO’s “My exit, your entry.”<sup>18</sup>

Single Window has been high on border agencies’ agendas for decades, with various degrees of success. The main obstacles to its implementation are the reluctance to share data, political sensitivities and the inability of different agencies to agree on a governance model. Here, too, blockchain has a clear role to play. For example, take agricultural licenses. These are usually granted by the Ministry of Agriculture and controlled by health authorities or veterinarians at points of entry. The corresponding import declaration is supervised by customs, and its approval might require write-off of the permitted quantity specified by the certificate. When stored on a blockchain, this provides an integral view of usage and allows for accurate write-off and avoids double usage.

To facilitate cross-border trade and combat fraud, countries increasingly need to collaborate, either through bi/multilateral agreements, regional trade blocks, the World Customs Organization (WCO) or the World Trade Organization (WTO). Today’s efforts to collaborate and share data are often

expensive and inefficient. Political sensitivities about a shared data mean that, in practice, countries deploy their own and exchange messages via an agreed protocol. One example is temporary admission of goods whereby goods, such as paintings for an exhibition, enter countries on a duty-free basis regulated by multi-lateral agreements.<sup>19</sup> Using a blockchain to track their movements and share information would eradicate the need for today’s paper-based processes and costly data exchange.

Hong Kong and Singapore are working on a cross-border blockchain solution to facilitate trade, with combatting trade finance fraud a top priority.<sup>20</sup> Once up and running, the model could easily be scaled to more countries and serve as an example for others to emulate.

## Conclusion

As they assess the applications that blockchain may have to create trust and eradicate inefficiency, it’s critical for customs agencies and governments not to get distracted by the technology, but instead focus on the problems it can help solve. By using the four areas we’ve set out, agencies can take this different view and start to build a robust business case for blockchain’s use in helping cross-border trade become more efficient, faster and ultimately more valuable. Ultimately, it all comes down to trust. And blockchain could be the game changer to lower the trust barriers for everyone involved in today’s complex cross-border trade ecosystem.

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