



BIX™ Bank Corporation

Secure Blockchain Technologies and Infrastructure for
Charitable Donations Transactions and Applications

Comments and Suggestions

OCC Initiative and Document
*"Exploring Special Purpose National Bank Charters
for FinTech Companies"*

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This short document contains my personal comments and suggestions to the OCC based on the document *"Exploring Special Purpose National Bank Charters for FinTech Companies"* (December 2016).

I. Personal Introduction

I have been working in the area of IT and cyber security for over 40 years now. I have received my Ph.D. in IT security from The Ohio State University in 1976. In my long carrier I have been for 25 years full tenured professor of IT networks security at the Royal Institute of Technology (Stockholm, Sweden). I have also been professor at GWU for several years, as well as visiting professor at several other international universities and Institutes.

I have been continuously engaged as expert in cyber security, and especially lately for blockchain, virtual currencies and Bitcoin, by many int'l institutions. At the moment, I am engaged as an international expert by the EU/JRC. I am visiting scientist at the CSIR (South Africa). In the past I have been engaged as an expert or project manager by VISA, The World Bank, IADB, European Commission, Swedish national authorities, and also by the US Government (NIST, NOAA, GSA, etc.).

Finally, I am continuous entrepreneur and innovator. With my team of my former M.Sc. and Ph.D. students I continuously design, develop and deploy products in the area of IT networks security. I have been running my companies in Sweden and in the USA (Silicon Valley). At the moment,

I am the CEO of two companies – SETECS[®], Inc. (MD Corporation), specialized in cloud security products, and BIX[™] Security Corporation (DE Corporation) specialized in secure blockchain technologies and blockchain applications for financial transactions based on real and virtual currencies. SETECS security products are validated and certified by NIST (three technology certificates), by GSA (HSPD-12 Approved Products List) and by FedRAMP – US Federal Government cloud security program. BIX[™] Security has two operational systems: BIX[™] Bank – secure system for financial transactions based on real and virtual currencies using blockchain, and BIX[™] Ledger – secure blockchain ledger.

Related to the area of secure blockchain financial transactions, I have recently given workshop to FINRA and I have met with (then congressman, now the director of the OMB) Mr. Mike Mulvaney, who established Blockchain Caucus in the House.

I am involved in international research, development, standardization and deployment projects with blockchain and virtual currencies in the USA, in Europe, in Latin and South America, in Africa, and in Asia.

2. Background Information

I became aware of the three OCC documents related to responsible innovation in the area of virtual currencies, blockchain and other innovative new FinTech initiatives quite recently:

- (1) *“Supporting Responsible Innovation in the Federal Banking System: An OCC Perspective”* (March 2016);
- (2) *“Recommendations and Decisions for Implementing a Responsible Innovation Framework”* (October 2016);
- (3) *“Exploring Special Purpose National Bank Charters for FinTech Companies”* (December 2016)

I missed the opportunity to send my comments to the OCC document *“Supporting Responsible Innovation in the Federal Banking System: An OCC Perspective”* (March 2016). But, I find the interests, initiatives, areas, and planned activities of the OCC very important. I also believe that the forthcoming OCC planned activities and expected results will be very significant and relevant for further development and deployment of innovative financial technologies and services in the near future.

Based on that, I am very interested to participate personally and also with my expert team in all future activities of the OCC in this area. I believe that I can contribute useful suggestions and my current results to the OCC with my research/design solutions, organizational and regulatory recommendations and specifications, and practical, tangible resources for initial field tests and pilots.

3. Introductory Comments

The three OCC documents can, obviously, be considered "in sequence", as they follow each other, not only by their creation date, but also based on the ideas and topics that they consider.

The second document, with topics and information that it contains, follows very logically the first document. In the first document, the OCC indicates its intentions and motives to address and be actively engaged in these Responsible Innovation activities, together with clear specification of seven guiding principles. Then, in the second document, the OCC reports on its subsequent actions and decisions. Both documents address the issues of innovative technologies and related activities.

However, contrary to the "spirit" of the first two documents, I found current version of the third document very classical and standard. By reading it I felt that it is addressing the aspects of the charter to a classical bank without any innovation, alternative technologies, alternative and disruptive financial services and methods.

The text explicitly states (section "Chartering authority", page 3): *"A special purpose national bank that conducts activities other than fiduciary activities must conduct at least one of the following three core banking functions: receiving deposits, paying checks, or lending money"*. The text further in the same section states: *"Though the focus of this paper is on fintech companies in particular, there is no legal limitation on the type of "special purpose" for which a national bank charter may be granted, **so long as** the entity engages in fiduciary activities or in activities that include receiving deposits, paying checks, or lending money"*.

These three types of services are standard financial services and I doubt that many FinTech companies will offer any of those services. These services indeed address activities of standard banks, offering standard financial services with standard currency (US \$). There are many FinTech companies, new ideas, new innovative technologies, and new innovative financial services that are in the scope of "responsible innovation" described in the first two OCC documents. By insisting that the charter of the special purpose national bank will be issued to any FinTech company, *"as long as . . . the entity engages in activities that include receiving deposits, paying checks, or lending money"* OCC will miss the opportunity to cooperate and regulate companies that, for instance, manage various types of virtual currencies, offer services with crypto currencies, engage in different types of financial services (crowd funding, distributed autonomous organizations, automated clearing houses for virtual currencies, energy/solar based virtual currencies, "human labor" virtual currencies, user privacy as virtual currency, etc.).

I believe that the OCC should consider issuing charters to FinTech companies that do not necessarily offer these three standard and classical financial services, stated above, but to all companies that intend to provide any type of financial services with any type of currency – real, virtual, or crypto currency.

In the section “Baseline supervisory expectations” the document lists seven such expectations. Each of them is further elaborated in detail in the same section. Again, as before, I find the approach, criteria and procedures suggested for these seven expectation rather classical, applicable to standard, current banks, and not much related or relevant to new, innovative, disruptive ideas and financial services. If the OCC adopts the suggestion to extend and broaden the scope of its interests and activities, then these seven baseline expectations must be reformulated and may be even extended.

4. General Approach, Criteria, and Principles

4.1 General Discussion and Criteria

Before going into details, the OCC should first consider some general criteria in order to decide which type of FinTech companies and which type of financial services should be considered and eventually approved as a special interest national bank. For some of these aspects, the question is whether the OCC is even responsible for such type of innovative activities and financial services.

In my opinion, four the most important criteria for that decision by the OCC are the following:

(1) Which **type of currency** the company is using to provide its financial services, what is the scope of applicability of such currency, and if virtual currency is used whether it is convertible to US \$

At the moment, there are three major types of currencies used for financial services: real/ fiat currency (US \$), crypto currency (Bitcoin and derived crypto currencies), and virtual currencies (for instance solar / electric energy treated as currency). In the future there may be more, new, and innovative types of virtual currencies. For instance an hour of human labor can be unit of value / currency or user’s privacy may be exchanged for advertisements, personal medical data may be used to “pay” pharmaceutical companies in exchange for their medical products, etc.

Obviously, the OCC is in charge, responsible and interested in financial services based on real currency (US \$). But, the question is whether the OCC should be interested or responsible at all for other types of currencies

- virtual and crypto currencies.

Important question, in general, is whether institutions of the Federal Government should be responsible or concerned with issues that are in their scope for services based on real currency, but with virtual currencies. For instance, if someone loses crypto money due to a hack of an Exchange Server, whether consumer protection laws should be applied ? Another example: when people invest real money in distributed autonomous organization based on flawed blockchain and new, risky concept of "smart contracts" and lose money due to a hack and theft, the question is whether financial services provider violated any law and whether FDIC should reimburse investments to those who lost their money. Another example: when someone transfers 10 Bitcoins (current value approximately \$ 10,000) from the US to some other country, whether such transaction is considered remittance and whether it should be under federal financial regulations.

(2) Which **type of financial services** the company is providing - three standard services listed above or new innovative services and with which type of currency

This aspect has four variations:

- (a) Standard financial services – receiving deposits, paying checks or lending money, but with virtual or crypto currencies
- (b) Standard financial services with real currency, but by new players (examples: using air-time by telecoms as payment methods, offering digital lottery, remittance using conversion to crypto or virtual currencies, etc.)
- (c) New financial services, but with real money (like crowd funding)
- (d) New financial services with virtual or crypto currencies (like transfers within crypto currency community but with participants in different countries)

(3) Which **innovative technology** the company is using (blockchain, anonymous transactions, etc.)

This aspect includes mainly new type of peer-to-peer transactions, transactions validated using blockchain, and anonymous transactions. As an example, IRS recently asked one of the Bitcoin services providers to provide the names of all their customers. If the company properly implemented their Bitcoin services, they should not be able to provide such information, as all their users and their transactions suppose to be anonymous. So, an important question is scope of anonymity: whether users and their transactions should be anonymous only for other users ? Or also various E-Commerce Service providers should be forced to provide their services to fully anonymous users ? And, whether users and their transactions should also be anonymous even to the institutions of the Federal Government.

(4) In which **territory** the company is operating (national, cross-border or Internet)

This aspect addresses the scope of the OCC regulations. If the company is registered abroad and offers financial services over the Internet, even to users in the US, the question is whether and how the OCC can regulate and control such companies. For instance, many Internet gambling companies are registered in Malta. Users in the US also play these gambling games. So, the question is whether and if yes, how, the OCC can regulate such financial services.

4.2 Some Mandatory Principles

Regardless of the specific decisions by the OCC based on the criteria in the previous section, the OCC should be by all means actively engaged in addressing certain issues with financial services providers that should be mandatory, regardless of the specific criteria selected from the list above. The real issue is how the OCC can be engaged and whether at all, due to various specifics of the new technology. But, nevertheless, the OCC should pay attention and be actively engaged with the following aspects of virtual and also crypto currencies:

- (a) Prevention of creation and use of *illegal virtual currencies*. Those are the currencies created by exploring (eventual) weaknesses in the virtual and / or crypto currencies technologies
- (b) *Anti Money Laundering* (AML): These activities should be prevented even with virtual and also crypto currencies. Of course, new, innovative, and effective methods must be invented by research and advanced creative activities
- (c) Prevention of *illegal transactions* with virtual and crypto currencies, such as ransomware, sales of drugs, political corruption, etc.
- (d) *Fraud* and *theft* based on cyber attacks, vulnerabilities of technology, flawed implementations, negligence by service providers, etc.
- (e) *Consumer protection* – some form of consumer protection, equivalent to the protection when using real currency, should be established
- (f) *Consumer privacy* – consumer privacy should be enforced and balanced between requirements by official authorities, and against exploitation of Internet advertisers and various illegal data collection entities. The balance in user privacy must be established between today's extremes of absolutely no privacy with standard financial transactions, performed over and outside

of Internet, and extreme privacy – anonymity with those requesting ransoms, making illegal trades, or illegal payments

5. Comments to the OCC Questions

The OCC questions are answered only for those FinTech companies applying for the national bank charter that offer (a) innovative financial services, (b) with innovative currencies, and/or (c) based on innovative technologies.

1. What are the public policy benefits of approving fintech companies to operate under a national bank charter? What are the risks?

The benefits are that the OCC will advise and help FinTech companies with its expertise and experience, so they will be able to offer better, more efficient and more appropriate financial services. The benefits to the OCC will be faster learning and understanding new technologies and trends, what is useful to the role and processes of the OCC to improve the overall quality and scope of financial services in the Country.

The risks are (a) over-regulations by the OCC that may slow down the process of innovation and deployment, and (b) the “speed” of progress by the OCC team, as public sector teams and agencies are generally “slower” in establishing new and innovative solutions.

Another risk for FinTech companies will be that, in addition to “survival” activities (raising investments, creating new, competitive and innovative products, marketing, deployment, operations), now they will be involved in an another activity – regulations and standardization activities and collaboration with OCC, which in principle is not “revenue generating” activity. So for some FinTech companies it may appear as “administrative burden”.

Another risk is that many entrepreneurs are not familiar with projects and collaboration, and style of operations of Government agencies, so there may be “misunderstandings in communications”, “clash of cultures”, etc.

2. What elements should the OCC consider in establishing the capital and liquidity requirements for an uninsured special purpose national bank that limits the type of assets it holds?

This is financial question and I am not an expert, but I would assume that if the FinTech company is established and offers financial services to the public, they should have sound technology, team, support and financial assets to be in operations at least for the lifetime of their contractual obligations to their customers. For instance, if the company charges

annual subscription fee for its services and collects those fees in advance, then the company should have assets and other resources to be in operation until expiration of all subscriptions for which it has already collected subscription service.

3. What information should a special purpose national bank provide to the OCC to demonstrate its commitment to financial inclusion to individuals, businesses and communities? For instance, what new or alternative means (e.g., products, services) might a special purpose national bank establish in furtherance of its support for financial inclusion? How could an uninsured special purpose bank that uses innovative methods to develop or deliver financial products or services in a virtual or physical community demonstrate its commitment to financial inclusion?

This aspect is, in principle, easier to apply to FinTech companies with innovative technologies and services, than to standard, classical financial services providers (banks). Two reasons for that: first, most of the innovative financial technologies operate on a peer-to-peer basis, i.e. as so called "community" protocols. Enrollment and use of these services is open to anybody. Second, most of such services are based on pre-paid accounts, so the risk of default and other personal problem is almost completely eliminated.

4. Should the OCC seek a financial inclusion commitment from an uninsured special purpose national bank that would not engage in lending, and if so, how could such a bank demonstrate a commitment to financial inclusion?

Yes, as I suggested above in my text. For commitment to financial inclusion, the FinTech company should be required, in addition to support and operate permissioned ledgers, to also operate open-enrollment unpermissioned ledgers and financial services based on such ledgers.

5. How could a special purpose national bank that is not engaged in providing banking services to the public support financial inclusion?

By operating unpermissioned public ledgers with open enrollment.

6. Should the OCC use its chartering authority as an opportunity to address the gaps in protections afforded individuals versus small business borrowers, and if so, how?

Yes. Not protection to individuals vs. small business borrowers, but the gap between protection offered today to any user of financial services

based on real currency and protection (that do not exist !) to users who use services based on virtual and / or crypto currency

7. What are potential challenges in executing or adapting a fintech business model to meet regulatory expectations, and what specific conditions governing the activities of special purpose national banks should the OCC consider?

The challenges are that regulatory expectations and rules are not adequate for a specific FinTech company or their services. The OCC should consider (1) technical operational and IT security standards, created/recommended by the NIST (similar to various cloud security requirements created by NIST), (2) organizational readiness (customer support, technical assistance, local agents, etc.), and (3) financial aspects discussed in section 4.1 above.

8. What actions should the OCC take to ensure special purpose national banks operate in a safe and sound manner and in the public interest?

(a) Consultations and close collaboration with various FinTech companies, (b) promotion and dissemination of its expertise and regulations, (c) small practical deployment pilots, and (d) active participation in international standardization and regulation projects (for instance, EU/JRC, EBA, etc.)

9. Would a fintech special purpose national bank have any competitive advantages over full-service banks the OCC should address? Are there risks to full-service banks from fintech companies that do not have bank charters?

Yes. Such bank will definitely have (a) lower operational costs, (b) lower regulatory compliance costs, (c) broader access to consumer base, and (d) broader scope of financial services. Yes, there are risks, as many small, community banks may be soon out of business (Example: many classical taxi companies are out of business because of Uber services).

10. Are there particular products or services offered by fintech companies, such as digital currencies, that may require different approaches to supervision to mitigate risk for both the institution and the broader financial system?

Yes. In fact, all innovative currencies, new financial services, and new, disruptive global technologies (blockchain) require completely different approach to supervision. As clearly stated in the recent UK Government Report, there are two types of rules for financial services: rules by law /

regulations and rules by software/code. All innovative financial services companies and providers currently operate only under rules of software/code. The essential question is whether the OCC or any other financial authority can impose the rules by software/code as those are regulations imposed by designers and implementers of new technologies. The challenging issue is, if the OCC should regulate these new technology, how it can participate and eventually impose any of its own rules to these new IT systems. At the moment, it seems that such regulations are possible only by voluntary collaboration of IT developers, what with the current trends and situation in the Internet, is not the case.

11. How can the OCC enhance its coordination and communication with other regulators that have jurisdiction over a proposed special purpose national bank, its parent company, or its activities?

By making them aware and then ready and capable to participate in all these new and innovative activities. Unfortunately, in my own experience, I have not met any federal agency ready to learn, create active knowledgeable team and/or collaborate with (a few) experts in these new technology trends.

12. Certain risks may be increased in a special purpose national bank because of its concentration in a limited number of business activities. How can the OCC ensure that a special purpose national bank sufficiently mitigates these risks?

Quite contrary, the risks are based on broad scope of business activities. Example: companies involved in financial transactions with Bitcoins perform verification functions ("miners"), equivalent what CPAs do today, then they run financial ledger, equivalent to what accountants do, then they support financial transactions/payments, equivalent what bankcard brands do, then they also store crypto currencies on behalf of users, what banks do, they support trading stocks in bitcoins, what stock exchanges do, and so on and so on.

At the current state of the technology, the OCC cannot do much, if anything. If the OCC should do something, it must first (a) establish knowledgeable and expert internal team for all these new technologies through internal "education" or hiring external consultants and experts, then (b) convince, then establish some form of collaboration with FinTech companies so that the OCC can have influence to the design and the software/code, (c) immediately establish close collaboration, actions and joint projects with ABA, FINTECH, and some international, especially EU, China, and Australia public authorities, and finally (d) create some financial and other motivations for FinTech companies and also for standard financial institutions to establish close collaboration and establish

legal, regulated, controlled, protected, and secure infrastructure for global financial transactions.

13. What additional information, materials, and technical assistance from the OCC would a prospective fintech applicant find useful in the application process?

At the moment, I'd "reverse" the question to: What additional information, materials, and technical assistance from a prospective FinTech applicant would the OCC find useful in its process to prepare itself to assist FinTechs to prepare and then accept, consider, and approve their applications in the process of issuing them the charter of a special status national bank ?

If that were the question, my answer would be: everything what a FinTech could provide – knowledge / workshop, technical documentation, research papers, reports, software for demo, etc.

6. Conclusions and Suggestions

Briefly and symbolically, the OCC's Office of Innovation should establish its mindset, team, organization, and activities as a FinTech company !

Not to create software products and offer financial services. But, to perform everything else what each FinTech company does: create creative and knowledgeable team, learn, innovate, design (rules), develop (regulations), test (in practice), pilot (technologies).

The Office of Innovation should not do all that by **creating** all these resources by its own team. It should do all that by **collecting** and **utilizing** what ever is available out there: recruit experts as employees, consultants, advisers, collaborators, speakers, etc., create test/demo lab, initiate and participate in practical technology evaluation projects, organize small promotional pilot projects, partner with VCs who invested (and have influence) to new FinTech startups, establish collaboration with international authorities, and so on.

Simply, the Office of Innovation should be creative, productive, fast moving, reactive, and innovative as all FinTechs with which it plans to collaborate, are.