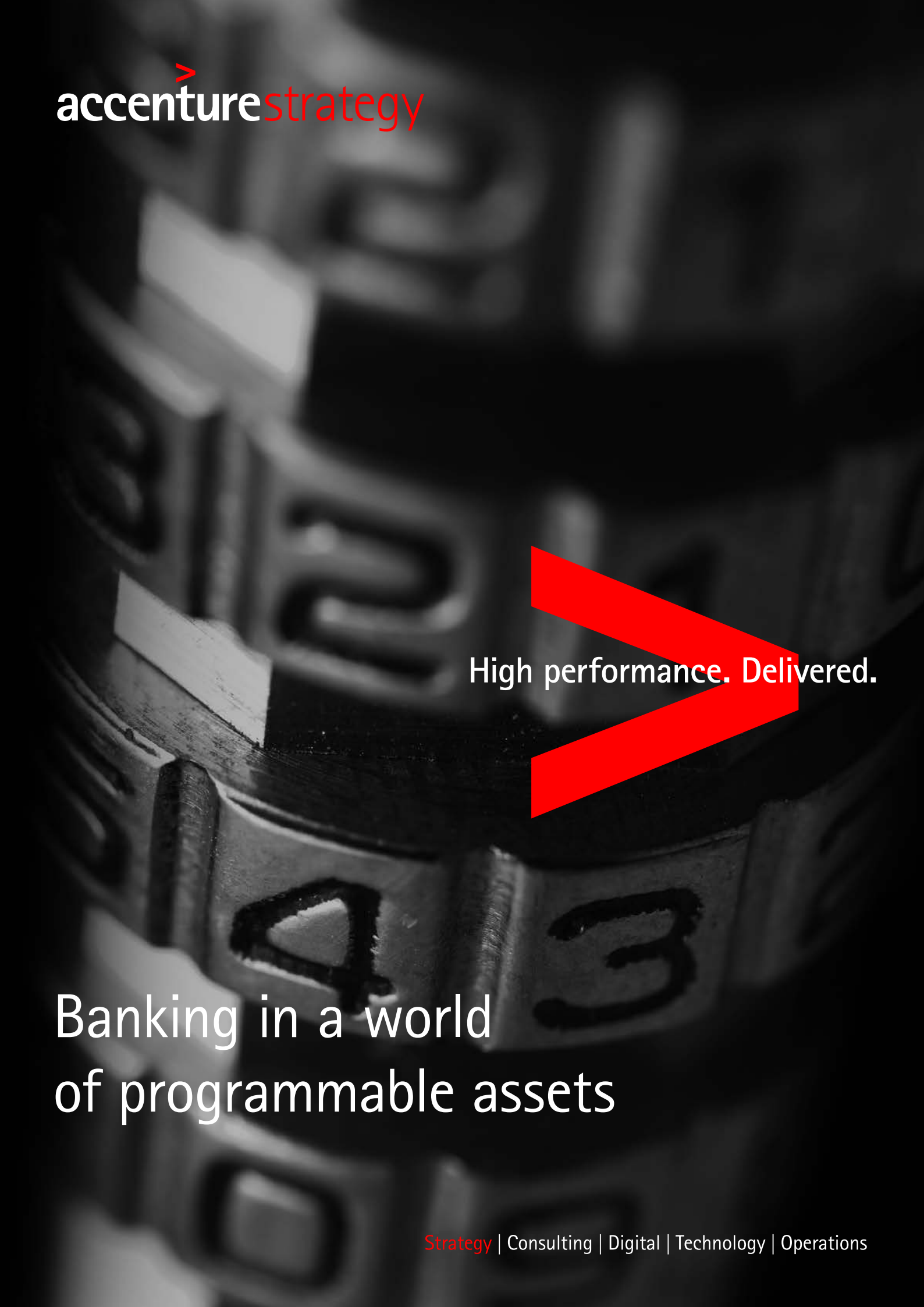
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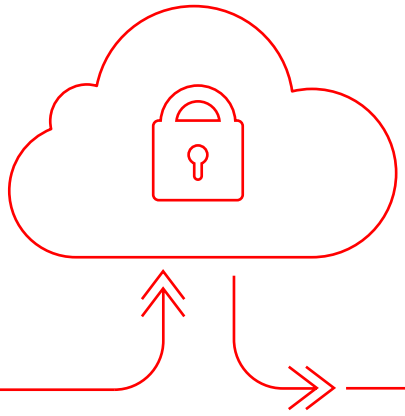
Banking in a world
of programmable assets
Strategy | Consulting | Digital | Technology | Operations

A vision for banking in the world of programmable assets...

As midnight strikes, the bank of the future is not at rest. While its employees sleep, the bank's balance sheet is busy settling the business of the previous day. Loan positions are collecting repayments, bonds are collecting coupons and cash holdings are accumulating the interest they are due. At the same time, the bank is automatically settling its obligations to its creditors.

Each of these transactions is being executed by the financial assets themselves—autonomous digital agents representing currencies, securities or bespoke financial instruments. The transactions are executed on pervasive and secure digital networks that track asset ownership, allow transactions to be settled instantaneously, and interface with the physical world.



...as institutions and their roles are reinvented

Ultimately, this new world will see financial, legal and regulatory institutions reinvented as shared, distributed services, connected directly to distributed ledgers and interacting directly with the financial assets held on them.

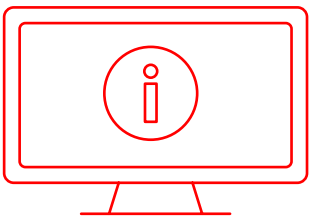
Some of these services will be completely decentralized, requiring no notion of trust with an external entity, with the ledgers ensuring security and integrity by consensus. However, some shared services will be operated by specific entities, which will require them to be trusted by those that use them. These services have been termed "oracles"—and groups of financial institutions will use oracles to authenticate the identity of counterparties and map digital assets with enforceable legal contracts.

This is the future reality opened up by blockchain.
Is your organization ready?

Welcome to the new world of programmable assets...

For several years, the media has been full of noise about the Bitcoin cryptocurrency. However, in recent months the focus has widened from cryptocurrencies like Bitcoin toward the broader potential of the blockchain technology that underpins it—including the creation of distributed consensus ledgers (DCLs). Now the focus has shifted again, to the implications blockchain brings for financial assets themselves.

These implications are profound. To date, we have lived in a world where financial assets exist as passive digital entries on separate ledgers. However, with blockchain, these same assets can become **active, programmable objects** that exist simultaneously on ledgers distributed anywhere across the globe. This is feasible because blockchain creates verifiable, auditable consensus around any financial asset across ledgers in near real time.



What is blockchain?

Blockchain is a technology platform that uses cryptography and a distributed messaging protocol to create a shared ledger between counterparties to a transaction. The data on the ledger is pervasive, persistent and creates a reliable "transaction cloud," as this transaction data cannot be lost or corrupted by any of the participants.

...with ubiquitous, trustless value transfer

So the real breakthrough with cryptocurrencies is the way the underlying technology enables value to be transferred ubiquitously, at low cost, in real time and in a trustless environment. While this capability brings major implications for payments, distributed ledgers have uses that go much further.

Crucially, they can transform the way assets, such as equities, can be held, processed, transferred, and behave. The fundamental change is that financial assets can become programmable, able to initiate and undertake transactions in response to specific triggers from trusted sources.

The shift to programmable assets has already started...

The potential impacts of this shift are huge, both for organizations and markets—and the initiatives seen to date are only scratching the surface. Currently, distributed ledger technology is used not only by Bitcoin, but also by Ripple, Ethereum and SETL. It is also used to underpin the equity management capabilities offered by NASQAQ Private Market.[1] However these applications are just the start, and our belief is that blockchain will ultimately revolutionize how markets function, fundamentally transforming areas like payments,[2] capital markets[3] and more.

Therefore banks need to look beyond the initial manifestations of blockchain. They must think through the wider implications of moving to a world where programmable assets live on servers—and have the embedded intelligence to provide verification, instant or near-instant execution, a verifiable audit trail, and other functionality as needed. These capabilities create a fundamentally new way of running a market.

...and will be driven by four key benefits

Such a market will benefit from:

1. Drastically reduced counterparty and operational risk in the financial system
2. Elimination of a significant proportion of today's market inefficiencies and embedded cost and complexity
3. Reduced risk of fraud
4. The potential for unprecedented auditability and transparency for regulators.

In delivering these benefits, blockchain-enabled DCLs and programmable digital assets will not remove the need for banks and regulators. But what they will do is provide an opportunity to make assets flow more efficiently and transparently. With blockchain, complex products can be much easier and cheaper to buy, own and manage. And simple products like shares and bonds can be programmed to enable events such as a dividend payment or share split to be performed by the asset itself.

"The potential impact of the distributed ledger may be much broader than on payment systems alone. The majority of financial assets—such as loans, bonds, stocks and derivatives—now exist only in electronic form, meaning that the financial system itself is already simply a set of digital records."

Bank of England
Quarterly Bulletin,
Q3 2014

[1] https://www.nasdaqprivatemarket.com/market/overview
[2] "Distributed consensus ledgers for payments," Accenture, 2015, https://www.accenture.com/us-en/insight-distributed-consensus-ledgers-payments.aspx
[3] "Blockchain in the Investment Bank," Accenture, 2015, https://www.accenture.com/us-en/insight-blockchain-in-the-investment-bank.aspx

The opportunity for banks: to be the trusted institutions at the heart of the "smart" world

Challenges around smart contracts…

As the new "smart" world of programmable financial assets takes shape, banks are ideally positioned to play a vital role at its heart.

This role is underlined by the concerns that currently surround an early manifestation of the blockchain-enabled world: smart contracts. These are programmable objects that codify the agreements inherent in complex financial assets. They have the ability to react to both internal and external events by executing transactions automatically.

However, market participants remain wary of adopting smart contracts for two main reasons. One is that any bugs in the programming could affect thousands of users. The other is the need to ensure that the data feeds that trigger actions by smart contracts are relevant and trustworthy.

…highlight the trusted central role that banks can occupy…

The concerns currently arising around smart contracts will also emerge elsewhere in the evolving blockchain ecosystem. So the big opportunity for banks is to establish themselves as the trusted institutions at the heart of the "smart" world, assuring the quality and integrity of the asset, authenticating the validity of data feeds, the identity of counterparties, and the integrity of the marketplace.

No market can be completely transparent—and for counterparties, a key priority is to ensure the details of the transaction remain confidential. Since banks already create many of the digital assets that will be held on DCLs, it is logical that they should provide trusted assurance that a transaction is valid and the counterparties are sound, while controlling who can see the transaction itself. Blockchain solutions can be designed in a way that makes transactional information, such as the trade volume and consideration visible only to participants in the transaction and those they designate.

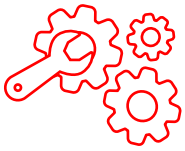
…and underline why banks and regulators must agree the way forward

As the use of blockchain platforms grows, we believe the counterparties in transactions will increasingly be joined by two other parties: a trusted bank to assure validity and identity; and a regulator to monitor compliance, either for every transaction or selectively. Banks and regulators need to sit down together and agree how this type of model might work in practice.

No time to lose

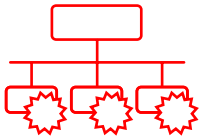
To position themselves for a world of programmable assets, Accenture believes banks should take four steps as a matter of urgency:

Understand the impacts



Identify how best to manage adoption and the restructuring it implies for them

Determine strategies to position themselves at the core of this new world



Identify what new services they can and should provide

With adoption of blockchain set to escalate, banks need to plan out their blockchain strategies now—while also considering wider questions about the future role of banks, regulation and the emerging landscape of non-bank players. It is also clear that banks have no time to lose. The early movers are already stepping up their investment, with global spending on blockchain in the capital markets alone estimated at US$75 million this year, rising to US$400 million by 2019.[4]

The move to programmable financial assets means the financial markets will never be the same again. Banks must move now to secure their roles and positions in this new world—or risk getting left behind.

[4] http://www.efinancialnews.com/story/2015-09-10/capital-markets-blockchain-spend-to-reach-400-million-by-2019

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