Chapter 6: New Generation Banking Concept – Bank 4.0
Finance Uberization

Abstract: The project of building a model of the next generation financial service (Bank 4.0) for unbanked people. This Bank is based on Blockchain as a platform for financial and technology startups. Biometric identification instead of passports and signatures. ICO instead of shareholders. Investment fund for acceleration and M&A of technology startups.

In modern literature – "Digital Bank" by Chris Skinner, "Bank 2.0" and "Bank 3.0" by Brett King – leading experts say that the bank is set to become an open platform having open API to integrate open data startups and act as a uniting element for social networks, games, etc.
Thus, project architecture looks something like this: digital payment network that unites banks, payment providers, fintech companies, retailers and telecommunication companies.

I look at financial markets through a blockchain lens, because over the last few years I have devoted my time to active investigations and experiments in this field. And after considering my communications with the leading experts in financial and fintech branch, I got a picture of how the model of a future financial institution could look. It will be represented in the form of three layers:

- foundation – blockchain as an open platform that serves as processing, bill, and finance generation

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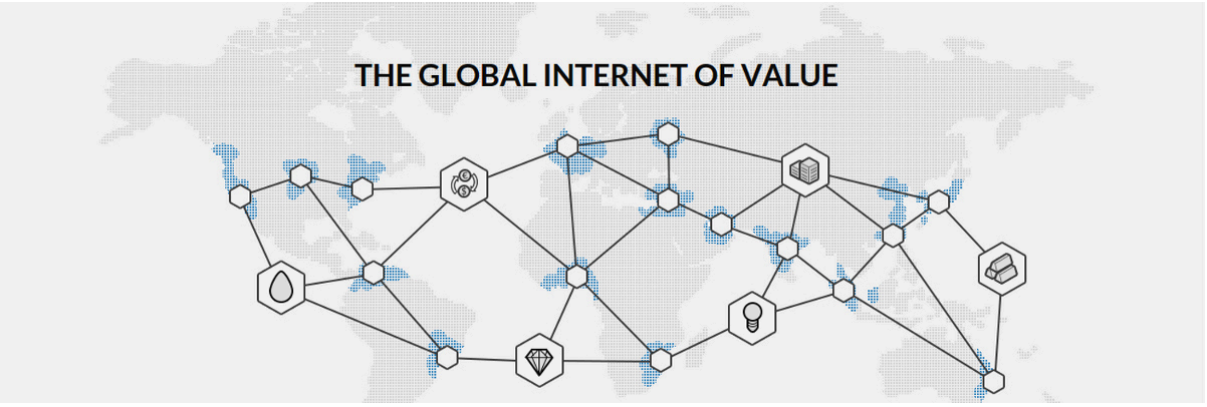
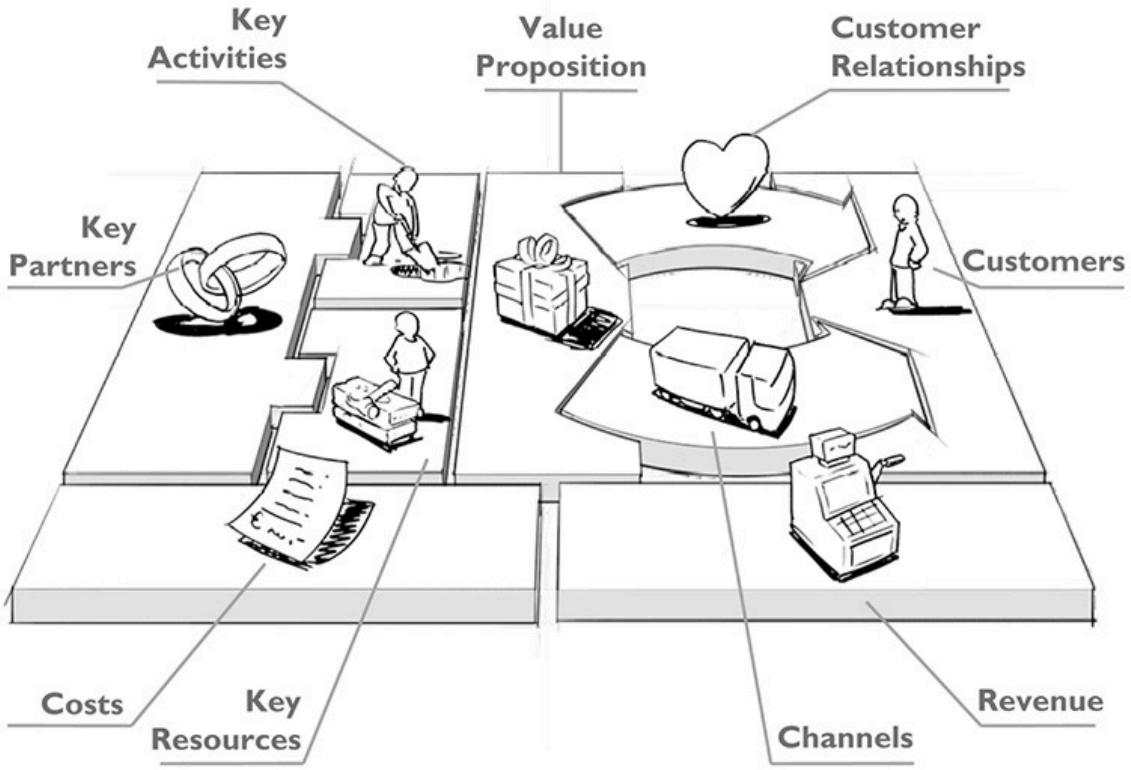


- the next layer – swarm of projects transforming business model: instead of bank crediting – p2p-crediting, insurance, data based business models, reputation and scoring systems…



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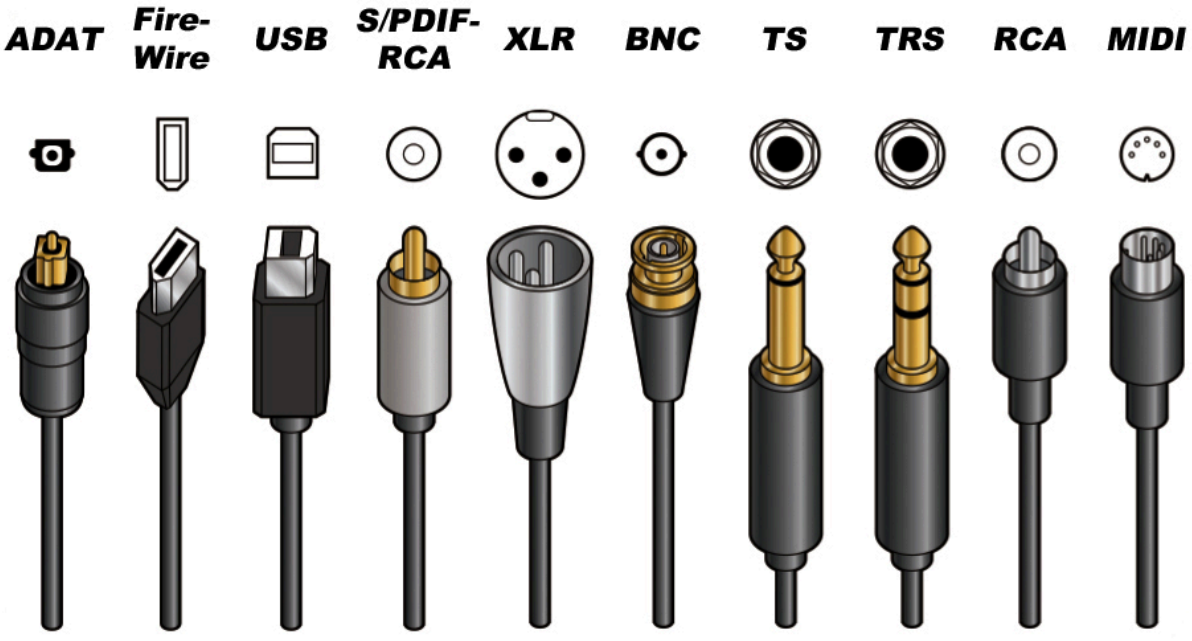
- The final layer: businesses operating with interface solutions such as cards, qr-codes, mobile applications, chat banking, social networks...



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This architecture was born initially in the form of Bitcoin. Satoshi Nakamoto released the code and after a while thousands of projects were created on the basis of this system. It should be noted that this approach scored a great success. But this solution was implemented

almost nine years ago; and now more advanced solutions can be offered. However, it is worth pointing out that such approach scored a great success.

Why blockchain?

Vitalik Buterin stated in the beginning of "White Paper Ethereum":

"All services you use in everyday life have some similarities: they are centralized. When you deposit money with a bank, you have to trust this bank, its honesty, protection against hackers and pressure from the government's side, to believe in a bank secrecy to be kept by the bank and hope for that fact that audition of his business activity is carried out by independent auditors… This is a flawed model but until now there were no decentralized alternatives.

And now there is Ethereum.

Applications built upon Ethereum do not require a user to trust anyone at all but Ethereum source code is open and can be analyzed by everyone. Ethereum solves not only aforesaid problems but opens a door for decentralized applications of all types including these we would earlier not even dream of".

Using the Ethereum Blockchain for implementation of the Humaniq project allows other startups to access the client database, open data machine learning directly. And this is without coordinating with security services and proof of the fact that a project can work as it happens to work with "old style" financial institutions. Using the Ethereum Blockchain also allows us to close all issues connected with blockchain security, mining, and commissions against fraud.

Why mobile wallet?

Let's come to the third layer. Why does Humaniq use a mobile interface to implement the first solution? As we can learn from the chapter "Trends and analytics", there is a significant potential to render financial services via mobile phones to population groups that have low service levels in developing countries (McKinsey).
Smartphone users – 1.2 billion (19%)
Mobile phone users – 3.5 billion (57%)
With mobile network coverage – 5.5 billion (88%)
Approximate overall population in developing countries – about 6.2 billion.

Second reason: we replace routine passport or e-mail verification with bio identification. Nowadays algorithms for neural networks are able to identify people through facial recognition with incredible accuracy.

In order to connect districts not included in the economy, we'll develop software for the cheapest hardware solutions on Android 5.0: a smartphone that costs $10-15. This device is sufficient to install a mobile wallet and it is fitted with a front-facing camera and microphone to authenticate the user.

Process of passing through bio identification will consist of a combination of identification methods and this enhances the likelihood of getting almost 100% identification. It should be noted that using hardware solutions such as a fingerprint scanner does not exclude the possibility of signal spoofing at the hardware level. Therefore, a data set coming directly from the user to the identification system is important for us. Face photo shot, video recording (series of photo shots for mimicking pattern fixation), and voice recording belong to such a data set. And, respectively, now all devices are fitted with front-facing cameras and microphone. To avoid fakes, you should add device ID and a random letter generator to be pronounced for voice recording. This eliminates the use of audio tracks prepared in advance. In this case faking will require creating large libraries to select necessary audio tracks from. Perhaps it is worth it to replace some elements and it is possible to substitute, add recognition tasks, CAPTCHA, etc.

Scoring model for personal emission in the form of "scoring function" (this mechanism is described in detail in the chapter "Mathematic emission model") will be also programmed for security purposes within the bounds of the next generation smart contract. Scoring function should contain parameters that, on the one side, will clearly sift out robot actions and, on the other side, will improve capitalization.

Here is an example of this approach in static condition:

- mobile application installation – one coin – payment is done once
- passing through bio identification – 15 coins - payment is done once
- friend connection passed through bio identification -10 coins payment is done every time. This practice has been tested at the start of PayPal. Description 2 minutes from Elon Musk (view from the 5:25): https://www.youtube.com/watch?v=2pKqPVma7sU;
- execution of transactions (after passing BioID) within the first month – 5 coins – once
- execution of transactions (after passing BioID) within the second month – 10 coins – once
- execution of transactions (after passing BioID) within the third month – 15 coins – once
- exchange via teller network (after passing BioID) – 5 coins – two times
- balance refill via teller network (after passing BioID) – 10 coins – two times
- proof of excellence — execution of payable simple task from one of the startups based on this platform (after passing BioID) — 10 coins — once (for example, Facebook can buy coins and propose to register for some coins via our application;

Google can offer payment for taking photo shots of everything around your environment with landmarks for Google maps, etc.)
- other types of activities.

This emission is multiplied by the current exchange rate coefficient. The smart-contract parses the current exchange rate from public source and defines the average price from tree-leading stock exchanges. The main objective of coefficient availability is to connect the cost of individual emission to the price of the cheapest smartphone able to perform mobile wallet functions and fitted with front-facing camera (the price of the cheapest smartphone falls down every year and is now about $10-20). Thus, after purchase our future user can cover his expenses within several weeks by executing simple actions.

Thus, costs for fake bio identification and imitation of user actions will be notably higher then benefit accrued from small emission.

The most significant fact is that this identification method takes less than 5 seconds and does not require to have e-mail, phone, passport, and you will not lose your password. One identification can cost 1 cent.

Project objective:

- To integrate 1 billion people disconnected from the international business community
- Philanthropy: to help philanthropic organizations render targeted assistance. In fact, costs of financial assistance delivery to depressed regions is higher than these particular persons can ultimately obtain
- Inclusion into a free business community will improve prosperity in these regions (freelance, money transfers) and reduce migration pressure on developed countries
- Independent “construction” of infrastructure for communication in developing regions

Thus, the project includes the most advanced and mass technologies: blockchain is the basis with connectivity to attached projects, mobile application, and bio identification.

Scrupulous readers may say that this system has a number of centralized places carrying risks. But there are answers to this:

1) Each user can use the Ethereum client wallet without using additional services.
2) It should be admitted that Bitcoin protocol add-on services are used by an overwhelming majority of Bitcoin users; and this is the normal operation of a payment system, and our operation will be based approximately on the same principles. And since security issues are undertaken by Ethereum, this allows us to focus on client-oriented decentralized business model.

3) With reference to bio identification and mobile wallet, we will move towards open source and hereafter decentralization (prerequisites are described in the Chapter “Crypto economics problems and project prerequisites”).
4) Besides the above-mentioned, the service development strategy is a decentralized business model, i.e. stimulating creation of several mobile wallets by third-party teams, chat bots, exchange services, service rendering.
5) There is no technology opportunity now to put bio identification into blockchain, however if there is a possibility to help people now, and to develop eco system of crypto economics – it should be done.