

EMBRACING THE BITCOIN: WHY MOBILE OPERATORS SHOULD PREPARE FOR THE DIGITAL CURRENCY SHIFT

Traditional banking, money-transfer and payment systems are often slow, expensive and liable to fraud. For instance, to send money abroad to a family member can take days and charges can approach 10% of the money sent in some cases which is punitive. To pay for goods or services using a credit card may be faster, but you are effectively handing over the keys for that vendor to your account in the form of the account number, leaving yourself open to fraud. To send money to an acquaintance requires that you know their sort-code and account number, which is not an ideal situation for the same reason.

Bitcoin is a digital currency which requires no bank or central authority but allows two parties to exchange money safely and almost instantaneously world-wide in a zero-trust environment where the parties know nothing of each other, by leveraging cryptography and a new area of computer science called the Blockchain. A bitcoin is currently trading at ca. \$650 and each bitcoin is currently divisible by 8 decimal places, so very small 'micropayments' are possible as well as larger payments. There are dozens of other digital currencies, each with their own particular feature or advantage.

This white paper does not go into detail about how Digital Currencies work, but instead outlines the opportunity at a high level for mobile operators to innovate new services, increase revenues and develop new business lines based on Bitcoin and other key Digital Currencies currently available.

A BRIEF HISTORY OF BITCOIN AND ITS CURRENT STATUS

It should be noted that Bitcoin has had a reasonably troubled start to its life, with association with black-market sites, a wildly varying exchange rate to the USD and a number of countries such as Russia and China effectively banning the currency entirely.

However it is now benefiting from a surge of interest, investment and acceptance, with ca. \$300m being invested in Bitcoin-related start-ups and high-profile names such as Richard Branson and the Winklevoss twins championing the digital currency movement, and more and more online and physical stores accepting the currency via services such as Bitpay, a service analogous to Paypal. There are also a number of bitcoin ATMs in large cities around the world.

At the time of writing many governments are examining digital currencies to ascertain their tax status and how they may be regulated. It's fair to say however that the regulatory status of Bitcoin internationally is currently fairly uncertain until national governments declare their position, and it is likely that established operators may wish to 'wait and see' the outcome of the regulatory clarifications before releasing any digital currency applications. However, in order to not miss the opportunity, operators should prepare for the shift now by formulating a strategy around digital currencies.

DIGITAL CURRENCY OPPORTUNITIES FOR MOBILE OPERATORS

Mobile operators are in an ideal position to embrace the developing digital currency shift due to the following factors:

1. Most people own a smartphone, and each smartphone could be a mobile bitcoin wallet; so customers already have the means to use such a service together with authentication systems (e.g. fingerprint readers) becoming standard on these devices to allow for security.
2. Each phone is already connected to the internet and to the operator's network and datacentre infrastructure, meaning operators could deploy and integrate new digital currency services effectively to their customers.
3. Customers have a certain level of trust with their mobile operator, and together with the marketing power of the operator and their knowledge of each customer, may encourage greater acceptance of digital currencies compared to e.g. an unknown app developer.
4. There are instances of mobile operators, for example Vodacom in Kenya and Safaricom in Tanzania, providing a highly successful mobile-based banking systems called M-Pesa, with 70% of Kenya's adult population using the service and 31% of Kenya's GDP is spent through mobile phones¹. A third-party company Kipochi has now added Bitcoin to compliment the M-Pesa service².

This section identifies a number of possible products/services which could be offered;

1. **Mobile Wallet for sending/receiving payments and purchasing goods**

¹ <http://qz.com/57504/31-of-kenyas-gdp-is-spent-through-mobile-phones/>

² <https://www.kipochi.com/en>

Leveraging applications on smartphones and other methods, operators would be able to allow the near-instantaneous sending of bitcoin and other digital currencies from consumer to consumer, consumer to business and business to business, anywhere in the world using the mobile phone as a wallet (where bitcoin is stored on the phone), or as a proxy (where the bitcoin is stored in a secure account hosted by the operator, but is controlled by the phone).

2. Digital to FIAT money conversion services:

In the case of monthly contract customers where FIAT³ currency account details are already known in the form of bank-accounts, mobile operators could potentially allow conversion services between FIAT and bitcoin – a potential new source of commission-based revenue in future.

3. Digital to Digital Currency conversion services

Along with Bitcoin, there are dozens of other currencies including Litecoin, Fastcoin, Peercoin, Dogecoin etc⁴. Currently it is possible to swap between currencies on online trading exchanges, as you may need a different coin for different purposes, for instance for a charity collecting only Dogecoin donations to provide water services in Kenya⁵. The trend of multiple digital currencies represent a move towards the personalisation of currency, where for example children can be given coins which can only be spent in certain child-friendly locations⁶, or a local digital currency may exist for a certain country (Auroracoin in Iceland, for example).

4. Innovative third-person signing and parental services:

Currently, under 18's in the UK are not allowed to own a credit card (because a credit card agreement is a contract). However there are no such restrictions with having a Bitcoin wallet presently, meaning that this could potentially open a new demographic for mobile operators to target appropriate services to children, with parental consent. Well documented concerns of children using their parents' credit card or spending too much money in a linked bank account to their mobile account on Apps or other services can be reduced by limiting the Bitcoin in a particular child's wallet, and for payments above a certain threshold, requiring the parent to sign (approve) a particular transaction; allowing a good balance between security via parental oversight and convenience. This functionality (third-party approval) is already built into the Bitcoin protocols but would need to be developed further.

5. Offline payment systems:

Mobile operators could develop ways to process bitcoin payments when the sending and receiving device is off-line (not connected to the internet). Currently there is no way for the receiving device to confirm it has received the Bitcoin unless there is connectivity to the internet peers which process the transaction and form the Blockchain; and so the receiving party is at risk in this case. One example of such a situation could be where a customer wants to pay a taxi driver but they are in an area of zero mobile/internet reception, perhaps by connecting the two phones via Bluetooth or a personal wifi hotspot or NFC and relying on the trust from both parties being known to the mobile

³ http://en.wikipedia.org/wiki/Fiat_money - FIAT money is that printed by government (as opposed to being based on the value of a commodity)

⁴ <https://coinmarketcap.com>

⁵ <http://www.forbes.com/sites/matthickey/2014/03/17/such-generosity-most-expensive-tweet-ever-sends-11000-to-kenyan-water-charity-via-dogecoin/>

⁶ <http://www.wired.co.uk/news/archive/2014-01/13/dogecoin-and-the-era-of-personal-currency>

operator; which will then sync back to the main block-chain once internet connectivity is restored. This area will require further research and testing.

6. Document proof of ownership/contract signing

There are many other potential applications and opportunities around bitcoin and the Blockchain technology – for instance there is a company that leverages the properties of the Blockchain to prove that someone owned a particular document at a particular time⁷ - so this could be leveraged by a mobile workforce to allow the signing and recording of contracts, rather than the pen and paper approach used today.

REVENUE MODELS AND COMPETITION

Revenue models for the mobile operators are likely to be along the following lines – any applications and set-up provided to the customer for free to encourage take-up; and for revenue:

1. Commission-based approaches, where the operator takes a small % cut of a certain transactions such as converting from one currency to another.
2. Monthly fee-based approaches, where the operator charges a few £ or € per month to enable certain features, for example hosting digital wallets and enabling off-line access to them as suggested earlier in the document.
3. One-off approaches, where a single payment is made for a feature such as the signing/proof of ownership of contracts, as stated above.

There may also be indirect benefits of offering these services too, with customers choosing a certain operator over another because of innovative services in the digital currency space.

Competitors to the mobile operators will include third-party app developers and web-based bitcoin services, and a number of wallets already exist. However mobile operators potentially have the ability to provide services over and above what can be done on a single app via their network infrastructure and datacentre facilities already accessed by the mobile phone, and they already have a close relationship with their customers (in terms of bank account details for monthly contract customers, etc.) which could provide another differentiator.

Banks will be another major competitor, keen to learn from missed opportunities such as M-Pesa – and in fact in the UK Paym, which allows users to pay other users via just phone numbers, and which was developed by the UK's major banks, is an example of this.

STEPS REQUIRED BY THE SERVICE PROVIDER

In order to implement such services, operators would need to plan to invest in the following (not an exhaustive list):

1. In-house or external mobile application development for the handsets.
2. In-house or external application development for the servers running the platform.
3. Deployment of servers in the internal environments running the various apps,

⁷ www.Proofofexistence.com

geographically dispersed to meet the needs of the customer-base.

4. Communication flow definition and integration into the network and datacentre environment, firewall changes etc.
5. Development of internal support processes.
6. External marketing.
7. Ongoing legal analysis of the current regulatory environment

CONCLUSIONS

Other areas of life have benefited hugely from the internet revolution and it is now, for example, possible to send a video-clip from a hand-held device to someone on the other side of the world instantaneously and basically for free, something which was unthinkable just 20 years ago. It's clear that money systems have not kept pace with these kinds of improvements, with only modest developments in recent years such as PayM and faster payments - until that is, the development of Bitcoin and other digital currencies.

Whilst the Bitcoin industry and associated regulation is in its infancy and not without its challenges, it is the view of the author that digital currency promises to shift the way that people make and receive payments. Mobile operators are in a strong position to benefit from this shift, with a large customer base owning smartphones capable of using digital currencies, the network and datacentre infrastructure to implement scalable services, and a trusted brand to encourage the slower adopters.

However as with many examples in the past (as has been seen with technologies such as WhatsApp/Skype/BBM/iMessage which left the operators flat-footed), if the mobile operators do not take advantage of this shift now, then third parties will do so, and the opportunity for the operators will be reduced by losing the 'first mover' advantage.

Sytel Reply is in a leading position to be able to engage its clients and prepare them for the digital currency shift through strategy, technical and delivery engagements.



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