Blockchain hitting the big time, but is it ready?

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Interest in blockchain technologies grew significantly in 2015, with venture capital investment, in particular, growing from $298 million in 2014 to almost $460 million this year. This interest in distributed ledger technologies is remarkable given that 5 years ago, it was barely a blip on investor's radars, known mostly for underpinning the Bitcoin digital currency.

Interest in blockchain gaining momentum

These days, a wide range of companies are exploring blockchain as the potential solution to numerous challenges both inside and outside the banking sector. During 2015, Citibank, Santander, Wells Fargo, HSBC and numerous other big banks announced partnerships with FinTech companies looking to leverage blockchain to make banking processes more efficient, timely and secure. At the same time, IBM moved forward with an open source blockchain initiative in tandem with numerous partners, from the London Stock Exchange to technology companies like Cisco and Intel.

These organizations, along with a number of others, believe the potential disruption blockchain could create — in terms of decreasing transaction times, self-automating smart contracts, lowering transaction costs, minimizing fraud and opening the door to micro-transactions — is impossible to ignore. As a result, interest in blockchain is gaining momentum, with investment expected to grow into 2016.

Being honest about the challenges with blockchain

But does the potential live up to the hype? While blockchain's potential is interesting, there are substantial barriers that must be overcome in order to

implement it successfully within banking and capital markets. Regulatory and market changes in particular could hamper blockchain's use on a global scale. Some analysts also suggest that blockchain has been burdened with excessive investor expectations — ones that cannot realistically be fulfilled. At the rate investment is growing, it's possible that investors looking for immediate, short-term success may be disappointed.

Corporate investors need to qualify their expectations when it comes to blockchain — and the obstacles associated with achieving value. The technology is not a silver bullet that can solve every problem tomorrow. As with every technology, blockchain solutions will need time to be tested and to be adapted to the industry requirements at scale. We already see early adoption in some payments use cases, but as the complications grow with asset transfers, for example, more time will be needed to qualify the technology and understand the full implications. To get the most value from blockchain, corporate investors need to be less hopeful and more pragmatic. They need to encourage industry-focused engineers to define the problems blockchain can help resolve, find the best and most cost-effective technology solutions, and work through limitations to scope, scalability, velocity and usability.

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The key to success is the combination of the right skills:

— cryptography

— distributed ledger technology

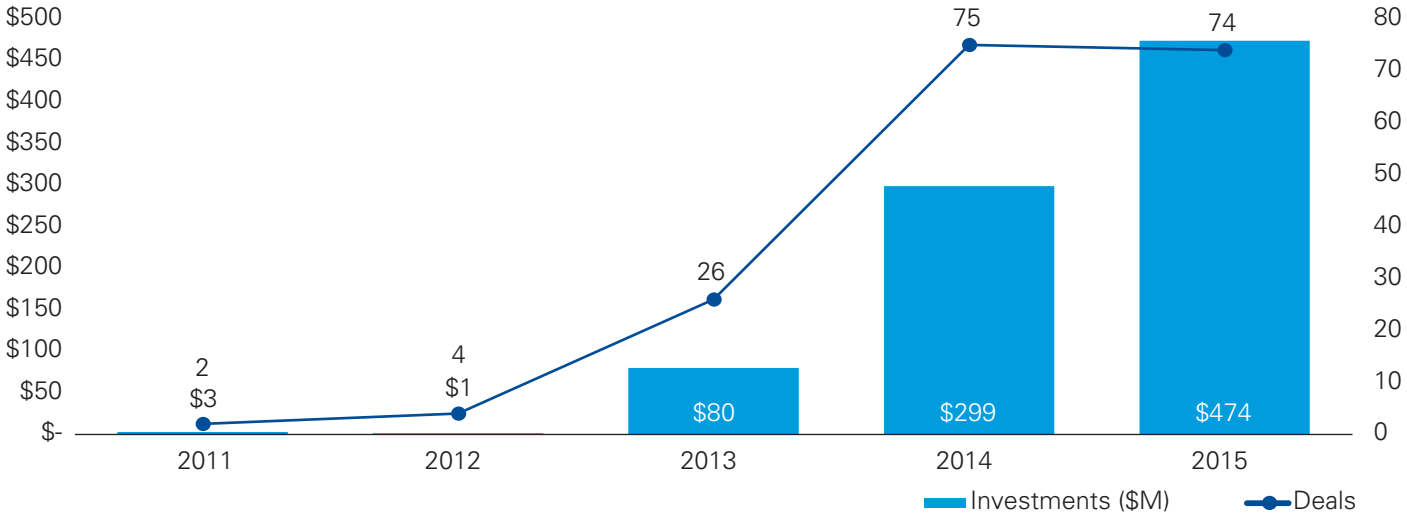
— deep industry and regulatory experience and knowledge

— technologists who can effectively navigate clients through the current IT landscape.

There are significant challenges with respect to each of these areas when it comes to status quo application of distributed ledger solutions to the mainstream components of the banking system.

For example, right now, blockchains created for and demanded by regulators are not scalable to a degree that can fundamentally replace large scale, high availability platforms. Nor do they provide the speed, ubiquity, application program interfaces (APIs), or controls environment needed by banks and demanded by regulators to conduct day-to-day activities. In addition, many banks continue to work with antique legacy IT systems, which may not be capable of supporting blockchain initiatives or will provide significant challenges if linked to new blockchain technologies. In the area of payments, the technology based on Bitcoin consensus mechanism consumes more computing power and will require initially more resources than the current solutions used by many banks. Beyond these technical challenges, there are some specific areas where fundamental issues relating to business models need to be addressed.

Blockchain and Bitcoin investment activity — Deal volume for global blockchain investment on the rise in 2015
VC-backed companies, 2011-15



Source: *The Pulse of FinTech, 2015 in Review*, Global Analysis of FinTech Venture Funding, KPMG International and CB Insights (data provided by CB Insights) 9 March 2016.

> Corporates that encourage use-case testing — whether for the securities trading life cycle, the processing of a loan or digital identify verification — and who can learn from this experimentation, will be better positioned to adjust course and achieve the most value.

Business model challenges for blockchain

The models by which these use cases are being developed vary greatly. They include utilizing open source protocols, such as Bitcoin or Ethereum, to federated server models, better known as permissioned blockchains or those that support a consensus model amongst known and, possibly at a later stage, potentially unknown parties. Many of today's prominent permissioned blockchain use cases had their origins building APIs on top of the Bitcoin blockchain, such as Chain and Digital Asset's Hyperledger solution. There is an acknowledgment amongst major financial services companies that preference can be found for permissioned networks built for specific markets and product classes. These networks can issue and transfer assets directly between parties who control the assets and are preferable to an initially permission-free technology platform. As a result, many providers began to build their own proprietary blockchain solutions to test those specific use cases that were most in demand by their clients. These included creating solutions addressing the Bitcoin protocol challenges with regards to security, efficient consensus mechanism, scalability, regulatory risk, etc. The result is a fragmented marketplace in which it is critical for clients who are experimenting with blockchain solutions to align with the provider and protocol that will provide the most economic value for any particular use case of interest.

Evidence of the fragmentation across solution providers can be seen in the variety of blockchain/distributed ledger solutions use cases. Solution providers have focused their blockchain solutions on capital markets use cases such as post-trade settlement, syndicated loans and privately held shares to name just a few. This is not to say that these solutions can't and shouldn't be looked at for other use cases. Chain, for example, is supporting the trading of privately held shares proof of concept for NASDAQ, but also has a smaller blockchain for gift cards set up as well. At the same time, Ripple has determined that the optimal use for its network is both domestic and cross-border cross-currency payments and has focused on the payments area after initially pursuing use cases in the post-trade area. Other investment and resource focus decisions on specific use cases are being driven by the nature of the clients, the potential economic benefit and the demand in the marketplace. For a particular use case, the level of focus should be a key consideration when deciding which solution to select as limited funding for new providers may drive resource allocation decisions.

Another key point to consider is that while open, public protocols utilize very specific cryptographic consensus methods such as proof of work, permissioned ledger cryptographic methodologies differ by solution provider ranging from multi-signature validation to practical byzantine fault tolerance (PBFT) or proof of stake to using traditional change management technology. As a result, solutions must be vetted across a range of capabilities and chosen based on potential value delivered by use case.

The scalability challenge

An additional challenge blockchain/distributed ledger technology needs to overcome is related to the scalability of these point-to-point, bilateral solutions. In the world of permissioned blockchains, in which the majority of large financial institutions will play, scalability may be less of an obstacle depending on the number of nodes required to validate transactions. Larger scale distributed ledgers like those proposed for international payments promising real-time clearing and settlement obviously have more at risk. The asynchronous and ad hoc peer-to-peer nature of these systems poses challenges when compared with the natural throughput of transaction processing engines written in assembler code designed specifically for the processing of higher volume transactions. Solutions to this issue, such as not having reliance on one global system (much like side chains for the Bitcoin protocol), have been discussed but have not yet been validated. Utilizing innovations such as those being developed for web payments may have promise but to date have not been proven.

For financial services organizations, these issues could significantly impact their decisions and plans to move to new distributed ledger platforms. Taken together, these challenges illustrate why there is still a long way to go to gain widespread regulatory acceptance for blockchain within financial services.

Short-term blockchain opportunities do exist

In spite of these challenges, there are still many reasons to continue to pursue innovation in distributed ledger technologies as the potential benefits associated with a breakthrough down

the road are great. One area we see the technology offering particular benefit, in the short term, is digital identity — or what others are calling a digital financial passport. Many banks are excited about this opportunity and can see positive improvements related to how digital identity is currently being facilitated and enabled at banks. Improvements in this area could enable better choice and portability of customers between financial institutions and ultimately higher customer satisfaction as individuals are able to take control over and gain benefit from their own identity. Beyond digital identity, there are a number of other important niches where blockchain could make early gains as well.

Now is the time for experimentation

Given how the technology is evolving, at KPMG, we believe that now is the time for experimentation, not for wholesale technology implementation. Corporates that encourage use-case testing — whether for the securities trading life cycle, the processing of a loan or digital identify verification — and who can learn from this experimentation, will be better positioned to adjust course and achieve the most value. More widespread implementation at this stage could have serious financial consequences should the technology not live up to expectations.

In regard to testing, we see some early examples of this trend taking hold in the marketplace. A great number of the major financial services institutions we work with have proof of concept (POC) and prototype initiatives underway related to blockchain. Larger financial institutions, such as JP Morgan Chase, are now considering how to test for scalability, validate initial hypotheses, build longer term target operating models and enhance business cases based on their POC/prototype results.

We are also seeing work being done related to enhanced international payment capabilities as well as the application of distributed ledger principles to needs for identity management and other areas. It is clear that the move to test and experiment with distributed ledger technologies is well underway in financial services.

A balanced approach

Having said that, investors need to take a balanced approach to their blockchain investment strategies. To be the disruptor investors envision, blockchain protocols and solutions must evolve to support the reliability, efficiency and scalability requirements expected in the industry. It also needs to be a differentiator, rather than simply an enabler. And, it needs to be adoptable by all parties in the banking supply chain — a fact that will require significant collaboration across industry, regulatory bodies and those supporting potential solutions.

There's little doubt that investment in blockchain has taken off recently, but relative to other FinTech areas such as robo-advisory, machine learning or alternative lending, the scale of investment is still modest. The ability for blockchain to become a true game changer is still in process. Investors need to look beyond the hype and ensure that any technology solution is underpinned by exceptional engineering, a full understanding of the barriers, and clear economics on the costs and benefits associated with the technology.

In this regard, we see many organizations and engineers now undertaking deeper analysis on blockchain and a more balanced and pragmatic view emerging. We see ourselves as part of this group and advocate toward selective and targeted experimentation as a first priority that will yield greater benefit down the road. ■

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