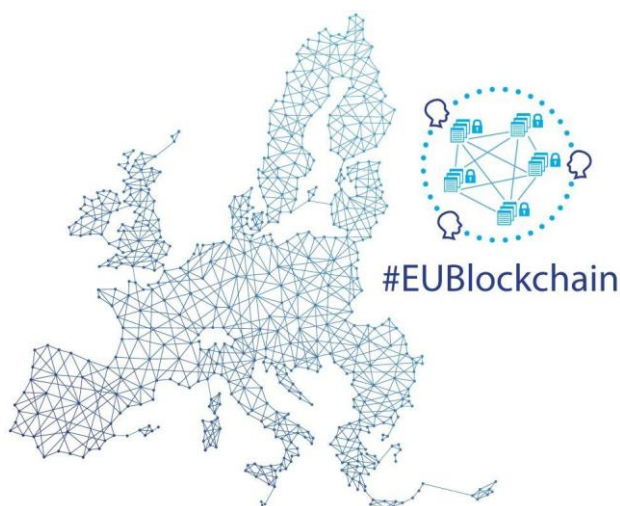


# EU BLOCKCHAIN OBSERVATORY & FORUM

Blockchain for cross-border payments: Connecting the  
fragmented world, October 5<sup>th</sup>, 2022



*By the European Commission, Directorate-General of Communications Networks, Content & Technology.*

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## Welcome

Bara Greplova welcomed all participants to the workshop and explained its focus: how blockchain can play a role in improving cross-border payments and how it can help address all existing challenges. She then introduced Jan Klesla who is representing INATBA's working group on Finance.

## INTRODUCTION

Jan Klesla welcomed all participants. He mentioned that in the Finance Working Group of INATBA they have been working on MiCA and other regulatory frameworks in the EU, but cross-border payments is quite an interesting field - even more interesting than NFTs or other similar fancy stuff that are trending these days. It is important to have some numbers, e.g. the SWIFT network just last year announced the new peak of about 50 million messages per day, so this is one of the largest financial industries in the world and basically is one of the best use cases for blockchain in general, so this is basically the reason why we are organising this event.

JK encouraged the audience to ask questions and mentioned that the questions coming from the audience will be prioritised in the discussion.

## Presentation by John Ho, Standard Chartered Bank

John Ho started by setting the scene in cross-border payments, looking at issues such as costs; the average transaction fees for a cross-border payment, under the payments' journal is about seven percent (7%); for certain types of emerging markets payments the costs can even exceed double digits. The second thing is speed. Unlike peer-to-peer exchange on blockchain, cross-border payment using traditional risks, on average takes two to three working days for payments to flow through from one jurisdiction to another. Third point is savings; Juniper conducted a survey in 2021 that indicated that the savings for global banks if they modernise their payment rails, including the use of blockchain could lead to 10 billion dollars in saves. Then, another survey conducted about a year ago, reported that in terms of interest in cross-border payments using sort of blockchain payments, 99% responded positively that they would be willing to use new forms, including blockchain forms of payments. With that backdrop, the four main challenges with respect to payments and how these can be addressed were discussed:

The video player shows a slide titled "FSB Four Main Challenges of Cross-Border Payments". The slide features four blue circles arranged horizontally, each containing one of the following terms: "Costs", "Speed", "Access", and "Transparency". Below the circles, there is a small text source: "Source: FSB 2021 Report on Targets for Addressing Four Challenges of Cross-Border Payments, https://www.fsb.org/wp-content/uploads/P131021-2.pdf". The video player interface includes a play button, a progress bar at 7:38 / 1:27:20, and social media sharing icons for YouTube and others.

Essentially, there are costs within each and every cross-border payment, where multiple of intermediaries and fees are required.

The video player shows a slide titled "Models for interlinking cross-border payment systems". The slide contains four diagrams illustrating different interlinking models between two jurisdictions, Jurisdiction A and Jurisdiction B. Each jurisdiction is represented by a bank icon and a payment system icon. The models are: 1) "Single access point" where both banks connect to a single central payment system; 2) "Bilateral link" where the two banks connect directly to each other; 3) "Hub and spoke" where each bank connects to its own local payment system, which then connects to a central hub; 4) "Common platform" where both banks connect to a shared central platform. A legend at the bottom identifies the bank icon and the payment system icon. The video player interface includes a play button, a progress bar at 9:36 / 1:27:20, and social media sharing icons for YouTube and others.

But when we talk about cross-border payments, it is essential to understand that we are talking about interlinkages. There is no “one-size fit all” approach.

The policy makers are discussing about cross-border payments as an issue to be tackled given the challenges discussed before. The ECB has recently issued a paper looking at what is deemed as the

ideal of what the modern payments should be like. Many other organisations, public and private are engaged in this discussion. But how is blockchain used for cross-border payments?

There is an ability, in a carefully designed blockchain enabled infrastructure to provide for a direct end-to-end payment using smart contracts programmability; in a well-designed private or public permission network to provide data on payments to be made on a cross-border basis using tokenised or the atomicity of tokenised cash or tokenised deposits.

**DLT based Cross-Border Payments – Major Participants**

**1 Banks and Financial Institutions**

- Tokenised commercial bank money
- Tokenised deposit
- Bank issued stablecoins
- E-money
- Tokenised financial instruments
- Asset-backed tokens

**2 Central Banks**

- Tokenised Retail Central Bank Digital Currency (CBDC)
- Tokenised Wholesale CBDC

**3 Big Techs and Fintechs**

- Digital assets including cryptocurrencies used for payments and settlements
- Fiat-pegged Stablecoins
- Atomic settlement of digital payment tokens

**4 Crypto-asset providers**

- Cryptocurrencies such as BTC or ETH
- Stablecoins issued by private entities
- Digital payment tokens
- NFTs
- Atomic settlement of cryptoassets.

Who are the main players in cross-border payments? Banks, Central Banks, Big Tech and Fin Tech companies and Crypto-asset providers. These are players that are looking at tackling the main pain points in cross-border payments.

Blockchain for Cross Border Payments Connecting the Fragmented World

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**Blockchain based payments instruments**

Besides the improvement or modernization of existing payment rails (eg. US FedNow Service, Expansion of the web3metaverse will likely drive shift in digital currencies as means of payment, exchange or store of value. These would include e-money, central bank digital currencies (CBDCs), stablecoins and privately issued cryptoassets.

**Crypto currencies**

**Central Bank Digital Currencies (CBDCs)**

**Stablecoins**

**Utility Tokens**

12:13 / 1:27:20

CC YouTube

Use case examples:

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**Use Case 1: Icebreaker – a retail CBDC cross-border project**

**ICEBREAKER HUB**

**End user**

**Retailer**

**Fx provider**

**Wallet provider**

**Central bank**

**NOK**

**e-krona**

**digital Shekel**

13:00 / 1:27:20

CC YouTube

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Use Case 2: Project Helvetia – Phase II

John Ho



### Project Helvetia Phase II

Settling tokenised assets in wholesale CBDC

BIS Innovation Hub SIX

13:46 / 1:27:20

CC YouTube

IN AT

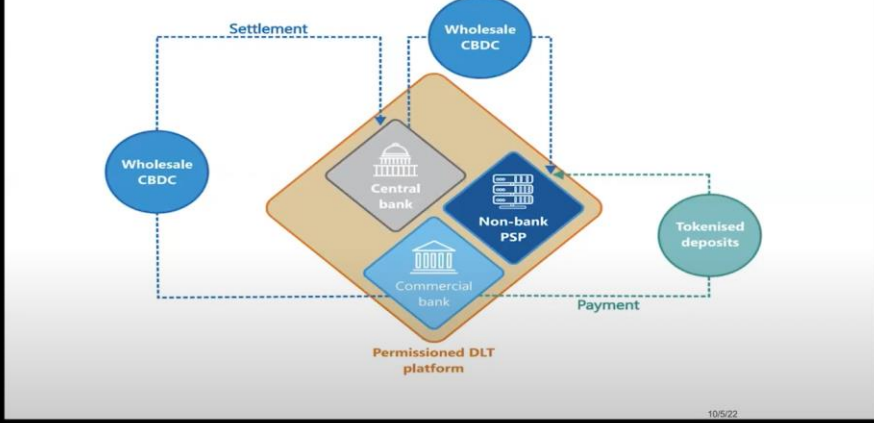
Blockchain for Cross Border Payments Connecting the Fragmented World

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PUBLIC

Use Case 3: Payments with Tokenised Deposits

John Ho



Wholesale CBDC

Wholesale CBDC

Central bank

Non-bank PSP

Commercial bank

Tokenised deposits

Settlement

Payment

Permissioned DLT platform

10/5/22

14:26 / 1:27:20

CC YouTube

IN AT

**Blockchain for Cross Border Payments Connecting the Fragmented World**

**Use Case 4: Project Partior – Disrupting Cross border Payments**

Partior is an open industry platform, developed to transform and accelerate interbank value movements, for Payments, Trade, and Foreign Exchange settlement in the new digital era.

Following the close of Project Ubin, DBS, J.P. Morgan and Temasek have jointly established a new technology company, Partior. Its blockchain-based clearing and settlement platform serves as a wholesale payment rail for digitised commercial bank money, enabling 24/7 global instantaneous money movement with speed, certainty and transparency.

**Partior's difference**  
Partior is an open industry platform, and banks around the world can join the network to access real-time cross-border multi-currency payments. Partior's 24/7 blockchain network can complement and interoperate with real-time local currency payment/RTGS systems, which may not be 24/7.

As part of future enhancements, Partior plans to support broader multi-asset class use cases such as Delivery Versus Payment (DVP), FX Payment Versus Payment (PVP), tokenised asset borrowing and lending, and serve as a complementary platform for ongoing Central Bank Digital Currency (CBDCs) initiatives.

**2016** Project Ubin commences

**2020** Project Ubin develops a prototype that validates CBDC cross-border payments are cheaper and faster

**2021** Partior goes live with SGD and USD

**2022**  
Feb - 8 currencies selected to onboard by 2022  
May - Platform and legal documentation finalised  
Jun - Commercial expansion

14:40 / 1:27:20

Other Central Banks' projects include:

**Blockchain for Cross Border Payments Connecting the Fragmented World**

**Central Banks' Blockchain/DLT Projects**

 <b>DEUTSCHE BUNDESBANK</b> EUROSYSTEM <b>BLOCKMASTER</b> Explore DLT for multiple purposes (eg. improving efficiency and reducing risk in the interbank securities settlement)	 <b>BANK OF ENGLAND</b> <b>CBDC PROJECT - BoE and MAS</b> POC on cross border payments and settlements. Explore settlement of cross border payments using central bank digital currencies on DLT.	 <b>BANQUE DE FRANCE</b> EUROSYSTEM <b>PROJECT MADRE</b> Blockchain based decentralised sharing repository for SEPA credit identifiers in SEPA dabbling scheme	 <b>BANK OF CANADA</b> BANQUE DU CANADA <b>PROJECT JASPER</b> Cross border interbank payments using CBDC	 <b>MAS</b> MAS (G20 Authority) <b>PROJECT UBIN</b> Crossborder interbank payments using CBDC	 <b>ECB &amp; Bank of Japan</b> <b>PROJECT STELLA</b> Pilot project to explore whether DLT can improve domestic interbank payments & settlements (phase 1) and facilitate rapid interbank trading and settlement of securities for cash (phase 2)
 <b>Svenska Central Bank</b> (Svebanks)	 <b>BANK OF THAILAND</b> <b>PROJECT INTHANON</b> POC on CBDC for interbank payments & liquidity management efficiency	 <b>BANCO CENTRAL DO BRASIL</b> <b>PROJECT SALT</b> Interbank payments contingency & resiliency system	 <b>MONETARY AUTHORITY (SAMA)</b> <b>PROJECT ABER</b> In conjunction with UAE, pilot DLT for interbank payments and settlements between Saudi Arabia and UAE	 <b>SOUTH AFRICAN RESERVE BANK</b> <b>PROJECT KHOKHA</b> Explore CBDC for domestic interbank payments and settlement efficiency	 <b>HONG KONG MONETARY AUTHORITY</b> <b>DLT USE CASES</b> Conducting research and experiments on multiple use cases – MCBDC, trade finance, digital identity management & KYCAML processes.

15:19 / 1:27:20

A number of Proofs of Concept have been deployed for cross-border payments across the globe, looking at interbank settlements, lowering the cost of transactions and also enabling cross-border payments.

The biggest barriers in blockchain adoption, are (in accordance with a latest PwC survey):



- Regulatory uncertainty
- Lack of trust among users
- Ability to bring network together
- Separate blockchains not working together
- Inability to scale
- Intellectual property concerns
- Audit/ compliance concerns.

These concerns are possible to address, if private and public sector work together.

Currently, there are 91 CBDC projects in deployment globally. 86% of Central Banks globally are doing some form of CBDC trial – most of them looking into cross-border payments in some form of collaboration with other central banks (in the form of projects).

The screenshot shows a video player with the title "Blockchain for Cross Border Payments Connecting the Fragmented World". The main content is a world map titled "CBDCs around the world – approaches" with a key statistic: "86% of all Central Banks are currently researching or experimenting with CBDCs". The map includes callouts for various countries and regions, detailing their CBDC initiatives:

- Canada:** No current plans to issue CBDC, but will have contingency plan for cash-like retail CBDC.
- US:** Increasing research into CBDC, but USD cash is in demand and plays an important role globally.
- Bahamas:** Launch of nationwide domestic digital Sand Dollar in Oct 2020, pegged to the US Dollar.
- Eastern Caribbean:** Running a pilot of a general purpose CBDC (DCash) through 2020.
- France:** Experimental programme on a CBDC for interbank settlements, feeding into wider digital euro.
- Senegal:** Has existing national digital currency, the eCFA, although in transition to new currency, the "eco".
- Thailand:** Joined with R3 and eight financial institutions to create a CBDC based on R3's Corda platform; recent collaboration with China, HK and UAE announced.
- EU:** Recently consulted on a digital euro with practical experimentation on possible designs, will decide whether to launch digital euro by mid-2023.
- UK:** Open dialogue/consultation on potential retail CBDC system, intends to consult on wholesale CBDC in future.
- Sweden:** Pilot project to develop e-krona, complement to cash.
- Turkey:** Developing digital lira with expected pilot to begin in H2 2021.
- China:** DC/EP testing is advanced with retail pilot schemes underway; recent collaboration with Thailand, HK and UAE announced.
- Japan:** Exploration of general purpose CBDC to begin early 2021.
- HK:** Collaboration with China, Thailand and UAE announced on m-CBDC Bridge Project.
- Cambodia:** Launched Bakong, an interbank, blockchain based payment system.
- Singapore:** Completion of CBDC project utilizing DLT, focus on industry testing to determine commercial integration.

The video player interface includes a play button, a progress bar at 16:44 / 1:27:20, and YouTube branding.

The key areas to focus on when exploring digital transformation in payments, include speed, the potential of a frictionless experience, the business agility, well designed-resilient blockchain technology, the overall digital experience and last but not least the payments infrastructure.

What are the key requirements for achieving a “utopian stage” for improving cross-border payments? You would need strong governance, data control, compliance with regulatory requirements, standardisation in messaging; digital identity is key as well as security and reliability and last but not least scalability to ensure wider adoption of this ecosystem.

The modernisation of financial payments is a direction that everyone is embracing. We are currently at the stage where we are trying to resolve some of the key challenges in the market. But on the bright side, the international setting is discussing the future of cross-border payments, and will examine the cross-collaboration between private and public sector to actually make it a success.

## Presentation by Antonio Leal Batista, LACCHAIN/Inter-American Development Bank

Antonio explained the LACCHAIN initiative, i.e. how it is a global alliance for the development of the blockchain ecosystem in Latin America and the Caribbean, running since 2018.

Some of their applications are listed below.

The screenshot shows a YouTube video player with a presentation slide titled "Blockchain for Cross Border Payments Connecting the Fragmented World". The slide is divided into several sections:

- VALUE RECOGNITION : APPLICATIONS** (with LACCHAIN and IDB LAB logos)
- Agriculture and Natural Capital**
  - AGROS ID
  - Alpaca Fiber Traceability
  - UPRA
  - Coffee - Peruva
  - Agro Traceability
  - Belize Smart Sugar Cane Cluster
  - Coffechain Honduras
- Education, Talent & Employment**
  - Blockchain Digital Identity
  - Blockcerts Caribe
  - Cedia elections platform
  - vsionpad.com
  - Certijoven-Certiadulto
  - Instituto Valle Grande Certificates
  - TanTan Digital Identity & Payments
  - University of West Indies Academic Diplomas
  - REM ID
  - IAHLAC Certificates
  - RedCLARA Academic Credentials
  - Expertise Program
  - Capacity Building activities
  - Academic Certificates
- Climate Crisis**
  - CREAD Parametric Insurance
  - Garbage Traceability
  - Climate Trade
  - Microfinance for water and sanitation pilot
  - Green Bonds
- Financial Inclusion**
  - Solvency verifiable credentials
  - Conditional Payments Fondopes
  - Tokenized Money & Settlement
  - BME Digital Bond
  - Cross Border Payments**
    - Popular
    - E-money Sandbox S.U. Mexico
    - Davivienda e-Bond
    - Prosperidad Social Colombia
    - Subsidy Tokenization - Panama
    - Fintech
- Health**
  - Vaccines / Medicines Traceability
  - Covid solution (Triage)
  - DAVID-19
  - LACPASS
- Gender and Diversity**
  - N1+

On the right side of the slide, there is a list of specific projects and a video feed of Antonio Leal Batista. The list includes: Cadena, DIDI Project, Public Tenders Honduras - SIPAC, cryptopasp.com, umnicid.com, Digital Certificates, Supernotariado, VC's for OSCE employees, Credentials, Elections in Bolivia, TanTan NFT Pro, Notarization of legal documents, Port access solution for truckers, Glass: Traceability of public work processes, Land Registry, Digital Identity for Citizens, Post-quantum cryptography, Own Home, Peru Compras, Stock Market Distributed Data Integration Platform, Issuance of credentials, Clothing raw material certificates, and Certification of current rates.

Currently they have a cross-border payment application which is a proof of concept they have developed in 2020.

He explained the background of how IDB sends thousands of annual transfers from its headquarters in Washington DC, USA to the regional offices of Latin America and the Caribbean for the payment of supplying in projects. These transactions normally involve IDB agent bank as well as the beneficiary bank. This includes: transfer costs, returned payments with intermediary bank fees, lack of traceability of transfers and commissions of intermediaries and finally, no control over processes and fees applied to transactions.

When using the aforementioned application, the goal is to demonstrate that it is possible to use blockchain technology to make cross-border payments with the benefits, and to increase the traceability of transactions, intermediaries and costs of IDB disbursements.

The proof of concept was implemented on the LACChain Besu Network, the largest public-permissioned blockchain network in Latin America and the Caribbean.

Another major goal was to achieve integration among the LACChain blockchain network and Citi World Link's payment services.

Following the popular taxonomy presented by the IMF in 2019, two stable coins were created, one linked to the US dollar and the other linked to the Dominican Republic Peso, which is categorised as B-money. The development of this proof of concept was based on ERC-2020 called “E-Money Token Standard”, i.e., an extension of the standard interface for Ethereum ERC20 tokens. There was a lot of effort on putting KYC and AML processes in place, as any financial institution would do, in order to have users whitelisted.

The results are quite encouraging with regards to time reduction and traceability; there was actually reduced time for whitelisting accounts, tokenising money, FX rates, payment generation, payment approval, payment transaction but also cost reduction. At the same time in terms of traceability improvement, this was evident in payment transactions, KYC and AML of users but also in FX rates.

The main findings from this process, lead to both challenges and opportunities that need to be addressed in the future:

- **For blockchain networks:** privacy and correlations; blockchain-based identities, transaction throughput and fees, key management, optimal models for resource distribution, specific-purpose settlement networks, legal frameworks and regulatory policies and finally quantum safeness.
- **For financial institutions:** KYC and AML of blockchain-based identities, integration with core financial systems, FXs on the fly/ on chair FX rates and development of new business models.
- **For end-user adoption:** Digital wallets and usability are the key issues at hand.

The work in progress currently is focused on continuing to explore the possibilities in the financial ecosystem with commercial and central banks; enabling the LACChain infrastructure for cross-border payments and settlements generate use cases with impact on social and financial inclusion continue building blockchain innovation partnerships with banks and other financial institutions, where IDB can contribute with its strong presence in the Latin America and Caribbean region

review current internal business processes with potential for optimisation using blockchain and DLT technology.

## Presentation by Dan Weinberger, MORPHEUS Network

The focus of the presentation was on the problems in global trade. Dan stressed on how “Supply chain inefficiency is the number one world problem to solve in order to stimulate economic growth. Reducing these barriers to global trade could increase worldwide GDP by USD 2 trillion”.



The above diagram provides a simplified version of the global supply chain, where there are a lot of stakeholders involved as well as different flows which make this one flow happen. Breaking down the tree, we have the flow of goods themselves, the flow of documents and services and the flow of the money.

For the purposes of this discussion we are focusing on the flow of the money (cross-border payments); but all this data works together to push ahead global trade. In order to optimise and automate all different steps need to speak to each other through interoperability.

Supply chains are very fragile, and we have seen this during COVID more than ever:

- There are disconnected systems throughout the chain;
- Communication gaps between stakeholders;
- Inflexible software architecture (if any at all);
- Manual and error-prone processes;
- Complex and scattered information and communication;
- Lack of visibility;
- Lack of speedy and reliable customer demands management.

To improve these, we need to have interoperability, trustworthiness in data and data portability, which are all currently lacking. In addition, there is lack of communication between the stakeholders and between the existing systems themselves, creating data silos and that slows down the whole world of global trade. Furthermore, the manual and error-prone processes mentioned, and also missing trust in the authenticity of documents and transfer make it even more problematic.

What is needed, is a “binding glue” for fragmented data in supply chain. This could include software systems and stakeholders down the supply chain. What the Morpheus Network does, is play the middleware role, and provide intuitive tools to digitise and automate any supply chain.

What Morpheus does with regards to cross-border payments, is that they take data from one system which is necessary for that cross-border payment, in order to push ahead that payment based on the data that is already in the supply chain.

***Interoperability: this is the ability of computer systems or software to exchange and make use of information.***

When there is lack of interoperable systems, there are so many manual processes that have to take place...

Still, 1 out of 3 people in the world do not have access to financial services and the banking system. But there are solutions for this as well through decentralised, peer-to-peer networks. In such networks, all actors can send funds peer-to-peer directly to each other, without an intermediary. They don't need to use banks in order to push ahead their supply chains.

The technology that allows that to happen, is blockchain! Blockchain is very important to third-world nations in order for them to interact with all companies in the first world nations, in order to bring up their global trade or to make it a level playing field in a sense, and then actually communicate via fund transfer in order to push ahead their supplies.

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### Centralized vs Decentralized

31% of the world unbanked

Centralized

Decentralized

40:57 / 1:27:19

CC YouTube

There are several applications where we have made this work. Some examples:

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### Interoperable Data Implementations: Certificati

- Our platform is use by Federated Co-op, one of the largest companies in Canada with over 23,000 employees and over 1,400 retail food stores, home centres, gas bars/convenience stores, agro centres, propane plants across Canada.

"We are very pleased with the results of our work with the Morpheus.Network team. Working with Morpheus.Network has resulted in an efficient throughput of our supplier document management and validation processes. The transparency provided by Morpheus.Network's technical solutions fits well with our own co-operative ethos of driving integrity from start to finish." — Raymond Gareau Supply Chain Manager, FCL

42:36 / 1:27:19

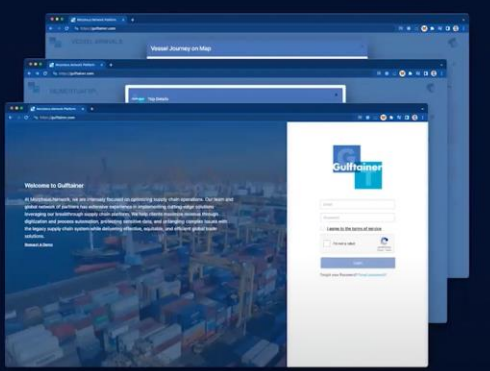
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Blockchain for Cross Border Payments Connecting the Fragmented World

## Interoperable Data Implementations: Port Management

- Gulftainer is the world's largest privately owned port operator with operations across the Middle East and in the US. They aim to expand their global portfolio in the next 10 years to triple business volume worldwide to more than 10,000 vessel calls and triple container handling to 18 million TEUs.

"We are on a mission to identify the very best thinkers and entrepreneurs whom we can potentially partner with to redefine the future of the shipping and logistics industry. We congratulate Morpheus Network as winner in the blockchain category." - Charles Menkhorst, CEO, Gulftainer



43:06 / 1:27:19

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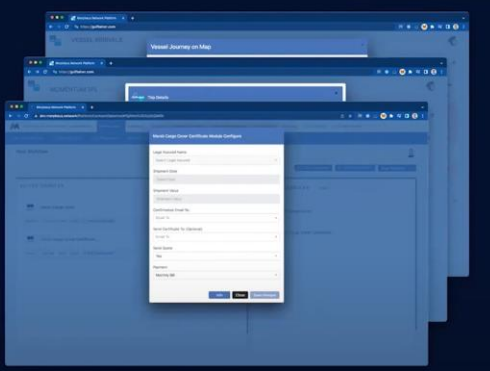

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## Interoperable Data Implementations: Insurance

- We co-developed a 1-Click Paperless Insurance Certificates feature with Marsh, the world's leading insurance broker and risk advisor available in more than 130 countries and works with 45,000 Global Exporters.

(Co-marketing Q1 2023)



43:44 / 1:27:19

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The key criteria for assessing Tech Systems:

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## Key Criteria In Tech Systems to Look For

Dan Weibberger



Ease of integrate	Trusted data	Adaptable
No proprietary system, <b>no lock-ins</b> and no need to replace established legacy systems and IT architecture.  The result: Fast setup and minimized switching costs	Blockchain backend for <b>secure data notarization</b> without the hassle of setting up wallets or tokens.  Decentralized data clearing removes a single point of failure and reduces costs of data exchange.	<b>Third-party integrations for diversified solutions</b> and automated end-to-end processes.  Flexible, customizable modular architecture suited to clients of all sizes, verticals and supply chains  <b>AND EASY TO USE!</b>

46:00 / 1:27:19

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The interoperability in the supply chain is of great importance and has global impact:

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## Global Impact - Why is Interoperability and and Efficient Supply Chain so Important?

Dan Weibberger



The Earth is choking at 400 ppm CO<sub>2</sub> with **40 billion tons of CO<sub>2</sub>** being released into the atmosphere each year  
The Paris Agreement limits global warming to 2 C (or below!)

The EU has launched the Green Deal which targets 50% in CO<sub>2</sub> levels until 2030 and Net Zero Carbon until 2050 for the block of 27 Nations

According to the EPA, supply chains often account for more than **90%** of businesses greenhouse gas (GHG) emissions.

48:58 / 1:27:19

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## Panel Discussion – Moderated by Jan Klesla

### PANELISTS:

- Daniel Szego, CBDC Think Tank Budapest (EUBOF Expert Panel)
- Tamara Ferreira Schmidt, Digital Euro Association
- Dan Weinberger, MORPHEUS Network
- 

### MAIN QUESTIONS AND ANSWERS:

#### *Question: Is blockchain the best solution for cross-border payments?*

**John Ho:** Blockchain for cross-border payments is the answer, because several enterprises have already turned to DLT technology and infrastructure, which makes sure that one can have the ability to tokenise not just the cash link but also the digital asset link. Also, because the ability to create interoperability and payment versus payment is key, because otherwise, if one keeps using existing payment rails, they won't be able to settle their assets link as well, so the two should be "married".

**Antonio Leal Batista:** It is the underlying layer that will provide the capability of having traceability and eliminate asymmetries, so that everyone can see the same information.

**Dan Weinberger:** one would be directly able to see the data transparently and this creates a level of trust that is missing today in supply chains. Even domestic payments can sometimes take 24 to 48 hours to complete, which is unbelievable, not to mention the potential cost savings as mentioned in previous examples. Connecting 31% of the world that can't connect through a bank, that opens up a lot of opportunities for billions of people. Although we wouldn't want to push clients towards any specific technology use case, in many cases blockchain is an actually great solution for these problems.

**Daniel Szego:** Blockchain is practically the fastest developed technology on earth; there is a huge innovation potential from the infrastructure side but also on the application side as well.

#### *Question: Which ledger do you consider to be the most suitable one for CBDCs?*

**Tamara Ferreira Schmidt:** there is no specific ledger preferable that the central banks are working on, and try to find out which one is better, but we know that the CBDCs that were launched, were more based on Ethereum, but we don't have data to decide which is the best one. Maybe Central Banks and other organisations or companies are discussing this right now.

**Daniel Szego:** In terms of which ledger is exactly fit for CBDCs, that is quite a tough question to answer. From a technological point of view, there are like three platforms in terms of DLT for CBDCs (R3's Corda, Hyperledger Fabric, Ethereum Hyperledger Besu). There are some initiatives combining these technologies like cross chain swaps and so on. It is quite uncertain which one will prevail, but partly, these innovations come from the open blockchain world, which can help improve transaction speed and provide more privacy.

#### **Question: what are the costs for cross-border payment providers, both for traditional payments and fintech services? And how difficult is it to change the modus operandi?**

**John Ho:** I think when we look at the private permission blockchain at this point in time, there has to be a cost. The cost is to be shared by a network of participants. As I mentioned earlier there is no

such thing as a “free lunch”; in order to support infrastructure you need to ensure that infrastructure can scale, can be upgraded and is up to date. Currently in the payment rails it is embedded in the fee, because if you look at why we pay x amount other than the profit, for example, there is sort of an embedded minimum floor that the cost of cross-border payment has to be factored in. Because the problem is, once you have a payment that is free, over time it is history proven, that it is hard for the whole ecosystem to be maintained up to date. If the payment is done on a private permission-basis chain, it has to be carefully designed with the right partners and ensuring how that cost can be funded or shared; both private and public sector are key.

**Antonio Leal Batista:** as I mentioned, in the end, blockchain will be the underlying layer. The discussion about which ledger and which type of money will be used, will be part of the interoperability discussion. What we try to focus on, on our proof of concept is that LACChain is basically an infrastructure provider – we are not married or have to abide by the rules of any kind of ledger; what we are trying to do is establish an infrastructure with different layers, like having a DLT layer, we have an identity layer, and an organized money layer that we think, and on top of that there are going to be side chains and different types of tokens and different types of ledgers but in the end there is going to be an infrastructure that is transparent for all of us in the future and that is what we are heading for. The common goal is to have an interoperable infrastructure as today and being faster and able to include all these non-financial users. The world has an opportunity and we have a great future ahead of us in terms of financial inclusion.

*Question: How interoperable are CBDCs*

**Daniel Szego:** Technically, there are many ways of doing interoperable systems on blockchain tokens. Basically, if you think about CBDCs, that is clearly your token on top of your ledger and what should be actually guaranteed is that the two different systems can somehow cooperate in a transactional way and technically there are many different ways of doing that. Usually the question is if you want to guarantee sort of an atomicity or if you would like to prevent spending between two blockchains; if you want to do something similar, then the two ways, it is like the one is the atomic cross chain swap and the second way is through cross chain tokens. There are complex frameworks that implement these technologies and aim to connect many different blockchains. This is a hot topic because at the moment there are many different blockchain platforms and for blockchain, DLTs and CBDCs there are many different approaches, so there is a risk of fragmentation – of having many different island solutions that need to be integrated somehow.

**Tamara Ferreira Schmidt:** To ensure interoperability it is essential to have a standard structure and this involves specifications and requirements and regulations. In this sense, maybe the ISO 20 or 22 is used, and considered as a way to change this information; it uses globally as a standard, all financial transactions between institutions - market infrastructures, regulators, etc. Maybe this is a way to get started with interoperability.

*Question: Will CBDCs prevail against private stable coins (e.g. like Libra)?*

**John Ho:** if you look at the ECB, the statements varied from Fabio Panetta (president of the ECB), Christine Lagarde and also the Federal Reserve Board and the Bank of England, the message right now is very clear: there is no “one-size-fit-all” solution. There is no intention for CBDCs to be used in all use cases. The reason is, that the regulators do not see themselves using digital money for purposes such as stable coins for staking – because, as most of you know – CBDCs do not pay any interest and certainly, decentralized finance is not a space that regulators want to be in, as it is a trade-off between privacy, licencing and regulations. There are use cases for CBDCs (e.g. for

wholesales for interbank payments, for retail, for financial inclusion) but stable coins are based on a financial construct and have their own use cases.

**Antonio Leal Batista:** I think that in the long run, in the digital world, we are going to have as many options as we have in the analogue world. It all depends on the use case. Perhaps supply chain will rely on a stable coin - perhaps on the stability of the supply chain, even though a CBDC might be available for different types of transactions, in a regulatory environment or in a country as well. I think the use case will determine the nature of how we tokenise the money and how we use it.

**Daniel Szego:** CBDCs and stable coins are two different things from an economic point of view, because a stable coin is actually a derivative, so it is tagged somehow to an underlying fee of money and then we change practically that this pack is always questionable, so it carries an additional risk. The risk factors on the two types of money are also different. Although, I don't know what the future is going to be like, but putting CBDCs into the DeFi space, which will make the DeFi ecosystem more stable and could be a way to introduce regulation into the DeFi space. This is not a mainstream idea – it is quite innovative, but there is some brainstorming towards this direction.

*Question: can you provide more details about the security and privacy provided by the Morpheus network?*

**Dan Weinberger:** Great question and it makes sense, as we have so many different third party integrations, so data comes from many different places. How do we trust the data that we are receiving? There are many different solutions for this and we take advantage of the trust aspect of blockchain obviously. We have built a parallel system (trust layer node network), where a bunch of nodes receive the data that are also middleware receipts and notarises the data in a decentralized fashion and then we can match up the data that we have received as well. In oracle implementation and in the ERP of the two different parties, the ERP is showing different data, or alternatively our middleware showing different data than the ERP we can always go back directly to that decentralized node network and verify how the data was originally and it can't be changed – taking advantage of the immutability of blockchain as well and also, as the data is written there, it can't be changed, so there is that security level as well. Privacy: we mentioned some permission chains, permission data; if there is sensitive data we can use encryption methods as well.

*Question: what about the privacy of CBDCs?*

**Tamara Ferreira Schmidt:** A CBDC should provide the highest degree of privacy and in this context, activities should supply technical guarantee privacy by design and by default without the need to trust the central bank to preserve privacy and should be utilized ideally by anonymous payments for a small intermediate size transaction; so it is possible to do this from the technological perspective.

**Daniel Szego:** Privacy is one of the key topics in CBDC design. From a technical point of view, it is possible to design a system that is cash-like privacy (e.g. Monero, Dash). The question is whether this is desirable or not, and whether it is preferred by Central Banks. For example, the Chinese CBDC has pretty good privacy properties, but it is doubtful if something similar will be acceptable in Europe.

**Question: Should the digital Euro be early on based on cryptocurrencies or blockchain?**

**Tamara Ferreira Schmidt:** The ECB now is running the investigation phase and is trying to know about all available technologies. Blockchain is of course a possibility; but we have two different kinds

of blockchains: permissionless and permission-one. But in my personal opinion, I think it would be a closed blockchain.

**Dan Weinberger:** This goes back to the comment on interoperability. If we are discussing about different banks, we are talking about different payment systems, different ERPs, etc. Obviously there is going to be some conversions down the road, about a crypto to a banking sort of system, to allow them to speak to each other. These conversions will be more effective than the legacy systems we are converting right now going through intermediary banks.

**John Ho:** The most important thing is that all platforms find a way to speak to one another and that they find a way to interoperate. The issue is not DLT or nothing and there can't be "one-solution-fits-all" option. It can be a high-end solution, a traditional one or a combination of the two, depending on what works better.

**Antonio Leal Batista:** I agree that it is most probably going to be a hybrid system. As mentioned earlier, our next step in LACChain is to be a retail network and if it is a traditional network and having a blockchain based network and then we would have a settlement / a bridge for interoperability; it could even be among tokens or among any type of transactions that will take place on a blockchain, so I think that's going to narrow down to either a blockchain or a hybrid solution.

Daniel Szego: the way I see the different CBDC initiatives (six or eight different technologies that are being brainstormed), from the DLT part, you get at least three different blockchains or distributed ledgers that are used and that are at least like two or three more message based systems. So interoperability will be surely an issue but it is an issue in blockchain as well. So you find general purpose interoperative frameworks already but they are not as developed as message- based payment systems.

*End of the event*

## Appendix

Videos from this and all other workshops can be found on the [EU Blockchain Observatory and Forum website](#) under the section [Reports](#).

### Agenda

## Blockchain for Cross-Border Payments: Connecting the Fragmented World

Blockchain is said to be a game-changer for cross-border payments, making the entire process simpler, reducing costs and time required for transactions. The event intends to engage the audience on the most essential facts about utilising blockchain for cross-border payments, showcasing some of the latest use cases, and discussing the opportunities and challenges.

### Agenda

#### 1. Introduction & Welcome

**2. Presentation** – John Ho | Standard Chartered Bank

**3. Presentation** – Antonio Leal Batista | LACChain/Inter-American Development Bank

**4. Presentation** – Dan Weinberger | Morpheus Network

**5. Panel Discussion** – Moderator: Jan Klesla | Blockchain Republic, Panelists: Daniel Szego | CBDC Think Tank Budapest, Tamara Ferreira Schmidt | Digital Euro Association, John Ho | Standard Chartered Bank, Antonio Leal Batista | LACChain/Inter-American Development Bank, Dan Weinberger | Morpheus Network

#### 6. Final Remarks & Conclusion

## Speakers



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Morpheus Network



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