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GLOBAL BLOCKCHAIN SUMMIT

◇ BLOCKCHAIN REDUCING FRAUD

◇ THE INTERNET OF THINGS

◇ THE CALL FOR
ICO REGULATION



Blockchain explained

WHAT IT IS. WHY IT MATTERS.
THE CURRENT AND FUTURE STATE
OF THE EMERGING TECHNOLOGY.

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WELCOME

Blockchain Australia is a publication produced by ADBITmedia and Lakeba to help educate and inspire the market about Blockchain technology developments and their relevance for Australian and global businesses. In the coming editions we will explore the ecosystem that can surround Blockchain like ICO's cryptocurrencies and coins.

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Blockchain Australia has one agenda, to become the central point of media, news and content for Blockchain and Blockchain related developments and events from Australia and around the world.

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ADC GLOBAL BLOCKCHAIN CONFERENCE PUTS

ADELAIDE ON THE world stage

INNOVATION AGENDA DRAWS EXPERTS FROM AROUND THE GLOBE.

Nicholas Giurietto

From the 18th to the 20th March of this year, I was honoured to attend the ADC Forum Global Blockchain Summit in Adelaide. Organised by ADC Forum with support from the Government of South Australia, the event brought together attendees, industry experts, regulators, members of government, businesses, entrepreneurs and enthusiasts from over 30 countries to learn, collaborate and develop a roadmap for the development of blockchain technology.

In spending three long but invigorating days in sessions, panels and deep discussions with some of the leading thinkers in the blockchain space, it has become very clear that when a state government really engages with technology and the community, it has the opportunity to bring business to that state. South Australia has now clearly positioned itself as a very attractive destination for blockchain companies.

The rewards are already flowing. During the summit, three international blockchain companies announced that they will use Adelaide's Lot Fourteen as their Australian base.

One of the companies to establish roots in Adelaide



Nicholas Giurietto, Chief Executive Officer and Managing Director, Australian Digital Commerce Association (ADCA)





is Hong Kong-based Binance, the world's biggest cryptocurrency exchange based on trading volume. During the summit, Binance CFO, Wei Zhou announced Binance Lite, a platform that enables Australians to purchase cryptocurrencies at newsagencies across the country. The goal of the company is to demystify the process of acquiring and transacting with cryptocurrencies.

Another standout during the course of the summit was Shyft, a company that in its own words, "is building a blockchain-based ecosystem that allows for the secure and private sharing of data for industries, governments and consumers." The business is working hard on identity and compliance banking solutions and has also selected Adelaide as its Australian HQ.

Thirdly, SALT Lending, which offers loans secured by crypto assets has opted to put a stake in the ground in South Australia. The team offers an intuitive, automation-based platform to track value at as close to real time as possible.

Meanwhile, IBM and local SA businesses, Thomas Foods and Drakes, announced a successful trial using IBM's Food Trust technology.

A GLOBAL PHENOMENON

One point that stood out during the course of the three-day Summit was the range of nationalities represented at the event, reflecting the clear reality that blockchain is a global phenomenon. Each session saw a mix of people from traditionally advanced economies, but also really exciting entrepreneurs from developing countries that are solving different challenges and will – I believe – inject enormous energy and excitement into the global blockchain community.

Closer to home, in addition to the international representation, there were two big announcements from the federal government that I thought were very important. The government has committed to provide \$100,000 to support Australian blockchain companies to go to the Consensus Conference in New York, which will be held in May. ADCA has partnered with Austrade to lead delegations to Consensus as well as Shanghai for the last two years. This additional support is very welcome and shows the federal government clearly has its sights on supporting the Australian blockchain community to reach out to build its customer, partner, supplier, and investor networks.



South Australia is becoming a hub of innovation ... It's about not just businesses, but the way we want to run our society that will come from it.

The federal government also announced it will start work on a roadmap for blockchain implementation in Australia. This is slated to include identifying and prioritising opportunities for blockchain innovation in Australia, which is something that ADCA has been calling for in the past. It's refreshing to see the Australian government put its weight behind blockchain in a more formal way.

The roadmap itself is set to be constructed with close collaboration and help from the blockchain community. In fact, it's the belief of many in the blockchain community that the process should be industry-led, with senior players in some more mainstream Australian industries actually asked to play key coordinating roles. If the roadmap is to have a significant impact, now is the time for government, industry and the broader blockchain community to rally behind the initiative and build it properly.

PACE OF CHANGE

One other point worth acknowledging is the energy and enthusiasm of the Australian – and global – blockchain community. Reflecting on the fact that the technology was developed approximately a decade ago, the industry is moving apace across multiple different parts of the economy. As an example, during the summit, there were sessions on healthcare, on identity and management, on banking, on education and myriad others. In every one

of these areas, there exists a pipeline of amazing ideas that will really make a big difference to the way our economy and our society will operate; not just in the next few years but in decades to come.

The critical flipside of this almost limitless innovation is the importance of making choices now about how it will be managed. With great power comes great responsibility, and blockchain applications will require regulation and ethical frameworks to ensure the technology evolves in an ethically principled way.

A good example of the maturity of discussion came from the token and crypto communities at the summit. These groups have really exciting, innovative ideas about the way this technology could be applied to make the economy work in new ways. I was fortunate to witness numerous serious, genuine, and engaged conversations between innovators and entrepreneurs on the one hand and regulators and others who understand the how and why of the way the economy works today. Together, they were looking for the way forward that marries the principles behind our regulatory structures and processes with innovation and enhanced regulatory models. There is much more work to do both in Australia and internationally but this collaboration is the only way forward.

As new technologies emerge, the discussion is turning towards, "how do we hold tight these important principles around market efficiency, consumer empowerment, and consumer protection, but do it in new ways to take advantage of this technology?"

The summit served as a fantastic starting point for an ongoing conversation we need to have at all levels of Australian business, regulatory and technology communities. And the roadmap is another piece of that.

According to South Australian Premier Steven Marshall, a huge part of the South Australian government initiative is to look at technology as a driver for the South Australian economy. The Premier pointed to South Australia as a pioneer in using blockchain for government applications and its goal to develop into an epicentre for Australian technology. He pointed to a recent Minister's Recreational Fishing Advisory Council vote employing blockchain, joining such forward-looking organisations as IP Australia in embracing the technology. The State Government has invested into a technology hub called Lot Fourteen, on the site of the former Royal Adelaide Hospital, touted as Australia's first creation and innovation neighbourhood.

Lot Fourteen has already been selected as the home of the National Space Agency, and Lockheed Martin Australia has partnered with Adelaide University's new Australian Institute for Machine Learning (AIML), located on site to develop machine learning applications.

In the words of Premier Marshall, "South Australia is becoming a hub of innovation. The creation of Lot Fourteen and the world-class attention it is garnering is not purely focused on blockchain, but the future of technology and how society interacts with technology. It's about not just businesses, but the way we want to run our society that will come from it."

AUSTRALIAN COMPANIES LOOKING TO

de-stigmatise BLOCKCHAIN PAYMENT

PAID BY COINS AND PREZZEE REDUCING FRICTION TO APPEAL TO CONSUMERS

Editorial Contribution

Blockchain and the distributed, auditable trust it inherently provides has traditionally been viewed as inaccessible to most everyday consumers – particularly when it comes to cryptocurrency. Despite being created approximately a decade ago, as recent as June of 2018, a survey conducted by ING concluded that as few as seven percent of Australians invested in cryptocurrency.

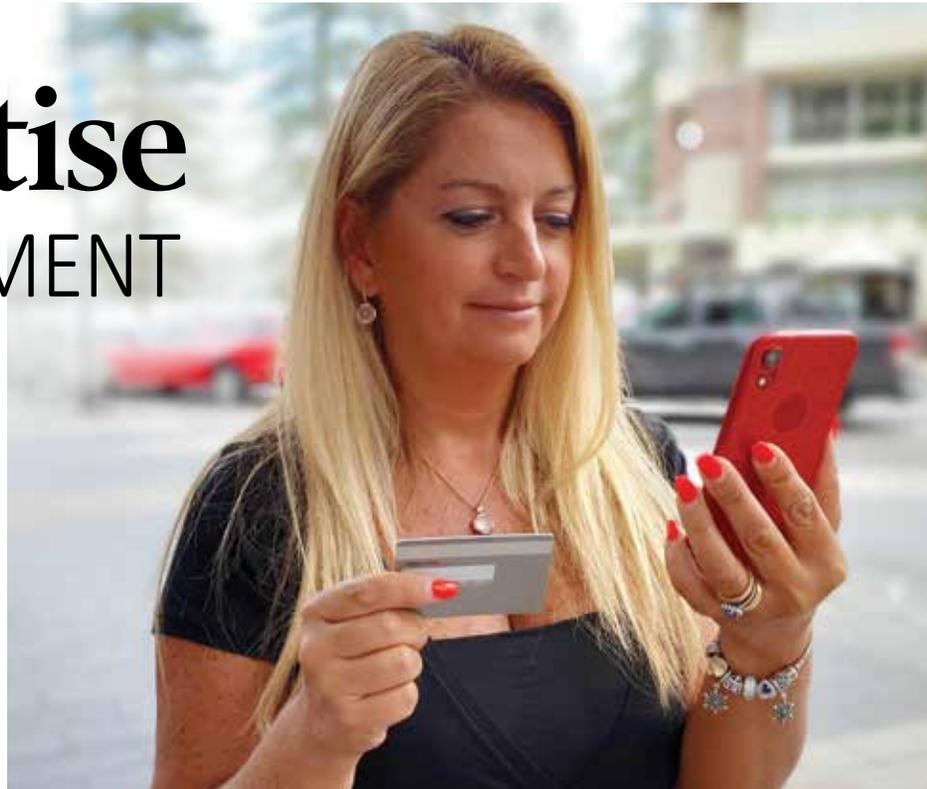
Paid by Coins was launched in 2018, and is owned by Mobecom (ASX:MBM) and the Lakeba Group. The business was developed from the start to bring crypto payments into the mainstream.

Paid by Coins offers a secure payment gateway to enable consumers to use any cryptocurrency coins they own to pay bills via BPAY or transfer into fiat currency and deposit in any Australian bank account. The system currently accepts the industry's best-known cryptocurrencies: Bitcoin, Ethereum, Litecoin, Bitcoin Cash, and Ripple, with more planned to be integrated in the future.

"Paid by Coins launched as a consumer portal in early 2018. The initial goal was to provide people that held cryptocurrencies with a simple, quick and effective way to be able to use their crypto, and not just for the few, specific occasions where a web site or specific, forward-thinking retailer might accept crypto. Instead, we wanted to build a payment gateway to let people pay their everyday bills or transfer funds to any bank account in Australia via cryptocurrency directly," said Marco Manera, Chief Operating Officer at Lakeba Group.

"The problem we saw with the old way of managing cryptocurrency to pay bills was very convoluted," he continues. "Imagine: I receive a bill from my telecommunications provider. In order to pay using crypto, I would need to log into an online exchange, sell my coins, convert them to fiat within the exchange, then transfer the currency to my bank account, and finally pay my bill. This complexity and the many steps it takes to make effective day-to-day use of cryptocurrency has been an impediment to widespread adoption."

The platform also enables users to transfer cryptocurrency assets in order to purchase gift cards at an extensive list of retailers via a partnership with Prezzy; an electronic gift card provider. Prezzy is a technology



platform that can be used to bulk-send gift cards to more than 80 retailers including Anaconda, Barbeques Galore, Myers, Target, Uber, Coles and myriad other businesses - all of which can be purchased through the Paid By Coins portal. Through an application programming interface (API)-based approach, Prezzy is able to add new partners and integrate with their IT systems to grow its overall reach and appeal.

Paid By Coins also offers a B2B API to enable businesses both large and small to integrate with the technology and build additional services.

"We recently released APIs for the service, and this allows any eCommerce business or merchant out there to be able to use our services to accept cryptocurrencies. We essentially enable businesses that aren't equipped to accept crypto, to now accept crypto," explains Manera.

While the volatility of the cryptocurrency space in recent months has left many wary, Manera suggests the ability to convert crypto coins into gift cards or make BPAY payments, will help destigmatise the technology and bring it into the mainstream.

"Gift cards represent a valuable opportunity to change the perception of crypto. A number of well-known retailers, and big brands that consumers are familiar with in Australia, are coming on board, and we've made it easy for smaller businesses to integrate. Paid By Coins is focused not on targeting just the crypto community, but rather the general consumer community in a way that is safe and familiar," he concludes.



Gift cards represent a valuable opportunity to change the perception of crypto. A number of well-known retailers and big brands ... are coming on board.



EMPLOYING THE BLOCKCHAIN TO reduce FRAUD

DISINTERMEDIATED TRUST BUILDS
EFFICIENCY AND ACCOUNTABILITY
Editorial Contribution

Fraud is nothing new, with the first incidence of financial fraud recorded around 300BC. A Greek sea merchant called Hegestratos insured his ship and cargo, then scuttled an empty (but insured) ship in a bid to sell the cargo. He was caught.

In a modern, digitised society, fraud is no less prevalent than it has been throughout history, but it has proven increasingly difficult to detect.

Blockchain Against Fraud (BAF), a blockchain-based validation platform developed by Lakeba, is designed to offer a single ledger and a decentralised way to capture information and verify its authenticity in real time. As blockchain offers the benefit of disintermediating trust between two parties, it also eliminates the need for intermediaries to handle often sensitive data.

Blockchain-based technologies can also be set up to automatically execute actions. For example, smart contracts can be used to facilitate agreements directly between two parties and can be automatically and irreversibly created and tracked without the involvement of a third.

“Due to the immutability and inherent trust provided by blockchain technology, BAF has the ability to improve productivity, strengthen connections in security, speed and trust,” says Patrick Reiss, Business Manager for BAF.

“It can be used to combat reporting fraud, such as overstatement of income, the transactional data held in

the blockchain will provide irrefutable evidence showing any irregularities. It will also prevent unscrupulous operators from creating fictitious transactions or backdating documents thanks to the continuity, irrevocability and irreversibility of the blockchain ledger,” he continues.

The use of blockchain technology provides benefits across a wide range of industries that have specific requirements around ensuring authenticity of information, including – but not limited to – the financial sector, academia, pharmaceuticals, supply chain and logistics, healthcare and myriad other applications.

For example, BAF can be used to verify the authenticity of education credentials for a PhD candidate, or combat the counterfeiting of drugs and false medication, or verify that an expensive handbag that has arrived

in a high-end fashion retailer is a genuine item. However, it’s arguably the financial services industry where the economic benefits are most immediately obvious.

BLOCKCHAIN FOR BANKING

With the conclusion of the Royal Commission into Misconduct in the Banking, Superannuation and Financial Services Industry, much emphasis has been placed on how to streamline banking operations and stamp out endemic fraudulent practices.

Reiss is quick to point out the benefits that BAF could

bring to a sector that has been accused of widespread misconduct. In one example, a number of banking customers were discovered to have provided fraudulent pay slips and company details, resulting in a bank issuing home loans under false pretences. The use of a blockchain-based system able to verify the authenticity of such documents would immediately detect the fraud and alert not just the bank, but

also the payroll provider. BAF is making headway in its engagement with leading banks to test the technology and verify in real time that specific documents like pay slips or tax returns have been issued by the right source and with the numbers presented by the borrower.

As Reiss explains, “Lakeba recently concluded a successful eight-week pilot with one of the leading banks in Australia with extraordinary outcomes, including productivity gains, a decrease in manual labour, and overall fraud mitigation. We tested 100,000 existing payslips, and more than 1,000 historical car and home loans and were able to show 100 percent validation of the data. This is a powerful solution and one that we believe more banks will be adopting as we start to roll out the BAF solution across the broader banking and finance industry, not just in Australia but globally.”

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We recently concluded a successful eight-week pilot with one of the leading banks in Australia with extraordinary outcomes.

Money laundering is big business, with an estimated USD\$800 billion to USD\$1.5 trillion per year transacted globally. Those involved in illegal transfers of value are always looking for new ways to move proceeds of crime back into the legitimate economy. While the high-profile blockchain-based cryptocurrency, Bitcoin, marred the reputation of blockchain as it became synonymous with the dark web and notorious Silk Road trading site, the truth is far more nuanced.

The question remains: are crypto-criminals defeating the best intentions of regulators, or is blockchain a technological saviour to a world where money-laundering and terrorism financing continues despite best efforts to track and prevent it?

ANTI-MONEY LAUNDERING AND AUSTRALIA

Prior to 2006, Australia had drifted considerably away from international standards in financial markets designed to inhibit and detect money laundering, before the Anti-Money Laundering and Counter Terrorism Financing Act 2006 (AML/CTF) was enacted. The 2006 IMF Mutual Evaluation Report politely described Australia's Anti-Money Laundering (AML) regulations as "functional rather than institutional".

CRYPTOCURRENCIES AND THE RISE OF THE INTERNET

The world is interconnected like never before and high speed communication and movement of funds is now the norm. Despite this, or perhaps because of this, international movements of money from questionable sources have also increased. In the early days of its existence, Bitcoin was used heavily on the dark web, and continues to be requested as payment for ransoms by hackers. However, the use of cryptocurrency for illegitimate purposes fell both in absolute and relative terms through 2016 to 2018 as digital assets have entered the mainstream, amounting to around USD\$2.5 billion globally over the ten years from 2009 to 2019. This can be compared to the total money laundering in Australia in 2006, which was estimated at AUD\$2-3 billion.

The current use of cryptocurrency in money laundering is miniscule in comparison to the vast sums of cash involved in that same activity. Most cryptocurrencies are far less anonymous than is generally understood (including by criminals). Generally, blockchain technology provides a transparency and traceability which is simply impossible in existing cash systems, which rely on reconciliations and separate ledgers leading to mistakes and missed opportunities to defeat financial crime.

PUBLIC VS PRIVATE BLOCKCHAIN

A blockchain is essentially a distributed ledger technology, but is also used to describe certain kinds of databases. There are broadly two types of blockchain: public (one that is publicly accessible, as in the Bitcoin blockchain); and private or permissioned blockchains (which allow only certain users to access or add to the data contained within that blockchain).



Blocking money LAUNDERING WITH BLOCKCHAIN

PUBLIC AND PRIVATE BLOCKCHAINS MAKE IT HARDER TO HIDE

Andrea Beatty & Michael Bacina | Piper Alderman

Direct access to a shared ledger (whether public or private) can save institutions the time-intensive process of identifying and reporting fraud. With blockchain, end-to-end tracing and tracking of transaction and client activity is less costly and more automatable.

Block explorers such as <https://www.blockchain.com/> allow anyone to examine the transactions occurring in the Bitcoin blockchain, viewing the address of the recipient and sender of the Bitcoin, and all associated transactions. This enables tracking of transactions – a technique used to identify the alleged perpetrator of the laundering of billions of dollars worth of Bitcoin stolen from the Mt Gox exchange in 2014. More recently tracking of cryptocurrency movements have been of assistance in the QuadringaCX exchange collapse, giving faster results of investigations at speeds never before seen.

Blockchain enables record keeping of transactions which are censorship resistant and designed in a decentralised give resilience to system failures, balancing privacy with transparency and traceability to help prevent fraudulent or otherwise illegal activities while maintaining lower cost compliance. As the Mt Gox and QuadringaCX investigations illustrate, public blockchain technology can be used to track transactions and ultimately help combat money laundering. In February, it was reported that AUSTRAC has started a proof of concept blockchain project, showing continued Australian leadership in the fight against financial crime using distributed ledger technology.

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The current use of cryptocurrency in money laundering is miniscule in comparison to the vast sums of cash involved in that same activity.

WILL STABLECOINS BRING cryptocurrency TO THE mainstream?

Fred Schebesta

You know how people say the Internet, social media, banks and government are broken? Money is broken in many parts of the world today as well." Says George Samman, a cryptocurrency advisor and former Wall Street strategist. "This is because monetary authorities and governments have a hard time maintaining stable value in their currencies, which reduces wealth, transparency and trust in the global monetary system."

Unfortunately though, so do cryptocurrencies. Price volatility is perhaps the most notorious of cryptocurrency's downsides, and one of the major barriers preventing the next wave of institutional and business adoption, according to Samman in his 80-page report *The State of Stablecoins 2019*.

Even at the retail level, where market activity has been concentrated for most of the past decade, volatility can diminish the appeal of actually using cryptocurrencies for commerce.

No one wants to buy a coffee for \$4 one day, and \$6 the next.

ENTER STABLECOINS

Stablecoins are cryptocurrencies that are intended to maintain a 1:1 value peg with a fiat currency, in order to reduce their volatility. For instance, a US dollar stablecoin such as Stronghold USD represents the value of the US dollar, with every coin being redeemable for a corresponding real-world US dollar.

This means that stablecoins are essentially financial instruments that take many of the benefits of cryptocurrency – like programmability and transparency – while leaving behind their issues of price volatility. They have enabled a new wave of use cases, products and adoption.

An example of this is IBM's recent announcement, launching a global remittance service called IBM World Wire, built on top of the Stellar blockchain. It uses cryptocurrency to settle cross-border payments, accessing 47 currencies in 72 countries and using 44 financial institutions.

Vice President of IBM Blockchain Jesse Lund says, "Stablecoins offer the potential to change remittances



Fred Schebesta is Co-founder of cryptocurrency brokerage HiveEx.com and comparison site finder.com



No one wants to buy a coffee for \$4 one day, and \$6 the next. Volatility is stunting the industry's growth.

and cross border payments by allowing participants to send cash instantly, in virtually any currency, from any electronic device directly to the recipient."

It's this speed, ease of use and low cost that cryptocurrencies bring, without the downsides of volatility, that has major businesses coming to the table. Lund says that IBM is even in talks with central banks on adopting the technology, to issue their own central bank digital currencies.

Several other companies are seeing the upside to stablecoins too, with Facebook reportedly developing a stablecoin for use within its WhatsApp messaging app. According to a report by Bloomberg, the stablecoin would focus on the remittance market in India.

JP Morgan Chase has joined the stablecoin wagon, despite its CEO and Chair, Jamie Dimon, famously bashing Bitcoin for several years. Dubbed JPM Coin and pegged to a fiat currency, JP Morgan Chase intends to use it as part of a private blockchain to enable near-instant international settlements between large organisations.

As with all things though, stablecoins aren't a magic bullet. They still require a "peg", something to derive their value from, which is likely to always be volatile. Stablecoins also need to be backed by collateral, including assets other than fiat, which can introduce new problems. We've seen a prominent stablecoin issuer accused of not having sufficient fiat collateral to back its coin. This caused the stablecoin to lose its US dollar peg, falling as low as 90 cents in some markets.

Kain Warwick, founder of Sythetix and its Synthetic USD (sUSD) stablecoin, is tackling this issue by collateralising its coin with its users' cryptocurrency. This allows users to lock up SNX coins in a smart contract to mint their own stablecoins, allowing them to be the custodian of their own collateral.

Other stablecoins such as Maker Dai, BitShares, BitUSD and Augmint A-Euro also use similar methods, which generally rely on over-collateralisation as an attempt to hedge against market movements that might negatively impact the value of the collateral.

By now, most people accept the digitisation of the economy as a fact, rather than a possibility. So it stands to reason that money will become increasingly digital, especially given that digital currency in the form of stablecoins provides a unique set of upsides that cash simply cannot recreate.

However, we are still in the early stages of ideation and experimentation in cryptocurrency, let alone stablecoins. As Samman says, "All money systems have trade-offs, stablecoins are no different. They need to prove they can be stable, scalable, private and decentralised in order to overtake the current regime."

ADCA AND BLOCKCHAIN AUSTRALIA ANNOUNCE MERGER

NEW INDUSTRY GROUP TO DRIVE ADOPTION AND INNOVATION AROUND BLOCKCHAIN

Matthew Overington

During the ADC Global Blockchain Summit in Adelaide in late March, it was announced that two premier industry bodies focused on blockchain development, regulation and implementation in Australia would merge. Following discussions between the bodies, the Australian Digital Commerce Association (ADCA) is scheduled to merge with Blockchain Australia, maintaining the name Blockchain Australia.

Says Nicholas Giurietto, Chief Executive Officer and Managing Director of ADCA, “merging the organisations was something I was very keen to do, and the Blockchain Australia side were eager as well. It’s a good strategic fit between the strengths of the two organisations and testament to the growth of blockchain momentum in this market.”

He goes on to suggest that while each body has developed its own skillsets and areas of focus, the merger is designed to bring both business and regulatory acumen together with the next generation of thinkers and developers that will shape the future of commerce and industry.

“Historically, ADCA’s focus has been on blockchain businesses – from start-ups, through to SMEs, and corporates. ADCA’s primary interactions have been with regulators and policy makers, whereas Blockchain Australia has been very successful at grassroots community-building and tapping into individuals with brilliant ideas.”

Giurietto will serve as CEO of the merged organisation, with the existing boards of ADCA and Blockchain Australia combining and suggests that the experience with business that ADCA brings to the table as well as the connections to up-and-coming blockchain experts and entrepreneurs, will make for a powerful combination.

“Linking those two together creates an opportunity to bind the whole blockchain community in Australia much more strongly. And, importantly, that means when we do advocate for a policy change coming out of Canberra, the community is speaking with one clear, consistent voice,” he explains.

Further illustrating the symbiotic relationship, Giurietto points to the merged entity’s capacity to, “operate with state governments to create a strong linkage right up the chain, from a grassroots innovator, through entrepreneurs, through start-ups, and really build programs that can



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Linking those two together creates an opportunity to really bind the whole blockchain community in Australia together much more strongly.

drive innovation and deliver results.”

A key focus of the merged entity is around improving education around blockchain technology and its implications for the future, along with connecting luminaries with other enthusiasts and subject experts. “There will be some other roles actively working in this space, that we’re still finalising on, but we have a vision for getting some of the foremost thinkers in the blockchain space on board,” he explains. “The merger will also give us the opportunity to build stronger connections into the academic and university sector, and there are some young leaders in the university space who are going to combine together to really push their ideas.”

While the announcement of the merger has already taken place, there are still a few details to be worked out, says Giurietto. “The new entity is scheduled to take effect at midnight on June 30. So, we’ll start the new financial year as a merged institute.”

The third annual APAC Blockchain Conference that has been traditionally developed in partnership with ADCA will be branded under Blockchain Australia, to be held in Sydney from the 22nd to 24th of July of 2019. It’s scheduled to include Australia’s first Blockchain Industry Excellence Awards, with a special session for Women on the Block, which will, “bring together the amazingly talented female entrepreneurs and innovators in this space – Australia has some incredible women working on blockchain technology and we’re delighted to be able to honour their contributions formally,” Giurietto concludes.



INTERNET of THINGS

DRIVEN BY BLOCKCHAIN TECHNOLOGY

AS SENSORS AND DATA PLAY A GREATER ROLE, SECURITY BECOMES CRITICAL

Editorial Contribution

The advent of sensors and ubiquity of connectivity has revolutionised the tracking of physical products. For almost two decades, the Internet of Things (IoT) has promised to change the way humans interact with technology. The term, first coined by British technology pioneer Kevin Ashton in 1999, espoused a capacity to revolutionise how connected sensors could fundamentally simplify life for industry and consumers alike. Fast forward two decades, and society has seen a shift in how humans interact with technology, from electricity distribution to working remotely, while being able to access the information critical to their roles.

The availability of inexpensive sensor technology, combined with near ubiquitous connectivity has provided enormous efficiencies and cost savings for consumers and businesses across a range of sectors, including logistics companies, home security, parking, shopping and even automotive technologies.

According to Gartner, the number of installed IoT devices is predicted to globally reach 20.4 billion by 2020, while competitor and market analyst firm IDC estimates there could be many as 30 billion connected in the same timeframe. Inherent in the growth of use of IoT to collect data and enable organisations to deliver services is the importance of maintaining privacy while maximising convenience. The challenge facing many IoT vendors is that with the advent and wide availability of sensors collecting an array of data, any collected (and stored) information could be compromised. Enter the blockchain to act as a buffer to provide a single, immutable source of information from private networks to organisations that rely on information to delivering services to consumers or organisations.

Via the use of blockchain technology, any information collected can be scrubbed to ensure anonymity, but also verified for its authenticity. Sensors that collect and systems drawing on the information remain detached

from each other, but the veracity of the information is guaranteed by the blockchain.

According to industry analyst firm IDC, 20 percent of all IoT deployments will employ blockchain-based solutions by the end of 2019, and the ability to execute smart contracts triggered by conditions promises to ensure transparency and adherence to agreed terms.

In December of 2017, US-based blockchain technology firm Net-Objex showcased a smart parking payment solution that employed IOTA distributed ledger technology to facilitate cryptocurrency payment for parking spaces. As part of the test, the company that describes itself as providing, “game-changing technology that enables enterprises to share data securely with ecosystem partners, while utilizing smart contracts to enforce business rules and legal covenants”, employed sensors and blockchain technology to reduce friction by enabling motorists to autonomously pay for parking. While maintaining privacy and integrity, the system used a distributed ledger to track where a car was parked,

how long it was parked for, the amount owing on the parking space, and then facilitated a transaction to cover the cost of the parking – all without the drivers’ intervention. In an ever-more interconnected environment, blockchain technology and the use of distributed ledgers have the power to connect physical assets to data stored and accessed digitally.

As sensors continue to become more widely available and decisions are increasingly made based on digital data, maintaining the integrity of the data that informs those decisions will become ever more critical. From parking a car to ensuring the provenance of our daily groceries, blockchain technology has a critical role to play in establishing trust in the age of IOT.

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The number of installed IoT devices is predicted to globally reach 20.4 billion by 2020, while ... IDC estimates there could be many as 30 billion.



BLOCKCHAIN STREAMLINING THE travel industry

TECHNOLOGY TO TAKE THE STRESS OUT OF TRAVEL
Editorial Contribution

One area in which blockchain technology shows clear benefit is through the existence of a trustable ledger that ensures every party providing a service has access to only the information pertinent to their role. This immutable source of truth and trust adds security and fidelity, while streamlining processes.

According to Gustavo Pina, director of specialist air transport communications and information technology lab SITA, "The biggest obstacles standing in the way of a seamless passenger journey and truly efficient air travel, are the siloed processes across the many stakeholders, including airlines, airports, ground handlers and control authorities."

In discussing the potential applications for a blockchain ledger to help streamline the flow of information, Rupert Colchester, Head of Blockchain and Consulting Practice Leader at IBM Australia and New Zealand points towards the travel industry as one that could reap benefits of adopting blockchain technology.

"Take for example, an airline and airport," he begins. "They're in the same industry, but they offer very different

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If flight is late, and a connection is missed, the insurer is able to ensure immediate payment for travellers with flight insurance. There's not even a need to make a claim.

things. One of them is responsible for the infrastructure, and the other is responsible for the maintenance and operation of planes. Layered on top, you have a number of websites that [track flight times and logistics], as well as insurance providers, and banks that are related to insurers, but are clearly in a different industry. Today, all these parties engage, but they engage on a one-on-one basis."

And to Colchester's point, this one-on-one interaction forms the crux of inefficiency in consumer-facing transportation that blockchain has the ability to solve. He continues the example by explaining the flow of information between each individual entity.

"The airports talk to the airlines, but airports may not talk to insurance companies, and the flight statistics websites collect most of their information from APIs that enable them to access data regarding arrivals and departures," he explains.

By way of explanation, he continues with a possible use case scenario that highlights the benefit of being able to match trusted data securely from disparate companies and organisations to provide business solutions - eliminating time and potential for error, while simultaneously increasing customer service.

Colchester says, "with the use of blockchain, we have a world in which a human being could get on a plane from an airport in Paris, or from Frankfurt, and then flies on Lufthansa or Air France to an airport in the US, and every involved entity is able to access the information that's relevant to them. If the flight is late, and a connection is missed, the insurer is able to ensure immediate payment for travellers with flight insurance. There won't even be a need to make a claim."

Blockchain has the power to offer a single immutable source of trusted data around the timing of a flight, which passengers are on the flight, how many items of baggage they may have checked in, as well as what insurance they may have purchased. Through the use of the blockchain, sources of information could be protected, but be accessed by all the relevant parties involved with trust in the veracity of the data.

According to statistics aggregator Statista, approximately ten million passengers are carried on airlines every day. Even a modest increase in efficiency and cost-savings has the potential to reap tremendous benefits for all stakeholders; passengers, airlines, ground handlers, airports, insurers and financial institutions alike.



LOGISTICS on the block

BLOCKCHAIN IS BRINGING A WHOLE NEW MEANING TO 'TRACK AND TRACE'

Matthew Overington

It's no secret that the global economy and the GDP of most modern nations is dependent on trade. The economy of most nations throughout the world depends on producing products that can be bought and sold in different locales. However, provenance and authenticity have emerged as key issues in trade and logistics, with a 2016 report titled *The Economic Impacts of Counterfeiting and Piracy* by Frontier Economics stating that as of 2013, total international trade in counterfeit and pirated goods topped USD\$460 billion, forecasting the trade to exceed USD\$900 billion by 2022.

In 2018, international freight and logistics handlers, DHL published a report titled *Blockchain in Logistics* in partnership with global consulting group Accenture. The document underscores the important role that blockchain has to play in providing, "excellence in logistics, [which] involves working collaboratively with others to optimize the flow of physical goods as well as the complex flow of information and financial transactions". In a specific example, the report estimates that there exist approximately 500,000 trucking companies operating in the US alone. "With such a huge number of stakeholders involved in the supply chain, this often creates low transparency, unstandardized

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processes, data silos and diverse levels of technology adoption."

A combination of private and public blockchain ledgers have the ability to add a degree of tracking of parcels, packages and containers that underpin the modern economy. The report goes on to suggest that as much as 90 percent of world trade is dependent on the international shipping industry, and that improvements in streamlining efficiency could improve global trade by up to 15 percent.

Danish shipping company Maersk has partnered with IBM to create a system that relies on blockchain technology to track shipments.

According to the report, "the system allows each stakeholder in the supply chain to view the progress of goods through the supply chain, understanding where a container is in transit. Stakeholders can also see the status of customs documents, and can view bills of lading and other data. Blockchain technology ensures secure data exchange and a tamper-proof repository for this documentation."

The technology is designed to reduce delays and incidents of fraud, but this is merely a single use case. The greater transparency and improved traceability of products throughout sourcing, manufacturing and delivery enables the tracking of virtually any consumer item from priceless works of art, down to counterfeit perfumes or consumer products. A digital fingerprint stored on the blockchain can be linked to goods securely and inexpensively, and the low cost of sensor technology and ubiquitous connectivity that underpins the Internet of Things (IoT) means that inexpensive sensors can track the movement of goods and store the information on a blockchain, so all members of the supply chain can trust the authenticity of the data.

A clear example of a packaged blockchain-based solution that meets a specific need is IBM Food Trust, which relies on blockchain technology to ensure transparency, efficiency and accountability across the food supply chain. As Rupert Colchester, Head of Blockchain and Consulting Practice Leader at IBM Australia and New Zealand explains, "IBM's Food Trust tracks products throughout a food supply chain, whatever form they're in; from an abattoir to an actual cut of meat in a plastic package. Or the transfer of a raspberry from farm to someone's plate. It's an end-to-end solution designed to provide transparency and visibility across the supply chain. With that you can do a lot of things."

Colchester goes on to point out that while the technology exists today, the broader challenge is in securing support from the large range of stakeholders required to bring it to fruition, stating that, "rolling it out to different countries, regulated buy in and driving adoption becomes the challenge," concludes Colchester.



ICO REGULATION

TREASURY CALLS FOR INDUSTRY
SUBMISSIONS ON ICO REGULATION

Giuseppe Porcelli

Treasury's January Issues Paper requesting industry and business community input on blockchain kickstarted a flurry of activity across the industry. Input closed at the end of February and the topic has attracted wide and diverse opinions on the future of ICOs in Australia.

Treasury's January Issues Paper requesting industry and business community input on blockchain kickstarted a flurry of activity across the industry. The deployment and use of blockchain-based technologies has generated considerable interest across not just the financial sector, but all areas of Australian business. In particular, the use of token-based technologies has proven difficult for a number of reasons. Some tokens confer on their holders a combination of rights such as access to products and services, profit sharing and the ability to vote. Other tokens may evolve into another type of token as the project develops – such as by starting as a token that represents a financial interest in the project and later used to purchase a good or service available through the network on which it was created. In addition, the rapid pace at which the industry is developing means that new types of tokens are constantly being issued.

If a token has the characteristics of a financial product – for example, it confers rights to an equity stake in a business – it is often referred to as 'security' token in general discussion. It is important to note that a token may be a financial product even if it is described by another name, such as a utility token. As a result of the varied and dynamic nature of Initial Coin Offering (ICO) tokens, and the fact that ICOs represent a new form of fundraising, it is difficult to make general and definitive statements on the application of existing regulatory frameworks to all ICOs. For example, while some digital tokens such as 'equity' tokens bear the hallmarks of a financial product, others such as utility tokens are more difficult to assess.

Traditionally, ICO activity has been facilitated by developments in distributed ledger technology (DLT).

Distributed ledgers are databases that are replicated and synchronised among multiple servers located in different sites, eliminating the need for a central administrator. The underlying code and supporting infrastructure for this sharing and synchronising process is referred to as DLT. This technology has a range of potential applications across the financial sector and more broadly. More than a thousand ICOs have since launched, mostly using blockchain DLT for the underlying platform and digital token.

Input to the ICO Issues Paper closed at the end of February and the topic has attracted wide and diverse opinions on the future of ICOs in Australia.

The Australian Government has identified innovations in the financial technology sector as potentially transformative for the Australian economy. At the same time, the Government has been circumspect, and some suggest overly cautious in coming to terms with the regulatory environment needed to encourage the growth of the ICO sector to enable robust and progressive growth of the fintech sector.

The submissions received by government for the ICO Issues Paper, and the subsequent roundtables convened by Treasury in March on the topic, highlight a galvanised opinion by peak industry bodies and prominent experts in the ICO realm including academics, legal specialists, and ICOs themselves.

Next steps in outlining the regulatory landscape would not be complete without first acknowledging the highly volatile environment and subsequent market scepticism of the purpose and value of ICOs. In many instances, given the paper-thin due diligence of a number of ICOs launched globally, a cautious market perception comes as no surprise. Factual reporting on aborted ICOs and the vulnerability of investors sits in the memory banks of the public longer than any good news related to successful ICOs.

More informed perception could help lubricate productive discussion, driving the way for meaningful industry contribution to government regulation. >



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Some of the more prominent areas challenging the current ICO industry, and potential solutions Government could consider in terms of a regulatory framework to address key drivers of the ICO market include:

- The current lack of regulatory certainty acts as a constraint for the fair expansion of the ICO market. Heavy handedness by regulators against security token offerings will lead to more Australian firms registering operations overseas, when they would prefer to register in locally, contribute to the prosperity of our economy and help sustain Australia's position as an innovation hub.

- Australia currently lacks economic complexity and is overly dependent on a structural economy that has been 50 years in the making. We rank 59th in the world's most complex economies so we have much to catch up on when it comes to having a regulatory environment that embraces innovation and entrepreneurial pursuit. We need government to provide a regulatory environment that embraces ICOs and blockchain technology as a potential pathway to new wealth creation for sustained economic prosperity.

- We must protect ICO investors in the same rigorous way that traditionally-listed firms protect their investors.



Currently, ICOs can be launched without any visibility or reporting regime imposed on their board or directors. Mismanagement and over-inflation of investor expectation is in hype mode. Base level investor reporting is currently not mandatory, further increasing shareholder vulnerability and leading to a chaotic, fragile investment environment, typified by poor returns of ICOs. The issuing of a share

prospectus, similar to traditional listings, is just one of the key elements which could be enforced by a stronger regulatory framework.

- Government needs to recognise the importance of ICOs as a key part of Australia's capability in becoming a global leader in Fin Tech. It's critical to maintain an open mind to Security tokens and Reverse ICOs and find the right balance of growth strategy and regulation. Australia has the opportunity and ability to attract global ICO and crypto projects to use our legal and financial services and bring innovative ideas to Australian companies. ICOs could become a vital pathway for Australia to strengthen its position as an innovative global leader in the Fin Tech sector.

Momentum is clearly building, but it will take a deep understanding of technology and wise stewardship for government as well as business to navigate the road ahead.

AUSTRALIAN COMPANY USING BLOCKCHAIN TO LEGITIMISE CARD TRADING

TAP'N'PLAY BRINGS BLOCKCHAIN TO BRIDGE GAP FROM PHYSICAL TO VIRTUAL CARDS

Tap'N'play is an innovative company bridging the gap between traditional collectors' cards and the digital world. Capitalising on the growing popularity of collectible cards, the fledgling business has capitalized on the interest in sports including cricket, netball and soccer to develop a platform that enables enthusiasts to collect and trade cards that celebrate their favourite players.

The platform matches physical collectible cards with digital versions that can be traded and swapped, with the authenticity and provenance of each card underpinned by blockchain technology. According to managing director, Neil Armstrong, the team is "looking to enhance but not replace physical cards", giving passionate fans the ability to trade cards and amass a collection that's unique to their passion.

In his words, "trading cards have been around for a long time, but we are looking for a way to focus on having great product at launch, that will be accepted and embraced by the community from the start."

In tapping into the market, Tap'N'Play estimates that up to 30 percent of buyers are "fervent collectors of cards". He points to examples overseas, where international superstars like Wayne Gretzky have bid in excess of AUD\$2m for desirable card.

In Armstrong's words, "the blockchain has the capacity to help encrypt and protect the authenticity of a card," adding legitimacy to trades conducted and helping ensure that everyone that trades in the space is protected.

More on Digicards in the May edition.



The blockchain has the capacity to help encrypt and protect the authenticity of a card" Neil Armstrong Managing Director Tap'N'Play.



EDUCATION THE KEY TO FUTURE innovation

DRIVING INNOVATION BY NURTURING THE NEXT
GENERATION OF BLOCKCHAIN LEADERS
Editorial Contribution

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has long been at the global forefront of scientific research and innovation. From developing Wi-Fi, to extended wear contact lenses and plastic bank notes, the independent Australian federal government agency has turned its eye in recent years towards blockchain technology through Data61.

Dr Mark Staples, a Senior Principal Researcher at CSIRO's Data61 explains the role of the organisation as focusing on data and digital research. "Data61 takes a horizontal view across all sorts of industry demands. I have been coordinating a lot of the blockchain research at Data61 over the last couple of years." Dr Staples co-authored two reports with the support of the Australian Treasury in 2017 and is active on International Standards Organization, blockchain's standardisation effort through Standards Australia.

He's published many papers and co-authored a textbook for architecture for blockchain-based applications. "From an architecture point of view, we're trying to understand the design trade-offs in using blockchain versus other technologies," he explains.

"In doing so, we're attempting to understand the ways in which you can use blockchain as a component in the

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It's an emerging area and there's a need for all educational institutions to cater to the growing demand for learning about blockchain.

development of broader systems. It's important to understand when data should be put on a chain, when it's appropriate to put data off-chain, and how you use different kinds of blockchains for different purposes."

Dr Staples points out that across the broad range of research covered by Data61's more than 1000 employees and partners, blockchain expertise is a hot topic. "We get a lot of demand for it," he says. "It's hard to keep up with the external interest in blockchain systems."

Blockchain has enabled people to change how they think about business models and has evolved beyond what it is to how it can be used, explains

Dr Staples. "[Today] there's a more sophisticated understanding of how blockchain can be used. At conferences we attend, we don't focus on 'Blockchain 101', so there is a growing sophistication and an increasing understanding about how to use blockchain."

Part of Dr Staples' work also involves upskilling students looking to forge careers through expertise in blockchain. As universities and learning institutions across Australia develop blockchain-based curricula, Dr Staples approaches education through a specific lens. "It's always hard to find the sort of people who are both expert researchers and experts in blockchain and the sort of foundational disciplines that we're working in," he explains.

Many Data61 staff have adjunct and conjoint appointments with universities in their region in order to be able to post-supervise PhD students. Dr Staples co-authored Architecture for Blockchain Applications, and has developed a course to teach based on the material at the School of Computer Science and Engineering at the University of New South Wales (UNSW). Though 2019 represents the first year the course was offered to students, enrolment exceeded the goal of 80 students, demonstrating there's clear interest and demand for the material.

In discussing the natural place for blockchain technology to be taught in tertiary environments, Dr Staples is quick to suggest that blockchain has applications across a broad range of disciplines, from law to mathematics, science and commerce: "mathematics is important for the foundation for strong cryptography, and the law as well. There are many interesting legal issues around the nature, property and custody, and the various emerging kinds of regulation around blockchain and digital currency."

However, it's not just formal education that Dr Staples sees as driving the blockchain revolution. Dr Staples also places emphasis on the role of meetups and community learning as being critical to driving the next generation of innovators and thought leaders in the space.

"At the end of the day, it's an emerging area and there's a need for all educational institutions to cater to the growing demand for learning about blockchain," he concludes.

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