

# BLOCKCHAIN INNOVATION

## REDISCOVERING BLOCKCHAIN AND BITCOIN IN EUROPE

ANTANAS GUOGA MEP SHARES HIS VIEWS ON WHY 2018 IS AN  
IMPORTANT PERIOD FOR REDISCOVERING BLOCKCHAIN AND  
BITCOIN IN EUROPE



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Registered in England & Wales.  
Company Reg No. 8667479.  
VAT Registration No. 169 9152 64.

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# INTRODUCTION

A very warm welcome to this exciting May 2018 Blockchain Innovation publication.

We are honoured that Antanas Guoga MEP heads up this edition, indeed, I can highly recommend that you take time to read his insightful article. We are told that 2018 is going to be the winning year for everyone in the blockchain industry, as business and governments are seeking effective ways to implement this revolutionary technology for the empowerment of citizens and the growth of business.

In another piece, we discover that after a stunning rally at the end of 2017, cryptocurrencies have lost almost two-thirds of their value. This is not necessarily bad news for the blockchain industry, argues the Crypto Valley Association's, Tom Lyons.

In a special focus, Smart Dubai Office lifts the lid on the role blockchain technology plays in Dubai, including

what the Dubai Blockchain Strategy sets out to achieve. The organisation also explores how this presents an opportunity to deliver more seamless, safe, efficient and personalised city experiences.

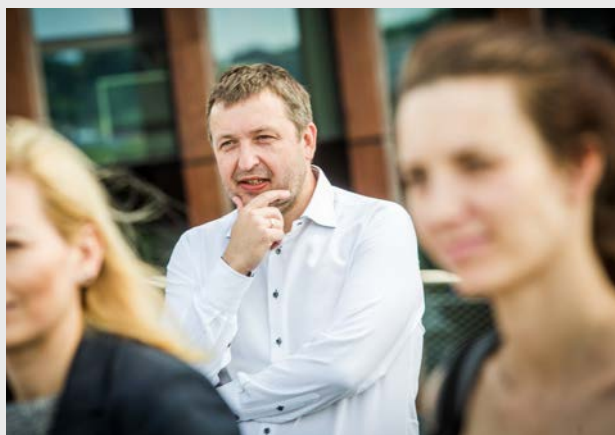
I trust that you find this supplement useful and thought-provoking. Do feel free to get in touch with any suggestions for engaging content in the future, or if you have any comments on this journal. ■

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# Rediscovering blockchain and bitcoin in Europe

Antanas Guoga MEP shares his views on why 2018 is an important period for rediscovering blockchain and bitcoin in Europe

**B**eyond the power of Bitcoin, 2018 is an important period for rediscovering blockchain technology beyond the massive craze over bitcoin and other cryptocurrencies. Beyond the race of ICO projects, this is going to be the winning year for everyone in the blockchain industry as business and governments are looking for effective ways to implement this revolutionary technology. The falling cryptocurrencies market will cool down those who are looking only for profit and will reveal the real hard-workers. This is where both national and European, governmental, business and non-profit players can step in and embrace the innovative technologies for the growth of business and the empowerment of citizens.

## Europe should invest more

Here, at the European Parliament, we are having series of discussions on innovative technologies, especially artificial intelligence (AI) and blockchain technology. It is now obvious that Europe wants to lead the way in these areas, however, today we are far behind others, even Asia. These innovations create enormous opportunities for many traditional industries. However, we need to separate the bitcoin madness from other potential applications of blockchain technology. I truly believe in it and the goals behind it, including transparency, decentralisation and security.

Although the technology has many future-oriented applications, there is speculation about it. I do not support the latter. For blockchain investors, I would always suggest considering the projects that create value. I am hopeful we will allocate enough resources and funding from the governmental level for research into and the massive application of blockchain. To the maximum extent – I believe that this is essential for our future – that is the synergy of artificial intelligence (AI) and blockchain technology. This is where the major invest-

ment needs to go, starting from the government up to the corporate level. I believe that everybody in Europe should invest. Moreover, everybody should invest in both knowledge and skills to become successful.

## Clear signs from the European Commission

I strongly support the European Commission's direction to consider the usability of blockchain technology. In this vein, the Fintech action plan has already been presented. The European Blockchain Observatory and Forum – have just been launched. I hope that this is going to be a very progressive engine that is going to take blockchain to new European heights. In addition, it is a clear sign from the European Commission that they care about blockchain in Europe. I strongly support, and I hope to contribute towards this. I encourage everybody to contribute their expertise, sharing events and other initiatives via <http://eublockchainforum.eu>.

## Status quo: self-regulation

I have noted that one of the most popular discussion topics in Europe concerns the question of regulation – or lack of it, to be more precise, particularly related to ICOs and cryptocurrencies. We see regulatory measures in China, South Korea, the US and by some European governments and central banks – all of whom are taking a cautious approach towards the technology. As a member of the European Parliament, my policy objectives are to have a wider viewpoint, before deciding on whether regulatory measures are necessary, especially when it comes to innovation.

Every European will be using blockchain and will understand its benefits and opportunities in the future, in spheres such as national registers, health insurance, financial projects and so on. The enabling of a regulative approach is taking the lead now and this is how we can attract innovative investment into



**Antanas Guoga MEP**  
Group of the European People's  
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Europe. The longer we have non-restrictive regulation – the better. I think the status-quo is self-regulation. We saw Google, Facebook, Twitter taking down ads about cryptocurrency, ICOs and in the end, I think, this area will self-regulate.

## Education – a priority

Education in blockchain technology is crucial for everyone to succeed and benefit from what the technology offers. It is important to unite our efforts and invest our knowledge into changing the world for good. Significant actions have already been taken with the first international Blockchain hub in Europe – Blockchain Centre Vilnius – in January. These are some of the reasons for founding the Blockchain Centre Vilnius.

It is the first facility of its kind on the continent. The global network of blockchain centres includes Melbourne, Shanghai and now, Vilnius. It is a not-for-profit knowledge-hub, co-working space and incubator for blockchain technology companies. The chain started with Australia's Melbourne Blockchain Centre. Drawing on the experiences of the Melbourne location – which brands itself as a community of more than 2,000 blockchain technology entrepreneurs, experts, mentors and investors – the new facility's founders say they hope to benefit from Lithuania's favourable climate for digital businesses. Lithuania is a great place to invest in and there is a growing recognition in Europe that the country has gained an edge in terms of financial and digital innovation, as well as an innovation-friendly regulatory climate.

## The first mover advantage

As a Lithuanian MEP, I am glad that the Australian and Asian blockchain communities selected Lithuania as the network's first location in Europe due to its political and economic stability and relationship with the European Union, as well as having favourable business and regulatory environments. It is in line with the overall

positive attitude of the European Union institutions, who are all ready to embrace the new technology.

Here in Lithuania, we are pulling out the stops to bring the world's top blockchain talent, ideas, investors and regulators together to create value for both the private and public sectors. Lithuania, for the last three years, has strengthened its reputation in this area – in our central bank and our investment community has been actively developing fintech industry, introducing LBChain, a sandbox to test blockchain initiatives. This has provided us with a lot of information and know-how.

I think Lithuania has many opportunities to bring different businesses and start-ups into the blockchain area. And initiatives like the blockchain centre in Vilnius will help people to deliver on projects and promises. I think we are delivering and empowering. I hope that Lithuania is going to lead the forefront of blockchain projects because we have the first mover advantage.

## Witnessing the future

In conclusion, we are witnessing a completely new technology emerging that will revolutionise the way governments, companies and people access information. It has demonstrated how trust is created on a massive and global scale – so, blockchain technology enables people to feel safe, secure and confident. It is a very transparent system. Moreover, it just keeps expanding. I believe that several world-changing start-ups will emerge. I know there will be much activity coming from the blockchain centre in Vilnius, the first international blockchain centre, connecting both Asia and Australia. ■

MEP A. Guoga was elected for top 200 fintech influencers. You can find out more at [www.lattice80.com/top-200-fintech-influencers-europe/](http://www.lattice80.com/top-200-fintech-influencers-europe/)

Antanas Guoga MEP, Blockchain Centre Vilnius and the diplomatic representations to the European Union cordially invite blockchain industry stakeholders to a high-level Intercontinental Blockchain Conference: "Blockchain - The Game Changer of the 4th Industrial Revolution", on the 24th May, at the European Parliament, Brussels, Belgium. Admission is free. Register at: <https://goo.gl/Lykwo2>.

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# How trusted data is helping to liberate the power of medical cannabis

Bradley Moore, CEO of GCAC discusses how artificial intelligence and blockchain (trusted data) solve the paradox of limited medical cannabis data and anecdotal user information

Jane Carter is an active young woman in her 30s who works as a software engineer, likes the outdoors and is planning to raise a family. Jane also has epilepsy.

As someone who has dealt with the condition her whole life, Jane is accustomed to maintaining control over her seizures. However, when her usual medication started to feel less effective, Jane confessed her concerns to a friend, who suggested medical cannabis as a potential treatment. Jane had never considered this possibility, but when she tried to learn more about it, she struggled to find trustworthy sources. Therefore, she turned to her physician, Dr Lisa.

Dr Lisa told Jane that although the benefits of cannabis have been discussed among doctors for a few years, she herself hadn't yet seen any evidence from reputable studies showing clinical benefits of cannabis. The doctor explained that as a practitioner and a scientist, she liked to have solid evidence and clinical experience before she prescribed medication to her patients; therefore, she would not prescribe cannabis to treat Jane's epilepsy.

Jane's story is not unique and illustrates the medical cannabis paradox.

## The medical cannabis paradox

The medical benefits of cannabis – including pain management, seizure

remediation, muscle spasms management and others – have been well known for centuries. However, over the past century, cannabis has become a proscribed substance and treated as a law-enforcement challenge. As a result, it has become difficult for researchers to get approval and funding for properly controlled cannabis studies and users are unable, or unwilling, to share their experiences. Consequently, doctors and other practitioners lack trusted information on which to base clinical decisions.

Altogether, these factors have led to significant under-prescription of medical cannabis, there has been a large, unfilled demand for quality research, new product delivery methods and consumer information on the uses and effects of this substance.

## The Citizen Green community

In an effort to bring together the global medical cannabis community and motivate its members – including patients, practitioners, scientists, cultivators and manufacturers – to share their knowledge of and experiences with medical cannabis, Global Cannabis Applications Corporation (GCAC) has developed the Citizen Green platform. This cutting-edge platform will facilitate the sharing of information between consumers, caregivers and researchers, as well as regulators and members of other

industries, such as healthcare and cosmetics.

The Citizen Green platform is powered by the following technologies: CannaCube database, artificial intelligence (AI), mobile apps and blockchain.

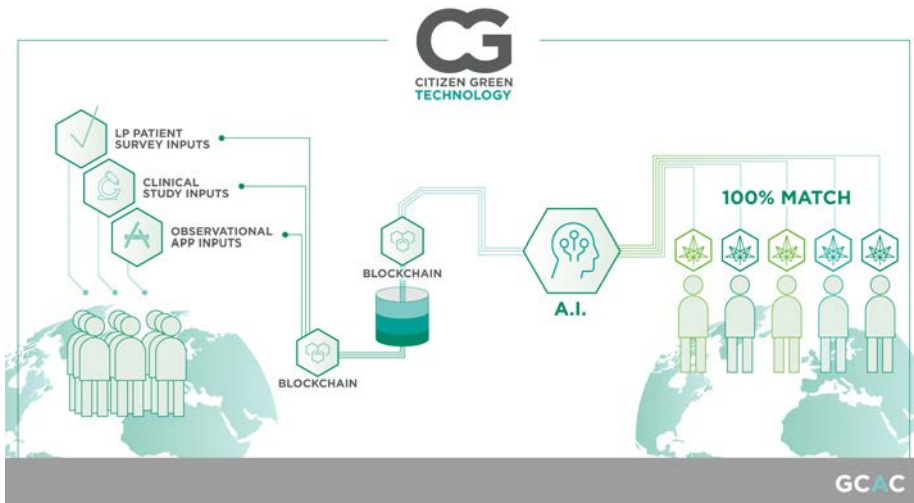
**AI, Chatbot and CannaCube**  
Artificial intelligence provides GCAC with the ability to bring to life all of the data collected and managed.

AI is used for multiple applications in our platform: chatbot, advanced analytics, predictive analysis and machine learning tools. And its capability to integrate observational and clinical research findings allows us to offer deeper insights and better outcomes for patients and the entire community.

The AI models the relationship between patients' demographics and medical conditions, medical cannabis features and treatments effectiveness, thereby closing the loop between "pain and strain". (TM pending)

**Sanna**, GCAC's proprietary chatbot, facilitates stronger engagement with its adaptive user experience and personalised recommendations via our apps, CannaLife and Prescriptii. The chatbot will grow smarter over time as it will bridge missing information in users' profiles.

**CannaCube** is GCAC's medical cannabis database. Equipped with



world-class data encryption and storage, this database curates ‘noisy’ data aggregated from CG apps, doctor references, social listening and various industry inputs against thousands of clinical study reports for validation and expansion of the data sets.

**Mobile Apps**

The client-facing components of Citizen Green are two easy-to-use mobile apps: CannaLife and Prescriptii. Connected by the CannaCube database, these apps collect and share 360-degree data relating to medical cannabis production, research, prescription and usage.

**CannaLife** is an app for networking, sharing peer-to-peer-feedback and searching experiential user data related to cannabis consumption and consumer behaviour. Using screen capture technology, users can find information on medical cannabis, create a post and share it with other like-minded users. Then, when seeking information, users can call upon Citizen Green’s chatbot, Sanna, who, coupled with the world’s first cannabis-specific Google search engine, helps them find answers to specific health and cannabis queries.

**Prescriptii** is the first consumer-facing app for medical cannabis license holders. It takes users through an ailment-related questionnaire and

based on CannaCube analysis, recommends the appropriate products to the condition described. An interactive map helps users to find nearby retailers that offer the recommended products.

Sanna, the chatbot, encourages users to evaluate their experience with the cannabis prescription. Fed back to CannaCube this information optimises further recommendations and can help patients and their practitioners to assess.

**Blockchain**

The GCAC blockchain gives medical cannabis users ownership over their data in a secure and encrypted environment. Unlike centralised applications, blockchain uses a distributed, decentralised digital ledger to record all transactions. GCAC recently released a White Paper discussing the digital token it is introducing on the blockchain to incentivise users.

**How CannaLife Changed Jane’s Life**

When Jane saw a news report about the CannaLife app, she was intrigued enough to install it and as she familiarised herself with the Citizen Green community, she found many stories from other epilepsy sufferers. This made her reconsider how cannabis might help her own condition.

Jane presented Dr Lisa with CannaLife, showing her the large database of anecdotal patient information, as well as research studies and manufacturers’ results. After reading a large number of consumer testimonials and some of the research, Dr Lisa felt confident enough to prescribe Jane a medical cannabis license, using the Prescriptii app as a guide. Three months later, Jane’s epilepsy symptoms had decreased considerably, and she very rarely had seizures.

As she works with Jane on her progress in Prescriptii, Dr Lisa is getting a feel for what other treatments work best with medical cannabis. She will definitely be using the app as part of her diagnostic toolkit going forward.

Jane, meanwhile, has returned to a much-improved quality of life. She is back to coding, rock-climbing and considering with her husband whether it is time to try for a baby.



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# Reinventing the collaborative economy with blockchain

The ERC research project P2P Models aims to use blockchain-driven Decentralized Autonomous Organizations (DAOs) to boost a collaborative economy which is decentralised, democratic and where profits are distributed, as the university's researcher, Professor Samer Hassan reveals

The collaborative economy is not what we were promised. Inspired by Wikipedia, it emerged from the idea of a peer-to-peer networks of citizens, sharing and collaborating for the common good, in every field. However, today we can observe how digital monopolies concentrating data, resources and power are the new normal. Instead of decentralizing the power of traditional institutions, we can see how the platform economy is creating larger than ever monopolies: Uber is larger than any taxi company, Airbnb than any hotel chain, Google than the traditional providers of infrastructure and Facebook governs more than 2 billion users.

This market dominance has, of course, some benefits of the services they provide, but it is not without serious drawbacks, in a context where scandals are common. For example, the terrible labour practices in Uber or Deliveroo, privacy-hindering services by Google, regular collaboration in mass surveillance programmes by most major companies as revealed by Edward Snowden, or Facebook's Cambridge Analytica mess. Even worse, any new start-up aims to either be absorbed by these giants or become the new monopoly in a non-platformed field. Is this science-fiction pseudo-dystopian scenario all we can expect? What would it take to change the rules of this nasty game?

P2P Models is a €1.5 million, five-year interdisciplinary research project, funded by the European Research Council (ERC) and awarded to [Samer Hassan](#), a researcher at both the [Berkman Klein Center for Internet and Society at Harvard University](#) and [GRASIA at the Universidad Complutense de Madrid](#) in Spain. The growing Madrid team comprises of computer scientists, social scientists, activists and hackers.

## The P2P models vision

A new research project has the ambitious aim of facilitating the emergence of a different ecosystem. [P2P Models](#) has a simple yet challenging research question: can we build online platforms in a different way? Can we build collaborative economy platforms which are decentralised, so there is not a single owner of the whole infrastructure? Can we build platforms where the decision-making is democratic, involving their users, which may become empowered? And yet, can we make such platforms in a way in which the profits are distributed across the users?

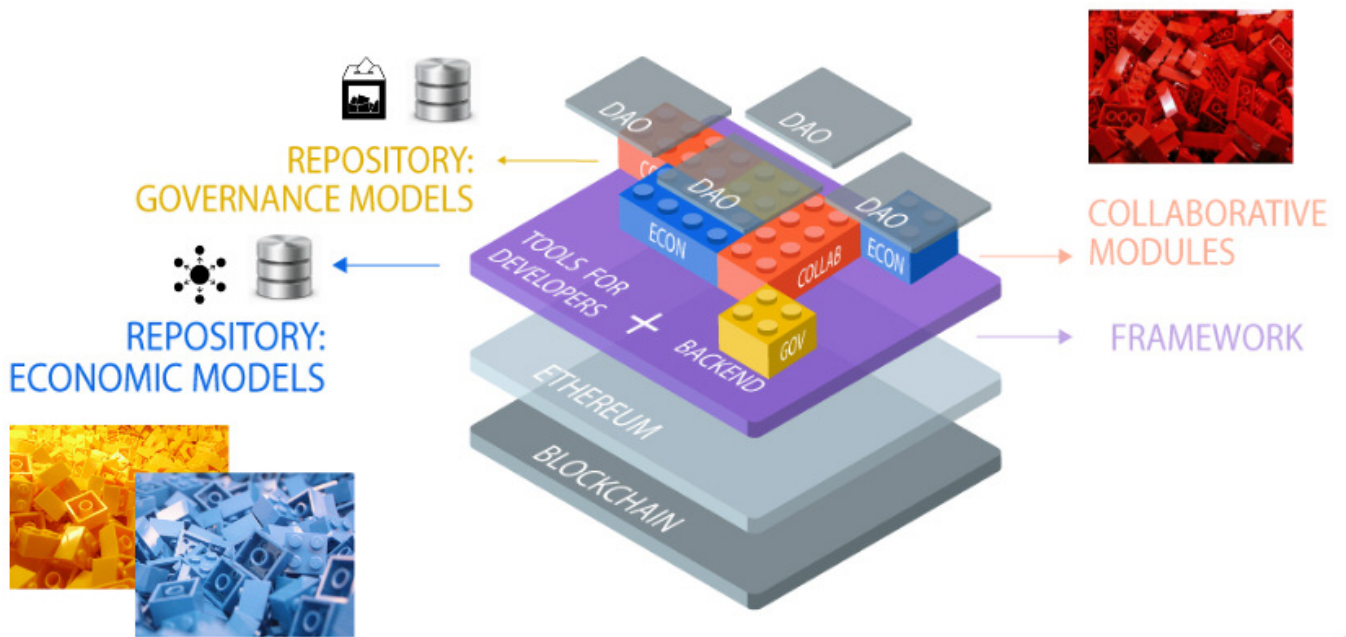
The project will harness the potential of the blockchain to tackle these issues. However, instead of focusing on finance and crypto-currencies, the project will explore the potentials of Decentralized Autonomous Organizations (DAOs). The idea is to replace the traditional online platforms like Airbnb, which rely on a centralised server infrastructure controlled by a single actor, with the serverless DAOs hosted and executed

in a decentralised blockchain network. Such DAOs may embed the rules for the users to interact with each other in a peer-to-peer manner.

Thus, we can easily imagine a decentralised Airbnb developed in that way. Moreover, users could vote for which changes they would like to see in their DAO-platform, thus empowering them in the process. Then, we could see an ecosystem of multiple decentralised Airbnb's, with different features depending on what their community has decided, for example, some totally anonymous, others with a high insurance in case something goes wrong, or others adapted to a local culture.

Without the strong dependency on platform owners, profits could be more distributed, and users rewarded in multiple forms (for example, cryptocurrency, votes, reputation, shares). In such an ecosystem, interoperability provides a competitive opportunity, since the users and even their reputation, are shared across the ecosystem (sharing the same





blockchain), instead of locked in a single platform... allowing new start-ups to reach a faster critical mass, sharing users and even components with other companies. In such an ecosystem, barriers to entry are lower, competition is higher and dominant positions are harder to maintain.

**New governance & economic models**

If that vision is to be realised, at least partially, the building of DAOs is critical. Thus, the project will build both a framework and tools to enable the modular construction of DAOs, especially those providing collaborative economy features. Therefore, the project will build “lego’s” or building blocks, embedding different features, so that developers may combine them to deploy their new platform. By being a fully free/open source platform, anyone could build their own building blocks for their specific needs and if desired, contribute them for others to use.

In the same way, other series of building blocks will embed governance models and economic models, focusing on democratic and redistributing

approaches. The characteristics of blockchain and smart contracts enable the automated execution and enforcement of rules in a decentralised context. Thus, the project will allow user communities to be governed, at least partially, by explicit rules embedded in the code. This may allow democratic rules that make these communities more inclusive and equal, for example, considering gender, minorities or low-income profiles.

Furthermore, blockchain, through its tokenization, facilitates the distribution of value. However, tokens may be much more than cryptocurrencies, alternatively representing equity, decision-making power, non-transferable reputation, or even property ownership digital certificates. This may enable the emergence of new business models, where user participation is rewarded.

P2P Models will perform social research, codesign pilots with communities, build a testbed for researchers... all with the aim of moving from an ecosystem controlled by Silicon Valley centralised monopolies – to an open interoperable ecosystem.

Today, with the help of blockchain, there is a window of opportunity to change the rules of the game. Will the project manage to avoid the dystopia?



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# The bitcoin and cryptocurrencies market

Olivier Forgues, CEO of the EUROPEAN CRYPTO BANK Project explains the first bank and trading platform protecting its investments in the bitcoin and cryptocurrencies market

**E**UROPEAN CRYPTO BANK launched its Initial Coin Offering (ICO) on the blockchain on February 15th, 2018 to build the first bank and trading platform protecting its investments in the bitcoin and cryptocurrencies market. Faced with the observation of a lack of regulation, financial and tax specialists, computer scientists, mathematicians, blockchain engineers have partnered to build a European bank and thus meet the expectations of investors by providing banking and trading services, secure, flexible and scalable. The Artificial Intelligence Research Laboratory will be in Paris, the tax assistance department in Milan and the exchange and trading platform in London.

Today, one of the biggest problems crypto investors face is the difficulty in converting their investments into traditional assets. And clearly, the banking system is hostile and unfriendly.

Cryptocurrencies look like the serious competitor to the traditional process of banking and a lot of financial institutions stop accepting crypto exchange money and try to give a hard time to crypto owners and investors.

European Crypto Bank wants to reply to the growing requirements of Crypto holders and the market that we want to disrupt is a massive one, with over €8 trillion being circulated daily in the financial sector alone. If you consider the close to \$500+ billions that make



the cryptocurrency market, you realise that the first fintech ICO that will have a viable product has an immense opportunity. Today, most of coins and tokens holders need to declare their profits and need assistance to manage their wallet with financial advisors who master markets volatility.

From the investment side of our business, ECB will include an exchange and trading platform and leveraged services on cryptocurrencies and FIAT. Furthermore, ECB will provide portfolio management, wealth management and financial analysis on crypto-currencies, will help people for life planification with crypto-assets and finally will create gateways to all investments universe (real estate, art, gold, traditional financial assets (stocks, bonds and managed funds), private equity and alternative investments...)

From the tax side of our business, ECB will provide services to calculate the benefits people will have to declare to their tax administration and will give to them a tax reporting and a tax guide.

Furthermore, we will carry out tax optimisation and will provide a crypto expert tax lawyer in their country in case of tax litigation.

In that case, the blockchain will help ECB to transfer a payment in ECB Tokens to lawyers, in respecting the right to stay anonymous when a customer need lawyer assistance (a worldwide human right).

The team behind European Crypto Bank already has the KYC and AML software and they've been using it for the past nine years in their wealth management business. ECB will be

the platform that allows anyone in the world to make crypto investments and benefit from the same services traditional banks offer for fiat money.

The approach taken by European Crypto Bank is quite unique. Indeed, the token associated with the project (ECB) is a swap between two different tokens: One for investing and one for tax defending.

**ECB TOKEN I**, is for investments (access to the research, trading, etc...) and private bank services. Token I is non-anonymous. Token holders will enjoy, every year, a buy back with 6% of ECB annual turnover. Token I will be tradable and convertible to token S or usable.

**ECB Token S** for tax services and tax litigation on cryptocurrencies and anonymous. Token holders will get, every year, 5% reward program. Token S is tradable and convertible to ECB token I or usable.

All ECB Tokens selected by the token holder at the end of the ICO will be tradeable and listed in several exchanges.

ECB's main target is to become a fully regulated Crypto Bank in Europe over the next four years. This will act as a gateway between owners that want to exchange crypto and owners of traditional assets (shares, bonds, real estate, art, ...) - providing an easy and secure way to do these conversions.

Since 20th March 2018, EUROPEAN CRYPTO BANK partners with ARCHOS to distribute the ARCHOS Safe T mini under the brand name of EUROPEAN CRYPTO BANK. As per the terms of this partnership, holders of more than

600 ECB Tokens, whose current ICO finalised on May 1st, 2018, will receive a hardware wallet, which will then be available for purchase at a price of €49.99. In addition, the European Crypto Bank will transfer 150,000 ECB Tokens to ARCHOS, as part of its R&D investments.

**“Cryptocurrencies look like the serious competitor to the traditional process of banking and a lot of financial institutions stop accepting crypto exchange money and try to give a hard time to crypto owners and investors.”**

This wallet provides secure management and storage of crypto-active, safe from cyber threats:

- Identification by PIN;
- Offline private key generation;
- Management of operations on the device, offline;
- On-screen display of information about each transaction for an easy verification before approval;
- Physical authorisation with buttons;
- The creation of a recovery code (consisting of 24 words), essential in case of breakage, loss or theft;
- Support for ECB and major cryptocurrencies and;
- Compatibility with Electrum, GreenAddress/Greenbits, MyCrypto and Mycelium.

In addition to these functionalities, ARCHOS will also provide all the EUROPEAN CRYPTO BANK's multilingual platform services, accessible at

the end of its ICO from May 1, 2018: portfolio statements, research notes, investment advice, conversion of crypto-assets into traditional currencies and generation of corresponding tax declarations according to the various regulations in effect in Europe.

EUROPEAN CRYPTO BANK and ARCHOS join forces to facilitate access to Blockchain's cryptocurrencies, products and services, by the greatest number, whatever the level of experience, in the respect for the rules established taxes.

The easiest way to contribute to the European Crypto Bank ICO sale is to pay directly to cryptocurrencies. You can also purchase via wire transfer and by sending a cheque. For details on what information to put when doing a wire transfer/check visit their site: [www.europeancryptobank.io](http://www.europeancryptobank.io).



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# Crypto winter, or blockchain spring?

After a stunning rally at the end of last year, cryptocurrencies have lost almost two-thirds of their value. This is not necessarily bad news for the blockchain industry, says the Crypto Valley Association's Tom Lyons

What a difference a few months make. In 2017, we experienced a rally in the value of cryptocurrencies the likes of which had rarely been seen before. Bitcoin, which began the year trading at \$1,000 ended it close to \$20,000. Ether, the second-largest cryptocurrency by market cap, went from just under \$8 to nearly \$1,300. The story was similar for many, if not a majority, of the other 1,500 or so cryptocurrencies currently in existence.

This rally meant huge windfalls for anyone lucky enough to have bought in early. For those of us who work in blockchain – the technology that makes Bitcoin and other cryptocurrencies possible – it was hard not to see the rally as a validation of what we were doing.

For example, one of the factors driving the crypto rally had been a concurrent boom in initial coin offerings, or ICOs – a way for blockchain-based projects to raise money by creating their own cryptocurrency or token on a blockchain and selling it directly to investors. In 2017, more than 300 ICOs had come to market raising some \$5 billion for projects covering a vast array of use cases, from financial services, health records and supply chains to aiding refugees and combatting human trafficking.

As we popped the champagne on New Year's Eve, we could be forgiven for interpreting the ICO boom as a public vote of confidence in this nascent industry.

Yes, there were problems – as in any endeavour involving significant sums of money, ICOs have had their share of scams and cons – but overall it seemed clear that not only the ICO model, but the basic blockchain paradigm, was working. Then overnight, it seemed, the wind changed.

## Reversing course

Through the end of March, bitcoin had lost almost two-thirds of its value, dropping back down to \$6,000. Ether dipped to around \$400. The market capitalisation of all cryptocurrencies shrank from \$800 billion to just under \$250 billion.

And while the ICO market continues its impressive growth, with a number of headline successes, behind-the-scenes we were seeing increasing numbers of token sales failing to meet their targets, or simply failing. Among investors and others, a general sense of doubt and unease set in. What happened?

One factor has been a regulatory clampdown on ICOs in several important jurisdictions, particularly the US. That has sent a chill through the industry. You could also rationally argue that the dramatic price spikes of 2017 were simply not sustainable. As crypto naysayers have maintained, this did look like a classic bubble that was bursting.

Whatever the reason, the icy winds of the 'crypto winter' have been bracing. Suddenly, we could wonder if the price of bitcoin, as some had predicted, might not just fall to zero. Perhaps crypto, in general, was destined for the same fate as past bubbles like tulips or the South Sea Company – a wild speculative ride based on little of sustainable value.

## Just as well

Such a view, of course, is as irrationally pessimistic as the view that bitcoin would never correct was irrationally exuberant. While blockchain-based cryptocurrencies get all the headlines, as many of us have been at pains to point out, blockchain has many other important uses besides money. The price of bitcoin is therefore

not a very good proxy for the overall health of the industry.

Quite the contrary, the frothy speculative phase we have just been experiencing can be taken as a sign of progress: just think of the dotcom bust of the early 2000s, which seemed like a death knell at the time but in hindsight proved to be the starting bell for the rise of the global Internet and all the wildly successful enterprises associated with it.

We can see something similar at play today. Despite the crypto bust, for instance, governments remain largely committed to blockchain technology. Here in Switzerland, the regulator recently published [ICO guidelines](#) designed to foster innovation by providing some regulatory and legal clarity for blockchain projects and the Swiss Economics minister reiterated the country's determination to become "[crypto nation](#)".

In Europe, the EC just started a major two-year initiative called the [EU Blockchain Observatory and Forum](#) to support this technology throughout the bloc. And even the US regulators, while taking a tough stance on crypto-speculation, have made it clear that they are [keen not to squash innovation](#) in this space.

Perhaps more importantly, all over the world development of blockchain technology and its application to a wide number of problems goes on, a sign that [a major industry](#) is indeed coming to life here.

## **A necessary update**

This is important not just for business but, in my opinion, also for the world.

A technology for creating consensus on information among large groups without the need for central authorities, blockchain supports trust, fairness and transparency while also protecting privacy. With it, we can build what many are calling the Web 3.0 – an Internet in which information can be trusted and individuals can better control and protect their data.

Considering the major data and propaganda scandals we are experiencing in today's Internet, this would be

a radical – and highly necessary – improvement. It is also likely to mean big business.

As in many other locations, at the [Crypto Valley Association](#) in Switzerland, we are working hard to look beyond the cryptocurrency hype to foster the sustainable industries, as well as jobs, that will grow out of blockchain.

On this, we remain quite bullish. If we have learned anything from the bracing winds of the crypto winter it is that this work will be difficult and will likely take longer than many had originally thought. But that too, as [Amaral's law](#) reminds us, is typical of truly transformative technologies.

I, therefore, like to think of the present moment not as a crypto winter, but as more of a blockchain spring.

Even if we look at our somewhat flawed cryptocurrency bellwether, the forecast looks bright enough. As of this writing, the price of bitcoin seems to have stabilised in the \$6,000-\$7,000 range and ether in the \$300-400 band.

A disappointment perhaps compared to the heady days of last November and December, bitcoin still returned 600% over the past 15 months. Ether, close to 5,000%.

By any measure that's a remarkable achievement. For me, it is also a sign of rude health. ■

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# AI & blockchain to empower 1 billion entrepreneurs by 2040

The ORS GROUP explains to us their expertise in delivering sophisticated AI-based optimisation software solutions to a large international client base, including how AI & blockchain will empower 1 billion entrepreneurs by 2040

In its simplest terms, a [blockchain](#) is a new means of structuring and distributing data. The technology enables financial companies and other institutions to create a digital ledger guarded by cryptography, which can be shared among participants during transactions. This allows authorised participants to alter the ledger without awaiting approval from a central authority, often resulting in faster and more secure transaction that saves financial institutions time and money. Since the mysterious origins of [Bitcoin](#) in 2009, numerous cryptocurrencies have been thrust upon the marketplace, allowing transactions to take place directly between users and can be exchanged – as regular currency can be – for goods and services.

## So why is there such on-going hype around cryptocurrency and is it masking the power behind blockchain technology?

This year has commenced with a lot of turmoil in the cryptocurrency world. However, that has been necessary to preserve the long-term health of the market. Bitcoin is already amidst the throw of a turbulent year, with the recent ban on cryptocurrency advertising from the world's biggest search engine Google and social media platform Facebook to proceed in June 2018. There are also rumours that [Twitter will soon follow suit](#). Despite the industry currently in overdrive, key

observers of the blockchain say the technology is bound to not only survive but thrive.

The general outlook for blockchain in 2018 looks to be increasingly positive: Fiat service provider, [Robinhood](#), of which over 1 million people have signed up for, [announced their zero-fee crypto trading](#) on February 22nd; March 15th saw the official release of [Lightning Network's](#) first beta implementation for the Bitcoin mainnet, securing [\\$2.5 million in seed funding](#); and one of the most important Polish cryptocurrency exchanges, [Bitbay](#), has decided to add support for [Ripple \(XRP\)](#) and [Infinity Economics Token \(XIN\)](#), impulsing the internet of things (IoT) to the mass market. It is clear that the production of mass-market-focused products will finally be launching this year, making it a lot easier for the wider public to start building on and using the blockchain.

## What does this imply about the future of work?

As widely proposed in recent news, the future is autonomous. We are already moving towards a workforce that could be purely operated with the combined use of artificial technology and robotics. The study of 46 countries and 800 occupations by the McKinsey Global Institute found that up to one-fifth of the global workforce will be affected by robot automation.

[According to the report](#), 39 to 73 million jobs may be eliminated by 2030 in the US alone, but about 20 million of those displaced workers may be able to easily transfer to other industries.

But what if there was a way that the inevitable influx of automated workforces didn't have to affect the world's rate of human employability? What if there was a solution that could effectively convert the masses into fully equipped entrepreneurs, by applying one straightforward concept?

## Meet the man on a mission to change the world, one entrepreneur at a time

President and Executive Chairman of [ORS GROUP](#), a leading Artificial Intelligence software company, Fabio Zoffi is on an incredible mission to empower 1 billion small entrepreneurs by the year 2040.

In the words of Fabio Zoffi: *"The future doesn't have to be dystopian."*

How will he do it? By making the algorithms his company currently uses for the world's largest companies (which until now have been extremely protected) available to small businesses and entrepreneurs by connecting them with the blockchain technology.

ORS GROUP's innovative new concept of **Hypersmart Contracts** will provide





the mechanism by which they will do this: connecting Artificial Intelligence and blockchain together to make use of big data and powerful algorithms for turning businesses of all sizes highly competitive on a global scale.

President Zoffi says: *“We are creating a global community of like-minded developers, entrepreneurs and crypto enthusiasts, who want to embrace the new digital alphabet “ABC – AI, blockchain and cryptocurrency”, to create and successfully run a business in almost every possible industry sector.”*

**The power of algorithms**

Founded in Italy, ORS GROUP is a leading global supplier of cross-industry software solutions for optimising and automating business processes. For over 20 years the company has delivered sophisticated solutions using proprietary Artificial Intelligence, machine learning and big data analytics algorithms.

ORS GROUP’s large international client base includes that of Fortune 2000 enterprises and span industries including retail, energy, finance and manufacturing. ORS GROUP’s soft-

ware solutions save their clients over \$1 billion yearly.

**Small entrepreneurs’ new digital alphabet empowering a global decentralised network – it’s easy as ABC**

Imagine the possibility of a future decentralised network of small companies on a planetary scale, empowered by technologies which enable the “little guy” to put their big ideas into action and to be competitive against the “big boys”. For example:

A farmer living in a small village in Southeast Asia, running a family business that has carried on for generations. In light of increasing competitive pressure from global farming companies and distributors, the farmer is now struggling to make the necessary business decisions needed to survive and thrive in his industry. Thanks to ORS GROUP’s new digital alphabet, he would be given the power to successfully compete and grow his business:

Hypersmart contracts can act as intelligent connectors, which activate AI algorithms (off-chain) to solve com-

plex efficiency/optimisation problems utilising data stored on-chain. They can also release instant crypto payments. Together, these technologies can lead to significant improvements in global value chains, which even small farmers can benefit from. For example, algorithms can be used to predict crop yields and for dynamic price optimisation, blockchain can be used for providing transparency about the whole food chain and cryptocurrency used for receiving immediate payments. As an end result, small farmers can regain negotiating powers against distributors and compete globally.

Individual entrepreneurs will become empowered once they are provided with the technology to educate themselves, resulting in the establishment and growth of fully optimised and successful businesses. ORS GROUP continues to dedicate itself to ensure that any entrepreneur with a dream will be able to compete on a global scale and in an autonomous world.



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# Building a digital Europe: Seamless access to data and the role of blockchain technology

Markus Hautala, Head of Blockchain Solutions at Tieto argues that the public sector holds the keys to building a digital Europe, including why seamless access to data is essential for a thriving economy and the role of blockchain technology in the region

Any thriving economy depends on the availability and free movement of skilled labour, products and services. Data has for centuries been an integral element in facilitating the movement of these assets. For the casual observer, it might seem that – thanks to the internet, API economy, cloud services and data platforms – we have largely managed to solve the issue of free movement of data. But as the EU Commission initiative, “Building a European Data Economy” illustrates, this is not the case. There are still major barriers to free movement of data and competition, due to localisation restrictions and lack of rules for data portability.

The European Commission has sought to remove these barriers by issuing regulations such as GDPR and the recent proposal for a regulation on a framework for the free flow of non-personal data. Whilst these initiatives are major steps in addressing the issue of data portability, they fail to tackle one of the biggest challenges prevalent in the modern internet: the verifiability of data.

## Trusted interactions require verifiable data

As anyone who has ever bought anything online knows, the main issue with data is not its availability, but instant access to trusted data. Can I trust the

merchant to deliver the purchased goods? Can I trust that the goods are not counterfeited? These are just some of the concerns for consumers and e-commerce is but one of many use cases. The W3C Verifiable Claims Working Group has identified many more in domains such as finance, education and healthcare. As more and more of our personal and business activities move to the internet, we need to make various kinds of claims as part of our everyday activities in transactional interactions. For example, we use a driver’s license to prove that we are capable of operating a motor vehicle, a university degree to prove our education status and government-issued passports to grant us travel between countries.

## From centralised platforms to a distributed trust

As the amount of digital data has exploded, new platform-based business models have emerged. Due to network effects, this has led to a situation where a relatively small number of platforms control our data, as well as continue to grow and gain more influence. European Union initiatives related to data portability aim to address some of these concerns. Yet whilst doing so, the European Commission takes the former network, infrastructure and trust models as given. The trust and data sharing

paradigms present in platform-based business models rely on the existence of trusted counterparty (“the platform”).

As instant access to trusted information is becoming increasingly vital for our everyday interactions, a new type of approach for exchanging the data is needed. During the past couple of years, a new network and trust model based on distributed infrastructure – namely blockchain – has emerged. One of the reasons why blockchain technology has received significant interest is that it has the potential to transform existing trust models – including how personal data can be handled. Instead of relying on centralised trust platforms, we now have the means to establish new types of trust infrastructures without vendor lock-in.

## Decentralised identity helps guard personal data whilst improving customer insight

Until recently, the prevalent way to share identity information has been through a centralised platform with a single point of control. The problem with trusted middlemen is that when compromised, they pose a massive security risk to a large number of people.

As global digitalisation moves forward, we have witnessed a tremendous

increase in hacks and personal data breaches that cripple businesses. Recent examples include the Equifax breach, where more than 145 million people were exposed to identity theft and the Facebook leak in which more than 50 million user profiles were handed to Cambridge Analytica.

Handling customer data is clearly a huge risk for organisations, but at the same time, it is the cornerstone of customer relationships and business critical operations. How can organisations then maintain a holistic view of their customers without exposing themselves to increasing risks and regulatory pressures? This is actually one of the goals of GDPR: to make organisations rethink how to handle customer information. And this is exactly what solutions decentralised identity networks, such as Sovrin, allows them to do.

### **Decentralised identity networks can deliver the internet's missing trust layer**

In decentralised identity networks, the identity holder forms secure digital connections with entities (organisations, individuals or things) that can provide information about the identity holder. This information can literally be anything such as a name, government ID, address, power of attorney, drivers licence, health information, university degree etc. This verifiable data can then be shared by the identity holder to a party that requires these proofs. This provides for all kinds of rich digital interactions: Know-Your-Customer, contract and transaction signing (B2B, B2C, G2C), permits, insurance claim, job application and so on. Storing identity data on blockchain would naturally be problematic for various reasons, including adherence to GDPR compliance and risk of data hacks. In a decentralised identity network, actual identity

data is not stored on the ledger. Instead of identity data, the decentralised ledger only contains pointers to the data. These uncorrelatable pieces of information are related to an identity holder and stored on the ledger to allow entities access, share and verify identity data when authorised.

### **What should the European public sector do?**

Whether we realise it or not, technology choices always also carry choices of ideology. This is rarely as evident as in the context of identity data. By supporting centralised platforms, we are essentially supporting a business model which leads to a situation where a relatively small number of operators remain in control of our data and – due to network effects – continue to gain even greater influence over our lives.

The European public sector holds the keys to changing the course of this path. In the context of verifiable data, public administration maintains base registries such as citizen, company, land, vehicle and others. Due to the trust held in public authorities, these are the most reliable sources of basic information. Seamless access to this data is essential in digitalising not only the government but in all interactions (B2B, B2C, G2C). To drive the adoption of distributed identity networks, private and public sector participants should jointly and iteratively prototype, pilot and develop new distributed infrastructure concepts to demonstrate their value for citizens.

### **Conclusion**

Competitive economies depend on the availability and free movement of labour, products and services – and data is the fuel that drives the movement of these assets. Despite the ubiquity of the internet and related technologies, barriers remain in access

to verifiable data needed in transactional interactions. EU initiatives related to data portability aim to tackle some of the problems concerning access to data and the dominance of data platforms. These initiatives, however, fall short in responding to issues related to instant access to data needed in transactional interactions. The cause for this is that these initiatives do not address trust, data sharing and infrastructure issues caused by platform-based business models.

During the past couple of years, blockchain-based distributed platforms have emerged, providing us means to establish new types of trust infrastructures without vendor lock-in. The public sector has a pivotal role in digitalising society, as it maintains the base registries containing verifiable identity data needed by both public and private sectors in transactional interactions. The public sector needs to actively drive the adoption of the new distributed platforms in collaboration with the private sector to ensure a wide market take-up. It is now time to time to make the EU's single market fit for the digital age and ensure that the European economy remains globally competitive – bringing benefits to both businesses and consumers.



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# How is blockchain disrupting health and wellness?

Distributed and open technologies are bringing new business models, personalisation, prediction, motivation, collaboration and trust in healthcare, in the view of Sari Stenfors from the ReCon Blockchain Research Project, at Aalto University in Finland

In a forward-looking research project at Aalto University's Business School in Helsinki, we are studying blockchain technologies and how they will impact our society. Much media attention is given to blockchain and its best-known use case, Bitcoin. However, the most impactful business and societal implications of blockchain are still in their early stages or yet to come. One of the important industries that will be disrupted by blockchain technology is healthcare.

**“Different types of blockchain technologies and other decentralised ledger technologies are important building blocks of our future. When they are combined with AI, AR/VR, IoT and Robotics they provide completely new ways to set up the societies we live in.”**

## The future of health and wellness

The number of people aged 60 years is now 962 million and by 2050 it is projected to reach 2.1 billion. The rising life expectancy, together with an ageing population is creating high demands on our health care systems. Not only is there a strong need for rapid innovation in the biopharmaceutical industry, but also the way healthcare is delivered in our societies will need to change. Thus, the healthcare sector is under rapid innovation cycles to embrace new therapies (such as immuno-oncology, gene ther-



apies, personalised medicine) and emerging technologies (for example artificial intelligence (AI), augmented reality, wearable technologies and blockchain).

To provide affordable quality care for an ageing population, healthcare systems will need to focus on effectiveness, and home and preventive care. Wearables and different types of sensors will monitor your genealogical weakness points already before you fall ill and artificial intelligence (AI) applications will analyse the data streams together with your doctor. You will be guided by an application, which generates a personalised patient path for you. The enabler of this disruptive change will be blockchain technology.

## New ways of healthcare

Blockchain technology will enable placing the patient at the centre of the

healthcare ecosystem. It will increase the security, privacy and interoperability of health data and it will make health records more efficient, disintermediated and secure. Also, it will allow for the addition of wellness records (such as a fitness tracker data stream) to supplement your health records for the AI systems to more accurately analyse your health.

Some examples of how exactly blockchain is changing healthcare:

### Value-based care

Blockchain-based smart contracts are used for focusing on patient outcomes. The patient pays for the result and not for the medical process (Robomed Network).

### Patient wellness motivation

A user of the wellness platform is rewarded with crypto tokens for engaging in healthy activities (Clinicoin).





**Provider collaboration audit trail**

Providers are reimbursed for care depending on how extensively they worked with other providers (ConnectingCare).

**Prescription medication provenance**

Bringing together competing pharmaceutical manufacturers and wholesalers to improve traceability of medicine (MediLedger Project).

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“The number of people aged 60 years is now 962 million and by 2050 it is projected to reach 2.1 billion. The rising life expectancy, together with an ageing population is creating high demands on our health care systems.”

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**Why is blockchain technology so powerful?**

Blockchain technology is a new type of a data-architecture and that makes it powerful as we live in the data-driven era. The most important businesses, such as Google and Amazon, are about data. Blockchain technology stores data in a decentralised way in

multiple computers to make sure it is not tampered with. There are hundreds of different decentralised ledger technologies today and their governance structures ensure that a single computer cannot decide what data are stored. This way, we can trust that the stored information will not be corrupted by a party that would benefit from the change. The system creates programmable trust.

Different types of blockchain technologies and other decentralised ledger technologies are important building blocks of our future. When they are combined with AI, AR/VR, IoT and Robotics they provide completely new ways to set up the societies we live in. They hold the potential to disrupt not only the Internet but the way our societies are governed and what we know of as the current way of doing business. The impacts could be vast. Blockchain technologies are also being applied to the fields of finance, government, energy, accounting, logistics, insurance, education, record keeping and governance.

**Our research**

These are the types of questions we at the ReCon research project are elaborating and experimenting on. We engage in pilot projects, hackathons, studies, workshops and keynotes. Our mission is to describe, analyse and experiment on the potential societal impact and new business models of blockchain-like technologies. More information regarding the ReCon research team and our partner organisations can be found at <http://recon.site/>.



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# Blockchain and initial coin offerings: Switzerland as an attractive location for digital innovations

Switzerland's Federal Department of Finance (FDF) explains the country's position as an attractive location for digital innovations, focussing on blockchain and initial coin offerings (ICOs)

**A** blockchain/ICO working group in Switzerland is investigating the legal framework for the provision of corresponding services and pointing out any need for action. The focus is on financial sector-specific applications using blockchain technology.

As a small and open economy, Switzerland is dependent on continuous innovation if it wants to maintain its appeal as a business location in the longer term. Blockchain technology<sup>1</sup> has great innovation potential and applications based on it can be used in many economic sectors. Aside from the financial sector, examples include energy trading, supply chain management and land register management. Switzerland has excellent conditions for playing a leading role internationally in this

area. These include the strong financial centre, leading universities, an existing Fintech and blockchain ecosystem and stable framework conditions. Consequently, Switzerland is an attractive location for digital innovations already today.

However, blockchain technology also raises questions about risks and the legal framework. Due to the rapid developments in recent times – including those in Switzerland, for example, around initial coin offerings (ICOs)<sup>2</sup> – the clarification of such issues has become very important and urgent, especially in the financial sector. The industry has a considerable and understandable need for a greater legal certainty: it wants to know which activities are possible under which condi-





## BLOCKCHAIN INNOVATION

Swiss Civil Code, etc.). In the longer term, the legislator or regulator will be responsible for making legal adjustments, if necessary, to ensure a competitive framework and technology-neutral regulation, as well as to address any risks.

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**“As a small and open economy, Switzerland is dependent on continuous innovation if it wants to maintain its appeal as a business location in the longer term. Blockchain technology has great innovation potential and applications based on it can be used in many economic sectors.”**

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The FDF has established a working group (together with the FOJ and FINMA, among others) for this reason. It is to report to the Federal Council by the end of 2018 and point out any requirements for action. The sector should be consulted and involved in this process. The aims of this work are to increase legal certainty for companies in the blockchain area, maintain the integrity of the financial centre and ensure technology-neutral regulation. ■

### References

- 1 Blockchain is a decentralised register in which all types of transactions are processed in a network of distributed computers.
- 2 With this special type of crowdfunding, bitcoins, ether tokens or other cryptocurrencies are collected under the term “ICO” (initial coin offering) for project financing and new, project-specific tokens are issued. These tokens are designed differently. Some contain only rights and values on the blockchain (e.g. bitcoin), others represent values (e.g. gold) or rights (e.g. shares) in the real world. Depending on distribution and acceptance, all these tokens can also have characteristics of a currency.

tions. However, any risks must also be addressed. The integrity of the Swiss financial centre may not be adversely affected by the new technology.

In the short term, the Swiss Financial Market Supervisory Authority (FINMA) is tasked with applying the existing financial market law considering technological developments. In February 2018, for example, it published guidelines on the practical design of ICOs. In addition, it conducts strict enforcement in the case of fraudulent projects.

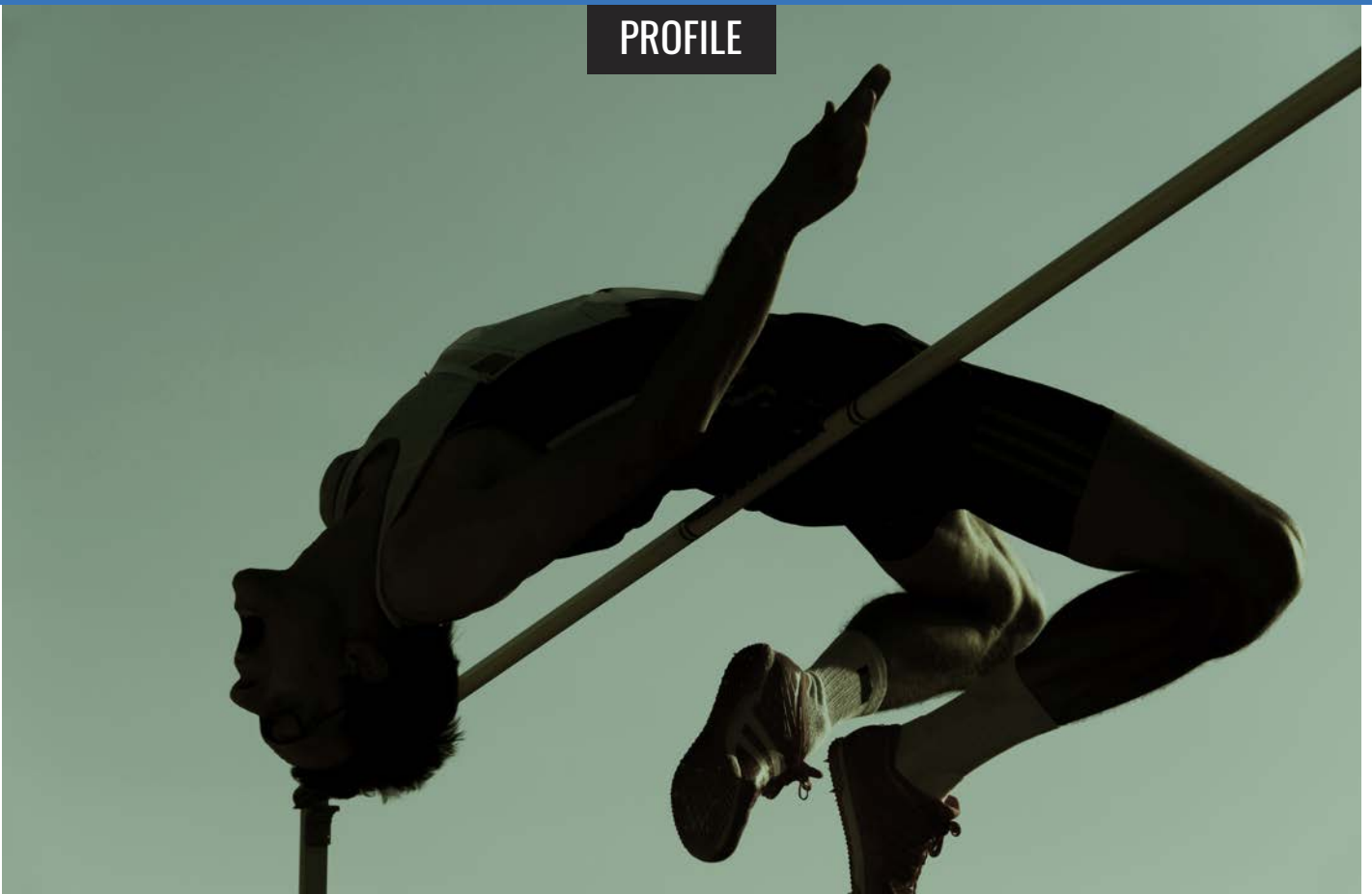
However, blockchain technology also gives rise to fundamental legal issues concerning both financial market law and general pieces of legislation (Code of Obligations,

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# Blockchain – a “Fosbury flop” for the insurance industry?

Jags Rao, from Swiss Re explores how a maverick mentality can turn the tables on tradition and have a global impact

**M**exico City, 1968. The Summer Olympics. And the scene is the men’s high jump final. The whole stadium was stunned when a 21-year-old lanky American called Richard Douglas Fosbury took Gold that day with a record-breaking jump of 2.24 meters. That in itself wasn’t so much the point but the manner in which he did it was. Fosbury jumped with his face to the sky. Until then, everybody did what was called “straddle” jumping facing the ground. His technique has since been famously called the “Fosbury flop”.

The athletics coach for the American team announced at the time that

those who followed Fosbury’s method risked breaking their necks. The only things that were broken were high jump records and the Fosbury flop has been almost universally adopted.

Uniquely, Fosbury challenged the status quo and adopted a style that contradicted the established convention. Decades later, his innovation is still discussed. And yet all he did, in fact, was to seek a better way of jumping over a high bar.

Fast-forward to January 2009 when a peer-to-peer electronic cash system called bitcoin network came into existence. This offered a unique way of

moving currency from point A to B without any intermediaries. It demonstrated that “trust” could be generated digitally from within the system. It contradicted the traditional process of building trust externally through intermediaries such as correspondent banks, clearing houses and sidestepped legal and regulatory oversight.

Much like the Fosbury flop, blockchain, the underlying technology behind bitcoin, challenged the status quo by offering an alternative that was fundamentally opposed to the traditional way of building trust. After over nine years the market capitalisation of Bitcoin continues to



soar to billions of US dollars, while the underlying blockchain technology continues to unravel its latent potential for the financial services industry and beyond.

So, what can blockchain do for insurance? In fact, the industry is financially healthy, but could operationally improve. It relies on multiple layers of counterparties generating “trust”, but with high frictional cost through their interactions. Over time, counterparties have improved operational efficiencies, but gains have been confined to “silos”. And the reality is that there still exists noise, friction, duplication, excessive paperwork and bureaucracy, with shared and common business processes leading to huge reconciliation costs and contract uncertainty. It is no surprise that this has contributed to the insurance industry’s not-so-customer-friendly reputation!

However, with the advent of cryptography, smart contracts and distributed ledger technology (blockchain), there are clear opportunities to tackle inefficient processes. The potential exists for commercial entities to track all their data-driven interactions securely on a smart-contracts resident on a blockchain without having to build different systems. Blockchain can enable the transaction flow across multiple layers of counterparties from original insured to brokers to reinsurers and all the way to capital markets. It could feasibly redefine the standard for digital transaction processing and deliver significant efficiency gains.

There are a number of experiments going on in the industry to test the hypothesis, validate the benefit and

convert prototypes into production-ready states. B3i, the Blockchain Insurance Industry Initiative, remains at the forefront of approaching this innovative technology with a clear purpose to bring real business change to our industry. This spirit around rethinking insurance is brought to life by some B3i members and captured on [video](#).

The formation and success to date of B3i is in itself breaking moulds. Formed initially by 15 insurers and reinsurers and later expanded to 38 market participants including brokers, the project has shown that where there is a common sense and purpose across the whole value chain, genuine collaboration is possible.

The project is an innovation and not just a dream. It has delivered hard results. In its first year, it moved from small in-house prototypes to an industry-wide global proof of concept and on to a market-tested property catastrophe excess-of-loss application in the largest industry-wide distributed ledger network to date. In 2018, B3i aims to transfer this into a self-sustaining entity to further develop and run the platform to settle legally binding contracts.

Nevertheless, there are a number of challenges ahead. Key issues such as collective standardisation, systems integration, legal and regulatory frameworks, privacy and confidentiality need to be addressed. However, the expected benefits in the form of reduced cycle time, cost and friction, as well as enhanced transparency, are hard to ignore as they are expected to create significant material savings.

Sharing these savings with the ultimate insured could help to drastically reduce the global protection gap.

The fact that over 7.5 billion people on our planet have no or limited access to insurance or cannot afford it, as much as anything else, provides an incentive to close this gap especially when the untapped premium could be as much as USD 800 billion. So, it is not just about increasing margins or improving service but providing an opportunity for social good and for a just cause. Let’s not forget that our role is to share the misfortune of the few across the many.

Much like the Fosbury flop, blockchain technology is once-in-a-generation kind of innovation, which if applied with clear sense and purpose as postulated in a [blog](#) by Paul Meeusen of Swiss Re, can make insurance more affordable, accessible and attractive for millions of underprivileged across the globe and make our world more resilient.



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# Regulation within cryptocurrency markets

Alexander Larsen from the Institute of Risk Management (IRM) provides an in-depth look at the state of play concerning regulation within cryptocurrency markets

According to Reuters: "Japan's financial regulator said on 2nd February it had ordered all cryptocurrency exchanges to submit a report on their system risk management, following the hacking of over half a billion dollars of digital money from Coincheck."

Whilst the whole premise of blockchain technology and cryptocurrencies revolves around it being essentially unhackable, the exchanges that trade these currencies are vulnerable. The introduction of system risk management (which we assume to be risk management of the software/operating systems and servers) checks is a step forward for the cryptocurrency space, although it only covers one area of exposure linked to the cryptocurrency market.

### History of incidents

Cryptocurrency has been a booming market with increases in some major coins in the high 1000's of percent during the last year. This rise, coupled with a lack of regulation, has seen the cryptocurrency world being hit with a number of negative incidents from Ponzi schemes to fraud, scams and hacking incidents.

Bitconnect, which as of the writing of this article, is trading at roughly \$8.60, a huge fall from its height of over \$300 in January, is an example of a potential major Ponzi scheme which has lost \$2.4 billion worth of value over 10 days.

The subpoena by US regulators of crypto exchange

Bitfinex and its relationship with Tether is another concern to the cryptocurrency market, with many claiming Tether to be a scam. Tethers are tokens backed by US dollar deposits, with each tether always worth one dollar. These tokens should be backed by dollars, but thus far the company has yet to provide evidence of its holdings to the public and has not had any successful audits as of yet.

There have also been a large number of Initial Coin Offerings (ICO's), used to raise money for start-ups by issuing tokens/coins, which have raised vast sums of money only for the owners to disappear with all the money, whilst others have been less deliberate but have been just as devastating to investors. A cryptocurrency called Tezos, raised \$232 million last year, but suffered internal power struggles which have left the project in disarray.

This brings us to the current concern in Japan of cyber-attacks of exchange platforms. Cyber-attacks and hacking attempts of exchanges have been frequent with Bitfinex, coinbase and kraken amongst others having been closed down for days at a time during 2017 due to a number of hacking attempts. It is the successful hacking incidents which are the most worrying, however, with successful hacks such as MT Gox, which cost almost 350 million and two attacks on Youbit which led to its bankruptcy. The most recent Coincheck hacking was worth 500 million, a record, and it is this which has caused Japan to act.

## Regulation

Last year, China took a definitive stand on regulation on cryptocurrencies which sent shockwaves through the market. Some feel it was perhaps heavy handed with ICO's being banned, bank accounts being frozen, Bitcoin miners being kicked out and nationwide banning on the internet of cryptocurrency trading related sites. Others, however, believe that it has been a positive step and has encouraged other governments to take regulation seriously and hopefully take a more balanced approach. It certainly isn't in the interest of governments to stop ICO's, which provide many positives including innovation, but they should certainly regulate them from a consumer protection, taxation and organised crime standpoint.

Implementing regulation also removes uncertainty for investors as well as the companies who are involved in ICO's. Uncertainty is the source of many risks and often a negative certainty is better than uncertainty as it allows a focus within set parameters. It's important to remember that too little regulation doesn't offer protection and too much stifles innovation.

## How to regulate

There are a number of ways to regulate cryptocurrencies and the following are just some examples:

### 1) Framework for ICOs

New ICO's are currently not subject to much in terms of regulation globally. One of the problems is determining how they should be treated with some being considered securities. As a fund-raising vehicle, there could certainly be a framework that lays out key requirements of an ICO such as a company needing to be registered in order to issue a token, transparency in terms of individual members of the registered company as well as perhaps introducing a few requirements that regular IPO's require such as implementing risk management. Currently, in the USA, ICOs are expected to adhere to Anti Money Laundering (AML)/Know Your Customer (KYC) practices.

### 2) Regulate exchanges

Exchanges, which is where much of the transactions take place in terms of trading coins, is a logical area of focus when it comes to regulations.

South Korea's financial services commission, for example, has stated that trading of cryptocurrencies can only occur from real-name bank accounts. This ensures KYC and AML compliance. According to the FSC, the measures outlined were intended to: "Reduce room for cryptocurrency transactions to be exploited for illegal activities, such as crimes, money laundering and tax evasion."

Regulators should, therefore, focus on regulation that encourages transparency and minimises anonymity.

### 3) Tax laws

Clarity needs to be brought into the tax laws in terms of when investors should pay capital gains. The USA

has been quite quick to ensure that crypto-to-crypto transactions are now taxable and not just crypto to Fiat currency transactions. This is not the case in the UK however, where things are less clear and will become even more so, once cryptocurrencies start to introduce dividend like behaviour.

#### 4) Reserve requirements of exchanges

Most banks and stock exchanges are required to hold a certain amount in reserves in order to survive any major downturn or crash. This should most certainly be the case for cryptocurrency exchanges too especially considering the volatility which sees crashes of 60% several times a year, with some cryptocurrencies falling 90% before recovering. This is also known in part as a systemic risk, which could be what the Japanese financial regulator defines as system risk.

#### 5) System risk management

As we have seen from this Japan story, one way of ensuring more protection and reliability is by ensuring there is regulation around system risk management on exchanges. There should be minimum requirements protecting against hacking, phishing and other cyber-related attacks. The requirements could be scaled against the value of the exchange and the number of users or number of daily transactions.

It's important to note that much is being done to reduce the risks of hacking incidents such as the concept of a decentralised exchange. This would essentially be a cryptocurrency exchange on the blockchain, much like the cryptocurrencies themselves. This would reduce hacking significantly and whilst it is not currently practical, it could be the standard of the future.

#### Self-regulation

The cryptocurrency market gets a lot of negative publicity and much of this could be rectified if there was more self-regulation. It would also reduce volatility within the market and bring about positive change. This refers to both exchanges and ICO's alike.

The Japan Blockchain Association (JBA) for example has established self-regulation standards which include the use of cold wallets amongst its 15 crypto exchange members (of which Coincheck was one of them) and

are now looking to strengthen the standards further, following this recent incident.

#### Risk management in the cryptocurrency space

Risk management, as with all organisations, plays a vital role in meeting and exceeding objectives whilst providing resilience and stakeholder confidence. Exchanges and companies that are raising/have raised ICO's should ensure that risk management is a part of their business. Identifying risks and opportunities, assessing them and implementing response plans should be standard. Cyber risks, reputational risks, operational risks, system risks and strategic risks should all be considered and prepared for, which would minimise market disruption and reduce the likelihood of financial ruin. At the very least they owe it to the investors who have funded them.

For investors, with volatility so high, the rewards are great but so are the risks. Investors should ensure that they only invest what they can afford to lose, do their due diligence on their investments which includes understanding the technology, the team and look for a prototype rather than a wild concept. Additionally, investors should always be on the lookout for phishing scams and suspicious emails.

Finally, even the most optimistic investor should at least consider that cryptocurrencies are a speculative bubble that could burst. ■

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# Blockchain technology for the public good: Design constraints in a human rights context

Tomaso Aste and Geoff Goodell from University College London's Centre for Blockchain Technologies share their views on why blockchain technology is for the public good and about the fundamental design constraints and digital identity protocols in a human rights context

Digital technologies offer great potential for the marginalised populations of the world in many dimensions of their lives, including communication, commerce, financial inclusion, disaster recovery and the delivery of aid. However, digital technologies can also play a divisive role. By enabling the powerful who can access key information and who have the capability to develop infrastructure, it often penalises those who cannot, especially the most disadvantaged. This is consequently increasing inequality and marginalisation. In this respect, technology is not neutral, and its design can strongly influence and shape our future society.

We argue that distributed ledger technologies present an opportunity for marginalised populations, by empowering them to manage their data and business practices and achieve demarginalisation by involving the community in a decentralised manner. Distributed ledger technologies allow cooperative actions for marginalised populations to refocus away from the most powerful gatekeepers and ease the conflicting interests between governments, non-government organisations and entrepreneurs. Here we present fundamental design constraints for digital technology services in a human rights context. We also

discuss an approach for decentralised digital identity that complies with these fundamental design constraints.

Centralised infrastructure is economically efficient and may create value, both financial and political, for those groups who authorise, build, operate and oversee the systems that use it. Often, the interests of such groups are not aligned with the populations they serve. Some service providers are drawn by the promise of operating a central hub that everyone must use, thus allowing them to collect economic rents on an indefinite basis. Other businesses are drawn by the promise of collecting, aggregating, analysing, or selling data about individuals for profit. State actors are drawn by the opportunity of controlling the behaviour of their constituent populations through surveillance.

Infrastructure with decentralised governance, by contrast, affords no such incentives for its development and relies on local actors to see the benefit of its value. Deploying infrastructure with decentralised governance is a particularly challenging task because it impacts existing business models based on asymmetry of information and disrupts local incumbents that may already benefit unfairly from existing centralised control points. To

create decentralised infrastructure, we must activate a multi-stakeholder process aiming at an agreement on standards and the mechanisms by which different participants can interact. A bottom-up process for deployment of infrastructure achieves legitimacy by rightfully involving the populations that it serves, each acting in their own self-interest.

## Design constraints for digital technology services

Let us first identify eight key constraints that can serve to guide our thinking about information services in a human rights context. These foundational constraints set a base for the design of ethical digital technologies that respect fundamental human rights and promote social virtue:

1. **Minimise** control points that can be used to co-opt the system. A single point of trust is a single point of failure and both state actors and technology firms have historically been proven to sometimes abuse such trust.
2. **Mitigate** architectural characteristics that lead to surveillance. Surveillance is about control, as much as it is about discovery: people behave differently when they believe that their activities are

being monitored or evaluated. Incentives defined by powerful actors do not always serve the public interest and the opportunity to discover misbehaviour often does not justify such mechanisms of control.

3. **Do not impose** non-consensual trust relationships on beneficiaries. If a direct trust relationship with a third-party platform provider or certification authority is required, then that counterparty is facilitating coercion. Such coercion should be recognised for what it is and not tolerated in the name of convenience.

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**“By enabling the powerful who can access key information and who have the capability to develop infrastructure, technology often penalises those who cannot, especially the most disadvantaged. This is consequently increasing inequality and marginalisation. In this respect, technology is not neutral, and its design can strongly influence and shape our future society.”**

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4. **Disincentivise** economic rent-seeking on the part of solution providers. These models provide the opportunity to achieve status as de-facto monopoly infrastructure, with network effects that shut out prospective competitors and allow extraction of value over the long-term. Such opportunities are fundamentally abusive to the users of the infrastructure.

5. **Empower local businesses** and communities to establish their own trust relationships. The opportunity to establish trust relationships on their own terms is important for businesses both to compete in a free market place and to act in a manner that reflects the interests of their communities.

6. **Empower service providers** to establish their own business practices and methods. Providers of key services must adopt practices that work within the values and context of their communities.

7. **Empower individual users** to manage the linkages among their activities. To be truly free and autonomous, individuals must be able to manage the cross sections of their activities that are seen by various institutions, businesses and state actors.

8. **Resist creation** of potentially abusive legal processes and practices. Infrastructure that can be used to abuse and control individual persons is problematic even if those who oversee the infrastructure are genuinely benign. Once the infrastructure is created, there is only a matter of time before it is used for the wrong purposes.

Establishing meaningful credentials for individuals and organisations is a problematic task, even in developed economies with strong rule of law. In an environment in which the incumbent actors are widely accepted as unscrupulous, this presents an even greater problem challenging the viability of services based on hierarchical trust networks, such as all-purpose identity cards. In many parts of the world, legitimate trust relationships are not hierarchical, and a top-down approach will not work.

**Decentralised design for digital identity**

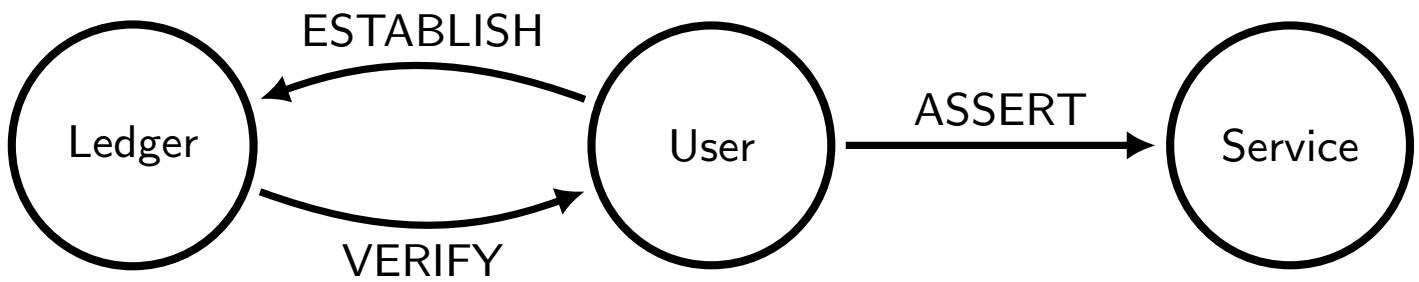
Modern digital technology infrastructure relies heavily on services that often require their users to establish accounts and assert their identities as they make use of the services. For this reason, the collection, aggregation and

analysis of personal data have become politically contentious issues, as the businesses that operate on such data often have little or no public accountability with respect to how the data is gathered and used. When marginalised communities are involved, the problem is exacerbated as weak public institutions are ill-suited to defend the interests of individuals and small businesses against the interests of those who seek control.

The current state-of-the-art in identity systems for social protection and financial inclusion impose non-consensual trust relationships on their users, including both the ultimate beneficiaries, as well as local authorities, service providers and others. Such trust relationships expose users to powerful central authorities with potentially corrupt or unscrupulous operators, poor security practices and the potential for coercion by politically or economically powerful actors. Identity systems that rely on a single technology, a single implementation, or a single set of operators have proven unreliable at best and in many cases, they represent a threat to human rights as well.

The alternative to imposing new trust relationships is to work with existing trust relationships. Distributed ledgers allow for system-level approaches that make it possible for existing businesses, community groups, cooperatives and service providers to continue to exercise self-determination, without forcibly requiring them to cooperate with central authorities (including governments, NGOs, operators and other institutions or service providers) or with specific platforms or implementations.

For users to retain control of their identities and to avoid the possibility that others might abuse their data, it must be possible to:



1. **Generate identifiers** on hardware that users own and trust. Conversely, general-purpose authentication tokens issued externally, such as all-purpose identity cards, as well as inalienable tokens such as biometrics, can be used to track the behaviours of users against their wishes.

“Modern digital technology infrastructure relies heavily on services that often require their users to establish accounts and assert their identities as they make use of the services.”

2. **Ensure** that authentication infrastructure operators never learn meaningful identity information about their users. Infrastructure operators are naturally positioned to exploit the data that they carry. To minimise the potential for abuse, such operators must not receive or carry exploitable information in the first place.

3. **Separate** operators of authentication infrastructure from service providers. Users must be able to exercise autonomy in making use of services, free of the concern that their various activities might be tracked and linked.

The figure above shows how such an identity system might work. An individual user can establish a credential representing an attribute or token by

writing to a distributed ledger. Later, the individual can use the distributed ledger to verify the credential and assert it when requesting a service or conducting a transaction.

The best way to eliminate control points is to decentralise control. The distributed ledger would serve as a layer of indirection between the processes of establishing and asserting identity, without itself being owned or operated by any single party. As long as the community of operators of the distributed ledger remains sufficiently diverse, there would be no particular point of control to be abused without establishing many separate control relationships.

By applying cryptography and community validation to remove third-party trust from business transactions, distributed ledgers hold promise as part of the solution. By facilitating decentralised control of a transactional system, their use can mitigate the threats to human rights posed by powerful intermediaries and, their use can empower the less powerful participants, such as small businesses, local cooperatives and the individual beneficiaries themselves.

It may not be easy to convince state actors and incumbent businesses to accept the development and use of

technology that disrupts current business and power models. However, with the rise of coercion and control through platform services and data aggregation, now is a fine time for those who believe in human rights to take a stand in favour of individual autonomy and dignity.



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# The role of blockchain technology in Dubai

Smart Dubai Office lifts the lid on the role blockchain technology plays in Dubai, in this revealing interview

Smart Dubai Office lifts the lid on the role blockchain technology plays in Dubai, in this special interview, including their thoughts on the Dubai Blockchain Strategy and what it sets out to achieve. In addition, they explore how this aims to demonstrate an opportunity to deliver more seamless, safe, efficient and personalised city experiences.

Smart Dubai Office also explains how blockchain technology is shaping the future of the Internet with simple, safe and secure transactions. Finally, we are told about the role blockchain will play in the country's government, to be an example to the rest of the world, as well as driving Dubai's economy.

## **Firstly, can you introduce and outline your thoughts on the Dubai Blockchain Strategy? What is it and what does it set out to achieve?**

The Smart Dubai Office launched the citywide "Dubai Blockchain Strategy" in October 2016, with the objective of executing all applicable government transactions using blockchain by 2020.

The strategy establishes a roadmap for the introduction of blockchain technology to Dubai and the creation of an open platform to share the technology with cities across the globe.

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**"In May 2017, the Smart Dubai Global Blockchain Challenge saw 21 start-ups fly into Dubai from 19 cities – to pitch their best and brightest blockchain ideas – several of which are now being piloted around the city. We are running the challenge for a second year in 2018 and will be announcing this year's winners in May."**

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We designed it essentially around three pillars that connect government, the private sector and the global community because of our strong belief in the power of collaboration. These three pillars – efficiency, industry creation and global leadership are detailed below.

**Efficiency:** To implement blockchain technology across all applicable government services.

Dubai aims to use blockchain to enable a paperless





## BLOCKCHAIN INNOVATION

and will be announcing this year's winners in May.

**Global leadership:** The strategy aims to position Dubai as a global thought leader in blockchain, through both formal and informal cross-border collaboration.

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**“In short, we want to give people back time and money they would have otherwise spent on filling paperwork and travelling to government service centres. More importantly, at the core of this vision is a belief in the profound power of emerging technologies to dramatically improve city experiences. This is a belief we have put into motion with the launch of the Dubai Blockchain Strategy.”**

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### **How does this aim demonstrate an opportunity to deliver more seamless, safe, efficient and personalised city experiences?**

To answer this, we need to look at the traditional governance model and the extent to which Dubai is different.

**Traditional governance model:** To understand why we are embracing blockchain and other emerging technology, we'll first state that governments have long existed to manage societal growth through the provision of trusted public services.

Historically, the delivery of these services involved frequent and time-consuming interactions between public sector agencies and constituents. If one wished to buy a property, the government's role would be to authenticate the transaction and record it for future reference.

The purchaser in this scenario would, therefore, be required to fill out and present several documents to ensure the government can do its “authentication and recording” role properly. The relationship between the two – government and individual – is purely transactional: Give and take.

Governments around the world have believed for centuries that they are achieving their objective by fulfilling

digital layer for all city transactions, converting millions of documents – covering everything from visa applications to bill payments to license renewals – into digital, blockchain-secured form.

In 2017, over 20 government use cases have been identified and designed, with many progressing into proof-of-concept phase. These cases include daily life experiences such as purchasing or renting a property, registering a student in school, obtaining medical treatment, and more. Dubai intends to first pilot these use cases on blockchain, before it proceeds to full implementation later in 2018 and beyond.

**Industry creation:** Support the creation of a blockchain industry by providing an enabling ecosystem that empowers start-ups and businesses.

In May 2017, the Smart Dubai Global Blockchain Challenge saw 21 start-ups fly into Dubai from 19 cities – to pitch their best and brightest blockchain ideas – several of which are now being piloted around the city. We are running the challenge for a second year in 2018



these traditional transactional roles – though this has been done through heavy reliance on manual processes and unnecessary labour work.

## How Dubai Is Different

The Dubai government differs from others around the world in that it aims to make Dubai the “happiest city on Earth.” We aspire to touch the life of every individual to ensure that their everyday city experiences and interactions are efficient, seamless, safe and personalised.

In short, we want to give people back time and money they would have otherwise spent on filling paperwork and travelling to government service centres. More importantly, at the core of this vision is a belief in the profound power of emerging technologies to dramatically improve city experiences. This is a belief we have put into motion with the launch of the Dubai Blockchain Strategy.

## How is Blockchain technology shaping the future of the Internet with simple, safe and secure transactions?

**Fundamentals of blockchain:** Due to the underlying fundamentals of how Blockchain functions, it acts as self-authenticating technology, guaranteeing the accuracy of the data on it, including transactions that have taken place. For this reason, blockchain is cutting off middlemen who act as ‘verification agents’ in today’s world.

Several industries will be disrupted once blockchain goes global including banking, insurance, government, transport, healthcare. This is the reason Dubai is embracing blockchain and other emerging technologies today, so the residents and visitors of Dubai can embrace the technologies benefits first and the city can act as a global benchmark for other cities around the world.

## With Dubai planned to be the first blockchain powered government, driving the future economy, what example will this set to other countries?

This takes us back to the Industry Creation pillar. We are proud to say that due to our ambitious mandate, the world has recognised Dubai as a global hub for blockchain implementation and blockchain specialists from around the world such as ConsenSys and BitFury are setting up offices in this city. This is further backed by our recognition at the Barcelona Smart City Expo World Congress, where we received the City Award for our efforts towards blockchain implementation.

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“The Dubai government differs from others around the world in that it aims to make Dubai the “happiest city on Earth.” We aspire to touch the life of every individual to ensure that their everyday city experiences and interactions are efficient, seamless, safe and personalised.”

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Dubai is host to at least one blockchain conference every month, as the world has acknowledged Dubai for blockchain knowledge exchange as well. The Smart Dubai Office is hosting a major blockchain festival in May called the Future Blockchain Summit, where we are inviting global blockchain experts to share their experiences with all. ■

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