CONSENSYS

ARTICLE

Blockchain in Aviation Leasing: A Game Changer for Airlines?

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Introduction

The aviation industry is growing at a pace like never before, with the International Air Transport Association (IATA) expecting passenger numbers to reach 7.2 billion per year by 2035, nearly doubling the 3.8 billion air travellers in 2016[1]. As a result of this, we will see the number of aircraft double, with a new, younger, more fuel efficient and environmentally friendly fleet coming into operation over the next two decades[2]. With over 1,000 aircraft currently traded each year, and this number set to grow further, now is the time for innovation in the aviation leasing space. Furthermore, with the time it takes for an aircraft to be transferred currently in the region of 9-12 months, any way in which this number could be reduced would be a step forward for the industry.

Despite the success of the aviation leasing industry over the past 10 years, with strides forward such as the Cape Town Convention bringing more predictability and enforceability to the industry and saving costs, technology is still an area which presents an opportunity for the leasing ecosystem. In this article we will look at how one technology in particular, blockchain technology, can and will add value in several key areas. We will examine through case studies, how these areas will be transformed in practice. The areas are as follows:

• Letters of Credit

• Digitising Aircraft Records & Parts Tracking

• Registry and Ownership of Aircraft

Before we look in more detail at the applications of blockchain technology in the aviation leasing industry, let's have a refresher of what blockchain is and its key characteristics, so we can drill down in each of the case studies covered later on.

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[1] IATA 2016, IATA Forecasts Passenger Demand to Double Over 20 Years, viewed on 6th January 2020
<https://www.iata.org/en/pressroom/pr/2016-10-18-02/)

[2] Topham, G 2019, Airbus forecasts 48000 aircraft to be in operation by 2038, The Guardian, viewed on 6th January 2020
<https://www.theguardian.com/business/2019/sep/18/airbus-forecasts-48000-aircraft-to-be-in-operation-by-2038>

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Technology is still an area which presents an opportunity for the aircraft leasing ecosystem

Lory Kehoe
Managing Director, ConsenSys

What Is Blockchain?

Blockchain is a distinct type of Distributed Ledger Technology (DLT). DLTs involve ledgers, or databases, where the input and maintenance of data on the ledger are controlled on a peer-to-peer (P2P) basis. This P2P nature means that there is no central trusted party or intermediary required to control the ledger, and so they can be said to be decentralized. Blockchain is a decentralized ledger, which simply means that a ledger is spread across the network among all parties in the network, and each party holds a copy of the complete ledger. Blockchain DLT technology takes its name from the way in which the ledger is structured, where inputs onto the ledger are grouped into blocks of transactions, which are then validated and transmitted to the network to form a chain of blocks.

How Does Blockchain Work?

The two most important concepts which were combined to create the blockchain technology were asymmetrical cryptography and distributed IT architecture. Asymmetrical cryptography is a system of public and private keys which allows users to confidently exchange encrypted information with unknown third parties. A public key is a string of numbers and letters which can be made available to everyone [think of your email address], while the private key remains secret, and is used to access any data which is sent to your public key [think of your password used to login and access your emails].

A distributed IT system is a series of independent computers, known as nodes, which can communicate with each other over a network with no central node, much like the Internet. As all the nodes are connected to each other on a P2P basis, when one goes down it does not bring the entire network down with it, also known as automated redundancy. Blockchains use these two concepts to allow users to store and send information in a decentralized manner, while the users of the network maintain it with the help of consensus algorithms which certify and confirm the transactions into 'blocks'. Users who complete this certification are known as miners, and a range of consensus algorithms are used depending on the blockchain, the most prevalent of which are proof-of-work and proof-of-stake. Once the miners have validated blocks through these mechanisms, it is added to the chain and shared with the network. Each block contains a hash of the previous block, which means that if any data in the block was altered in any way, the hash of the block would also change, and so the link to the chain would be broken. This means that once a block has been added to the blockchain, it is prohibitively difficult for it to be changed, making blockchains effectively immutable and tamper proof.

Beyond Transfer of Currency and the Birth of Ethereum

The original Bitcoin blockchain was created specifically for the transfer of bitcoin, or digital currency, between peers. However, it could not be programmed to transfer anything beyond this. In 2015, Vitalik Buterin launched Ethereum, which was the world's first fully programmable blockchain. Ethereum crucially supports the creation of smart contracts. These are contracts between two or more parties which are digitally programmed and automatically execute clauses of the contract on the completion of certain events. The events which cause the automatic execution can be external to the blockchain, and the data concerning it is fed into the blockchain by a trusted third party known as an oracle.

Public and Private Blockchains

The original Bitcoin blockchain, as well as Ethereum's Mainnet, are both examples of what are known as public blockchains. This means that anybody in the world with access to the Internet and appropriate hardware can access the shared ledger, store a copy of it on their machine, and begin to modify it through using their computing power to validate transactions. While public blockchains are extremely powerful in ensuring the true distribution of the network and transparency, they are not always suitable for enterprises which may want to control the access and permissions of users on their chain. This is where private or consortium blockchains are useful, and many of the enterprise blockchain applications currently in production in the Financial Services industry are hosted on a private or consortium chain.

Enterprise Private Blockchains

A private blockchain is one where a central authority controls the right to access or post transactions to the ledger, which are verified through a proof-of-authority consensus mechanism. These chains can be incorporated into enterprises alongside their existing systems and provide an encrypted audit trail of transactions between members of the enterprise or group of enterprises. Some of the primary enterprise blockchains are outlined on the following page:

Hyperledger Besu

Hyperledger Besu is an open source enterprise blockchain client built in Java, created by the PegaSys team within ConsenSys. Hyperledger Besu is mainnet-compatible, and includes features like consensus algorithms that are applicable to enterprise use. Hyperledger Besu provides the following benefits for enterprise clients:

- Built from the ground up with enterprise-friendly licensing

- Vendor supported by PegaSys engineers

- Secure and dependable permissioning and privacy features

- Stable consensus that enables fast, reliable transactions

PegaSys Plus

PegaSys Plus is a commercially licensed Ethereum platform. It offers all of the same functionality as Hyperledger Besu with additional features designed to accelerate production of enterprise blockchain solutions such as:

- Increased security of data when it is at rest and most vulnerable

- Advanced monitoring for consistent uptime

Use Case 1
Letters of Credit

With approximately 24,000 planes in operation, it would be reasonable to wonder how exactly airlines pay for them? The way that aircraft are mainly financed is through a leasing arrangement, provided usually by an aviation leasing company. These companies provide planes to airlines on a fixed term lease basis. The benefits of using a lease for an airline is that they are able to operate an aircraft without the up front financial burden of purchasing them. With a typical passenger plane such as a Boeing 737 costing in the region of $100m, it is clear that without these leasing companies, the industry would not be able to operate in the same manner. As a result of this, the aviation leasing industry is a highly lucrative one, with the global aircraft leasing market expected to hit approximately $470 billion by 2026, at annual compound growth rate of 7.5%.[3]

Within leasing transactions, a 'letter of credit' is often used as the financial instrument, providing an alternative to a cash deposit, and also on occasion is used to represent the contractual obligation to pay for maintenance fees in cash[4].

A Letter of Credit (LC) is an instrument issued by a financial institution, usually a bank, (known as the issuing bank) on behalf of a buyer (or applicant), under which the issuing bank is obligated to make a payment to the seller (or beneficiary) against the presentation of specific documents which are set out in the terms of the LC[5]. Typically these documents are paper based and the presentation of the documents is conducted in person, at the expense of both the issuing bank and the seller. Given that these documents are paper-based by nature, it is not uncommon for fraudulent documents to be used in a documentary presentation. Therefore, the LC acts as a contract between issuing banks and sellers. Typically a standby letter of credit (SBLC)[6] is used in the commercial aircraft space acting as a type of security deposit or collateral guarantee for any financial obligations in the leasing contract, such as maintenance. An LC is a major benefit for the lessee (applicant) as it frees up capital for other purposes. While a LC is a tool which underpins the leasing industry, the current process of manual paper based transactions is far from optimal.

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[3] MarketWatch 2019, 7.5% growth for aircraft leasing market size raising to 473.6 billion by 2026, MarketWatch, viewed on 6th January 2020,
<https://www.marketwatch.com/press-release/75-growth-for-aircraft-leasing-market-size-raising-to-usd-4736-billion-by-2026-2019-10-14>

[4] Nath, E & Pearson, J 2019, Letters of Credit Refresher, Nat Law Review, viewed on 6th January 2020,
<https://www.natlawreview.com/article/letters-credit-refresher

As previously mentioned, in the past fraud has been known to be commonplace in other areas of trade finance through documentary presentation, which begs the question; is there a better way of transacting with LCs? By digitally storing information regarding an LC and the presentation of documents relating to an LC, there is the potential for blockchain to automate and enhance security in the lifecycle of an LC[7].

In recent times we have seen companies try to digitise the issuance of LCs, for example HSBC in China have recently completed an LC transaction on their digital Voltron platform. We see a number of other consortia such as Marco Polo and TradeIX also working in the space, however the most successful industry consortium to date is the komgo consortium, which we will discuss in our case study[8].

Case Study – komgo

komgo by the numbers

- 15 entities make up komgo including 10 financing institutions

- Issuing letters of credit have moved from taking 10 days to 1 hour - 99.58% reduction

- 6 months to bring the solution to go-live / production. The komgo platform went live on December 19th 2018 after 6 months of development

- Over $700 million has flowed through the platform over the course of 2019

komgo seeks to catalyze the world's commodity trade finance network using Enterprise Ethereum blockchain technology to deliver higher levels of security, trust, and efficiency through automation and industry- tailored functionality. A private, shared blockchain network based on Enterprise Ethereum that serves as a secure, streamlined, and digital platform on which only authorized parties—banks, commodity traders, energy corporates, inspection companies and the broader ecosystem of participants—can store data, exchange transactions, and send messages more efficiently and securely based on permissions. komgo is backed by 15 of the world's largest commodity trade and finance companies: ABN-AMRO, BNP Paribas, Credit Agricole, Citi, Gunvor, ING, Koch Supply & Trading, Macquarie, Mercuria, MUFG Bank, Natixis, Rabobank, SGS, Shell, Societe Generale.By working with ConsenSys Solutions and leveraging Kaleido's enterprise blockchain solution, komgo was able to quickly implement its vision and successfully deploy its live production network in December 2018.

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[5] Moors, E & Rutten, L 2014, Structured Commodity Finance (2nd Edition), EuroMoney Books

[6] Johnson, B 2015, "Underlying Transaction Doesn't Violate Law" Exception in a Letter of Credit, Air Lease Review Blog, viewed on 6th January 2020, <https://airleasereviewblog.com/category/letter-of-credit/>

[7] Info Systems 2017, The Seven Steps to a Blockchain Based Letter of Credit, Info Systems, viewed on 6th January 2020, <http://infosystems.mu/the-seven-steps-to-a-blockchain-based-letter-of-credit-lc-transaction>

[8] Palmer, D 2019, HSBC Targets China Trade With Yuan-Denominated Blockchain Letter of Credit, Coindesk, viewed on 6th January 2020, <https://www.coindesk.com/hsbc-targets-china-trade-with-yuan-demoninated-blockchain-letter-of-credit>

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By digitally storing information regarding a Letter of Credit and the presentation of documents relating to a Letter of Credit, there is the potential for blockchain to automate and enhance security in its lifecycle.

komgo rolled out two initial products:

1. A digital letter of credit, allowing commodity houses or other platforms to submit digital trade data and documents to komgo with customer banks of their choice

2. A trusted decentralized network to exchange documents on a secure and private basis.

While streamlined operations are estimated to create potential cash-flow gains of 30-40% across the entire production chain, industry-wide adoption of komgo is expected to reduce the cost base between 20-50% with the possibility of further improvement as the project matures

The way in which komgo is transforming an antiquated and risk-prone system into a fully digitized, secure, and frictionless experience can serve as a prime example to the aviation leasing community that there is the potential to reimagine and revolutionise the industry as it is today. Given the material influx of capital and expected growth in the coming years, a platform like komgo could be the answer for lessors, banks and airlines to truly reap the rewards of blockchain technology.

Use Case 2
Digitising Aircraft Records & Parts Tracking

With approximately 24,000 aircraft in service, both passenger and cargo, the aviation industry is one of the world's largest economies, contributing over $2.7 trillion of Gross Domestic Product (GDP)[9]. The standard commercial aircraft can have a life cycle of up to 30 years[10], resulting in the amount of data on each aircraft totalling thousands of pages. The process for collecting information in relation to aircraft is still quite a labour-intensive process, with the result being paper-based records in many cases, given the lifecycle of the aircraft currently in service. Some have contended upwards of 90% of all of maintenance documents are paper-based, with "literally millions of boxes of paper-based documents"[11]. The archaic, paper-based nature of the industry has led to some high profile cases in recent times where fraud has been an issue, most notably with American Airlines in 2015 in which maintenance fraud was found during a mechanics safety complaint[12].

While instances like this are not as commonplace as they once were, airlines and lessors still run the risk of these instances arising when records are paper-based. Within this 30 year period, the aircraft most likely passes through the hands of several owners, meaning the quality of information documented at each stage of the aircraft's lifecycle may vary in both its detail and quality. This information is crucial when an aircraft passes hands from one airline to another, meaning that the length of the due diligence process can be adversely affected by poor quality or missing information with regards to a specific aircraft. It is clear that the potential to digitise records relating to parts and maintenance could have a positive impact on the industry. We will delve into how aircraft can be registered using blockchain in use case 3.

[9] Aviation Benefits 2019, Economic Growth, Aviation Benefits, viewed on 6th January 2020, <https://aviationbenefits.org/economic-growth/>

[10] AerSale 2019, Aircraft Lifecycle Management, AerSale, viewed on 6th January 2020, <https://www.aersale.com/media-center/aircraft-life-cycle-management>

[11] Seidenman, P & Spanovich, D 2016, Why Airlines, Aftermarket Struggle With Digital Record-Keeping, MRO Network, viewed on 6th January 2020, <https://www.mro-network.com/maintenance-repair-overhaul/why-airlines-aftermarket-struggle-digital-record-keeping>

[12] Goglia, J 2015, FAA Investigation Substantiates Mechanics Safety Complaint Against American Airlines, Forbes, viewed on 6th January 2020, <https://www.forbes.com/sites/johngoglia/2015/05/01/faa-investigation-substantiates-mechanics-safety-complaint-against-american-airlines/#7365072a9587>

In 2019, Honeywell launched an e-commerce initiative called GoDirect Trade for the aviation parts industry in which blockchain is used to verify the authenticity of documents relating to aircraft parts which are for sale. This further illustrates the appeal of blockchain for its ability to store the history of a part. A more recent industry wide initiative is GATS (Global Aircraft Trading System), which aims to facilitate the "trading and financing of aircraft equipment by reducing the burdens on lessees, lessors & financiers". In a similar guise to komgo, it is aimed at creating a more efficient, secure and predictable industry. By standardising documents and transferring them digitally, it is a great first step into digitising the leasing sector. Given the nature of the GATS initiative and the success of Honeywell, we see blockchain as a logical next step to be implemented to act as the foundational layer for GATS, upon which other industry products can be built. There is even the potential to leverage the public Ethereum chain in the future, if the goal is to create a more open, accessible system in the long term.

Case Study - Treum for Parts Tracking & Maintenance Records

Treum, a ConsenSys-backed blockchain and supply chain company, is building sustainable, supply chain networks in order to help companies bring trust with their customers. Treum's offering includes three key products; Transparency, Traceability & Tradability[15].

(i) Transparency

A product narrative about how it is sourced, manufactured and packaged - responsibly, sustainably using quality ingredients.

Based on our interviews with industry stakeholders, aircraft operators do not have oversight beyond tier 1 level suppliers for any aircraft part. Using Transparency, all suppliers for each aircraft part can be on-boarded onto the platform who can then upload and manage certificates required for compliance. Providing the Original Equipment Manufacturer (OEM), invites their Tier 1 level supplier, this first level supplier can subsequently invite their suppliers to join the network, creating a ripple effect along the supply chain. A key benefit of Transparency is that each supplier can upload evidence, i.e. proof behind the claims they make in the form of certificates, which could be ISO compliance related, to choose an applicable standard. Considering the labour intensive job it would require to obtain and perform a full due diligence checks on such a document, this is a significant benefit for the sector. Blockchain has the potential to act as a single trusted layer for the industry ensuring the highest standard of documentation (integrity) and a tamper proof record for each aircraft. As the industry grows in the coming years, records for an aircraft from its inception to decommission could be stored and managed on such a single platform.

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[13] Ledger Insights 2019, Honeywell uses blockchain for aircraft spare parts, Ledger Insights, viewed on 6th January 2020, <https://www.ledgerinsights.com/honeywell-blockchain-aircraft-spare-parts/>

[14] Aviation Working Group 2019, GATS, AWG, viewed on 6th January 2020, <http://www.awg.aero/project/gats/>

[15] Treum Website 2019, <https://treum.io/>

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We see blockchain as a logical next step to be implemented to act as the foundational layer for GATS, upon which other industry products can be built.

(ii) Traceability

A source narrative that a product item / batch traces back to. The source could be an ingredient, a region etc.

In the resale of parts we have seen positive inroads being made by the Honeywell product for resale of parts. Indeed, for the aviation sector, this could mean being able to trace parts for resale back to the original aircraft or even raw material if tracked from manufacturing. Treum's Traceability product facilitates the creation of a digital passport for any asset, which could be used throughout its lifecycle. Providing the ability to define the asset process and associated information you wish to track, for example maintenance records, you can track specific assets and create relationships with other assets within an aircraft, tracing an aircraft's entire lifecycle along with it's parts. In addition, Internet of Things (IOT) devices can be used to upload data in a real time basis to the platform to ensure data is accurate, timely and most importantly, recorded.

(iii) Tradability

An ownership narrative that allows items to be claimed, transferred and traded fluidly.

As we have discussed previously, the transfer of an aircraft from one airline to another can take up to 12 months to be successfully completed, blockchain has the potential to radically reduce this number. Similar to the goals of the GATS initiative, Treum could provide a mechanism for a more efficient, time saving transfer of an aircraft. The ability to have all documentation relating to the aircraft on one system would make the transfer of these aircrafts a streamlined process, potentially adding automation to certain due diligence checks for smart contracts, for example for flight hours in a 5 year period.

The above 3 products are just a snapshot of how aviation leasing could be positively impacted by blockchain relating to the trade of assets, we will now look at an even more disruptive business model with the topic of tokenisation.

Treum have worked across 7 industries; consumer products, oil & gas, food & beverage, pharmaceuticals, luxury goods, property and automotive. Treum's customers include; GlaxoSmithKline, Imaginea, Verified Organic, the World Wild Life Fund. To find out more about Treum or their customers go to treum.io

Use Case 3
Digital Assets / Tokenisation

What Are Digital Assets / Tokenisation?

One of the most spoken about applications of blockchain in recent times is that of digital assets / tokenisation. Digital assets are uniquely enabled by blockchain technology through digital scarcity, authenticity and programmability and in a more efficient and transparent way than previously possible. Tokenisation involves the creation of a digital representation of an asset, or any other unit of value, on the blockchain, which are known as 'tokens'. This is possible due to the digital scarcity which blockchain provides, whereby the chain acts as an indisputable and transparent record of the tokens, upon which they can be stored and managed trustlessly. These tokens can represent anything deemed of value by society, from a representation of currency, to digital assets, to representations of physical assets such as real estate or aircraft. Tokenisation enables the fractionalisation of these assets, whereby assets such as an aircraft, which are prohibitively expensive for all but a limited number of investors, can be split into fractions represented by tokens. This can reduce the barrier to entry for investment, enabling new capital to enter the market.

There are a number of different types of tokens which can be created on a blockchain. Utility tokens for example are tokens which provide holders with access to a product or service. The most relevant type of token in the aircraft leasing space however is a security token. A security token is a token which is backed by a tangible and tradable asset, giving the holder of the security token the right to ownership of the asset it represents. Security tokens can represent shares in companies, precious goods like metals or fine art, or the ownership of real estate or aircraft. A Security Token Offering, or STO, is the process whereby these tokens are created. These events and tokens open up the possibility of a secondary market to trade these tokens over the blockchain.

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Tokenisation involves the creation
of a digital representation of an
asset, or any other unit of value,
on the blockchain.

How Can This Benefit Aircraft Lessors

This process of tokenisation can be applied in the industry to tokenise the aircraft which are being leased and traded. The tokens could be used to represent either the ownership rights to an entire aircraft, a representation of each aircraft for tracking or registry purposes, or could represent parts of the aircraft such as an engine. There are many ways in which this tokenisation could be used to the benefit of the aircraft leasing industry, and we will focus on the two below.

1. Registry of Assets

The Convention on International Interests in Mobile Equipment, effective since 2006, operates to facilitate the efficient financing and leasing of mobile equipment including certain aircraft[16]. One of the primary objectives of this convention was the creation of the International Registry of Mobile Assets, which is located in Ireland, which records international property interests in the aircraft equipment covered by the treaty.

Using a security token to digitally represent each of these assets would provide a more efficient, error-resistant and secure mechanism of authentication and registry for the International Registry. Such a process would also mitigate existing potential liability for the Registrar in its assurance of the registry's data security and integrity, without affecting the Supervisory Authority's approval process or confidentiality protocols, which remain essential for the protection of sensitive entity data and Convention compliance[17]. Representing each asset as a Non-Fungible Token (NFT) on the blockchain would allow each token be referenced via a unique identification value with accompanying characteristics, and on request the blockchain could disclose the asset's current registration status along with its entire transaction history. Confidential information concerning the asset would be available only to predetermined entities who have been approved to view this data by the Supervisory Authority. Creditors would be confident through their possession of the asset's token that the asset's registration status, and therefore their ownership interest in the asset, would be incontrovertible until the next transaction event is validated on the chain[18].

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[16] Official Commentary to the Convention on International Interests in Mobile Equipment, s. 2.1 (3rd ed. Rome 2013) http://www.unidroit.org/instruments/security-interests/cape-town-convention.

[17] Dylus, Erich P. 'The International Blockchain Registry of Mobile Assets'. Air & Space Law 44, no. 1 (2019): 46

[18] ibid.

2. Ownership and Capital Raising

As mentioned earlier, tokenisation enabled the fractionalisation of assets, which reduces the barrier for entry to investment in large expensive assets such as real estate or aircraft. This can provide aircraft owners with new avenues to raise capital by opening the ability to invest in their aircraft to a wider range of investors. The ownership and cap table of these assets can then be transparently managed on the blockchain, with each token holder given ownership interest over a portion of the asset.

This would indeed raise the need for a new breed of regulated custodian to hold these tokens for investors, however ultimately it will become easier and cheaper for investors to directly purchase an interest in previously unattainable assets.

Geographic restrictions can be removed by trading over the blockchain, and fees can be significantly reduced by cutting out middlemen through the peer to peer nature of the blockchain. Secondary markets can also be opened to trade the tokens on an open market, enabling investors to exit their equity at a lower cost and on an almost real time basis. Ultimately a more liquid market leads to more capital entering the market, and can further bolster the already rapidly growing aircraft leasing market.

Case Study – ConsenSys Codefi

ConsenSys Codefi is the Blockchain Operating System for Global Commerce and Finance. ConsenSys have built a platform to act as the operating system for the future of commerce and finance. One of the products under development is Codefi Assets, a platform to create, issue, and manage digital tokens, their associated markets, and digital financial instruments on public or permissioned blockchain networks. Codefi Assets allows clients to:

• Manage the lifecycle of digital assets, streamlining governance, investor relations, and portfolio management

• Issue tokens, manage cap tables, and compliantly address various governance needs and corporate actions

• Purchase tokens, view portfolios, understand exposures, and perform related actions

• This can all be done through a whitelabel platform, or through a Digital Asset API. The value this product brings to clients is as follows:

• Accelerate blockchain development with configurable, easy-to-integrate tools and modules

• Reduce infrastructure and operational costs by building and deploying shared data standards and common workflows

• Leverage ConsenSys's global reach to create networks and markets at the highest levels of industry

An example of how valuable physical assets such as aircraft can be tokenised and fractionalised is through the use of Codefi Assets platform to tokenise real estate for Mata Capital[19]. French real estate fund management company, Mata Capital, sought to adopt blockchain technology in order to optimize the processing of securities registers for its real estate investment products. It partnered with ConsenSys Codefi and Screeb Notaries to leverage this innovative technology to record and process some of its operations. ConsenSys Codefi provided Mata Capital license to its security token issuance and management platform, Codefi Assets. Currently running in production, the platform was used to tokenize a single real estate fund asset, ownership of a building located in the 15th arrondissement of Paris for an investment volume of 26 million euros.

[19] https://codefi.consensys.net/mata-capital

Currently running in production for Mata Capital, Codefi Assets effectively delivers several major features that improve data security, optimize business operations, and streamline the investor experience:

- The platform securely holds the registry of shareowners for real estate funds

- The platform can successfully create token representations of financial instruments on the Ethereum mainnet, on a customized interface with built-in compliance attributes

- The platform allows Mata Capital and its investors to carry out all KYC and AML actions through the platform

- The platform enables Mata Capital to offer investors the possibility to engage in a fund or "club-deal" operation

- This platform could allow investors to easily subscribe and resell their securities over the counter

- This new blockchain platform was used to tokenize a single real estate fund asset, ownership of a building located in the 15th arrondissement of Paris for an investment volume of 26 million euros.

"This is the largest tokenized operation in Europe"

says Baptiste Saint-Martin.

In the future, the platform's purpose will be to handle all the eligible operations of Mata Capital, which also intends to offer this white label solution to professional partners in the financial and real estate sectors.

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ConsenSys have built a platform to act as the operating system for the future of commerce and finance.

Conclusion

In conclusion, aircraft leasing is an industry which has grown massively in recent years, and is set to continue growing at such a pace. To sustain this growth however, the industry as a whole will have to innovate and use cutting edge technologies, of which blockchain is particularly suited to bolster its growth. In this article we have discussed how:

1. Digitising letters of credit could significantly reduce the reliance on paper based financing methods for aircraft lessors, leading to quicker and more resource efficient issuance of finance via letters of credit, with higher levels of transparency reducing instances of fraud. This digitisation over a blockchain based solution has already been seen in the trade financing world through the komgo platform.

2. We examined how blockchain based supply chain platforms, such as Treum, can be used to digitise aircraft and improve the transparency and traceability of parts during manufacturing, and of the aircraft themselves throughout their lifecycle, increasing trust between parties.

3. We introduced the concept of tokenisation, through which aircraft can be represented digitally on a blockchain by a token, which can be used to maintain an undisputable registry of aircraft required under the Convention on International Interests in Mobile Equipment. Tokenisation also enables illiquid assets to be fractionalised to increase liquidity in the aircraft market and enables new investment to enter without previous barriers to entry. We briefly introduced ConsenSys Codefi's Assets product, which is leading the way in tokenisation of physical assets, and could easily be used to tokenise aircraft.

Blockchain is a relatively new technology, the market is expected to grow to approximately $57.7 billion by 2025[20], however, in looking to apply blockchain solutions to aircraft leasing, the following points should always be considered:

- Blockchain's biggest benefits arise through network effects, so collaboration and partnerships will be absolutely crucial

- Players will more and more be expected to quickly send and receive information in a way which is not possible through traditional means

- When assessing the potential impact of blockchain technology, new products as well as automated services should be imagined

- The full benefits of blockchain technology will appear when players engage and trust partner organisations, and create an ecosystem where resources are pooled in shared ledgers

Blockchain technology is well poised to help the aviation industry reach new heights in the coming years.

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[20] Report Linker, The global blockchain technology market size is expected to reach USD 57,641.3 million by 2025, registering a CAGR of 69.4% from 2019 to 2025, PR News Wire, accessed on 6th January 2020, <https://www.prnewswire.com/news-releases/the-global-blockchain-technology-market-size-is-expected-to-reach-usd-57-641-3-million-by-2025--registering-a-cagr-of-69-4-from-2019-to-2025--300902333.html>

"
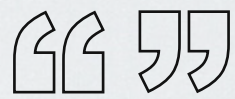
Blockchain is a relatively new technology, the market is expected to grow to approximately $57.7 billion by 2025

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Lory leads ConsenSys' Ireland hub. Prior to ConsenSys, Lory was a Partner with Deloitte, where he founded, set up and led Deloitte's Europe Middle East and Africa blockchain Lab. Lory has led blockchain corporate and governmental strategy projects, including production / live, pilot and POC projects. With the IDA in Ireland (Industrial Development Authority), Lory was the founding member of the Ireland national blockchain initiative "Blockchain Ireland'. This group includes 200 entities made up of global enterprises, universities, government entities and start-ups. Lory is a Qualified Financial Adviser, registered stockbroker and is currently (and has been for the past 13+ years) an adjunct assistant professor with the Business School in Trinity College Dublin

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John is a manager in the ConsenSys Ireland team. Within ConsenSys, John's main focus is working with governments, enterprises, and consortia to assist them in identifying, designing and building products and platforms. John has extensive delivery experience on blockchain engagements ranging from Proofs of Concept to Production platforms, and has also helped large global banks and Governments define their blockchain strategies. Prior to working in ConsenSys, John was a founding member of the Deloitte EMEA Blockchain Lab in Dublin and also sat on Deloitte's EMEA FinTech task force. John holds a Bachelor of Business and Law degree from University College Dublin and is a Certified Scrum Product Owner.

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Seán works as Scrum Master and Program Manager for the Assets team within ConsenSys Codefi. Codefi Assets has 3 scrum teams located between Dublin and Paris. Seán facilitates and develops their agile practices, as well as managing planning, resourcing, and overseeing delivery of these teams' project commitments. Seán has strong experience in project delivery, and has assisted in a range of roles within the ConsenSys Solutions team prior to joining the Codefi product, including business analysis and business development. Prior to joining ConsenSys, Seán worked as a Technology Consultant in Accenture, primarily within the financial services industry.

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