



Blockchain,

a catalyst for new
approaches in insurance

Part 2

Market launches and changes
in 2019

“Blockchain, a catalyst for new approaches in insurance – Part 1” published in 2017⁽¹⁾, presented our perspective on technological developments and their impact on the insurance value chain in particular. We gave several practical examples of what blockchain technology can offer, namely traceability (for example, the provenance and condition of the insured items, confirmation of the occurrence of events triggering claims etc.) and Know Your Customer (KYC) solutions, smart contracts and automation, index-based insurance, interconnectivity with the Internet of Things (IoT), and peer-to-peer insurance (P2P). Our conviction at the time was that “the idea of a decentralised, secure and transparent ledger distributed among users can/will help to manage increasing global complexity and give power back to individuals. The insurance industry, with its highly complex processes, is expected to be a major beneficiary of the technology”.

At the time of publication, blockchain technology was already attracting the attention of C-level executives in every industry. Although the financial services industry seemed to be blockchain’s natural target, the technology’s proponents began examining its potential applications in other industries, such as energy, food and the media. The challenge was to identify the relevant scenarios where blockchain could have a significant impact. A majority of incumbents were already monitoring technological developments, while a few were investing in proofs of concept (PoCs). Taking into account the limits of technology, the issue of scalability, system integration, current processes and the need to change the legal framework, our teams expected blockchain technology to be widely adopted within five years.

One year later, the situation has changed considerably, as interest grows, a community takes shape and the technology evolves. Businesses are increasingly moving from PoC to market launch, often through minimal viable products (MVPs).

In June 2018, an article from Forbes asserted that the ten largest companies in the world have a blockchain R&D department⁽²⁾. David Marcus, former Vice President of Facebook. Messenger and President of Paypal, announced that he would be spearheading a small team in charge of identifying relevant blockchain applications for Facebook.

In PwC’s third annual Global Blockchain Survey ⁽³⁾, published in 2018, of 600 executives from 15 countries and territories, 84% report blockchain initiatives being underway. As blockchain rewires business and commerce, the research provides one of the clearest signals yet of organisations’ fear of being left behind as blockchain developments accelerate globally, opening up opportunities including reduced cost, greater speed and more transparency and traceability. A quarter of executives report a blockchain implementation pilot in progress (10%) or fully live (15%). Almost a third (32%) have projects in development, and a fifth (20%) are in research mode.

The survey reflects the early dominance of financial services developments in blockchain, with 46% identifying it as the leading sector currently and 41% foreseeing its preeminence over the near term (3-5 years).

In this report, we analyse market launches carried out over the 2017-2018 period (first half), offering different perspectives that highlight:

- the first business use cases covered – relating primarily to traceability/KYC and the automation of smart contracts;*
- how these solutions were implemented by major market players or newcomers – technologies, project organisation, governance and interaction with the blockchain ecosystem;*
- the initial takeaways, as well as the upcoming challenges foreseen by market players, and approaches to reduce risks related to deploying blockchain technology, including operational, legal, regulatory, cybersecurity and reputational risks.*

Aside from market launches, 2018 has undeniably been shaped by the emerging phenomenon of initial coin offerings (ICOs), which raised around USD 4 billion in capital in 2017 and USD 16 billion in the first half of 2018 alone⁽⁴⁾.

ICOs allow users to raise capital via blockchain technology to finance an innovative project, as investors receive a token entitling them to voting rights, a licence or the right to participate in the project. The question is whether ICOs should be viewed solely as a way of securing funding and partners to launch insurance products on the market using blockchain technology or whether they should be seen as a new transactional product that itself requires specific insurance cover.

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(1) <https://www.pwc.com/gx/en/insurance/assets/blockchain-a-catalyst.pdf>

(2) <https://www.forbes.com/sites/michaeldelcastillo/2018/06/06/the-10-largest-companies-exploring-blockchain/#2cbf13161343>

(3) <https://www.pwc.com/gx/en/issues/blockchain/blockchain-in-business.html>

(4) <https://www.coinschedule.com/stats.html?year=2018>



Matching the right platforms with the right applications

01

Bitcoin, the first blockchain

The history-making blockchain technology, Bitcoin, has been attracting unprecedented media and investor attention. Bitcoin was trading at USD 950 on 1 January 2017, at almost USD 20,000 in December 2017 and at USD 6,400 on 1 July 2018.

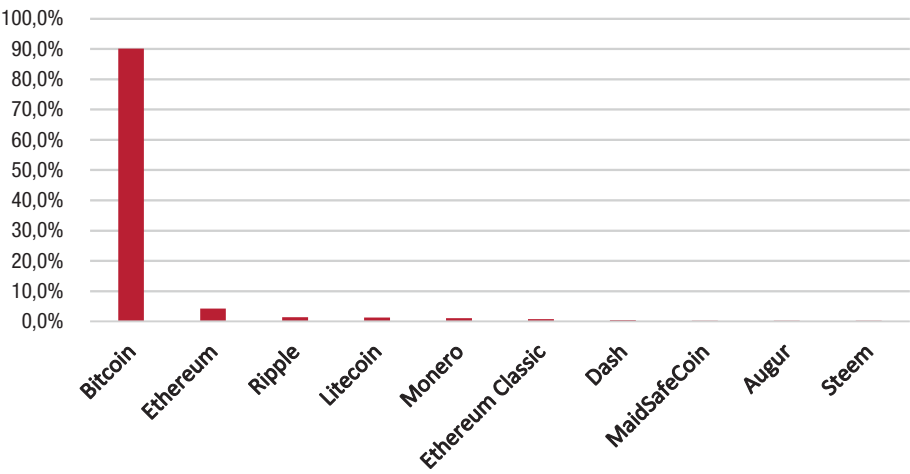
The Bitcoin project was first introduced in the white paper “A Peer-to-Peer Electronic Cash System” on 31 October 2008, just a few weeks after the fall of Lehman Brothers and the rejection of the Paulson plan by the US House of Representatives, events that marked the beginning of a global financial crisis. The product of several decades of cryptography research, Bitcoin culminated the

search for a value exchange system free of any supervisory body.

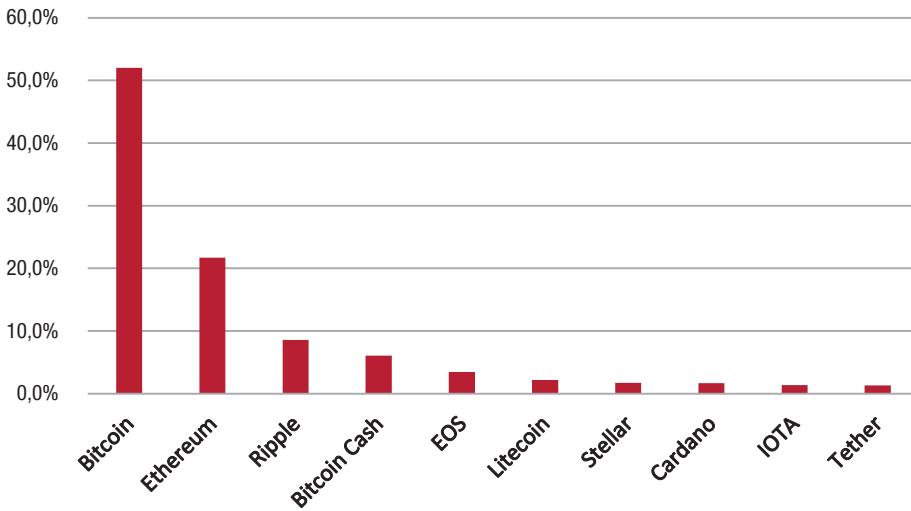
Bitcoin is the first decentralised, virtual cryptocurrency; instead of being created by commercial banks, bitcoins are created by users of the network, who run a public algorithm. There is a limit to the total number of tokens that will ultimately be released. Capped at 21 million, bitcoins will be put into circulation at a decreasing pace. Any computer can freely access the network and be involved in the process of approving new transactions. The Bitcoin community updates the ledger securely and transparently.

Bitcoin, however, is just the tip of the iceberg...

Breakdown of cryptocurrencies – 1/01/2018



Breakdown of cryptocurrencies – 7/01/2018



Ethereum, from smart contracts to DApps

The Ethereum project was launched in 2015 with the aim of becoming “the world computer”. Like Bitcoin, Ethereum is a public blockchain. Unlike Bitcoin, which was specifically designed as a currency exchange platform, its goal is to become the first decentralised data exchange platform (decentralised internet) hosting the largest number of blockchain apps. In the long term, the Ethereum Foundation seeks to become a Web 3.0 or a “dApp store” as the first blockchain as-a-service provider for the general public, using a cloud-based infrastructure. In practical terms, Ethereum wants to give everyone the opportunity to build complex, fully autonomous applications.

Ethereum’s blockchain uses its own programming language, Solidity. Ethereum is also unique for having introduced the idea of smart contracts, which are programs that run automatically based on the conditions built into the code, and the information they contain cannot be modified.

Smart contracts correspond to the first level of decentralised applications:

- if several smart contracts interact with one another, they are referred to as an open network enterprise;
- if they interact with an autonomous agent (programs that make decisions without human input), they are referred to as a distributed autonomous enterprise.

Ethereum makes its secured blockchain available using a public consensus protocol and enables the deployment of smart contracts managing other digital assets, i.e., tokens.

The Ethereum project has evolved at a remarkable pace. According to an article published in June 2017 by CNBC, 500 startups and some 35,000 developers are actively working on the Ethereum blockchain (some believe this number to be much higher)⁽⁵⁾.

The Ethereum Foundation is well equipped to lead this ecosystem of researchers and developers, who are contributing to what some consider to be one of the boldest ideas of our time.

(5) <https://www.cnbc.com/2017/06/23/ethereum-has-massive-potential-blockchain-expert-william-mougay.html>



Several promising projects are being undertaken:

- Slock.it, founded by Stephan Tual in 2015, is trying to build the future infrastructure of the sharing economy by enabling anyone to rent, sell or share anything – with no intermediary but with insurance that can be activated/deactivated by means of a smart contract. Today, Slock.it helps 1,070 owners of electric vehicle charging stations in Germany to sell their output on a peer-to-peer basis via an app;
- Augur, a protocol that allows each user to bet on the outcome of an event and be rewarded if their prediction is correct. Augur aims to forecast the future based on collective intelligence, serving as a sort of insurance/hedging solution.

The second generation of blockchain – brought about by the Ethereum platform – promises greater flexibility and widens the range of possibilities for businesses and end-users. The members of the network can interact with the blockchain via smart contracts, which automatically initiate transactions. The platform also democratises the token creation process; it is actually possible to issue your own virtual currency (tokens) on Ethereum, taking advantage of its underlying architecture. Within virtual currencies (cryptocurrencies), there is a distinction between coins (bitcoin, ether) issued by the consensus protocol of a public blockchain (one coin per blockchain) and tokens, which are exchanged via an existing blockchain. As of 1 July 2018, among the top 100 highest valued cryptocurrencies, 44 were Ethereum tokens. Speaking of tokens alone, a full 96 out of the top 100 are built on Ethereum!

These public blockchains boast transparency and security, but are struggling to scale up, as the verification of blocks by all members of the network slows down the pace of transactions. Solutions to address the issue are currently under development, including Lightning, SegWit, Plasma, Sharding and Casper.

Consortium blockchains, a new avenue for business applications

Another type of decentralised platform is a consortium or permissioned blockchain, designed for business applications. Network nodes allowed to participate in the consensus are chosen in advance and read rights may vary from user to user. This is the case for Hyperledger Fabric, R3 Corda and Quorum. Hyperledger, for example, has introduced the notion of business network. B3i recently decided to adopt the same type of technology.

These solutions are well suited to internal or B2B applications and allow for small-scale pilot schemes. The B3i initiative, whose goal is to pool the data of major insurers, built its MVP on Hyperledger Fabric and decided in June 2018 to switch to Corda, notably due to interoperability issues. However, one of the drawbacks of the consensus model is that as a private network, there is no economic incentive to maintain it. Another disadvantage of this kind of platform is that a token economy cannot be built on it.



PUBLIC BLOCKCHAIN **1**

Blocks are validated one after another and cannot be modified

Network nodes

The network is open to any new participants

All participants can be involved in validating the blocks

All participants can read the data contained in the blocks

CONSORTIUM BLOCKCHAIN **2**

Blocks are validated one after another and cannot be modified

Network nodes

Network nodes allowed to participate in the consensus

New nodes are accepted based on a consensus

Blocks are validated according to predefined rules (approval from a specific number of nodes)

Read rights can be public or limited to certain nodes

Public blockchain / consortium comparison



	Advantages	Disadvantages
Ethereum (Open Source)	• Take advantage of the vast number of developments contributed by the community on various projects, shared across all Ethereum projects • Many developers are able to program smart contracts on Ethereum	• Transaction data are not private • Number of transactions per second is quite limited • Proof-of-work algorithm, high energy consumption
Hyperledger (IBM software solution)	• High scalability • IBM offers support for tool implementation and maintenance • IBM is involved in many blockchain projects	• Project could become very dependent on IBM • Tool complexity reduces its accessibility • Does not integrate cryptocurrency; not optimised for managing tokens
Corda (R3 software solution)	• R3 offers support for tool implementation and maintenance • R3's teams manage numerous projects with major banking industry players	• Its architecture is difficult to implement • Data are not shared between nodes that participated in the transaction; data partitioning • Corda was thought as a distributed solution that ensures data control, but requires a strong governance to be set up

Bitcoin has successfully established itself as the no. 1 digital currency, whereas Ethereum has set its sights on the riskier goal of asserting its position as a value exchange platform. The project still has a long way to go, but has found business applications

for its solutions and is attracting increasingly more talent. Consortium platforms, on the other hand, are free of scalability issues and offer businesses a more agile, although less extensive, alternative.



Traceability and KYC

Bitcoin is certainly the most explored use case, and with good reason, as blockchain was invented to serve the purposes of Bitcoin. Bitcoin's creation effectively solved the "double spend" problem.

Double spending is simply the risk that arises due to the fact that the only way to transfer data peer-to-peer via the internet is to duplicate the data (typically, when a user sends a document via email, rather than physically transferring it, he/she is sending a copy of the original). With blockchain, however, each token is unique and the ledger – the blockchain – is immutable. This is how Bitcoin became the first non-replicable digital asset, enabling peer-to-peer exchange of value without a middleman.

Blockchain serves Bitcoin by securely bringing data under one roof, offering a built-in audit trail for transactions of all kinds. The ledger eliminates the need for endless paper-based record keeping and email exchanges.

Moreover, blockchain is relevant to all industries, including finance, luxury and retail. For example, Walmart in China and Carrefour in France use blockchain technology to provide their customers with greater transparency as to their supply chains. Carrefour built its platform on Ethereum open-source code and has made the platform available to its partners through a consortium blockchain. Producers, veterinarians, processors and transporters have all received a mobile app that they can use to track the life cycle of a given food product. Customers can access the app in-store by scanning a QR code, allowing them to verify that the

product complies with the principles of Carrefour's charter.

Data pooling from the perspective of market-leading insurers

In the normal course of business, insurers have to securely gather supporting documentation before they can determine claim payouts. Data pooling projects are therefore taking shape in the industry to address this particular issue.

Major industry players are reflecting on how to share their contract data in order to pool processes through a shared, encrypted database. While a claim today requires the exchange of data, and therefore manual reconciliation and follow-up work, the blockchain platform allows all the information needed to settle a claim to be stored in a single access point.

The B3i initiative, launched in October 2016 by five major European insurers and reinsurers, has developed a distributed smart contract management system for Property Cat XoL contracts, which was presented at the 2017 Rendez-Vous de Septembre in Monte Carlo.

***"It benefits our industry by lowering administrative costs, which allows us to focus on our core business – risk coverage."** ⁽⁶⁾*

Regis Delayat
SCOR

(6) Blockchain, a catalyst for new approaches in insurance – Part 1, March 2017
<https://www.pwc.com/gx/en/insurance/assets/blockchain-a-catalyst.pdf>

The consortium was made up of 38 insurers in early 2018 and has since been incorporated into an independent company to go even further.

How startups approach traceability

In the world of startups, a paradigm shift occurred between 2017 and 2018, as businesses moved from creating PoCs alongside insurers to actually launching solutions on the market. A good example is Monuma, a French startup seeking to connect its customers with an expert on a 24/7 basis. Through a mobile app, customers can take photos of their property and substantiate its existence, ownership and value by entering data into the blockchain. If a claim is covered, the expert can value the customer’s losses on the basis of these substantiating data.

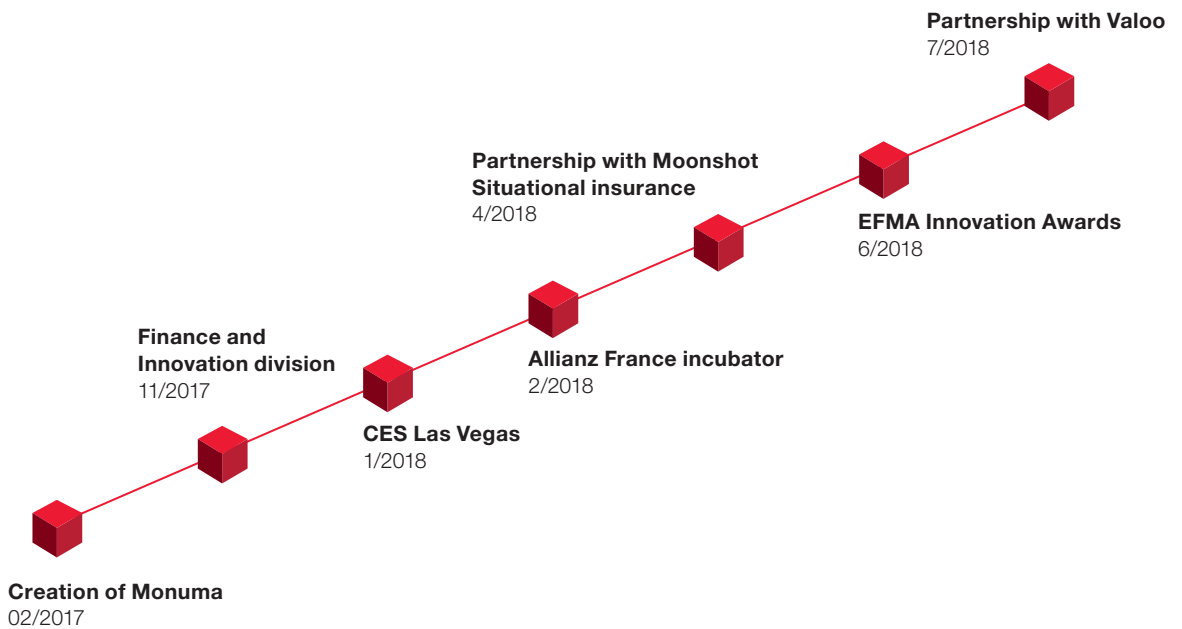
More specifically, users upload their proof of identity and the photos of their property onto the Patrimonia by Monuma app. The patented Keeex solution injects trusted metadata into files without changing their format. They are timestamped in real time and their unique hash is anchored on the Bitcoin blockchain to prove the existence of the file on a given date. Keeex provides its “sidechain” to make transactions anonymous, allow scalability and to reduce costs. The electronic signature is obtained using cryptographic methods that prevent its falsification. Each signatory is clearly identified and cannot deny that they approved the document.

Under no circumstances is the Patrimonia app meant to replace an expert. Instead, it allows property claims to be brought into the digital era. Monuma gets back to the customer within three days, versus one month on average, at a cost of €10 for a claim assessment and €50 for an expert opinion (base cost negotiable depending on volume).

“Blockchain is a global data storage system for secure, encrypted and immutable data, using a decentralised digital seal. The data, which are therefore binding, can be consulted by anyone.”

Emmanuel Moyrand
CEO/co-founder of Monuma

Fully integrated into the expert’s auditing, analysis and management process, Monuma accelerates the ability to secure real time property evidence, prepares the expert’s efficient on-site intervention with valid evidence, creates a relationship of co-development between the policyholder and the insurer, and values the property over time. Following its initial market launch with the support of Allianz France, Monuma is now exploring other use cases.





Valoo, a digital management platform for personal belongings and partner of a variety of insurers, including La Baloise, Maif, Macif and Matmut, has recently made the shift to blockchain technology.

Their number one reason? A desire to meet user demand for online expert services. The Monuma solution was the right fit, not just because of its blockchain-based system, but because it fully digitises the customer experience.

Using blockchain to audit data and carry out transactions requires taking a fresh perspective and applying innovative techniques to maintain an audit trail. In light of this, PwC's teams have developed a specific technological audit methodology to meet the emerging needs of their clients, particularly in relation to operational and cybersecurity issues. Similarly, the process of auditing the financial statements of a company that uses blockchain must involve reviewing the technology's implementation, assessing the quality of incoming and outgoing data, and identifying cybersecurity-related risks. During its audit of the first European institutional fund with cryptocurrency holdings (the Tobam Bitcoin Fund), PwC had to tailor its traditional approach to these challenges.

"Valoo is seizing the opportunity to get a better understanding of blockchain technology, which will be used first and foremost to ensure the integrity, traceability and security of data entrusted to us by users.

In a second phase, blockchain will be ramped up to support the roll-out of a new economic model whereby Valoo will provide purchase and multiple-sale solutions for goods and services brought together via smart contracts between individual customers, retailers, credit institutions and insurers."

David Gascoin
CEO/co-founder of Valoo.com



Smart contracts and automation

With the secure ledger function coming into play at the beginning of the insurance product value chain (identity of the policyholder, certification), smart contracts will automate contract management processes until reimbursement.

Delayed flights: the first blockchain use case to be launched on the market by AXA

In September 2017, AXA launched Fizzy, an Ethereum blockchain-based parametric insurance platform that could well be the insurance industry's first decentralised autonomous organisation (DAO).

Teams across AXA joined forces to offer customers flight delay insurance fully backed by the Ethereum public blockchain through a smart contract. Customers can take out the cover up to 15 days before a flight and will know from the moment the policy is taken out how much compensation they are entitled to if their flight is delayed. After landing, the smart contract compares the airline's scheduled time of arrival with its actual time of arrival, as reported by FlightStats. If a customer's plane is more than two hours late, compensation is paid out automatically, with no need to file a claim or provide proof of loss to Fizzy, as it already has the necessary information and evidence.

When FlightStats records a delay, payment is triggered automatically.

In this example, blockchain provides a way to bring in a third party which determines whether a predetermined amount of compensation should be paid.

AXA plans to extend this first blockchain product to:

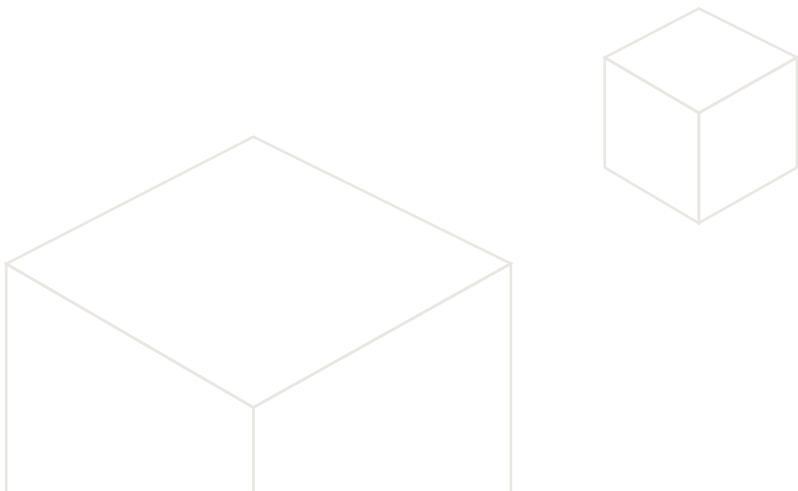
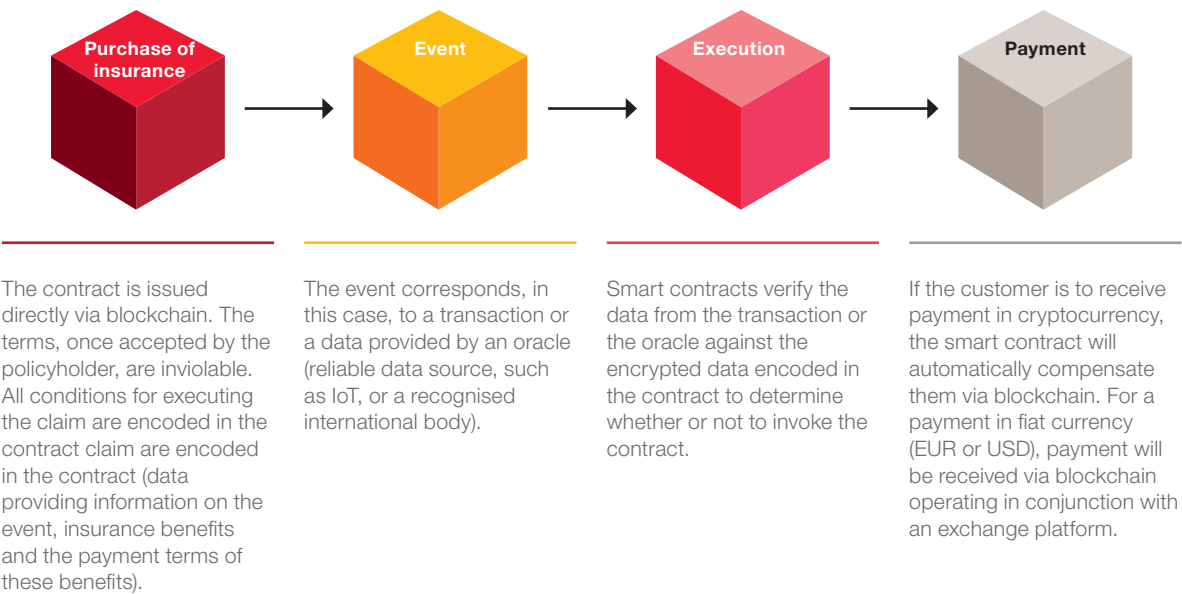
- flight cancellations;
- and subsequently to other areas of the insurance business (notably parametric), including rainfall insurance, pollution insurance, lack of snow insurance, tsunami insurance and volcanic ash insurance.

Using a public blockchain provides customers with guaranteed transparency and security. Its efficiency lies in its binary format and the code is inexpensive to run. To develop use cases that are more complex, innovation is needed and the blockchain must be coupled with other reliable sources of data (IoT, for example).

Other insurers offer comparable “proactive insurance” products which do not use blockchain technology. Blockchain’s value-added in the case of cancellation insurance is debatable, particularly given that customers primarily expect cancellation insurance to be packaged together with health insurance/medical assistance, which is not as compatible with blockchain. However, initiating a first basic use case enabled AXA to gain a foothold in the blockchain ecosystem. It also enabled AXA to get a better grasp of the technologies and issues related to governance, cybersecurity and the business model, as well as of regulatory, accounting, legal and tax requirements.

This can be considered as a smart strategy. From a business model point of view, Fizzy is setting up the variabilisation of costs for the backoffice.

Insurers will therefore have to assess feasibility and return on investment for each link in their value chain and then choose the products they think should be integrated into a blockchain architecture. It goes without saying that some types of situations will continue to require human intervention in the long term.



Blockchain serving captive insurers via a B2B application by Allianz

Allianz has decided to focus on B2B applications, launching a blockchain-based captive insurance solution in 2017. Captive insurance was a deliberate choice, as it is a highly complex area of business for multinationals that decide to self-insure. Leveraging its international network and its experience adapting to local regulations, Allianz developed a consortium blockchain platform bringing together the various parties involved, including the corporate client’s captive insurer, its local subsidiaries and Allianz itself in the role of fronting company.

The platform streamlines three crucial processes in the captive insurance cycle – renewing annual policies, paying premiums, and filing and settling claims – which traditionally involve transferring large volumes of information and making international payments.

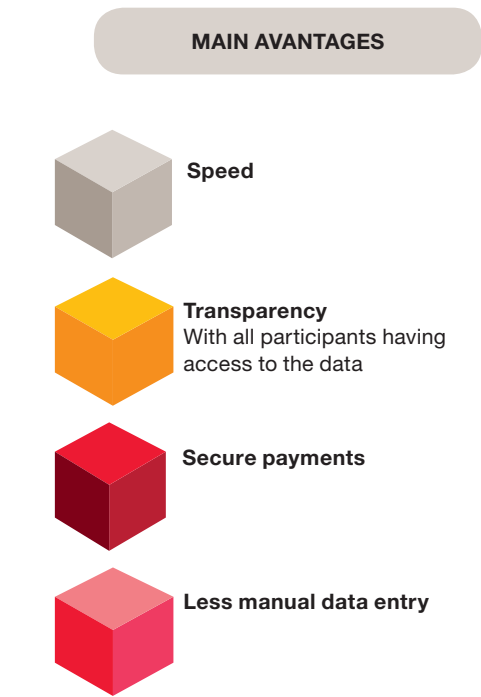
With blockchain technology, data can be managed transparently and securely and payments made in mere days instead of weeks. For example, Citi Treasury and Trade Solutions has leveraged its CitiConnect® Application Program Interface (API) solution to accept payment instructions from Allianz’s captive insurance blockchain prototype.

"Blockchain provides a single point of truth that acts as a springboard for collaboration. Above all, it allows us to meet our customers’ needs faster and provide the best possible service by optimising processes and identifying low value-added tasks"

Bob Crozier
Head of Global Blockchain Centre of Competence, Allianz Technology

Bob Crozier, Head of Allianz’s Global Blockchain Centre of Competence, has set out to instil the insurer with a strong blockchain culture. To help blockchain make the necessary transition from disruptive technology to core business solution, Allianz has brought together all of the relevant stakeholders, from industry experts across the value chain to blockchain engineers. It has also applied design thinking, whereby experts first harness their industry knowledge to identify the issues facing customers or employees, then the team determines whether blockchain technology is the best fit, before potentially tasking engineers to develop a solution. Agile methodology is used to design and develop the blockchain-based services.

In response to the skills shortage in the blockchain industry, particularly in terms of technology development, Allianz has partnered with the Technical University of Munich and Fortiss to nurture top talent.



Smart contracts brought to market by The Institutes RiskBlock Alliance consortium

In North America, many insurers have chosen to work with an independent “trusted third party” to support their consortium blockchain initiatives. The Institutes, for example, is a non-profit organisation that was originally formed out of Wharton and set up to provide education and research to insurers. A new arm of the organization — The Institutes RiskBlock Alliance — is increasingly focusing on helping the industry understand and adapt to blockchain technology. Its model is grounded in the belief that the industry needs a neutral third party to ensure that blockchain is correctly managed, and is designed both to enable information to be shared optimally among the various players and to speed up development of the technology. As a not for profit, it differs from other consortiums found in other parts of the world, such as the B3i model discussed above, which have set up a for-profit body to manage their blockchain.

The Institutes has been working with the industry to facilitate blockchain working groups and design solutions since late 2016. In 2017, it finalised four proofs of concept, launched the legal entity (The RiskBlock Alliance) and built an initial blockchain architecture. To close out 2017, RiskBlock brought a mobile application to market which was designed to verify proof of insurance. Thus far in 2018, the Institutes RiskBlock Alliance has teamed up with some 100 consultants to further refine the architecture and bring the four use cases to a minimal viable product (MVP) stage.

For The Institutes RiskBlock Alliance, the technology is chosen based on the results of use case analyses rather than an ideological belief in blockchain. In concrete terms, each product is designed with the intention of being reused if appropriate for future applications. Following the proof of insurance launch, RiskBlock plans to launch a first notice of loss application by close of summer, a net settlement application and a parametric application within 2018 or by early 2019. Further, they aim to start working groups related to at least ten more blockchain products by the end of 2018, then continue to expand its architecture and portfolio of applications in 2019 and 2020.

In particular, the non-profit plans to transform opportunities arising in other links of the insurance value chain, as well as other regions and even other industries, such as transport and shipping, where we are also seeing demand for blockchain technology and a complementary insurance service. Thanks to the initiative, an entire ecosystem is taking shape encompassing regulators, startups, incubators and universities as well as insurance companies.

"We've already risen to the following challenges:

- 1. reassure insurance companies that we are neutral and that there is no favouritism among players;***
- 2. remaining open to different kinds of blockchain technology;***
- 3. meaningfully involve stakeholders, which was definitely the main challenge given that blockchain is inherently decentralised.***

The Institutes RiskBlock Alliance is now focusing on new challenges, such as incorporating blockchain into legacy tools, delivering services at the right pace in step with technology adoption, and acquiring the right technical skills."

Peter Miller
Chair of the Board at RiskBlock Alliance

04

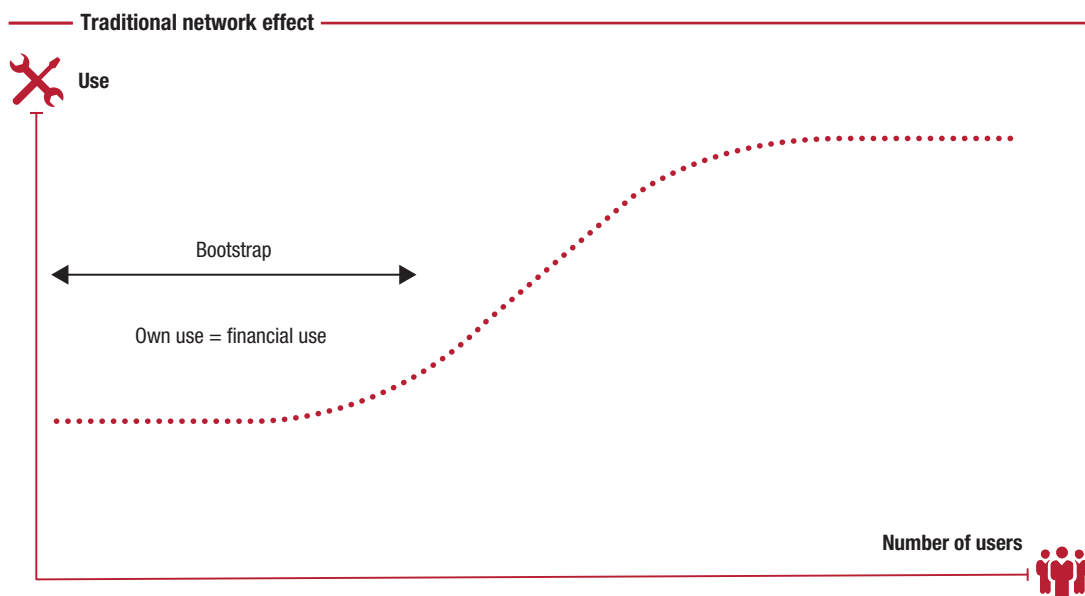
ICOs and the token economy

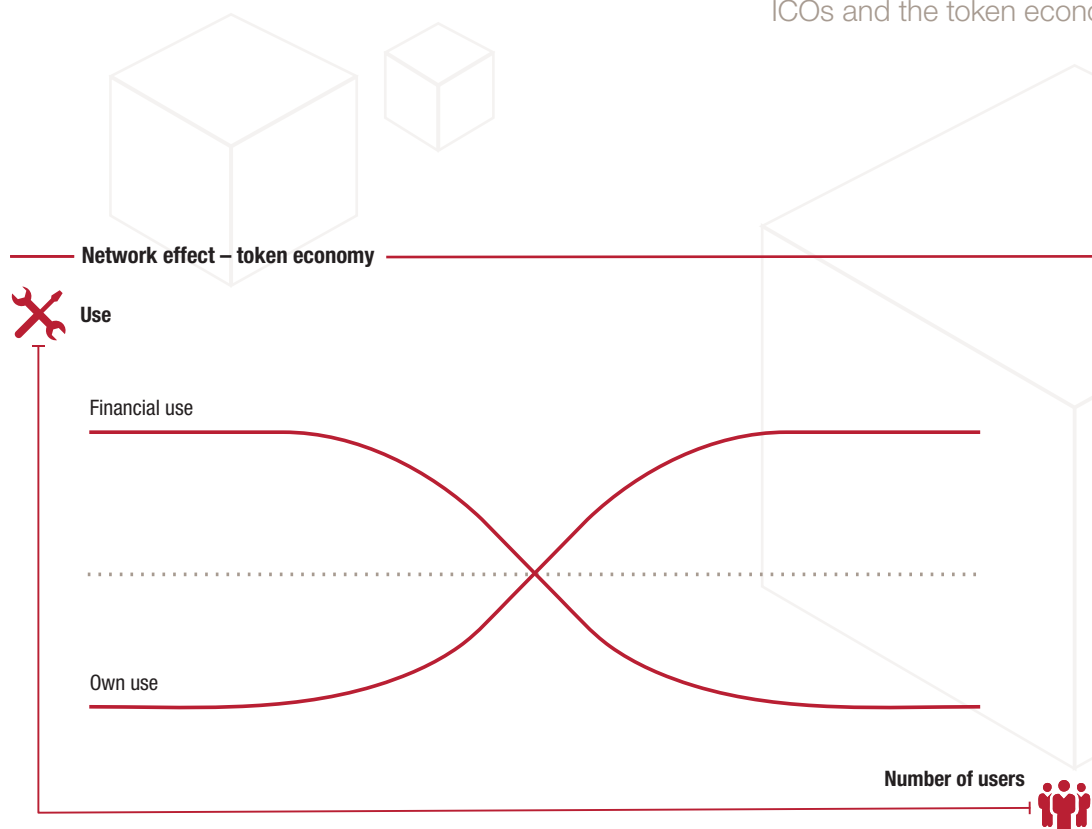
An initial coin offering (ICO) is a new means of raising capital via the issue of tokens on a public blockchain

Tokens are exchangeable for cryptocurrency or regular currency, but they must also give their owners access to the service developed by the company that initiated the ICO, which does not follow the same principle as an initial product offering (IPO). For example, Augur tokens allow owners to bet on an event of their choice.

ICOs are changing the rules of the digital market, first and foremost through the network effect, which is behind the dominance of platforms like Facebook, Airbnb and BlaBlaCar.

The value of a network is proportionate to its number of users: there was not much reason for a user to create a Facebook account in 2004. Today, we use Facebook because all of our friends are already on the site. If they have Facebook accounts, it is because all of their friends do too. ICOs will help to speed up the development of blockchain protocols and redistribute value fairly.





808 Labs seeks to disrupt the booking market

The startup 808 Labs developed the Booking Token Unit (BTU) protocol and issued its BTU cryptocurrency for companies. BTU's goal is to disrupt the booking market, worth USD 5,000 billion. Twenty percent of this total is captured by centralised platforms (such as booking.com), and service providers (including hotels, restaurants and car rental companies) have become highly dependent on these few "winner takes all" players.

808 Labs provides access to an open-source, Ethereum-based program that allows any company to use the BTU protocol to carry out commercial transactions. For example, media companies can implement the BTU protocol to better monetise their recommendations and thereby recover profits lost to online booking platforms.

What is the three-step process for companies using the BTU protocol?

- 1. assessing business cases and economic opportunities;*
- 2. analysing the impact on existing systems;*
- 3. assisting in purchasing BTU tokens and recognising them in accounting documents.*

Vidal Chriqui
Co-founder of 808 Labs



ICOs are also an excellent way for blockchain-based platform developers to attract talent to further their work. There is currently a serious lack of blockchain technology experts, and those who have mastered blockchain are typically millennials who more and more often would rather be paid in cryptocurrency than in stock options⁽⁷⁾. Offering tokens through an ICO to win over talented individuals whose contributions will help maximise a service's chances of success is expected to become an increasingly widespread practice.

In addition, ICOs are breaking down the barrier that once separated professional investors (business angels or VCs) from individual investors, empowering any person to invest in the services they find promising. ICOs are shifting the paradigm by offering tokens that serve as an incentive for investors to join the network as early as possible, when tokens have a relatively low value before the service is adopted. Traditional VC funds are closely following the ICO trend, as demonstrated by Polychain, the first VC fund to specialise in the token economy. The company raised USD 10 million in capital from Union Square Ventures and Andreessen Horowitz. In June 2018, Andreessen Horowitz announced that it was creating a fund focused on blockchain and cryptocurrencies, which has already collected USD 300 million.

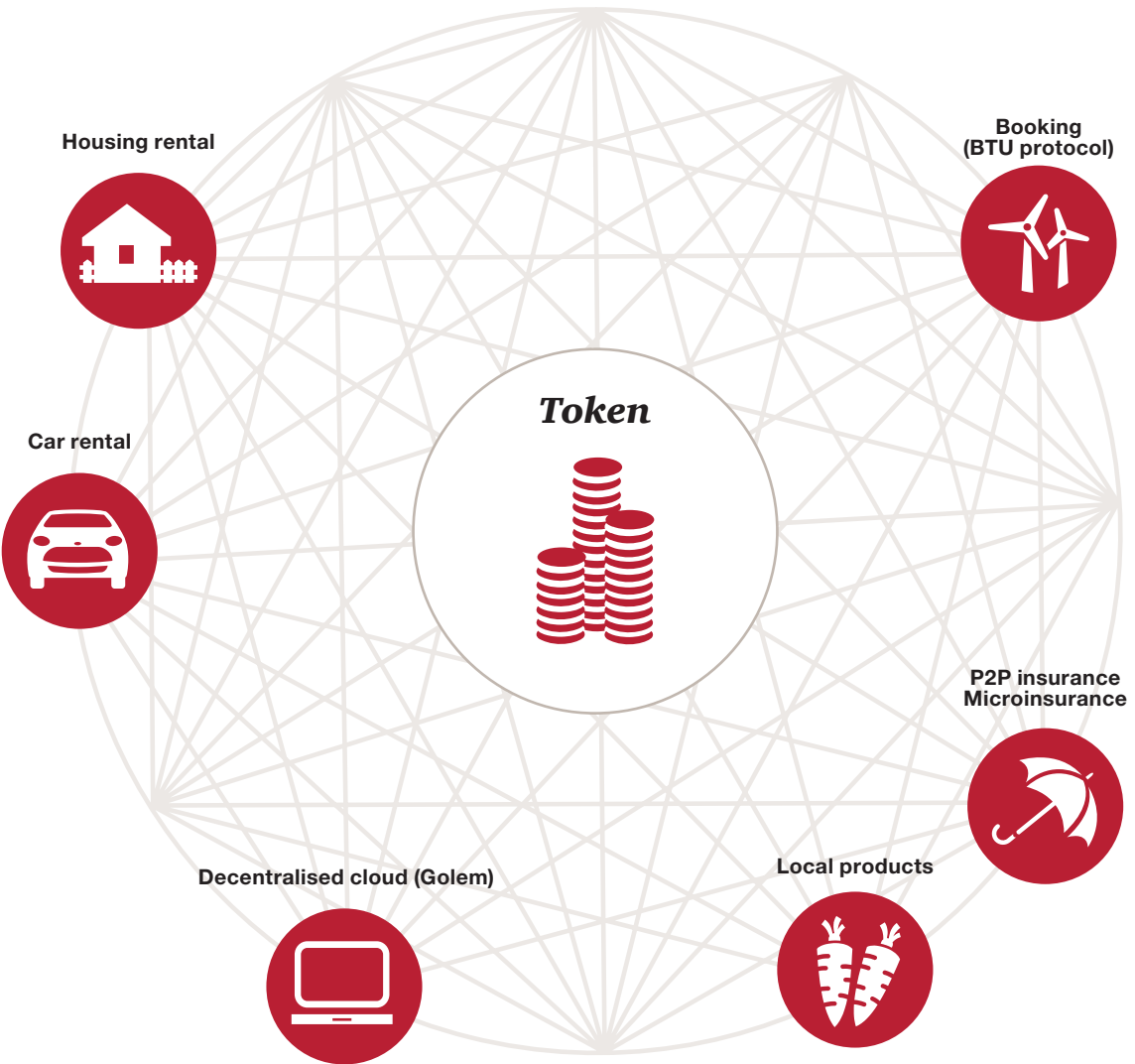
In the first quarter of 2018, some 230 collective investment undertakings had holdings in cryptoassets. Just under USD 4 billion in ICO funds was raised in 2017 and this amount is expected to rise sharply in 2018, with a total of USD 16 billion raised in the first half of the year alone.

As the ecosystem continues to develop, we are witnessing the “tokenization” of all industries, including online booking, data management, community insurance and power utilities. The trading of assets is becoming more fluid, with traditional assets being converted into tokens or assets being created for the specific purpose of tokenization. Tokenization has resulted in value creation being redistributed to protocol users.

As illustrated by the BTU protocol, protocol users are increasingly involved in the venture and also own tokens. As the number of users increases, they contribute to the success and value of the BTU protocol.

To conclude, the nascent development of ICOs is not devoid of risk, with legal, regulatory, cybersecurity, reputational and operational risks all coming into play. Accordingly, new specialised players are emerging to reduce these risks, while new opportunities arise for insurers to offer insurance products specific to ICOs.

(7) <https://www.bloomberg.com/news/articles/2017-11-08/millennials-ready-to-ditch-stocks-to-keep-bitcoin-rally-alive>





Point of view

Sandrine Cullaffroz-Jover and Nicolas Mordaunt-Crook,
French avocats registered with the Hauts-de-Seine bar

The abundance of assets based on blockchain technology, and the diversity of projects and solutions available collectively seem to offer an infinite number of possibilities... were it not for the legal and regulatory framework. The difficulties and barriers encountered to date can mostly be attributed to the inadequacy of the current framework, combined with the concerns of certain regulators, who are seeking to retain their oversight of transactions that are often risky for investors.

Some countries, like the United States, have matched the ICO regulatory framework with that of securities. Others such as China have simply prohibited them. France will be one of the first countries in the world to adopt ad hoc regulations on ICOs if it passes a new law known as PACTE (*Plan d'action pour la croissance et la transformation des entreprises – action plan for the growth and transformation of businesses*) due to be debated in the French parliament at the end of 2018.

The future French regulations will introduce an optional certification granted by the AMF (*Autorité des marchés financiers*), the French securities regulator, to French white papers organising an ICO (the simplified equivalent of an IPO prospectus). This quality label will send positive signals to investors, rewarding token issuers that comply with protective standards such as setting up an escrow account or adopting KYC rules. A white list of all issuers holding the label will be compiled. It will be a valuable tool for investors and will help limit the many cases of fraud.

Usual distinctions

Different economic “categories” are usually distinguished according to the projects with which tokens are associated, the counterpart to which they give entitlement, and the value they have – or subsequently acquire. These categories are not necessarily closed: there are thus common elements between a cryptocurrency issued for its own sake and a token issued in consideration for a project whose exchange value might subsequently be recognised. Similarly, a token initially representing the right to use any service (virtual storage space, etc.) may give rise to a proprietary right linked to the success of the underlying project, or even acquire an exchange value on the secondary market.

In its consultation on ICOs launched in autumn 2017, the AMF itself wondered if it might not be possible to classify tokens into two broad categories, identifying their characteristics as follows:

- utility tokens that grant a right of use to their owner by allowing them to use the technology and/or services distributed by the issuer;
- equity tokens that grant financial rights and/or voting rights.

Ultimately though, the legal analysis of the rules applicable to a given token must not be based on the “category” to which it is presumed to belong but rather on the specific legal nature of the rights granted to its holder.



First main findings and position statements

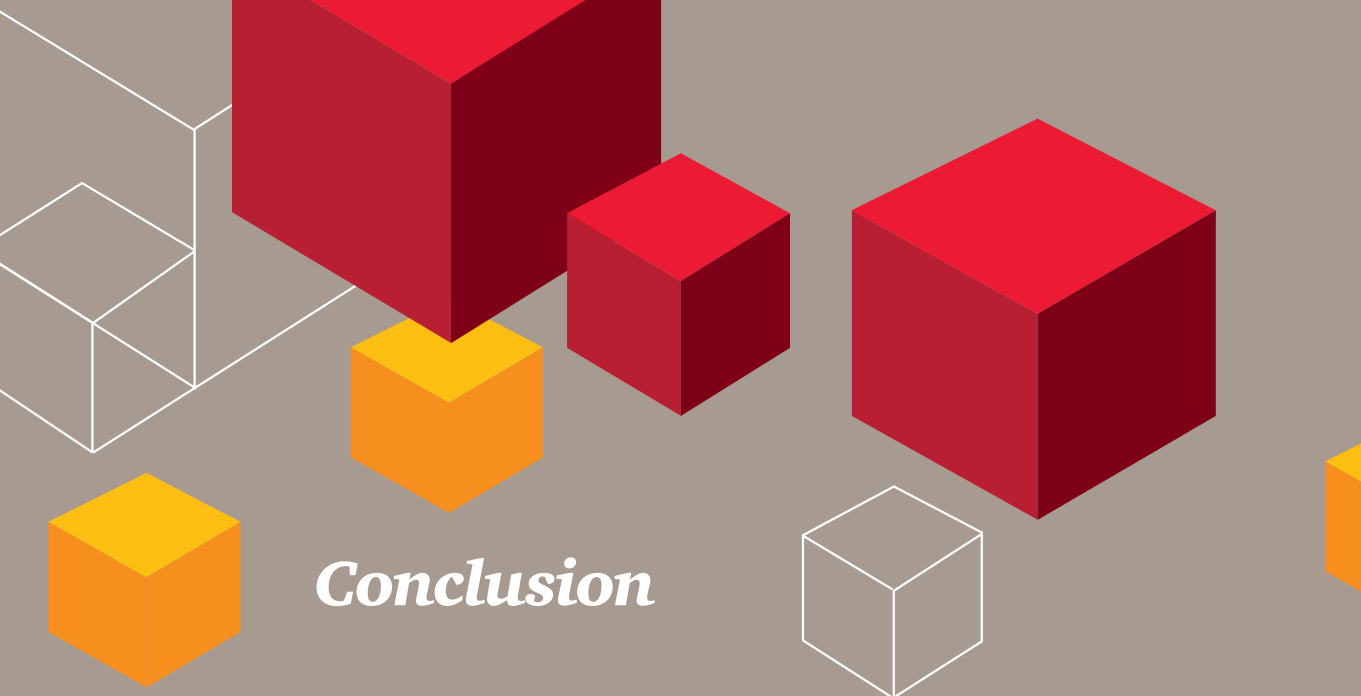
According to the summary of the AMF consultation, market participants seem to agree with the regulator that the tokens issued so far in France do not have sufficiently similar characteristics to those of a financial security to place them in the same category. Even if an “equity” token has certain patrimonial attributes such as the remuneration of the owner, it must still be specifically linked to the results of a company in order to be considered a share. Nevertheless, the AMF is also being practical in considering that the legal analysis of this situation should not be guided solely by rules: simply because certain characteristics associated, for example, with a share (e.g., the right to a liquidation bonus, the right to vote) are missing does not mean a token cannot be treated in the same way as that share.

Without taking into account those situations in which tokens might in the future be qualified as securities, the AMF was quick to conclude that a rulebook similar to that governing “intermediaries in miscellaneous assets”, as defined in the French Monetary and Financial Code (*Code monétaire et financier*), might be applied to the token issuers. However, there is ongoing debate on this issue, as the current application of the “intermediaries in miscellaneous assets” framework seems problematic primarily – but not only – because it does not govern the assets themselves inasmuch as the intermediary, depending on the characteristics of the offer. This is why article 26 of the proposed PACTE law includes a whole chapter devoted to token issuers, as part of a section otherwise common to “intermediaries in miscellaneous assets”.

The approach outlined above underlies recent adjustments made to the French regulatory framework to incorporate some of the developments linked to the blockchain – from the initial issue of tokens to their trading on the secondary market. However, the answers are still incomplete, as shown more particularly by the obstacles encountered in the field of collective investment.

The goal is to provide a flexible and attractive legal framework in order to encourage investments in cryptoassets. Although France is not currently at the forefront of the countries hosting the most ICOs, either in number or volume, this turning point is an excellent opportunity to establish a leading position in the field.





Conclusion

2017-2018 marked the transition from PoCs to the actual market launch of products. Early adopters have already learned that blockchain technology can offer a transparent, real-time customer experience by optimising processes.

A large swath of the ecosystem has yet to assimilate the topic. Blockchain technologies, currently overabundant as is the case for any emerging market, are not understood by a sufficient number of players. Therefore, challenges persist regarding how to best approach technical and functional governance, and above all, how to determine the right use cases.

The first hurdle has been cleared, as evidenced by the first market launches of insurance solutions (parametric insurance products, expert appraisal solutions, etc.) via smart contracts. These solutions have demonstrated the reliability of decentralised protocols, particularly for ensuring the integrity of exchanged data, contributing a starter level of automation and offering a high quality user experience.

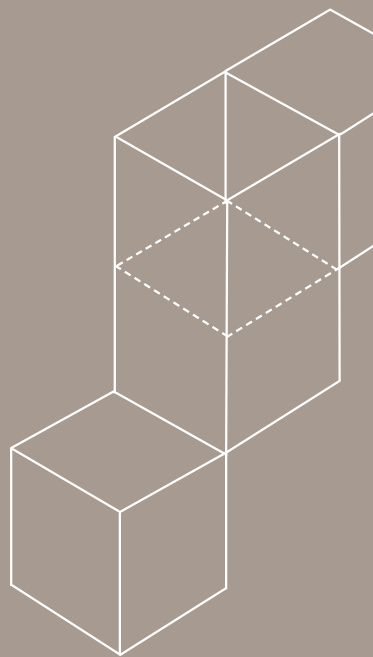
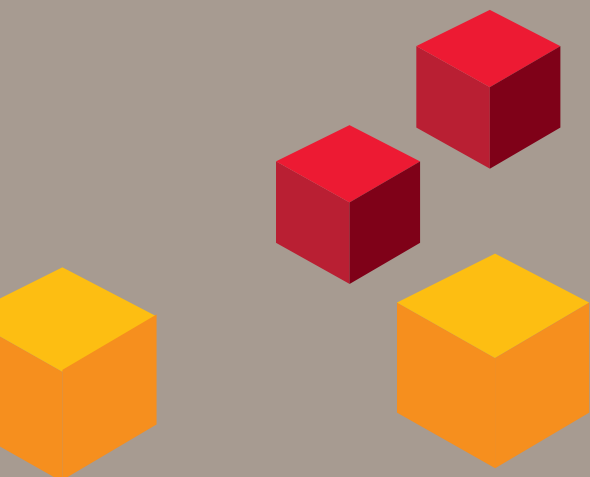
Do they show the extent of the potential gains introduced by blockchain technology? Probably not, especially since blockchain is not (yet) advanced enough to offer insurers a true transformation/automation of intra-insurer processes. The market launches have above all served to educate people, particularly executives and executive committee members in the insurance industry.

We are now approaching the second hurdle: the B3i initiative, in particular, shows the benefits to be gained by insurers by pooling data to facilitate reinsurance processes. Interest in blockchain protocols is effectively higher when use cases encompass transactions involving exchanges with multiple third parties, which requires a real change of direction in such a data-centric industry.

The gains will be greatest if insurers focus their experimentations on increasingly complex use cases, from the secured registration of user data to the issue of smart contracts on the blockchain, not to mention interconnectivity with IoT and decentralised P2P insurance.

ICOs offer startups and insurers genuine flexibility when it comes to raising capital, hiring talent and forming captive bases of future users of the insurance products and services that fit with these use cases. ICOs should be viewed in the wider context of the tokenization of the economy, where tokens representing assets are exchanged, with traditional assets being converted into tokens or assets being created for the specific purpose of tokenization. This new paradigm opens the door to a higher level of fluidity in economic exchange and investments.

A more complex ecosystem is emerging and with it comes additional risks, but insurers have the opportunity to help customers face them. Beyond being an enabler, blockchain technology may represent a new business sector for the insurance market with the potential for new products and services tailored to the needs of the blockchain community, such as insurance cover for cryptocurrency and ICOs.



Technology forecast

The roadmap needs to be developed against the future for Blockchain and the recognition of the need to «design in» flexibility

Research & innovation

Many providers and platforms coming to the market with technology innovations.

Development now

Proof of concepts

Industries undertaking proof of concepts to ideas to keep pace with disruption.

Future innovations

Legal & regulatory

New laws come into play in order to keep pace with the changing environment.

Privacy

Innovations in cyber-security within the Blockchain ecosphere.

Operational

Advances in scalability of Blockchain networks as there networks continue to grow larger and hold increasing volumes of data.

End state?

An abstract geometric design featuring several white wireframe cubes of various sizes arranged in a cluster on a solid orange background. The cubes are drawn with thin white lines, creating a 3D effect. Some cubes are partially overlapping, and their edges are visible, giving a sense of depth and perspective. The overall composition is clean and modern.

Appendices



Presentation of PwC

PwC, a worldwide leader in audit and advisory services

Our lines of service

- Audit of and issuance of opinion on financial statements
- Strategy and consulting advisory services
- Transaction advisory services
- Tax and legal advisory services
- Chartered accountancy

An international network guaranteeing you will have local support in every country where you do business

Backed by a powerful global audit network, PwC has the means to support you in all of your countries of operation, now and in the future.

Being a part of the PwC network means being able to draw on a unique, standardised set of audit technologies and methodologies, training programmes and management solutions. In addition, all of our offices are committed to upholding the firm's rules and policies regarding independence and quality.

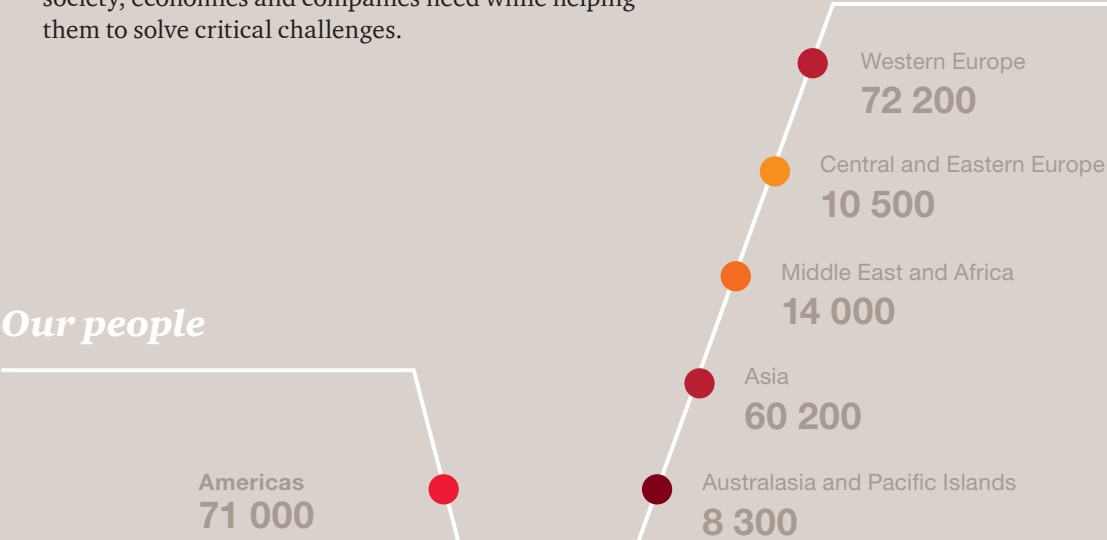
The vastness of the PwC network ensures that our clients can leverage the resources and strength of a global organisation as well as the informed response of local teams to cultural and economic specificities.



Build trust in society and solve important problems

PwC's corporate purpose is to instil the kind of trust that society, economies and companies need while helping them to solve critical challenges.

Our people



158
countries

37,7Md\$
in revenue for the year
ended 30 June 2017

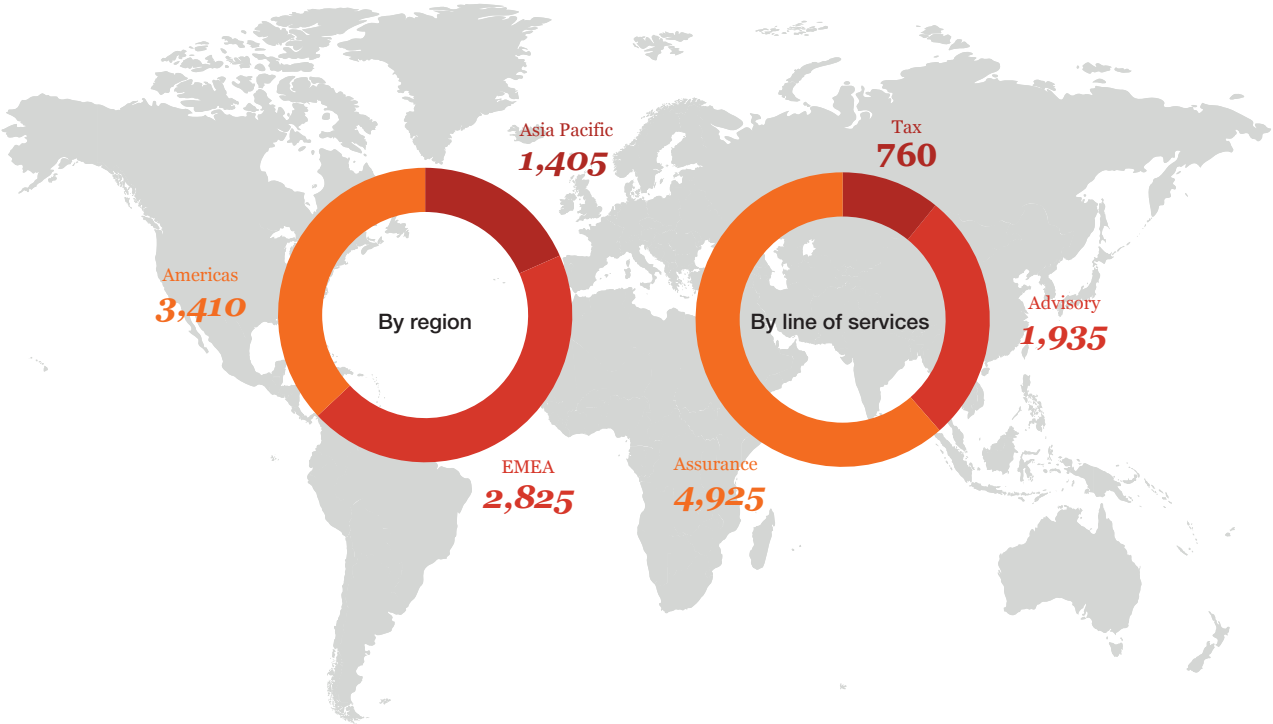
736
offices

PwC insurance capability

We are market leaders

A truly global
networkInsurance:
PwC at a glance

Over 7,640
insurance people
globally



PwC combines **unique experience** of delivering blockchain solutions with the depth of Insurance industry and regulatory knowledge that will help you define a robust and effective approach.

We are **independent** of any specific technology provider and can therefore give clear and unbiased guidance into the technology options available.



Blockchain Capability
The PwC technology team have deep blockchain delivery skills having built and deployed live blockchain applications and having completed a number of POC exercises



Technology Capability
The team have over 150+ years experience innovating and delivering business critical platforms for some of the worlds largest brands



Global Footprint
Our global footprint provides us with coverage of all major markets and the scale to engage experts in any location as required by the project



Regulatory Understanding
We will utilise SMEs in Insurance sector regulation to ensure that any wider regulatory requirements are met and any potential concerns or restrictions considered

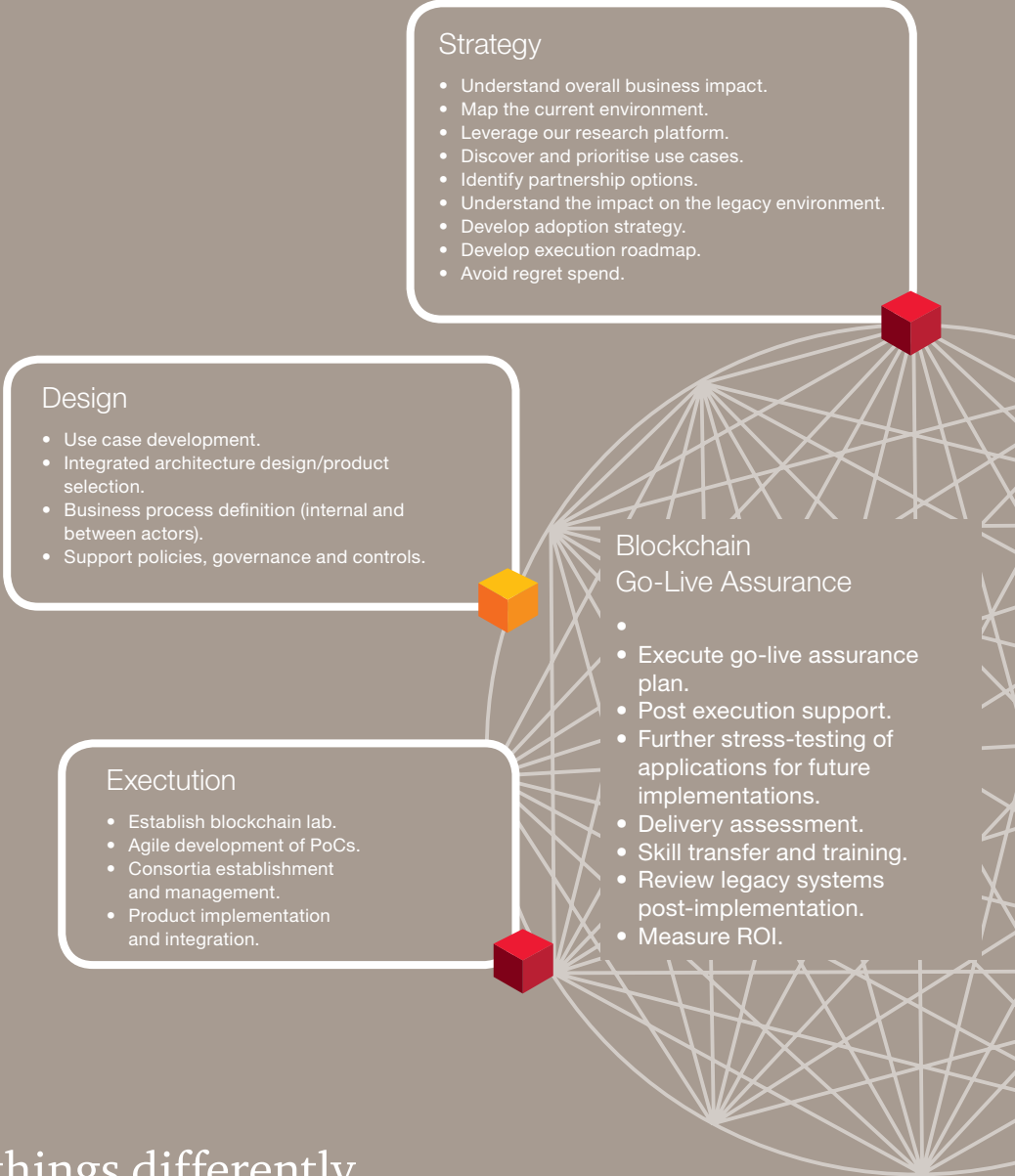


Experience
The team has delivered a number of FinTech and non FinTech based blockchain proof of concepts blending technology skills with the deep domain knowledge of PwC's Insurance experts.



Independent Perspective
As an independent firm we are well positioned to provide a clear and objective perspective on technology options and preferred solutions

Proposition and services



We do things differently



DesignThink

- Human Centred
- Asking the right questions
- Defining the problem correctly
- Jobs-to-be-Done Framework
- Design Sprints
- Journey Map



Product Delivery

- Delivery Focused
- User Centred Design
- Agile Methodology
- Collaborative Approach
- User Experience



FinTech

- Blockchain
- Traditional Payments
- Alternative Payments
- E-commerce
- Peer-to-Peer

***Delighting customers
is our passion.***

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