Evidence Report APPG BLOCKCHAIN UK Parliament

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ALL-PARTY Parliamentary Group on Blockchain

INTERNATIONAL TRADE FINANCE & CROSS BORDERS MOBILITY OF GOODS AND SERVICES

Blockchain applications - regulation, policy & strategy









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1. APPG Blockchain Evidence Meeting on International Trade.

1.1. Purpose

The purpose of the All-Party Parliamentary Group on Blockchain (APPG Blockchain) is to ensure that industry and society benefit from the full potential of blockchain and other distributed ledger technologies (DLT), making the UK a leader in Blockchain/DLT's innovation and implementation.

This Report of the 18^h Evidence Meeting explores the potential role of Blockchain in the digitalisation of International Trade. The report provides a summary of the takeaways from the meeting.

The Video recording of the session is available on our websites:

- APPG Blockchain https://uk.bicpavilion.com/about/appg-blockchain and
- Big Innovation Centre www.biginnovationcentre.com/

1.2. Details of the Meeting

- Date, 18th May 2021
- Time, 17:30 18:45pm BST
- Location, Virtual House of Commons
- Participants, 79 attendees





1.3. Panellists: Evidence Givers, Chair & Secretariat

The evidence meeting was chaired by the APPG Blockchain Chair Martin Docherty-Hughes, Member of Parliament.

Big Innovation Centre acted as the Secretariat for the APPG on Blockchain, led by CEO Professor Birgitte Andersen and Fernando Santiago-Cajaraville as the Project Manager and Rapporteur.

Building a robust Blockchain ecosystem is part of the APPG Blockchain mission. Assuring representations from across stakeholders, the APPG evidence meeting on International Trade had evidence giving from:

- Institutions World Trade Organisation (WTO) and World Economic Forum (WEF)
- Academia University College of London
- Blockchain Industry Everledger



Emmanuelle Ganne Senior Analyst WORLD TRADE ORGANIZATION



Nadia Hewett Project Lead WORLD ECONOMIC FORUM



Dr Abel Maciel Director CONSTRUCTION BLOCKCHAIN CONSORTIUM UCL

Secretaria:



Eser Torun Chief Of Staff EVERLEDGER



Chair

Martin Docherty-Hughes MP

House of Commons, UK Parliament



Secretariat: Professor Birgitte Andersen CEO

BIG INNOVATION CENTRE



Rapporteur Fernando Santiago-Cajaraville Project Manager,

BIG INNOVATION CENTRE





2. Background

Blockchain's characteristic of tracking and recording all transactions in an immutable way has found a purposeful application in International Trade. Blockchain has been identified as an enabling technology that could potentially address current inefficiencies across the globe.

Blockchain can bring transparency to the current opaque supply chains that conform to the international trade ecosystem. Applying Blockchain technology, we should be able to,

- Increase transparency for the consumers and enhance consumers' trust.
- Ensure the provenance of the goods
- Increase the efficiency of the global supply chains and reduce the frictions
- Make more sustainable supply chains

According to the World Trade Organisatoin (WTO), reducing existing inefficiencies and barriers in international trade could potentially lead to about USD One trillion in new trade by 2025.







3. Meeting Takeaways

3.1. Blockchain offers unique opportunities

Blockchain and DLT allow for real-time interaction on a peer-to-peer basis. As a result, all actors interact on a single platform with a single version of the events in a highly secure environment.

"Blockchain could be as transformative for international trade as the container" (E. Ganne)

"Blockchain allows everyone to be on the same page and looking at the same data" (A. Maciel)

Blockchain can increase the transparency of the supply chains, removing the current paper-based systems and increasing the global supply chains' efficiency, sustainability, and trust. Provenance and traceability are critical characteristics of Blockchain when we think in applications in international trade

Blockchain can benefit international trade by allowing for paperless trade, which leads to improved efficiency and substantial cost savings. (E Torum)

Blockchain has an essential role in bringing trust to international trade where trust is critical, and the current centralised model does not provide it. (N. Hewett)

3.2. A collaborative and robust ecosystem is critical for the success in trade

A collaborative and robust ecosystem is critical for the success of Blockchain in International trade. The ecosystems should be mapped in order to connect the different efforts across the private and public sector

Mapping the ecosystem has shown that we have a digital island problem, which is even getting more prominent. (E. Ganne)

Blockchain means sharing information, and this requires trust among participants. To increase trust, we need a system for increased information that is shared. Before implementing Blockchain, governance and business models in the supply chains need to be thoroughly studied and agreed



upon.



Having a trust governance framework is critical when it comes to the introduction of blockchain. (E. Torun)

In the application of blockchain technology in trade, it is important to consider business models and trust. (N. Hewett)

3.3. Regulation is crucial for the development of Blockchain technology

Currently, the blockchain industry and its applications are facing an absolute lack of a regulatory framework. Regulation is the more pressing challenge at the moment. This absence of regulation is burdening the development and the scaling up of the Blockchain applications.

There is a lack of a legal and regulatory framework to authenticate or provide enough confidence on documentation, especially when it comes to smart contracts. (E. Torun)

Regulators have to play a key role in supporting the wider deployment of blockchain in trade. (E. Ganne)

The financial system needs confidence in order to scale blockchain applications related to international trade. In addition, regulators need to embrace Blockchain in their organisations to develop legislation about it.

Regulators and governments have to embrace blockchain and bring technological expertise to the picture (E. Torun)





4. Evidence Giving

4.1. Emmanuelle Ganne, World Trade Organisation



International trading has seen extraordinarily little innovation since the invention of the container in the 1950s. The containerisation cut freight transportation costs drastically by removing the need for repeat attending parcels but did little to cut bureaucratic processes and paperwork.

The containerisation cut freight transportation costs drastically but did little to cut bureaucratic processes and paperwork

International trade today continues to rely very heavily on paper. For example, if you want to ship a container of roses or avocados from Mombasa to Rotterdam, it can generate a pile of paper that is twenty-five centimetres high.

The cost of handling container bureaucracy can exceed the cost of moving the container itself.

There are many actors involved in international trade. For example, suppose you want to do a single letter of the credit transaction. In that case, there are about twenty different players on average, 10 to 20 documents, five thousand data field interactions, but only 1% of these five





thousand data interactions create spam.

International trade is full of frictions; it is full of inefficiencies

There are about four billion paper documents generated because of trade activities, and this could increase. It can certainly be done better than this, where blockchain and distributed ledger technologies come in.

Blockchain and DLT offer unique opportunities to remove friction from international trade. It could be as transformative for international trade as the container.

Blockchain and DLT allow for real-time interaction on a peer-to-peer basis. In addition, it allows all actors to interact on a single platform in a highly secure environment.

Benefits of Blockchain & Distributed Ledger Technologies in Trade

Blockchain or DLT can **<u>enhance transparency</u>** into how goods are being processed, with three different purposes,

- Increase transparency for the consumers and enhance consumers' trust. For example, suppose you go into a store. In that case, there is minimal information on packaging. Yet, with blockchain, you can have greater visibility on the hamper process, by whom, and whether it meets environmental and ethical standards.
- Make it easier to prove the authenticity of products. There are luxury brands such as LVMH that are using it to that effect. It can help customs officials to prove prima facie evidence of infringement.
- **Track tainted products**. Big retailers such as Walmart are using it on their production lines to do just so. Therefore, this is the first important use case of blockchain in international trade.

When it comes to the **<u>digitisation of trade documents</u>**, like the bill of lading, for example, or the digitalisation of trade processes to enhance the efficiency of trade finance, transportation, and customs clearance.

In 2019, the WTO produced a survey of two hundred actors within trade finance; as part of a study, we asked them about the key benefits they saw with blockchain as part of the trade. The first benefit was greater transparency between all parties. The second was an increase in speed and efficiency, the third was a real-time overview of transactions, and the fourth was cost





reductions.

Additionally, there is another significant benefit with trade documents, which is <u>no double-spending</u>. This is critical because you do not want the bill of lading, a key document. After all, it proves ownership of goods to be duplicated or copied. This is likely to happen if you are simply scanning this is likely to happen. Blockchain allows you to prove the authenticity of the document's origin, proving that it has not been double-spent.

Current DLT projects

A few DLT projects have emerged in the trade sphere related to trade finance- open account trade finance letters of credit and supply chain finance.

In transportation and logistics, there is the well-known one, Tradelens (IBM/Maersk). Recently, GSBN has developed its own solution and a few others as well.

Additionally, there are plenty of private projects regarding the digitisation of trade doctrines and trade processes. There is plenty of room for digitisation in world trade. For example, the bill of lading: today, only 1% of bills of lading are in electronic format.

Mapping the different key global projects in the trade sphere, we have seen that the number of projects has increased from 29 in 2019 to 44 in 2020 (excluding supply chain finance projects).

Challenges

Mapping the ecosystem has shown us that we have a digital island problem, which is even getting bigger; we should connect the dots at the technical level, where there is already a lot of work being done in the private sector

Join up the dots at the level of data models. Several data models already exist, and some specific areas like customs; for example, the WTO has a specific data model. Also, sometimes we have many standards. For example, there are more than thirty different standards for invoicing, so we need to develop these if we want them to succeed. We must work at the regulatory level.

When trying to understand the challenges facing DLT firms as they try to scale up projects, legal challenges are the most pressing ones.

Regulators have to play a key role in supporting the wider deployment of blockchain in trade.





This is critical yet very often overlooked. You can have great digital technology, but nothing will change if you do not recognise e-signatures and e-documents. Unfortunately, there are still quite a few countries that do not have that, or where there is legislation, it needs to evolve.

Transferable records, such as bills of lading, are critical trade documents, and digitising them is essential to digitalised trade.

According to a recent ICC UK study digitising transferable documents could generate substantial benefits, generating £25bn in economic growth, 25% extra in trade by 2024.

Electronic Transactions regulation is critical to allow true digitalisation of trade and electronic bills of lading to be exchanged. However, only three jurisdictions have adopted it, Singapore, Abu Dhabi, and Dubai. The UK is working on it. Without digitalisation of trade, DLT will remain wishful thinking.

Regulators are the ones who, to a considerable extent, hold the keys to the digitalisation of trade.





4.2. Nadia Hewett, World Economic Forum



Business Models & Trust

They are many international and supply chain solutions today that are Blockchain-based, which can be argued should never have been developed with blockchain technology- a centralised model would have sufficed. However, for many in the private sector, whether to use blockchain is a business model decision.

In the application of blockchain technology in trade, it is important to consider business models and trust.

Answering the question of *where does blockchain make sense in trade*? Comes back to a discussion of centralised versus decentralised models. *Will platforms and centralised models, which are successful today, want to give up their position and invite others into a more decentralised model*? Many will argue not always. However, many will argue that centralised models are still "de facto" the way for the private sector to increase the bottom line optimally.

Consumer behaviours are changing to more value-based buying.

For instance, if you think about blockchain within sustainable supply chains, it goes back to whether there is a business case for the private sector in sustainability. Then they price a premium where they can prove sustainability through the added transparency that blockchain offers.





Blockchain then becomes a question of what specific industry you are in, what competitive and other pressures the industry is facing and what your competitors are doing. Regulation is another prominent driving force for enabling sustainable change and introducing blockchain where it makes sense.

Many organisations have decentralised technology, but they have a centralised business model.

Is DLT really necessary?

Many of blockchain's features are not unique to blockchain technology. Encryption, digital signatures, hashing, amongst others, can also be found within centralised systems. Many say centralised systems are easier to set up, and you still get some of the same security and advantages that blockchain offers. This is assuming you trust the centralised party. If you trust the entity running the centralised platform, there might not necessarily be a case where you need the immutability feature that blockchain technology brings.

Therefore, it depends on who will be running the centralised system. Do we trust that party? Do we trust that party's digital signature? Have they tampered with the record? Did a trusted organisation set up the ledger?

Blockchain has a significant role in bringing trust, especially where the centralised model does not provide it

Global Trade Digital Identity Verification

Using the centralised versus decentralised perspective, there is a use-case where decentralised technologies make absolutely sense in international trade, Digital identity verification, trade, or supply chain.

Identity and trust lay at the core of each trade interaction.

What suppliers can I trust? Are these new vendors compliant? As transactions and deal-making become increasingly digital, trade entities need to efficiently link a digital identity to a real organisation and evaluate the trustworthiness of these legal entities. This means that trustworthy and legal entities in one country would be mutually recognised in another country.





A global trusted digital identity system can be the key to unlocking trust and agility essential to make international trade resilient.

Supplier verification processes are currently performed in centralised silos, so different public and private ledgers record, maintain and verify identical identity data potentially a hundred times over. These are not interoperable and create a significant amount of redundant information and duplicative efforts. For example, in cross border transactions, there is not one global central party that can verify that this person or organisation is who they say they are.

Today the whole digital identity verification process is very siloed and is costly ineffective.

Let us imagine a world tomorrow where we want a global system with transparency and visibility globally on digital identity aspects. Where would that system be placed? The UK, in China, in the US? It is not politically feasible to have such a centralised database in any of these countries. Therefore, this is a clear business case to develop systems as a decentralised solution. No one owns it or controls it, at least not to the extent as with centralised systems. Data would not be in one central place, but instead, everybody has a copy of the ledger.

These kinds of scenarios are where blockchain makes sense in trade. However, a compelling case of blockchain would be where it is politically important to have control decentralised, in situations where it could be politically a struggle for other reasons to place a central system and authority in one country or one region. Decentralised model in such instances where control is decentralised, no one owns it, at least not in the traditional sense, makes sense.

Another example, using the same principles of decentralisation and trust, is where countries want a single view of cross-border transactions and link different countries.

Today, in single view trade systems, it is done in a centralised one to one fashion, but if you want to have a single system across multiple countries, you need an integrated infrastructure. This brings about the same question, where should it be placed? Here a decentralised system makes sense, where all parties can participate in the validation process and have a copy of the data.

If there is no trusted third party for political or competitive reasons, we should look at decentralisation in trade.





4.3. Dr Abel Maciel, Construction Blockchain Consortium and University College London (UCL)



Construction Blockchain Consortium is preoccupied with the fact that we have been mandated to use building information modelling (BIM) in the UK. The mandate for the use of BIM is an excellent initiative from the government. Yet now, with the development of information modelling, we are starting to see that it is becoming more of a project management tool, which is immensely powerful.

Business Information Modelling

On top of a geometry specification and simulation in the building information model, we also have a management tech emerging. Analytics included in the models can drive procurement in construction. The emergence of FinTech and LawTech layer and eventually a layer of GovTech is starting to happen in implementing in projects.

One key technology for all of this to happen, to have this vertical integration between these layers, is blockchain.

Blockchain allows everyone to be on the same page and look at the same data.

It guarantees the provenance of digital assets and the immutability of certain assets once a package has been completed. We expect to implement and evolve the ISO 19650 and other standards, including cyber security standards.





White Paper on Blockchain and Construction Industry

The Construction Blockchain Consortium (CBC) has been working to produce white papers on the use of Blockchain in the construction industry

Our first white paper, *Blockchain and Construction Cash Flow* was published at our conference in 2020. In addition, we are currently working on publishing our "Build information modelling management and computer-supported collaborative design" white paper in relation to blockchain. This paper considers the digital twin, pre-construction, construction, occupancy, and operations of that digital twin.

Our Blockchain and Construction Cash Flow white paper discusses five main points,

- The nature of finance and construction.
- The features of blockchain.
- The disruption and applicability of blockchain.
- The application analysis
- Recommendations.

We investigate some challenges, opportunities for improvement and explore the prospect of a new tool kit for the construction industry to aid information modelling.

Challenges. A culture cultural change in the Construction Industry

The construction industry is adopting BIM, and the industry is becoming more efficient. However, there is some resistance to the adoption of technology. This could be down to the industry not wanting to adopt the technology, yet the technology is relatively inaccessible due to the steep learning curve.

With software publishers, we are looking to explore how the technology can be more accessible to all tiers of the construction sector. In addition, different jurisdictions have to be considered when embedding blockchain in information models and using this to assist cash flow.

Recommendations

Automating and accelerating payments and automating accounts are essential in the use of blockchain in construction. We discussed in project oversight an interplay of cash flow. This is key as we need to ensure that a project account is being used correctly and the cash flow is executed with no hiccups.

Complex financials, such as smart contracts. With new blockchains, we can script overly complex smart contracts which can address and automate law. Thus, providing the potential to validate the project in a far more effective way, address variations, delays, time mitigation, liquidated





damages, and automate the dispute resolution and procurement by BIM.

Concluding Remarks

Every year in Construction Blockchain Consortium, we plan to publish a paper. We are now working on our second paper, and next year, we hope to start work on 'Internet of Things' and operations. While the white papers are published, we will start to work on a more technical, yellow paper, which can be used in an open-source technology project for the industry.

These projects are addressed via our hackathons and our technical team- the hope is that these will lead to our green paper, where we will address the use of blockchain in the construction sector from the perspective of sustainability.





4.4. Eser Torun, Everledger.



Everledger is a digital transparency company where we apply blockchain and other technologies like artificial intelligence and smart labelling to enable transparency and traceability across complex supply chains.

Sustainability is very much a core part of our proposition, seeking to increase the sustainable footprint of the supply chains. A vertical multi-asset model is applied, operating across the luxury market and the circular economy, such as electric vehicle batteries.

Blockchain is transformative for international trade due to three main qualities:

- Blockchain is a **decentralised distributed system** that enables peer to peer trust.
- High security and **immutability of data** are tamper-proof and can be shared by all participants in real-time.
- Automation, which is enabled by smart contracts. Smart contracts are computer programmes that are conditioned to self-execute when certain conditions are met.

Blockchain Applications

In the electric vehicle batteries supply chain, participants spread around the world communicate with central systems to get the battery from the mine to the user.





Blockchain allows all the parties to communicate with each other via a decentralised system.

The supply chain would not just work linearly; we can also bring the certificate agencies or auditors that create extra checks and balances into the system. Therefore, the current linear supply chain model becomes more circular; parties can exchange information in a secure and time-efficient way in an immutable environment with each other.

The traceability and transparency of the Blockchain systems enable all participants to act in the best interests of the supply chain.

Benefits of Blockchain

Mapping international trade workflows and identifying areas where the three characteristics of blockchain mentioned above can benefit the system, Trade Finance seems to be the most important one. This is because it can be complex depicting a single trade finance transaction.

In my previous career in banking, we experimented with applying blockchain to a trade finance transaction. In a transaction with 100,000 data products from end to end, we reduced the entire process from around seven to ten days to four hours.

Blockchain can benefit international trade by allowing for paperless trade, which leads to improved efficiency and substantial cost savings.

Additionally, intellectual property is a crucial area that traceability through blockchain would help find counterfeits in the space, protecting intellectual property. Finally, building trust and enhancing the transparency of supply chains could help small and medium-sized enterprises be a part of international trade.

Provenance and sustainability are the core propositions for the adoption of Blockchain systems.

Other key areas of how blockchain can transform international trade include the efficiency of custom clearance processes and reducing the reliance on manual verification identity management. In the national context, there is a benefit of interagency coordination. Simple things like temporary admission of goods, such as a museum exhibition, could be much simpler if managed in a paperless way.





Limitations Regarding Blockchain Implementations

There is a lack of a legal and regulatory framework to authenticate or provide enough confidence on documentation, especially when it comes to smart contracts.

Banks need confidence in order to scale blockchain applications. Some work is taking place, and the WTO is considerably involved in this, but there is a big gap in getting where we need to.

Interoperability is hard to achieve,

Although we have been part of successful experiments, as the one with the Australia Singapore Free Trade Agreement applied blockchain, there is still a marginal implementation. Yet, between importing and exporting countries, there is not enough standardisation.

Simplification and standardisation are continuously an issue

The way Everledger manage the ingestion of data across the different supply chains is through smart contracts. We do not need to standardise everything in every industry, but we need to map existing formats and enable smart contracts to grab the data that matters.

Developments to Consider

Decentralised finance is very much an evolving concept. It executes financial transactions without a bank or brokerage, no exchange in the middle, and certainly with no regulatory oversight. Decentralised finance is worth US\$20bn and has increased 700% since the start of 2020. The potential is enormous because of the potential of blockchain, but DeFi organisations operate globally, which makes very hard to regulate and enforce standards.

Regulators and governments have to embrace blockchain and bring technological expertise to the picture.

They need to define what is the best way to involve blockchain in the mainstream use cases.

Standardisation and legal policy issues can be solved by bringing stakeholders together; the Blockchain industry welcomes more cross-country engagements.

Impact on society. Usually, significant innovations can create prominent levels of confusion in society regarding important values like trust- current government tools won't be adequate to manage the impact on society when implementing revolutionary technology like blockchain.





Having a trust governance framework is critical when it comes to the introduction of blockchain.





5. Speaker Bios



Emmanuelle Ganne, Senior Analyst in the Economic Research Department, World Trade Organization

Emmanuelle is a senior analyst in the Economic Research and Statistics Division of the World Trade Organization (WTO), where she leads WTO work on Blockchain. She is the author of a recently published book entitled "Can Blockchain Revolutionize International Trade?" and regular speakers at blockchain events.

Emmanuelle is a member of the INATBA government advisory board. She also leads WTO work on micro, small and medium-sized enterprises. Prior to this, she held various positions at the WTO, including as Counsellor to Director-General Pascal Lamy. Emmanuelle is a 2009 Yale World Fellow.

Abel Maciel, Director, Construction Blockchain Consortium

Abel Maciel is an Architect and Senior Research Associate at University College London. His research interests include computational design, artificial intelligence (Machine Learning), distributed ledger technology (Blockchain) and collective reasoning (Game Theory).





He is a Founding Director of the Construction Blockchain Consortium (CBC) and Faculty Member of the UCL Centre for Blockchain Technologies.

Abel brings extensive experience in architecture and research on a wide range of design typologies and scales, working with some of the world's leading design practices such as Arup, Buro Happold, Foster and Partners, Heatherwick Studio and Zaha Hadid Architects.

Eser Torun, Chief of Staff, Everledger

Eser is the force-multiplier and strategic thought partner to Everledger CEO and the Executive team. She was previously a Senior Relationship Manager at Barclays Investment Bank in London. She was responsible for growing the business partnerships with the most prominent UK insurance and asset manager. She has 20 years of experience in Investment Banking and Business Management.

Eser holds an MBA degree from Rotterdam School of Management; she is also a CFA Charter holder. In addition, she is part of the Executive Team for the Diversity & Inclusion Network of the CFA Institute, where she plays an active role to help increase diversity across professional services.

Nadia Hewett, Project Lead, Data for Common Purpose Initiative and Blockchain, World Economic Forum

Nadia leads Forum projects that shape the future of technology governance in Data Policy and Blockchain. Under her leadership, deliverables focus on unlocking data and 4IR technologies to benefit society while protecting users from risks associated with the data economy.

Prior, she was with Maersk and was in charge to recommend direction and priorities to disrupt the transportation industry. She has lived and worked across Asia, Europe, Africa and the last decade in the Americas.

She previously held a position with Maersk and IBM's blockchain technology solution, participated in digitising the global supply chain industry, owned a \$110M+ revenue product portfolio for a leading logistics company and worked with the Chinese State-Owned Enterprises on big infrastructure projects in Africa.





6. Contact details

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