Blockchain in Financial Services

Francesco Burelli – Accenture Payments Strategy
Agenda

- Accenture’s profile
  - Why is Blockchain relevant?
  - Who is investing in Blockchain?
  - What are the applications?
  - Conclusions
Accenture has differential capabilities across multiple operating groups

Accenture Overview

- Accenture is a leading professional services company, with capabilities in strategy, consulting, digital, technology and operations
- We commit to results: design the strategy and execute leveraging our firm capabilities

- Over **6,000+ professionals** in 38 countries (Over **300+ Strategists** in UK)
- Distribution and marketing services helps clients in transformation programs
- Interactive: Delivering unique customer experience
- Analytics: **Data scientists** deliver meaningful insights
- Mobility: Growing the digital business
- Design and innovation consultancy that uses the power of design to create experiences that people love
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Mainstream definitions of blockchain are still (debatably) based on its general use as a virtual currency

Blockchain Technology and Financial Services in the News

“The blockchain is essentially a giant record book of all Bitcoin transactions, it is to Bitcoin what the internet is to email. This is the decentralised network where every bitcoin transfer is verified, processed and written down. It has the potential to make economic interactions cheaper, faster and more secure. The idea is to remove the need for middlemen like banks to vouch for facts, such as a person’s identity or the health of their finances — authentication processes that can be slow and costly, and vulnerable to corruption and cyber attacks. Instead, the blockchain relies on a combination of code-breaking and crowdsourcing that aims to create a self-maintaining and reliable system of record.”

“A blockchain is a public ledger of all Bitcoin transactions that have ever been executed. It is constantly growing as 'completed' blocks are added to it with a new set of recordings. The blocks are added to the blockchain in a linear, chronological order.”

The blockchain “is the ledger (book of records) of all transactions, grouped in blocks, made with a (decentralised) virtual currency scheme.”

“A digital ledger in which transactions made in bitcoin or another cryptocurrency are recorded chronologically and publicly.”
But overall, what are the advantages of the blockchain? Is it a revolutionary technology or a hype?

Blockchain Technology: The Big Question
The blockchain has four unique advantages that are peculiar to its architecture

Blockchain Unique Advantages

1. **Data immutability**
   - Blockchain allows for a complete record over time, which is guaranteed by the previous blocks of data “chained” together

2. **System resilience and speed**
   - Blockchain allows for real-time movement and settlement

3. **Transparency and consensus of the data**
   - Blockchain provides for shared, agreed data

4. **Automated logic**
   - Blockchain provides for the ability to automate logic and build that into the database so it can be executed once you have consensus
Blockchain - unintentional Bitcoin by-product and the point of convergence of three technologies

Blockchain Technology Concepts

**Distributed Ledgers**

“Asset database that can be shared across a network of multiple sites, geographies or institutions. All participants within a network can have their own identical copy of the ledger. Any changes to the ledger are reflected in all copies in minutes, or in some cases, seconds”

**Cryptography**

“Science of taking information and transforming it in a manner in which it can only be deciphered by the intended recipient. Cryptography is a process used primarily to protect sensitive information”

**Open source software**

“Open-source software is computer software with its source code made available with a license in which the copyright holder provides the rights to study, change, and distribute the software to anyone and for any purpose. Open-source software may be developed in a collaborative public manner. Open-source software is the most prominent example of open-source development.”

Source: “Distributed Ledger Technology: beyond the blockchain” UK Gov; Bankchain, Opensource.com
There are n permutation types of Blockchains based on architecture, underlying technology, content, reach, …

**Blockchain Architecture**

### Architecture Parameters

<table>
<thead>
<tr>
<th>Access</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform type</td>
<td>Homogenous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Content type</td>
<td>Homogenous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Block size</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Protocol</td>
<td>…</td>
<td>…</td>
</tr>
</tbody>
</table>

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<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>Permission - open read/write access</td>
</tr>
<tr>
<td>Speed</td>
<td>Slower</td>
</tr>
<tr>
<td>Security</td>
<td>Encryption based (e.g. proof of work)</td>
</tr>
<tr>
<td>Identity</td>
<td>Anonymous / pseudonymous</td>
</tr>
<tr>
<td>Asset</td>
<td>Native assets</td>
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Since 2016 there have been a number of key developments for the blockchain

Recent Blockchain Developments and Trends

1. Rising industry interest

2. VC Investment in blockchain startups accelerating

3. R3 developing standards with >43 Banks

4. Hyperledger Project grows to 40 members

Source: Accenture analysis on Google trends
Google searches for block chain has increased significantly since the start of 2016

VC Investment in Blockchain
Google Trends Interest

Source: Accenture analysis on Google trends
Blockchain based technology and its potential have become of interest for many financial institutions

**Stated interest and engagement in Blockchain Tech**

**Santander**

“In contrast to today’s transaction networks, distributed ledgers eliminate the need for central authorities to certify ownership and clear transactions. We expect the distributed ledger and smart contracts to dramatically reduce costs”

**BNP Paribas**

“Bitcoin has solved a technical challenge and the currency it hosts has been successful so far. Today, anyone can create their own blockchain based network”

**Deutsche Bank**

“Whilst the technology associated with distributed ledgers is still in its infancy we believe that it presents a potential opportunity to realise a number of important benefits including: more stable and resilient systems, faster processing of txns and lower costs for customers”

**HSBC**

“The distributed ledger technology has a huge potential, offering banks and their clients the prospect of enhanced security, lower costs and improved error reduction”

**Standard Chartered**

“The banking industry is starting to see the many potential benefits of its underlying technology. For banks, the blockchain has the potential to become a technology model for a low-cost and transparent transaction infrastructure”

**UBS**

“Setting aside its political agenda, we see Bitcoin as having some potential as a new transaction technology, where a bitcoin-like technology could provide a basis for a new shared payments and transfer system using existing currencies and securities. Such a system could reduce systemic costs, and provide faster, secure, transfers – particularly in the international arena”

**Barclays**

“Underneath [bitcoin] lies the technology of the blockchain and I think that will be transformative. I think it is a very big deal and very serious and it will have transformative effects – exactly how and exactly when, I think we’re all wrestling with”
Blockchain based technology and its potential have become of interest for many financial institutions.

Stated interest and engagement in Blockchain Tech

ILLUSTRATIVE

>40 members to the Hyperledger initiative

22 banks backing the R3 initiative

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Regional cross-banking co-operations with a focus on inter-banking clearing

Additional Example of Cooperation

**EUROPE**
- ING, Rabobank and ABN are trying to leverage their geographic presence and strategy towards the blockchain to create synergies

**APAC**
- Commonwealth Bank, Westpac and ANZ following similar path
The start of 2016 has seen two large block-chain related VC deals

VC Investment in Blockchain

Target

Digital Asset Holdings

Blockstream

Investment

$60M

$55M

Timeline

January 2016

February 2016

Source: CoinDesk
R3 is among the largest (so far) banking cooperation, it aims to establish consistent blockchain standards

R3 CEV Project
Overview
- Is a **financial innovation firm** that leads a **consortium** partnership with >43 banks worldwide, to design and deliver advanced distributed ledger technologies to global financial markets
- “Wants to establish **consistent standards and protocols**, while linking bank collaboration on research, experimentation and design of prototypes to create a “network” effect.”

Emerging Focus Areas
- **Crypto 2.0**
  - Intelligent application of crypto-technology and blockchain-based protocols to potentially solve age-old challenges
- **Exchanges**
  - Creative execution solution that is intelligently nuanced to improve the trading experience for existing and evolving asset classes
- **Ventures**
  - Targeted early stage investments in global companies that will shape the next generation of financial services

Application
- Corporate bonds
- Repos
- Swaps
- Insurance
- System Interoperability
- Payments
- Settlement
- Tradefinance
Hyperledger Project aims to advance blockchain technology cross-industry based on open standards

Hyperledger Foundation

Overview

- Linux Foundation collaborative project initiatives
- Hyperledger Project is a cross-industry effort, where banks feature prominently, with the aim to identify and address features for a cross-industry open standards for distributed ledgers
- to establish **consistent standards and protocols**, while linking **bank collaboration on research, experimentation** and **design of prototypes** to create a “network” effect.”
- Provides an Linux based, open standards framework, for initiatives to be developed upon. Implements open source best practices used in other non-blockchain initiatives

Emerging Focus Areas

**Digital Assets**

- Registry of digital assets registries based on straight through processing tools

**Within Value-chain trading**

- Development of cross-industry standards / platform to enable information and monetary transactions within specific industries

Application

- ERP like solutions
- Digital assets registries
- Cross industry integration
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Blockchain is being leveraged across four different product areas

**Blockchain Developments**

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<td>Smart Contracts / Programmable Money</td>
<td>Payment instructions with encoded requirements at the point of transaction origination. Autonomous, self-executing contracts</td>
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<td>Digitalization of assets ownership and asset transfer without the third party involvement</td>
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<td>Data Management / Storage</td>
<td>P2P network for document storage</td>
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- Digital currency
- Micro-payments
- Remittance
- Financial inclusion
- Clearing, settlement and reconciliation
- Crowd-funding / event driven donations
- Trade finance application
- Multi-signature accounts
- Digital bonds, securities, etc.
- Content and content rights distribution
- Certificate registers (e.g. patents, deed titles, etc.)
- KYC / identity management / audit
- Cloud storage
- Identity management / digital voting
Prevailing approach to development is an emerging multi-initiative edging

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Current Banks positioning can be seen through 4 maturity stages – best practices quickly adopting tech

The Blockchain and Cryptocurrencies Maturity Stages

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<th>Level of Maturity</th>
<th>Example Action:</th>
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<tr>
<td>Low</td>
<td>Establish research centres in incubators, whitepaper production and/or organization of workshops and dedicated events</td>
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<tr>
<td></td>
<td>Invest in blockchain and cryptocurrency related start-ups in order to have a first concrete approach to the technology</td>
</tr>
<tr>
<td></td>
<td>Test technology in a controlled environment. E.g. Launch of internal recognition programs for employees</td>
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<tr>
<td>High</td>
<td>Adopt the blockchain and/or cryptocurrencies to implement new products or existing solutions</td>
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Example Players:
# Retail banking blockchain applications are based around payments and data management

## Blockchain retail banking developments

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Blockchain is an innovative solution and still on a journey to development

Summary and Conclusions

Is the Blockchain ready to disrupt the Financial Services landscape?

- Blockchain has very high potential …
  - Potential to evolve from niche applications (e.g. digital currency) to large scale adoption

- … but it is not yet mature …
  - Technical modifications required to address regulatory and cost challenges

- … adhoc deployment can work in the short-term …
  - Potential short-term implications based on their industry and positioning

- … while developing ways to leverage the technology longer-term
  - Strategies with blockchain as a core or complementary enabler
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