

# Token Legal Opinion

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**Token:** XDC Token

**Ticker:** XDC

**Date:** 14<sup>th</sup> January 2021



**Ochsner  
Law**

**Addressed to:**

XinFin Fintech Pte. Ltd.  
111, North Bridge Road,  
#08-04, Peninsula Plaza,  
Singapore, 179098

Dear Mr Ritesh Kakkad,

We were requested to provide you with our professional Legal Opinion in connection with the classification of the Token used within the XDC Ecosystem (hereinafter referred to as the "**Ecosystem**"), i.e. the XDC Token (hereinafter referred to as "**XDC**") to determine its classification in accordance with Liechtenstein law.

Our Legal Opinion is being prepared on the basis that you intend to list the Token on a TT Exchange Service Provider's platform in Liechtenstein. The purpose of this Legal Opinion is to analyse whether the Token fulfils the criteria of a financial instrument or electronic money or neither of them.

The XDC hybrid blockchain aims to leverage the power of both the public and private blockchain paradigms to provide security and data auditability. Its blockchain runs its full and reference nodes on the infrastructure of consortium members that undergo a stringent vetting and can also run 'gerent' nodes. These nodes store the entire blockchain history and will also act as 'bootnodes' for Ethereum<sup>1</sup>. The XDC Token is used within the Ecosystem, it powers the XinFin's Hybrid blockchain and acts as a settlement mechanism for dApps built on it.<sup>2</sup> It is used to pay for transaction fees, and goods and services. In addition, XDC Tokens need to be staked to host a master node and participate in consensus. Nodes are compensated in accordance with their stake for the services provided, whereas nominators are rewarded for the delegation of their Tokens.

Based on the information provided, we are of the opinion that XDC does not classify as a financial instrument or as electronic money. The Legal Opinion hereunder shall provide a detailed *raison d'être* as to how such a conclusion was reached.

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<sup>1</sup> Whitepaper Technical, p. 5

<sup>2</sup> <https://xinfin.org/xdc-utility> (January 14<sup>th</sup>, 2021)

Kindly note that the requirements considered hereunder reflect the requirements as prescribed by the publicly available legislation as well as any guidelines and rules, final or otherwise, published by the Financial Market Authority (hereinafter referred to as "**FMA**"). Therefore, you are advised that the opinion expressed in this Legal Opinion is only being written in light of the applicable legislation at the date of issuance, and shall not cover any future changes, amendments and any additional supplementary legislation that may be enacted.

## 1. Assumptions

We understand that the Issuer of XDC is a Singaporean company named XinFin Fintech Pte. Ltd, having its registered address at 111, North Bridge Road, #08-04, Peninsula Plaza, Singapore. The Issuer has developed a Token as described in the Whitepaper annexed herewith and marked as Annex A (the "**Whitepaper**").

Our Legal Opinion is based on the assumption that the Whitepaper, as well as all additional information, submitted to us, is correct and complete in all material respects.

## 2. Scope

The scope of this Legal Opinion is to determine the classification of XDC under the general auspices of the relevant Liechtenstein laws and regulations. This Legal Opinion shall be based on the foregoing assumptions as well as those noted below and is limited to our understanding of the Platform, based on the indications provided to us.

### 2.1. Main points for consideration

The primary considerations in relation to the Token used on the Platform as obtained from the Whitepaper, amongst others, shall be denoted hereunder:

The XDC hybrid blockchain aims to leverage the power of both the public and private blockchain paradigms to provide security and data auditability. Its blockchain runs its full and reference nodes on the infrastructure of consortium members that undergo a stringent vetting and can also run 'gerent' nodes. These nodes store the entire blockchain history and will also act as 'bootnodes' for Ethereum.<sup>3</sup>

XDC is built upon the Ethereum code base and deals with the system state rather than blocks of transactions. Two different kinds of networks can exist within the Ecosystem:

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<sup>3</sup> Whitepaper Technical, p. 5

- (1) A public network that everyone can be part of, and
- (2) A private/permissioned network that restricts participation.

The private network is maintained 'within itself', with a hashed record of transactions and smart contracts being stored on the public state of the blockchain. All participating nodes share the public state of the blockchain but can also form fully permissioned networks with their own private state that is accessible by specified members only.

The XDC blockchain is also interoperable with Ethereum and Bitcoin. This means that transactions that are marked as hybrid on XDC can be transmitted to and executed on Ethereum.

## **2.2. Consortium Membership**

The XDC blockchain allows for three kinds of membership. Any individual or institution can reach Tier 1 by merely holding XDC Tokens; Tier 2 and Tier 3 require the holding of a certain amount of XDC and be subjected to vetting. Token holders can host XDC nodes and participate in the consensus mechanism of the XDC blockchain. XDC introduced asset forfeiture rules into the protocol that seize XDC holdings of misbehaving consortium members.

## **2.3. Architecture**

These are the individual components of the Ecosystem:

- (1) Administration Manager – It is equipped with a Java script CLI that can be used to define Data Models, create Messaging frames, and alter the State of the system;
- (2) Data Model – It is the part of the Administration Manager where the structure of the data that is to be stored on the blockchain is defined. The public state of blockchain has a predefined data model that is stored in here. The private state of the blockchain can inherit this data model extant, make changes to it, or create an entire new structure according to the use case;
- (3) Messaging – The Messaging section within the Administration Manager interfaces with the Conduit service to transfer the different kinds of messages across the constituent parts of the protocol;
- (4) State Transitions – The Administration Manager carries out state transitions across the private and public states of the blockchain. The Conduit Services and the Network Manager connect the Administration Manager to different parts of the protocol, local storage, and the Ecosystem in general in order to define, initiate, and execute different classes of transactions;
- (5) Smart Contract Manager – The Smart Contract Manager executes the appropriate contracts at the right time. It is deeply connected with the Resource Manager and Augur Services in order to ensure that the

conditions stipulated in the contracts are met. Highly audited smart contracts are available to be inherited by the public state participants with private networks having the ability to make further customizations according to the needs of the use case;

- (6) Message Conduit – The Message Conduit connects the various parts of the protocol with each other. It connects the Augur Service and the Resource Manager with the Smart Contract Manager to ensure external conditions critical to execution of smart contracts are securely transmitted and that they are executed correctly. It also connects the Network Manager with the Administration Manager to carry out a number of state modification tasks including transactions;
- (7) Network Manager – The Network Manager connects the various nodes of the Ecosystem. It is responsible for creating a permissioned subnetwork that has its own private state and in connecting to other nodes for modifying the public state;
- (8) Resource Manager – The Resource Manager is the part of the protocol that connects to the equipment or resource monitoring ecosystem that is part of the fiduciary arrangements. For instance, an IoT based resource monitoring ecosystem might be set up to make sure equipment purchased through a loan is being utilized within the terms of the agreement. It is the Resource Manager’s job to connect to IoT like devices that are tied to corresponding resources. The XDC protocol comes with inbuilt support for Arduino, Raspberry Pi, Intel Edison, and the ESP2866. More IoT device support is planned for as well;
- (9) Augur Services – The Augur Service communicates with the Smart Contract manager as a highly secure oracle service. Smart contracts that depend on external variables, such as market conditions, get their data from the Augur Service. The Augur Service will contain highly vetted and controlled connections to the pertinent external sources. For smart contracts or transactions that deal solely with the private state of a permissioned network, oracle data from the Augur Services can be augmented with mutually agreed upon sources.

The XDC blockchain is built upon Quorum, a private/permissioned blockchain developed by JP Morgan. It is a layer upon the Go implementation of Ethereum, and has a consensus mechanism called QuorumChain. This consensus mechanism allows for new blocks to be created in a two-step process. First, all transactions to be included in the new block are voted on by all participating nodes, and second, one node is selected as the leader or block producer in a random manner.

### XDPoS

XinFin employs a Delegated Proof of Stake mechanism, whereby validators (or delegates) are voted for in a real-time manner. Validators are:

- responsible to validate and convert the transactions created by the producers into legitimate blocks;
- responsible for broadcasting these blocks throughout the Hybrid Blockchain network;
- to keep their node in sync with the Hybrid Blockchain network at all times;
- responsible for solving any unforeseen network issues in a manner that is free, fair and democratic;

- responsible for keeping the network secure by operating in accordance to the above-mentioned expectations.

Interested parties need to stake 10,000,000 XDC in order to set up a master node. Max 5,000 validators are registered at any given time.<sup>4</sup>

Rewards are assigned by the Rewards Contract:

- Rewards for active validators are calculated as a percentage of the total stake;
- Nominators would also need to be rewarded to incentivize them to stake. These are the options:
  - The reward contract pays directly out to nominators, minus a fee paid to the Validator, which could be specified when registering;
  - The Validator is responsible for calculating/paying out the rewards. This could be done by allowing the Validators to register their own Reward Contract when registering.<sup>5</sup>

#### XDC Nodes

There will be four different types of nodes in the Ecosystem:

- (1) Full Nodes: Full nodes will store the whole history of the XDC protocol and will store all transactions in addition to the state. These nodes will be controlled by consortium members. In order to host a full node, a specific amount of XDC shall be held;
- (2) Reference Nodes: Reference nodes transfer transactions to the transaction pool only, and have no access to the whole history of the blockchain;
- (3) Light Nodes: Light nodes are implemented in private networks that do not participate in reaching consensus through the voting process. They store the relevant private state locally and can access the public state and transaction history from Full Nodes; and
- (4) Auditing Nodes: Auditing nodes allow access to the private and public state of the blockchain for matters concerning regulation, auditing or reconciliation with legacy systems.

#### Hedge Pool Functionality

In order to protect its participants from fluctuations in the XDC Token price, XinFin has developed a hedge pool that will come into picture at the time of procurement and settlement, especially for trade contracts where the time frame between contracting and settlement is high. Thus, at the time of settlement, XinFin will ensure payment to the receiver as per the agreed fiat currency value.<sup>6</sup>

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<sup>4</sup> <https://xinfin.org/xinfin-consensus> (January 14<sup>th</sup>, 2021)

<sup>5</sup> [https://xinfin.org/dpos\\_tech\\_brief](https://xinfin.org/dpos_tech_brief) (January 14<sup>th</sup>, 2021)

<sup>6</sup> Whitepaper Business, pp. 13 & 31 (January 14<sup>th</sup>, 2021)

## 2.4. Tokenomics

<b>Name</b>	XinFin Network
<b>Ticker</b>	XDC [native Token, XDC01 standard] <sup>7</sup>

The XDC01 standard is built on top of the ERC20 standard to ensure future compatibility when interoperability allows for such kinds of transfers. This does not mean that XinFin participates in the ERC20 public Ethereum ecosystem. The implementation uses the ERC20 standard in XinFin's forked hybrid blockchain platform that does not connect to the public Ethereum network.<sup>8</sup>

A 1:1 Token swap of XDCE [ERC20] to XDC [XDC01] is ongoing and ends 31<sup>st</sup> March 2021.<sup>9</sup>

**Total Supply** 37,500,000,000<sup>10</sup>

**Description.** The XDC Token powers XinFin's Hybrid blockchain and acts as a settlement mechanism for dApps built on it.<sup>11</sup> It is used to pay for transaction fees, and goods and services. In addition, XDC Tokens need to be staked in order to host a master node and participate in consensus. Nodes are compensated in accordance with their stake for the services provided, whereas nominators are rewarded for the delegation of their Tokens.

## 3. Token classification

### 3.1. Token definition under the TVTG

The regulatory landscape revolving around transaction systems based on trustworthy technologies (hereinafter referred to as "TT Systems"), has evolved rapidly on a national level. Liechtenstein has established the Law on Tokens and TT Service Providers – *Gesetz über Token und VT-Dienstleister* (hereinafter referred to as the "TVTG"), which came into force on 1st January 2020.

A "Token" is a new independent legal object which may represent rights of any type on a TT System. This figure, from a legal perspective, can be compared to an "*empty container*" that may be "filled" by subjecting an existing

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<sup>7</sup> <https://explorer.xinfin.network/home> (January 14<sup>th</sup>, 2021)

<sup>8</sup> <https://www.xinfin.io/fags.html> (January 14<sup>th</sup>, 2021)

<sup>9</sup> <https://www.xinfin.io/> (January 14<sup>th</sup>, 2021)

<sup>10</sup> <https://medium.com/xinfin/token-distribution-of-xinfin-token-xdc-xdce-3817bc542d48> (January 14<sup>th</sup>, 2021)

<sup>11</sup> <https://xinfin.org/xdc-utility> (January 14<sup>th</sup>, 2021)



right to the transmission and legitimation system of a TT system. The term "Token" is further defined in Article 2(c) of the TVTG as a "*piece of information on a TT System which (1.) can represent claims or rights of memberships against a person, rights to property, or absolute or relative rights; and (2.) is assigned to one or more TT Identifiers.*"

However, the TVTG is silent regarding the classification of tokens. The Report and Application 54/2019 drawn up in a complementary way to the TVTG only mention fiat payment tokens, utility coins, stable coins and security tokens on page 15.

The FMA issued a Factsheet on Initial Coin Offerings on 1st October 2018. In this Factsheet, it is being mentioned that, depending on their specification, tokens may constitute financial instruments subject to financial market laws. This may include tokens that have characteristics of equity securities or other investments. In all cases, the specific design and de facto function of the tokens are decisive.

### 3.2. Token taxonomy according to ESMA and EBA

Although not legally binding at a supranational level, it is advisable to refer to the regulatory framework structured on the Advice on Initial Coin Offerings and Crypto-Assets of ESMA<sup>12</sup> and the Report with advice for the European Commission on crypto-assets of EBA<sup>13</sup>; both published on 9th January 2019.

At present, there is no common taxonomy of crypto-assets in use by international standard-setting bodies. However, even if crypto-assets may have different features or serve different functions, a basic taxonomy of crypto-assets generally comprises three main categories of crypto-assets:

**Payment/Exchange/Currency tokens:** Payment tokens are tokens which have no tangible value, except for the expectation they may serve as a means of exchange or payment to pay for goods or in the services that are external to the ecosystem in which they are built. "Stablecoins" are a relatively new form of payment/exchange token that is typically asset-backed (by physical collateral or crypto-assets) or in the form of an algorithmic "*stablecoin*".

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<sup>12</sup> [https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391\\_crypto\\_advice.pdf](https://www.esma.europa.eu/sites/default/files/library/esma50-157-1391_crypto_advice.pdf).

<sup>13</sup> <https://eba.europa.eu/documents/10180/2545547/EBA+Report+on+crypto+assets.pdf>.

**Utility tokens:** Utility tokens are tokens which are intended to typically enable access to a specific product or service often provided using a DLT platform but are not accepted as a means of payment for other products or services.

**Investment tokens:** Investment tokens may represent financial assets such as a debt or equity claim on the Issuer. Investment tokens promise, for example, a share in future company earnings or future capital flows. In terms of their economic function, therefore, these tokens are analogous to financial instruments. However, investment tokens may also exclusively reflect the ownership rights of an asset, which may not be deemed as a financial instrument.

There is a wide variety of crypto-assets, some of which have features spanning more than one of the categories identified above. The individual token classifications are not mutually exclusive.

The following sub-sections discuss the legal qualification of crypto-assets under Liechtenstein's financial security laws in line with the European Banking legislation and ESMA's remit (MiFID II), and under the E-Money Act in line with the second Electronic Money Directive (EMD2) and the second Payment Services Directive (PS2).

Reflecting on the above, the current perimeter of regulation is such that crypto-assets may, depending on their characteristics, qualify as financial instruments, electronic money, or none of the foregoing.

### **3.3. Financial instrument**

The definition of a financial instrument is the key element towards determining whether trading services with respect to a Token can be deemed to be regulated in terms of the Banking Act and other relevant laws. Financial instruments are defined in terms of Section C of the Banking Act as follows:

- 1.** Transferable securities of all classes which are negotiable on the capital market, such as:
  - a)** shares in companies and other securities equivalent to shares in companies, partnerships, or other entities, including depositary receipts in respect of such securities;
  - b)** bonds or other forms of securitised debt, including depositary receipts in respect of such securities;

- c) any other securities giving the right to acquire or sell any such transferable securities or giving rise to a cash settlement determined by reference to transferable securities, currencies, interest rates or yields, or other indices or measures;
- 2. Money-market instruments which are normally dealt in on the money market, such as treasury bills, certificates of deposit, and commercial papers and excluding instruments of payment;
- 3. Units in undertakings for collective investment in transferable securities, units in investment undertakings, and units in alternative investment funds;
- 4. Options, futures, swaps, forward rate agreements, and any other derivative contracts relating to securities, currencies, interest rates or yields, emission allowances or other derivatives instruments, financial indices or financial measures which may be settled physically or in cash;
- 5. Options, futures, swaps, forwards and any other derivative contracts relating to commodities that must be settled in cash or may be settled in cash at the option of one of the parties other than by reason of default or other termination events;
- 6. Options, futures, swaps, and any other derivative contracts relating to commodities that can be physically settled provided that they are traded on a regulated market, a multilateral trading facility, or an organised trading facility, except for wholesale energy products traded on an organised trading facility that must be physically settled;
- 7. Options, futures, swaps, forwards and any other derivative contracts relating to commodities that can be physically settled not otherwise mentioned in point 6 and not being for commercial purposes, which have the characteristics of other derivative financial instruments;
- 8. Derivative instruments for the transfer of credit risk;
- 9. Financial contracts for differences; or

10. Options, futures, swaps, forward rate agreements and any other derivative contracts relating to climatic variables, freight rates or inflation rates or other official economic statistics that must be settled in cash or may be settled in cash at the option of one of the parties other than by reason of default or other termination events, as well as any other derivative contracts relating to assets, rights, obligations, indices and measures not otherwise mentioned in this Section C, which have the characteristics of other derivative financial instruments, having regard to whether, inter alia, they are traded on a regulated market, multilateral trading facility, or organised trading facility.

11. Emission allowances consisting of any units recognised for compliance with the requirements of Emissions Trading legislation.

XDC's use is to be staked by validators to validate transactions (DPOS) and to serve as reward to the same validators and nominators. When looking at the Hedge Pool it appears that the XDC's price is being hedged against future fluctuation to secure today's agreed fiat price. This is very similar to the definition of a derivative contract: *Options, futures, swaps, forward rate agreements and any other derivative contracts relating to securities, currencies, interest rates or yields, emission allowances or other derivative instruments, financial indices or financial measures which may be settled physically or in cash.* The Hedge Pool could also potentially fall within the definition of a CfD: *Rights under a contract for differences or under any other contract the purpose or intended purpose of which is to secure a profit or avoid a loss by reference to fluctuations in the value or price for property of any description or in an index or other factor designated for that purpose in the contract.*

However, it is the Hedge Pool and the contract between the Ecosystem/Issuer and the token holder which could potentially classify as a derivative/CfD and not the token *per se*. XDC does not represent assets such as a debt or equity claim on the Issuer. It does not promise a share in future company earnings or future capital flows. XDC in itself cannot be analogous to equities, bonds, or any of the derivatives mentioned in the definition of the financial instrument above, be it securities, commodities, or the transfer of credit risks. Therefore, XDC does not classify as a Financial Instrument.

### 3.4. Electronic Money

Electronic money is defined in the E-Money Act as:

"electronically or magnetically stored monetary value as represented by a claim on the electronic money issuer which is issued on receipt of funds for the purpose of making payment transactions as defined in Article 4(1)(54) of the Payment Services Act, and which is accepted by a natural or legal person other than the electronic money issuer."

Electronic money is commonly defined as a digital alternative to cash allowing users to make cashless payment with money stored over the internet, with such being regulated by the E-Money Act which aims to facilitate the emergence of innovative electronic money services and encourages effective competition between all market participants.

A token has to be classified as electronic money if the following conditions are met<sup>14</sup>:

- a. Is electronically stored;
- b. Has monetary value;
- c. Represents a claim on the Issuer;
- d. Is issued on receipt of funds;
- e. Is issued for the purpose of making payment transactions;
- f. Is accepted by persons other than the Issuer.

We understand that XDC shall serve as an integral feature of the core processes of the Protocol as denoted in point 2.1. However, nothing in the Whitepaper provided by the Protocol indicated that XDC holders have a claim against the Issuer's assets arising from funds which were initially placed against such issuance of XDC and that such holders can redeem their funds at par value. Therefore, XDC falls outside of the scope of the definition of Electronic Money in terms of the E-Money Act and Directive.

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<sup>14</sup> Article 4 (1) (b) of the Electronic Money Act (*E-Geldgesetz LR-NR.: 950.3*), *ex vi* Article 4 (25.) of the PSD2.

### **3.5. Summary**

In consideration of the assumptions made and the assessment carried out on XDC, it is our professional opinion that XDC does not classify as a Financial Instrument or Electronic Money. Additionally, it would be considered as a hybrid "utility/payment" token, according to the ESMA/EBA token taxonomy, hence further confirming XDC as falling outside the scope of applicable traditional EU legislative frameworks as indicated in this same paragraph.

#### 4. Qualification

This Legal Opinion is subject to the following qualifications:

This Legal Opinion is limited to the token classification only. No assessment or deliberation was made on the business model per se and whether such a model could potentially fall within the scope of regulation, and hence be subject to any authorisation or licensing by any competent authority.

Where obligations are to be performed in a jurisdiction outside Liechtenstein, they may not be enforceable in Liechtenstein to the extent that performance would be illegal under the laws of that other jurisdiction.

This Legal Opinion is limited to the laws of Liechtenstein as at the date hereof and is given on the basis of our knowledge of that law to date. We do not assume any obligation to advise any person entitled to rely on this Report of any subsequent change in, or in the interpretation of, the law of Liechtenstein.

What herein is envisaged as remote or unlikely should not be perceived as factual, and any matter herein featured as an opinion or evaluation is to be construed as such and should not be understood to be a point of fact or replacing any ruling, policy or stance is taken or to be taken by an applicable regulatory body. Our opinion is based on current available documentation, laws and perceptions. Authorities and courts may not necessarily agree with our opinion and hence, with the contents in this Report.

This Report is not to be construed or interpreted as financial analysis, as a business plan or as a proposed business model. The evaluations, as contained herein, have been drawn from an analysis of known legal concepts and their application at this current day and age.

The opinions expressed herein are solely intended for the benefit of the Addressee, and the undersigned shall not be held liable for the usage of such document by any third party or damages incurred by any third party, whether such usage or liability is direct or indirect.

This Report is not to be disclosed, circulated, published, communicated to, used, quoted, or relied upon by any other person or for any other purpose or in connection with any additional agreement, document, transaction or matter, without our prior written consent, save:

- a) to persons who in the ordinary course of your business have access to your papers and records on the basis that they will make no further disclosure, including advisors (but solely in connection with this transaction), auditors or anybody which acts as regulator;
- b) to persons who would require disclosure, circulation, publication, communication of, usage, quoting, or reliance upon of this Opinion for the purpose of listing tokens on a cryptocurrency/crypto-asset exchange platform;
- c) if required by law or in accordance with an official directive or request (whether or not having the force of law) with which responsible financiers generally comply in carrying on their business; or
- d) by the persons to whom this Report is addressed in connection with any litigation or proposed litigation in relation to this Report.

Moreover, the undersigned shall not, in any manner, be held liable for any different regulatory position undertaken by any relevant body or authority following the date of delivery of this Opinion, and the Addressee hereby acknowledges and accepts that the contents of this professional Legal Opinion are heavily based on the applicable laws, rules and regulations at the time of writing of this Opinion, which such laws, rules and regulations may be subject to change.

Yours sincerely,

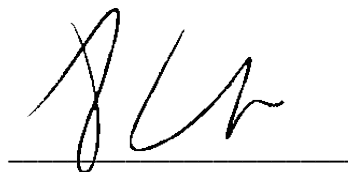


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BCA Solutions (BCAS) is a well-established team of regulatory and technical specialists, with involvement in the blockchain and crypto-asset industries spanning back to 2013. BCAS' comprehensive service offering can largely be categorised into regulatory and licensing, blockchain development & implementation, and cybersecurity & auditing services. In terms of regulatory and licensing services, BCAS is present and operating in Malta, Liechtenstein, and Singapore, and therefore well-equipped in providing assistance in such jurisdictions. To learn more visit [www.bcas.io](http://www.bcas.io).

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**Ochsner  
Law**

# BLOCKCHAIN FOR TRADE AND FINANCE

BUSINESS WHITEPAPER

By



**XinFin Organization**

[www.xinfin.org](http://www.xinfin.org)

Blockchain technology for global trade and finance

Version 1.1, updated February 2018

Contact us: [info@xinfin.org](mailto:info@xinfin.org)

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## **Purpose & Audience**

The purpose of this Business White Paper is to give the readers a comprehensive business understanding of XinFin's hybrid blockchain solution that will help address the inefficiencies that exist in the global trade and finance markets today.

XinFin is offering business solution for the global trade and finance industry through its proprietary permissioned blockchain powered by XDC01 Protocol which is fork of Ethereum and Quorum. This hybrid architecture combines the best of both private and public blockchains that makes it secure, scalable and lightning fast.

XDC01 Protocol facilitates Distributed Applications, such as TradeFinex, specially conceptualised marketplace platform that connects global participants of the trade and finance industry and enable them for global contracting, financing, payments and settlements through authorized financial institutions.

The intended audience for this White Paper is anyone who is part of the global trade and finance ecosystem or anyone who is interested in understanding how blockchain technology can transform real world business processes e.g. governments, regulators, financial institutions, corporates and others who regularly engage in trade and finance and look for new means of low cost financing to compliment traditional finance. This paper is also useful to the global industry that is investigating the potential of blockchain to address the inefficiencies across different sectors.

We have purposely kept the elaborations on business application side and we encourage the interested readers to refer to our Technical White Paper on [www.xinfin.org](http://www.xinfin.org) for more technical elaboration.

We hope this paper makes our audience think about how blockchain can transform real world trade and finance.

# 1. Global Trade & Finance Market Outlook

## 1.1 Trade

Global trade, also known as international trade, is simply the import and export of goods and services across international boundaries which is settled by financial transactions. A fundamental concept underlying global trade is the concept of comparative advantage in commercial activities and has material impact on economic conditions and standards of living of human beings. This comparative advantage is the result of human evolution, inventions, geographic conditions, political conditions and natural resources in that region.

Global trade can also create larger economies of scale due to global reach. At domestic level, one can focus more on what they are best in terms of cost and quality and save money by importing those goods and services what they are not able to produce more efficiently in their own country. It also has social angle which improves relation and exchange of culture between geographies due to mutual interactions among the people who are involved in trade. Historically it has been seen that international trade supports economic growth and development, helping reduce poverty around the world.

The cross border trade has been growing every year due to globalization and technological development. According to International Chamber of Commerce (ICC) 2017 report, world trade flows will grow at an annual rate of about 4.3% to reach nearly \$19 Trillion by 2020. Majority of this trade is driven by global infrastructure development due to increased population and urbanization. As per Global infrastructure hub 2017 report, by 2040, the global population will grow by almost 2 Billion people – a 25% increase. Also, rural to urban migration will skew this growth more towards urban areas leading to urban population growing by 46%. This will trigger massive demand for infrastructure support, especially in urban area and to keep pace with this growth, the global infrastructure investment needs are forecasted to reach \$94 Trillion by 2040, which is an average of \$3.7 Trillion per year. Based on current spending levels, the shortfall is more than \$18 Trillion which is around a Trillion dollar gap every year.

Sector wise, electricity and roads remain the two most important sectors, together they account for more than two-thirds of global investment needs. The economic development is not uniform all across and there has been difference in availability of basic infrastructure needs in developed and developing economies. The World Health Organization reports that more than 1 Billion people live without electricity, 2.3 Billion people still do not have access to basic sanitation facilities and 844 Million people lack even a basic drinking-water service. Hence by 2025, half of the world's population will be living in water-stressed areas. This further adds \$3.5 Trillion by 2025 to growing needs of infrastructure investments for ensuring access to drinking water, sanitation and electricity.

## 1.2 Finance

To fuel such massive infrastructure growth, financial institutions and banks are supposed to pump money in the ecosystem which is known as trade finance. However after financial crisis and global meltdown the trust has come down and risk has gone up. As a result deserving businesses and individuals around the world are either denied access to trade finance or delayed due to increased regulatory and compliance limitations of traditional financing systems. Hence there has been a gap between growing trade needs and available trade finance.

According to a 2017 survey by the Asian Development Bank (ADB), the gap in global trade finance is in the range of \$1.6 Trillion annually.

Of the global financing needs today, infrastructure remains the most sizeable and critical financing need for both developed as well as developing economies. Infrastructure affects economic growth by boosting economic activity and productivity by means of reliable transport, real estate, electricity, water and telecoms. Though central and pivotal to any country's socio-economic progress still infrastructure financing remains underserved and with less supply from the private sector which results in tax burden on government and consequently on general public of any country. Inefficiencies in financing further add to the cost of capital. Also finance rates across globe varies a lot and accessibility of these centralised funds is not convenient due to intermediaries. The current financial ecosystem is not fully able to cater to this growing financing demand, resulting huge loss of opportunity for global trade and in turn, economic development which needs innovating financing mechanism to compliment traditional finance.

This deficit is skewed and it is disproportionately available to multinationals and large corporates, the top end of the market, and consistently absent in the micro, small and medium sized enterprise (MSME) segment. Though small in size but cumulatively large in economic contribution worldwide. MSME contribution in the development of world economy has been significant, both in terms of contribution to GDP and creation of employment opportunities. Many studies show that the contribution of formal MSMEs in high-income countries amount to around 50% of GDP on an average. Per India International Centre March 2016 report, MSMEs in India account for 95% of total industrial units and 46 % of the industrial production.

According to IFC 2014 analysis, there are more than 160 Million formal MSMEs, employing more than 500 Million employees. MSMEs account for 50% to 70% of employment across regions. The numbers clearly indicate the importance and contribution of the MSME segment to the world economy and especially in the under-developed and emerging economies where the growth in the number of MSMEs is the largest.

While the contribution is significant still due to small size and fragmented spread of MSMEs leads to many trade challenges. Per the World Bank survey, access to finance remains the biggest obstacle faced by MSMEs restraining their growth. The total credit gap for both formal and informal SMEs is as high as \$2.6 Trillion. Across South East Asia and the Pacific region, more than 120 Million MSMEs, including both formal and informal ones, are unserved or underserved in terms of credit facilities. Similarly, there are about 30 Million MSMEs in African and Latin American markets that are unserved or underserved.

MSMEs are less likely to get finance access compared to the large firms due to various reasons such as high cost of capital involved, less upfront collateral that MSMEs can provide, high costs incurred by the complex processes to access traditional finance etc. Better access to finance for MSMEs, can create significant economic value, especially for the developing economies in Asia Pacific, Africa and Latin America.

The challenge is not only in funding Capex but also in managing OpEx which is day to day transactions and ensuring working capital, especially in cross border payments. Per McKinsey & Company report on Global Payments 2016, the cross-border payment flows are \$135.8 Trillion in 2015. Such massive payment flow leads to high transaction & remittance costs which is growing every year and is estimated at \$2.05 Trillion in 2018. The impact is more when it comes to smaller transactions, generally the case of MSMEs. The Institute of Financial Operations survey-Sep 2011, on Cross-Border Payments Perspectives clearly states that high cost of payment transactions reduces margins and discourages smaller businesses in doing

business transactions are more particularly for those making payments of less than \$10,000, especially those in the \$500 to \$2,000 range. <sup>[SEP]</sup>

To address these issues there has been innovations in Fintech and Supply Chain to disrupt current systems and to remove major inefficiencies that exist today.

### **1.3 Inefficiencies in Trade and Finance**

There are various factors limiting infrastructure development related trade & financing globally. The inefficiencies arise due to disjoint systems, manual processes, multiple intermediaries and an inherent need to demonstrate environment of trust between the parties doing commerce.

- **Nature of infrastructure investments**

Infrastructure projects often face funding challenges due to large up-front investments coupled with longer cycles to realize returns and uncertainties linked to government policies and regulations. This limits private investments leading to governments often borrowing at high cost of capital, leading to increased tax burden on the citizens.

- **Limitations of traditional providers**

Traditional financial providers such as banks face capacity challenges constrained by balance sheets and regulatory requirements (AML, KYC, sanctions, Basel etc.), insufficient levels of collateral, complex procedures to avail financing creating entry barriers specially for MSMEs. Trade financing is particularly pressured by increasing costs on one side due to compliance requirements and increasing commoditization and price bottoming on the other side. Industry has seen a lot of consolidation post global financial crisis, leading to withdrawal of several correspondent banking relationships across high risk markets.

- **Lack of a truly global financial Marketplace**

In spite of globalisation of finance and several providers on the market, finance still remains largely regionalised and centralised. The cost of capital remains high contrary to the expected benefits of increased competition. What is missing is a global market place where financiers can finance projects anywhere in the globe thus increasing competition and reducing the cost of capital for all the participants.

- **Cross-border latencies**

Cross-border payments and settlements remain biggest challenge for merchants or beneficiaries from tapping global business opportunities. The cumbersome cross-border payment infrastructure and processes not only introduce time latency and delayed trade and payment confirmations, but also drive up the financing costs due to several intermediaries involved. A simple cross-border payment today still takes 3-5 days.

- **Legacy issues**

Trade and finance globally suffers from multiple web of legacy systems and huge delays due to the cumbersome processes involved in traditional means such as letter of credit and associated documentation and procedures to be maintained by all the participating entities including the supplier, buyer, their respective banks etc.

Clearly several inefficiencies exist today in the trade and finance, both in terms of financial funding as well as supporting infrastructure. The world economy stands to benefit as a whole if we are able to provide an innovative financing mechanism that can overcome these inefficiencies and complement the existing financial systems.



## **2. Blockchain as Efficiency Improvement Tool**

Simply put, Blockchain technology provides means of establishing a public, distributed database or set of records or set of transactions that are cryptographically secured and immutable in nature. A distributed consensus mechanism is used across the nodes of the network for making or verifying any changes made to the blockchain of records to ensure that the nodes in the network are synchronised and always agree on the latest state of the blockchain which will be the correct one as long as majority of the network is honest. The distributed decentralised nature of the blockchain network and its consensus mechanism ensures that there are no central points of failure in the system. There is a close link between evolution of finance and blockchain technology.

Traditionally, finance, as we know, has always been dominated by intermediaries such as banks, governments and central authorities as a means to establish 'trust' for any storage or exchange of value. With the internet boom in early 2000s and the mobile revolution in late 2000s, much of this commerce found new 'channels' to exchange value, though the concept of establishing trust via 3rd party largely remained same as before. Thus, traditional commerce followed by e-commerce remained largely 'centralised' pushing up transaction fees. The financial crisis of 2007 made many ponder over the primary function of the intermediaries to establish trust.

After many previous attempts towards 'decentralisation' of money, 2008-2009 saw the emergence of a first distributed digital currency 'Bitcoin' which facilitated exchange of value without needing a trusted 3rd party or intermediary. Basically, it means that anyone, anywhere in the world can buy, sell, exchange this currency against fiat currencies and the system will make the transaction immutable, secure and irreversible on a public distributed ledger. Bitcoin value dynamics are governed by demand and supply just like any fiat currency with the key difference being that in case of Bitcoin, the supply is fixed by the system and not by monetary policies of governments or bank consortiums. Bitcoin had limited applications in the real-world finance though, considering the public nature of its transactions and limited functionality support at protocol level.

This is where the interest in the technology behind Bitcoin, referred to as 'Blockchain' technology, soared. Blockchain opened a wide array of possibilities in the financial world (imagine a global distributed financial ledger where every person in the world can transact with every other person in the world with minimum or no fees in a trust-less system removing all barriers to banking, trade and finance!). Of course, it is only a dream! 'Ethereum' which was proposed in late 2013, added to the public, open and distributed blockchain, the notion of 'smart contracts' facilitated by a complete programming language. Smart contract was a major breakthrough with endless possibilities to build 'distributed applications' mapped to real world use cases. Ethereum also brought in other significant advantages of rapid development time, security for small and rarely used applications etc.

The missing notion of 'privacy' still restricted the application of public Ethereum in financial world leading to new variants, such as 'Quorum', a permissioned blockchain developed by J.P. Morgan, based on Ethereum. It introduced transactions and contracts privacy by facilitating 'public' and 'private' states on the network bringing the whole blockchain concept closer to real financing and enterprise scenarios.

'XinFin' has taken this blockchain technology even further by developing a truly hybrid blockchain 'XDC01 protocol' with complete interoperability with public blockchain networks

and support for private transactions make it suitable for financial and other real-world applications.

Extensive research on strengthening the different blockchain networks, protocols and consensus mechanisms continues as we write this white paper.

## **2.1 Advantages of Blockchain Over Traditional System**

Blockchain can record financial transactions or any possible structured information about anything in a trust-less and yet secure, immutable manner. This opens up its application to possibly any aspect of the society. Let us see what key advantages blockchain offers over traditional or legacy systems.

- **Digitized ledger**

Since blockchain is a distributed database at its core, it provides for storing digital records of all kinds of transactions, documents and contracts. So, any financing, trade or any other industry business process can be digitally recorded on the blockchain.

- **Decentralisation & Dis-intermediation**

Since there is no central ownership of the blockchain, there are no central or single points of failure in the blockchain system. Decentralisation can remove many barriers to trade and finance by reducing the dependencies on intermediaries or single authorities. Financiers, buyers and suppliers can transact with each other with blockchain and smart contracts there by gaining significant efficiencies.

- **Immutability & Auditability**

Blockchain is secured by advanced cryptography and any change to the blockchain of records requires some form of consensus from the entire network thereby making the records or transactions very secure and immutable in nature. To make any change to the blockchain needs consensus from the network which inherently builds trust and safety in the system. This provides an in-editable audit trail for all kinds of financial and non-financial assets and transactions that are recorded on the blockchain.

- **Efficiency improvement**

Most of the complex processes that are involved in trade and finance today can be re-engineered and automated using smart contracts over blockchain thereby building efficiency in the system. For example, lending and repayments, trade, shipment & settlement can be automated using smart contracts.

## **2.2 Blockchain Applications in Trade & Finance**

The current financial systems move Trillions of dollars every day and provide financial services to Billions around the world. There is a huge complex network of several intermediaries that run the financial web including banks, payment networks, stock exchanges, money transfer services, regulators etc. with significant delays and crime recorded at each level increasing the financial burden on the entire value chain. Let us broadly see Blockchain can be applied to real world trade and finance scenarios to gain significant efficiencies and value for all the parties involved.

- **Digital contracts**

All kinds of traditional trade and finance contracts can be executed using blockchain based smart contracts. Traditional lending, trade finance and other scenarios can be re-engineered and automated using digital smart contracts that use underlying digital or crypto tokens that can be liquidated on the market against fiat currencies or other crypto currencies.

- **Facilitating cross-border transactions**

Blockchain provides infrastructure to facilitate cross-border and domestic transactions where different entities around the world can connect and contract with each other using digital tokens and smart contracts thus removing all geographical barriers and limitations of currencies etc. The tokens can be liquidated through authorized exchanges thus opening up the global markets for everyone.

- **Real-time payments and settlement**

Blockchain efficiencies mean that transactions are executed with very high throughput and there is no post-trade settlement and recovery processes. Once the digital asset is transferred that is settlement in itself as the receiving party instantly gets the ownership of the digital asset.

- **Asset Digitisation**

Apart from the digital token itself that underlies the trade and finance smart contracts, the asset or goods or services itself can be digitally represented on the blockchain and monitored or tracked in real-time using Internet of Things (IoT). For example, for an aircraft financing contract, the aircraft itself can be represented as a digital asset in the smart contract and its usage and value can be monitored real-time by means of IoT or other market feeds.

### **3. The XinFin Solution**

Our mission at XinFin is to address the global trade and finance deficit with a robust next-generation financing mechanism that will complement the existing financial ecosystem in a seamless manner. Our vision is to leverage the fast-evolving blockchain financial technology and develop a complete ecosystem around the proprietary permissioned blockchain, XDC01 protocol, with participation of governments, financiers, buyers, suppliers, regulators and communities to help bridge the global trade and finance deficit.

#### **3.1 XDC01 Protocol**

XinFin has architected its network from a fork of Ethereum and Quorum. The hybrid architecture of the network combines the best of both private and public blockchains. It maintains both, a private state and a public state. Private state ensures that the sensitive financial data is secure yet at the same time its public state makes it transparent and verifiable. The architecture makes XDC protocol secure, scalable and lightning fast. Its Hybrid nature also makes it highly interoperable with legacy systems and other blockchain platforms.

The network runs on a delegated proof of stake consensus between trusted master nodes. The blockchain is powered by its next generation digital token called XDC token. The underlying fuel, the XDC is very cost efficient and transactions cost is significantly low. IoT layer over the XDC protocol allows real time data to be fed into the blockchain. The XDC01 protocol will enable utility tokens in compliant jurisdictions to run on the XDC01 protocol.

Thus, the XDC01 protocol can work as a messaging and confirmation layer for domestic or cross border approved payments or the XDC token can be used as a payment and settlement layer supported by approved financial institutions. The XDC01 protocol is essentially sector agnostic and can be used across different industry sectors.

The XDC blockchain is forked from Quorum, a permissioned blockchain built by J P Morgan over Ethereum. Apart from smart contracts, private states, higher throughputs and easily modifiable consensus mechanism which are necessary for most enterprise applications, the ability to reuse the substantial development dedicated to Ethereum protocol makes the choice of Quorum as base implementation for XDC very appropriate.

In addition to the above, our fork includes a number of improvements to the Quorum protocol. The throughput of transactions is significantly high (tested up to 300 TPS in our test environment vis-a-vis 20 TPS on Ethereum network). We've developed a smart contract manager that allows for interoperability between the XDC blockchain and public blockchains. We've added punitive smart contracts to ensure those who stake the XDCs to run network infrastructure remain honest.

#### **3.2 Distributed Consensus Mechanism**

Our permissioned distributed consensus mechanism replaces the wasteful energy intensive mining making XDC essentially mining free. Our consensus mechanism has been evolved into a distributed proof of stake consensus that gives nodes with higher XDC stake, higher voting power and thus ensures honesty on the network as any attempts to attack the network leads to nodes losing their stake. This is taken care by punitive smart contracts built on the XDC blockchain.

### 3.3 Hybrid Blockchain Architecture

The XDC blockchain is built upon the paradigm of consortium blockchains that differs from conventional private/permissioned blockchains as well as public blockchains. The public state of the XDC blockchain is shared by all participating nodes that are owned by different kinds of constituents. Groups of nodes can further form fully permissioned networks with their own private state that is accessible only to authorized members. The private network state is maintained in its respective network but a record (hash) of transactions and smart contracts is stored on the public state of the blockchain. The public state can be used to share basic account opening and other data securely and transparently across the XDC network. The private state can be used to protect sensitive and financial data from outside world.

There are multiple blockchain implementations today but most of them are not suitable for real world applications. XDC Hybrid architecture addresses the shortcomings of all private and public blockchains and makes XDC protocol suitable for real world applications. It combines the availability, transparency and decentralization benefits of public blockchain along with security, privacy and high transaction speed benefits of private blockchain.

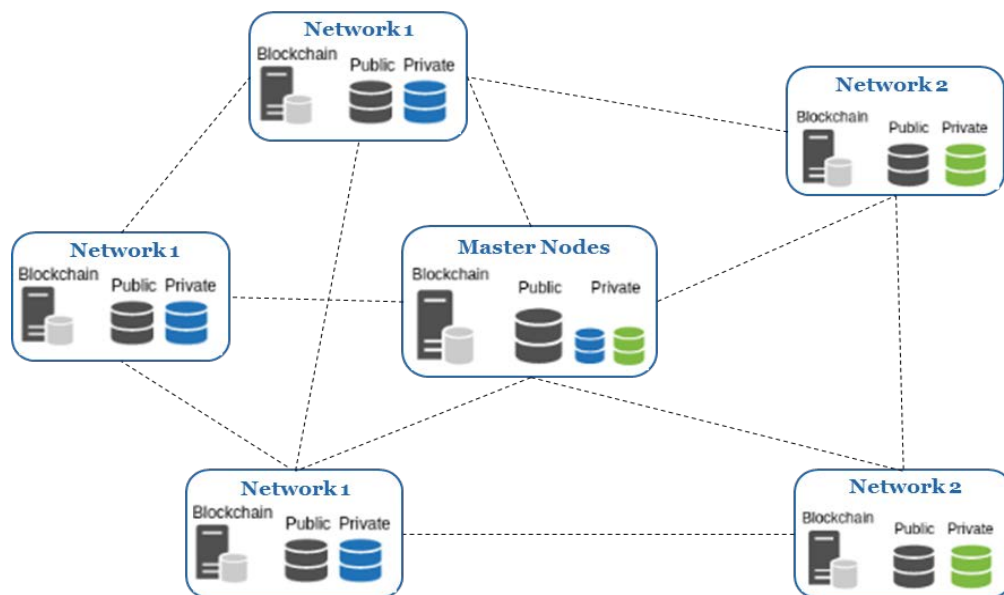


Figure 1: XinFin hybrid Blockchain architecture

### 3.4 Interoperability with Public Blockchains

The 'hybrid' nature of the XDC blockchain extends to interoperability with public blockchains like Ethereum and Bitcoin. Transactions that are marked as hybrid on the XDC blockchain can be transmitted to and executed on the Ethereum public blockchain without the need of external wallets or exchanges. The XDC protocol seeks to create a truly decentralized cryptocurrency space through interoperability.

### 3.5 Consortium Membership

Consortium membership here refers to the relationship different institutions and individuals can have with the XDC blockchain. The XDC blockchain has three kinds of membership. The

first is the most accessible. If an individual or institution owns the XDC tokens, they are part of Tier 1 membership by default. Tier 2 and Tier 3 memberships are both obtained by holding a certain amount of the XDC subject to requisite vetting. These tiers allow institutions to host the XDC nodes and participate in the consensus mechanism of the XDC blockchain.

### **3.6 XDC Token & Wallet**

The fuel that powers the XDC blockchain is the XDC token. XDC is a utility token that provides utility to the global trade and finance industry by facilitating international and domestic transactions and also supports business efficiency use cases across different sectors through non-tokenized as well as tokenized solutions. Utility tokens for specific industries can be built through child chains on the XDC01 protocol. The users can buy the XDC fuel through authorized exchanges. XDC token allocation and dynamics are explained in the XDC Economics section.

XinFin's blockchain platform offers integrated wallet solutions to enable real time payment and settlement across the globe. Built on the highly evolved XDC01 protocol, the wallet offers secure and high transaction throughput making it an ideal solution for real world transactions. Interested users can sign-up for XDC Wallet from Google Play Store, Apple Store or from Web link: <https://ewallet.xinfin.org>

### **3.7 Business Applications**

The XDC01 protocol and smart contracts can be leveraged to build various distributed applications (DAPPS) that will find a wide array of applications and business process in areas such as supply chain, financing, procurement, distribution, settlement etc. For example, an Uber like service could actually be setup on the XDC blockchain where riders and customers can book their rides via DAPP with transactions recorded and settled on the blockchain. XDC Protocol will also support non-tokenized solutions that will help improve the business process efficiencies across different industry sectors. The possibilities are endless.

XinFin encourages the development community and industry professionals to come up with more ideas and build DAPPs and use cases along with XinFin that will facilitate several industrial applications on the XDC blockchain. There are several use cases and DAPPs that XinFin is already working on in different sectors such as banking, aviation, tourism, power, medical and other industries.

## 4. TradeFinex – Platform for Global Trade & Finance

### 4.1 TradeFinex Participants

Trade is all about exchanging goods and services against settlement of financial transactions. There are many people engaged in any project related trade or finance and at a high level. They can be classified as Beneficiary, Supplier and Financier.

- **Beneficiary** is an individual or an institution who is owner of project and is seeking finance for the project to procure goods and services. There are always limited avenues for raising funds, cost of capital is high, have to deal with unreliable suppliers and eventually project gets delayed which leads to additional financial burden or taxes on general public.
- **Supplier** is an individual, company, manufacturer, distributor or service provider that supplies goods and/or services to Beneficiary. Generally, do not have good visibility of global buyers, have to deal with intermediaries for cross border trade, payment processing takes time and remittance costs are high.
- **Financier** is an individual, an institution or a company who is seeking better project opportunities to invest money for attractive returns in acceptable risk environment. In current setup, there is limited visibility on global opportunities, poor transparency of project health, and high risk of escalations and delays which all leads to low returns. This makes infrastructure investments less attractive.



Figure 2: Inefficiencies in Global commerce

The trade relation and interaction between these core participants is broken due to challenges and inefficiencies discussed above. TradeFinex platform ensure synced and trusted relation among participants and minimizes transactional inefficiencies leading to various benefits to trade ecosystem.

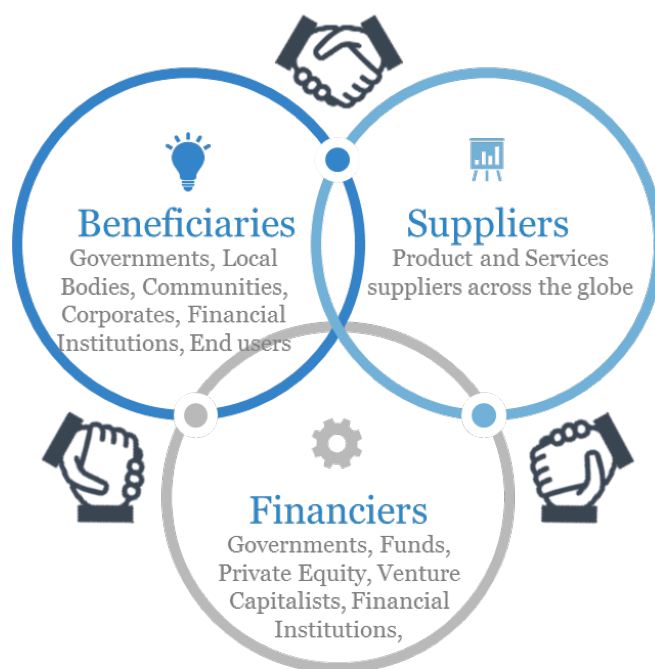


Figure 3: TradeFinex Marketplace platform

The TradeFinex platform is designed especially for Trade and Finance transactions using XinFin permissioned blockchain protocol XDC01. The key features of TradeFinex platform are explained below:

- TradeFinex platform lets different participants connect with each other on this marketplace without any restrictions. Platform can be used for all four stages of contracting including Discover, Negotiations, Contracting and Execution.
- Platform has the capability to create legally binding digital smart contracts between participants over XDC blockchain. Smart contracts bring transparency in disbursement and utilization of funds.
- The platform has capability to carry out real time cross border and domestic payments and settlements using a globally accepted XDC token in compliant jurisdictions through regulated financial institutions.
- IoT integration allows beneficiaries to pay directly to the financiers using digital smart contracts. IoT integration ensures real time access to asset's health and financial performance and provides visibility on repayment.
- Alerts can be configured with pre-defined defaults and NPAs, keeping everyone informed about possible risks.
- Wallet services are integrated within TradeFinex platform to ensure that any payment is secured digitally in the form of XDC token or any other supporting currency
- The platform incentivizes participants in form of XDC tokens to carry out commerce using TradeFinex platform.
- There is Hedge Pool functionality that lets participants hedge the fluctuation of XDC against fiat currencies.



## **4.2 Benefits for the participants**

All the three core participants on the TradeFinex platform stand to gain from their participation. The benefits can accrue in qualitative as well as quantitative terms and quantum depends on the maturity of the existing business processes.

### **4.2.1 Benefits for Beneficiaries**

While establishing the project if the Beneficiary uses TradeFinex platform then following advantages improves the IRR of project.

- **Lower Cost of Capital**

Currently most of beneficiaries such as governments, institutions and individuals are faced with high cost of borrowing due to the inefficiencies in the global finance chain in terms of projects access, projects visibility, currency movements etc. As we have often seen the competitive market for lending does not help reduce the rates and often governments and institutions either delay or cancel projects, or end up borrowing at high rates. This high cost of capital in most cases is passed to end users or citizens in various forms such as high tax rates, higher prices etc. TradeFinex enables the beneficiaries access to a global financing pool and coupled with several incentives for the financiers as explained above, helps bring down the cost of capital for the beneficiaries which is a major boost to global trade and finance.

- **Access to Global pool of funds**

As TradeFinex is not restricted by countries and regions, beneficiaries get access to funds not only in their region, which is often the case in the traditional finance route, but from a global pool of financiers at competitive rates.

- **Access to credible suppliers and financiers**

XinFin encourages the ecosystem growth and will do verifications checks for participants on-boarding on the TradeFinex platform thus giving beneficiaries access to credible pool of suppliers and financiers. XinFin is also engaging Credit Assessment Agencies to offer credit visibility for different participants and projects for quicker industrialization of the platform.

- **Participant incentives**

Beneficiaries conducting trade and financing over TradeFinex smart contracts will also be awarded participation incentives. This encourages beneficiaries to increasingly shift their portfolio on TradeFinex smart contracts. Beneficiaries can also leverage the advertising facility through TradeFinex.

### **4.2.2 Benefits for Suppliers**

Suppliers also can engage in trade with Beneficiary through TradeFinex platform which leads to improved margin in their supplies due to following advantages:

- **Expand market for Goods and Services**

TradeFinex platform helps suppliers reach out to global consumers and tenders and they can competitively bid for products and services worldwide and expand their horizons. Hence, they get visibility and access on global tenders and customer base.

- **Improved Trade and cost efficiencies**

With the help of legally binding smart contracts, suppliers can ensure global real-time payments and settlement of their products and services. Escrow capability of the smart contracts shall ensure they get the payment against products and services rendered. Milestones are added to the smart contracts for completion linked payments. The peer to peer nature of smart contracts helps suppliers conduct trade and financing in a securer and cost-efficient way.

- **Participant Incentives**

Suppliers are incentivized for participating in trade on XinFin platform and get rating based on their products and services experience. Suppliers get participation rewards for conducting trade and financing using TradeFinex smart contracts. Suppliers can also leverage the advertising facility through TradeFinex.

### **4.2.3 Benefits for Financiers**

Financiers engaging with Beneficiary through TradeFinex platform gains better return on their investments due to following advantages:

- **Find global investment opportunities**

While financiers are actively looking at global investments, lack of visibility on global projects and markets deter their investment plans. TradeFinex platform allows financiers to view global investment opportunities in line with their sectorial alignment and evaluate projects for their techno-commercial feasibility.

- **Real-time Payment and Settlement**

Financiers can create legally binding digital smart contracts over secure XDC blockchain network via TradeFinex, thereby ensuring global real-time payment and settlement for trade and financing. Escrow capability of the smart contracts shall ensure that they release payments only against goods and services rendered. The peer to peer contracting nature of the smart contract makes it more secure and cost efficient for all the parties.

- **Real-time Investment tracking**

Since, all investments in assets can be digitally represented over immutable Blockchain ledger, financiers can remotely keep track of health of their investments on real time basis using IoT integration capability. The XDC01 protocol has Resource Manager and Oracle Services built in to it. IoT devices can connect securely to the resource manager and very tightly controlled oracle services can verify information related to the IoT service. This data is available to the smart contract to execute set of predefined conditions, basically act on the real-time feed provided by the IoT device.

- **Participant Incentives for Lowering Cost of Capital**

Financiers using TradeFinex smart contracts will be incentivized using underlying XDC fuel for their participation. XinFin has allocated up part of the XDC tokens as a rewards for hosting master nodes and bounty/cashback for the participants. The bounty of tokens and its inflation proof nature and potential for increasing in value will let the financiers offer easy terms to beneficiaries for real world infrastructure projects.

- **Hedge against the Forex volatility**

XinFin has developed a Hedge Pool that protects participants from the fluctuations in the price of XDC tokens. This will incentivize financiers to use the XDC fuel for international financing, trade and settlement.

Thus, XinFin provides benefits to all its participants, enterprises and communities across the globe, and creates a win-win scenario for the entire trade and finance industry.

### 4.3 Financing using TradeFinex platform

Infrastructure increases connectivity, facilitates productivity and stimulate trade which in turn enable the economic growth while on the other hand economic growth is key enabler of increased investment and basis for infrastructure funding. Demand for infrastructure and other government services is rising and many countries are now faced with the challenge of delivering increased investment in an era of reduced fiscal capacity

Infrastructure prioritization is often an informal process and there is no standard prioritization process or approach at either the state or the central government level. This prioritization leads to delays and implementation of projects that may not necessarily drive the economic growth.

The current global infrastructure deficit is estimated to be \$15 Trillion and governments & institutions around the world are struggling to get financing for their infrastructure boost. In today's world of high demand for infrastructure, slow economic growth and constrained fiscal budgets, the governments, infrastructure investors and project owners and sponsors can undertake projects without burdening government treasury using TradeFinex platform.

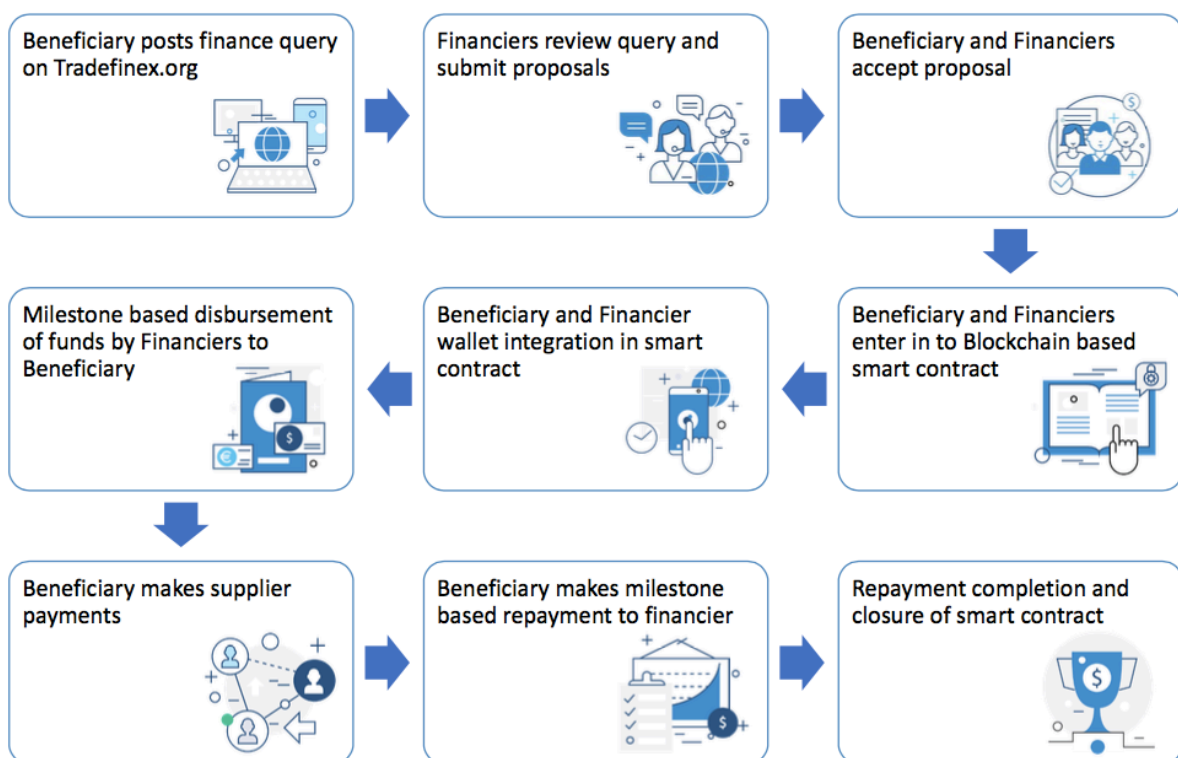


Figure 4: Financing using TradeFinex platform

XinFin recently simulated financing of a solar plant using Hybrid Blockchain Technology. The project can be illustrated with the example of figure 5.

Beneficiary is a government and has an attractive business proposition in terms of a setting up a solar project which will generate future returns in terms of revenue from power generation. Beneficiary posts finance requirement on TradeFinex platform providing all details of project and terms of raising funds. Interested Financiers review this project and submit their proposal. Both parties get into mutual discussions and negotiations and close the deal. Beneficiary and Financier enter into the Blockchain based smart contract which is linked to critical milestones and default terms. Both parties integrates their XDC wallet with smart contracts.

As the project execution progress the milestone payments are disbursed from Financiers to Beneficiary wallet. To ensure timely completion of project, Beneficiary buys raw material and engages road construction contractors. As and when their payments are due Beneficiary makes supplier payments. When the project is commissioned, it starts generating clean power. This ensures revenue generation which is linked to milestone based repayments to Financier. This may take several years basis how large the project is and the amount of fund raised. The generation of power can be integrated with IoT devices and smart contracts to ensure real time visibility and transparency to Financiers and Auditors.

Once entire repayment is completed the smart contract is closed and Beneficiary and Financier gives rating of each other which goes as credentials on the blockchain network to help other participants.

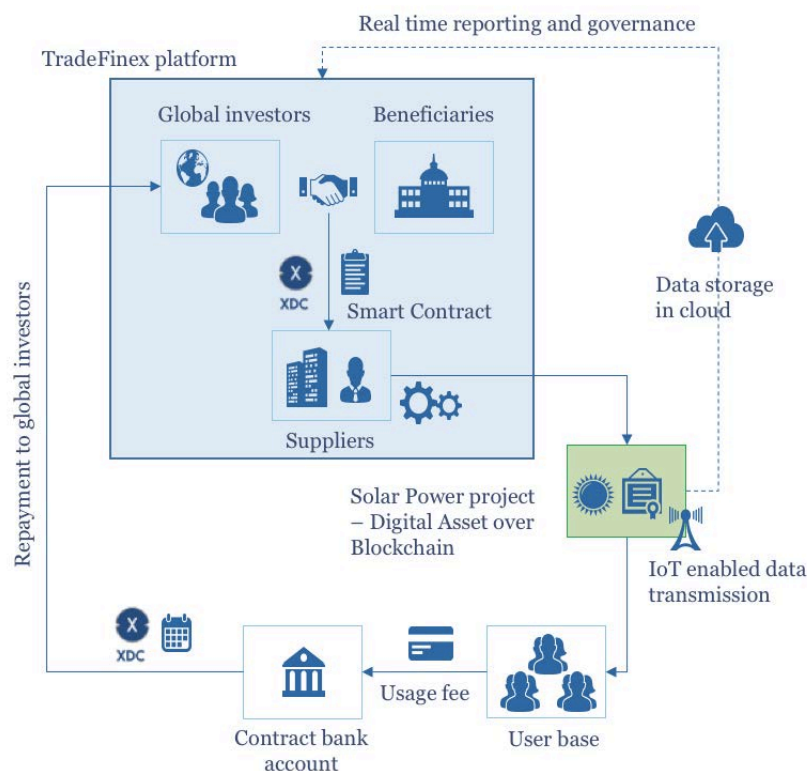


Figure 5: Financing using TradeFinex platform

## 4.4 Facilitating Trade using TradeFinex platform

According to WTO report, Up to 80% of the trade is financed by Credit or Credit insurance, but coverage is not uniform. SMEs face the greatest hurdles in accessing affordable finance. There are over 160 Million SMEs and they account for 50% of the global GDP and ~70% of the global employment. Globally, over half of trade finance requests by SME are rejected against 7% for the multinational companies. Facilitating the trade for SMEs would unlock the trading potential of Millions of businesses globally.

XinFin offers a bridge to facilitate the commerce in the digital era. The cost of doing commerce can be brought down to a fraction of the current costs. Participation incentives to early adopters will be an added savings thereby resulting to significant bottom-line benefits and opportunities for revenue growth.

Let's understand how TradeFinex helps in a conducting Trade and enable transaction between Beneficiary and Supplier. The trade work-flow can be summarized as given in figure 6.

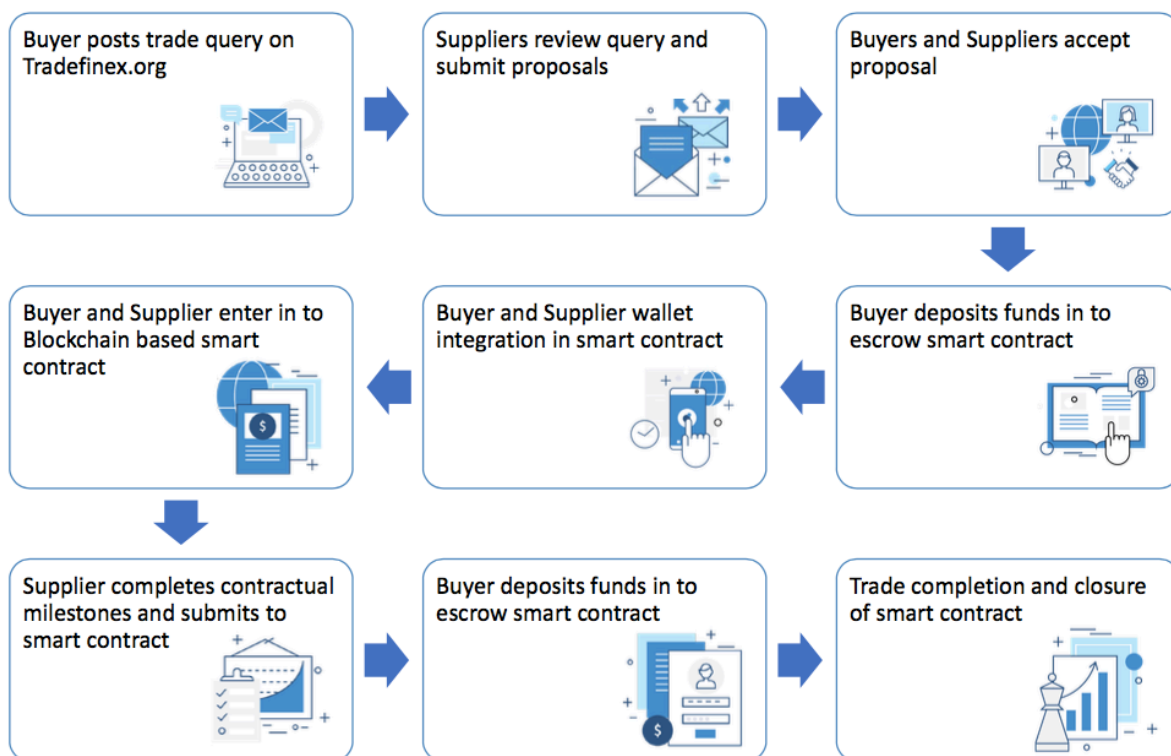


Figure 6: Facilitating commerce using TradeFinex platform

XinFin recently simulated cross border trade between the two parties using Hybrid Blockchain Technology. The project can be illustrated with the example of figure 7.

Buyer, a global food and beverage manufacturer posts his procurement requirement on the TradeFinex platform. The project can be viewed by global suppliers and they can submit commercial proposal. The buyer can negotiate with supplier both on and off the platform. Upon agreement, a Blockchain based smart contract (from a standard template) can be executed between the buyer and the seller. The Buyer procures and deposits XDC tokens in to the escrow smart contract account. The Buyer can avail exchange rate lock facility to minimize losses due

to currency rate fluctuations. The Supplier can view the payment received in the escrow smart contract, manufacture the product / delivers the services to the buyer. The condition of the smart contract are verified by the independent certifying authorities. Payment is released to seller from escrow based XDC smart contract. Upon completion, the buyer and the seller are incentivized for carrying out trade using XinFin Blockchain platform. Once entire repayment is completed the smart contract is closed and Beneficiary and Financier gives rating of each other which goes as credentials in blockchain network to help other participants.

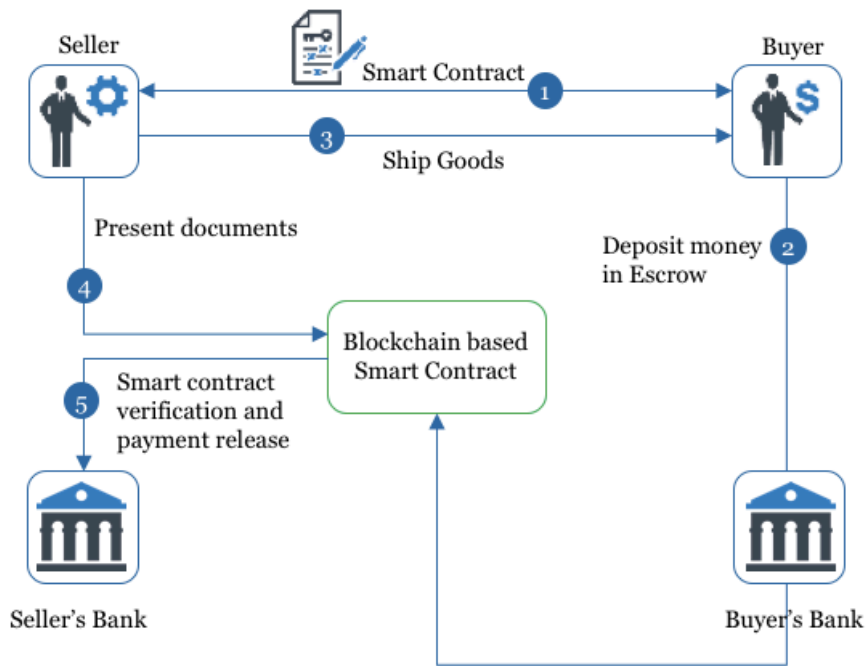


Figure 7: Enabling Trade using TradeFinex platform

## **5. XinFin Business Applications**

The XinFin solution can be applied to various industry sectors to improve their business process efficiencies. XinFin is currently working on several industrial projects in Banking, Power, Solar, Tourism, Aviation, Supply Chain Logistics and other sectors. The customized solutions are being deployed across business process re-engineering, supply chain, financing, procurement, reconciliation, settlement and other areas. The solutions can be non-tokenized (without use of XDC token) or tokenized (using underlying XDC token) depending on the use case and business application.

Across industries people are trying to use blockchain in various business applications. In complex conglomerates, it can be used for Work Flow Management System enabling the system without any one particular authority as it extends tamperproof and reliable transaction history.

In some businesses, it is important to manage and maintain asset lifecycle as chronologically that involves multiple participants who have their own process to manage data set of same asset. Problem come when any of these participants have to reconcile or retrieve their data set with previous owner of same asset. Due to disjoint systems and alien processes it takes ages to retrieve and reconcile information. Blockchain extends shared ledger instead of fragmented system making it lightning fast.

In financial service industry blockchain application are even more impressive. The peer to peer settlement system improves validation and authentication thereby eliminating fraud and money laundering issues. Purchase order management and invoicing processes are streamlined leading to accelerated settlements. On top of it as critical to industry it give a strong audit trail as well.

Cross border payment remittance especially from migrants working in developed countries to back home in developing countries. As per World Bank remittance report Dec 2017, the transaction cost can be as high as 16% in some cases. Through blockchain these cross-border payments can be transferred at a fraction of current costs.

In large global business scenarios where large corporates outsource part of their processes the Business Process Management becomes challenging. Though most of these integrations are through IT systems still there are places where humans are supposed to enter information in IT systems. Also installing IoT devices and sensors will not solve the problem as information can still be manipulated by inappropriate human intentions. Blockchain makes this process immutable where any external intervention will be recorded in the block and is tamperproof.

Let us look at some of the non-tokenized and tokenized business applications based on real-world pilots that XinFin is successfully conducting with some of the top industry names in various sectors.

## 5.1 Transforming Online Travel booking

The travel ticketing and booking industry has evolved in last two decades from smaller offline agent control to aggregation at online scale. But that has created its own challenges over time.



Synchronization delays between Online Travel Agents (OTA) and hotel or airline legacy systems. Different payment schemes by OTAs leading to non-standardization and additional efforts. Rising pressure on hotel margins due to competitive landscape and OTA commissions and capital locked due to Weekly/Fortnightly/monthly settlement by OTA with hotels. Customer pays extra for OTA commission, high FX mark-up charges by banks and has high dependence on

OTA for rescheduling and cancellation causing delays. So, meagre replacing offline agents by online is not helping much at current level where the number of international travellers only has grown more than twice in last two decades. Over the next 10 years, travel industry experts predict that the digital travel space worldwide will expand at an annual rate of 3.8% to reach \$11.4 Trillion, as per Nielsen research.

Now, let us look at how XDC blockchain and wallet services can further transform the online travel booking industry. Since XDC blockchain provides a way for real-time payment and settlement, our wallet services can be integrated in any industry where payments, reconciliation efficiency, payables and receivables management are important for business. The end users, OTA and hotels can all enter into smart contracts by a single click and settle payments on real time basis thereby eliminating the need for aggregators.

End Customers that book on the online travel agent will use their XDC wallets to make the payments against fiat currency. The payments can be held in escrow for a period as defined by the cancellation policy of the agent or the hotel. If the user cancels within time, funds will be refunded back to customer wallet. If user passes the date for refund, the funds will then be transferred to the agent, the hotel and XinFin as per defined fee model in smart contract. The escrow will be linked to the hedge pool against the fluctuations of XDC token. This will ensure that everyone gets full amount in terms of fiat currency irrespective of fluctuations of XDC token value at that time of settlement of payment.

**Benefits to OTA:** Direct peer to peer payment hence no need for data reconciliation and settlement leading to reduced cost of operations. Enhanced visibility on hotel inventory and user preference will drive more sales and customised promotional offers.

**Benefits to Hotels:** Low OTA commission, real time payment credited, no need to invest in separate inventory platform, ease of operation through API based calls, integrated analytics.

**Benefits to Consumers:** Lower prices, additional cash-backs, instantaneous refund in case of cancellations, ability to integrate insurance claims, integrate loyalty rewards and trust due to better transparency.



## 5.2 Transforming Medical Emergency Services

The healthcare industry has gone through most significant changes as all technological researches find their application in healthcare first. Rising opportunities of better healthcare also come with more expenditure.



As per Grand View Research report, the global per capita healthcare expenditure is rising exponentially since the past two decades. As per statistics published by The World Bank Group, per capita health expenditure in 1996 was around \$467.6, and in 2014, this number grew exponentially to \$1,060.9. This exponential growth of around 55.0% in per capita healthcare expenditure can be attributed to improving economic environments, improved access to quality treatment, and increasing

awareness in population, which translates into increased demand for these services since past five years. However human life saving depends on how promptly medical services can be made available when it is required in case of emergencies. Increased population and traffic conditions counteracts this and adds challenges to patients' lives who seek emergency attention.

Air ambulance is once such facility which comes as boon in such cases. Started with military applications where air ambulance was used to extend medical services in war zones, now serving civilian spaces and growing every year. Some research estimates that the global air ambulance services market size was valued at \$3.7 Billion in 2016 and is expected to grow at a CAGR of 9.3% over the forecast period. Improving global economy; increasing per capita health expenditure; availability of reimbursement plans; rising prevalence of chronic diseases, such as cardiac disorders requiring emergency medical response; and improving medical infrastructure in sports and entertainment industry are anticipated to help air ambulance services industry grow at a sturdy rate over the forecasts period.

Emergency does not come knocking and you may need it on bank holiday, public holiday or while on vacation in foreign country. You have money to spend but legacy systems do not allow you to save your or loved one's life due to lack of real time money transfer facility.

Here comes life saver, XDC blockchain wallet token based payments can be used to facilitate instant payments for emergency medical services. XinFin has exclusive tie-up with Airnetz flight chartering group in India that provides medical air ambulance services.

In event of medical emergency, user can request for air ambulance using Airnetz.com platform. User arranges money and transfers to local agent at pickup and the local agent then procures (if needed) and makes XDC transfer to Airnetz. Thus, Airnetz gets paid instantly and arranges for the medical transfer. Upon flight completion, both the local agent and Airnetz are incentivized for providing life-critical medical services.

**Benefits to Consumers:** Ability to arrange medical ambulance services at a short notice and save human life in a scenario where traditional banking channel has limitations in terms of arranging money at a short notice.

### 5.3 Efficient Distributed Ledger Solutions

Each company deals with multiple vendors and reconciliation of multiple documents to confirm accuracy and authenticity of the transaction.



It becomes more complicated when dealing with massive reconciliation of such large organizational spend as average transaction value runs into few hundreds of dollars. Reconciliation involves matching records from the institutions and vendor systems and issuing payments leading to many manual corrections, approvals and delays along the way. Such reconciliation processes currently are manual, cumbersome, involving reconciliation across multiple systems

and records including the employees, vendors, and account departments.

Since XDC blockchain provides a distributed ledger solution that can store variety of records and information, several business applications or ledger solutions can be revamped using the XDC platform. This is particularly interesting for domestic scenarios and for large corporates and banks where transaction volume is large in general, and help them to improve their business process efficiencies wherever multiple reconciliation processes, disjoint systems and other synchronization or efficiency challenges exist. Corporates, can use XDC protocol to build internal ledgers for transactions, KYC or AML records, internal processes such as employee records, travels, intra-company transfers etc.

To simplify the whole process, XinFin has demonstrated the XDC blockchain solution in which all the employee records can be maintained on a single ledger between the corporate, bank and the chosen vendors. This enables real-time view of transactions at any time using blockchain explorer thus eliminating the need to get Daily Sales Report (DSR) for the services provided from the vendors. When identified fields in the employee request and vendor response match, transaction is approved and uploaded on the Blockchain. The vendor payment rules can be configured to automate the entire settlement process thereby eliminating the need of manual reconciliation. This secure and scalable simplified process minimises manual interventions and processing overheads with significant savings for the client. Real-time payment and settlement can also be integrated with this solution using the XDC token or any other currency of the client choice. Such a solution can be extended to other multi party reconciliation heavy areas within banks or any other large corporate.

**Benefits to Consumers:** Reduction in overheads, real time settlement and enhanced business process efficiency.

## 5.4 Building visibility in Supply Chain

Logistics companies are facing an era of unprecedented change as digitisation takes hold and customer expectations evolve. New technologies are enabling greater efficiency and more collaborative operating models; they're also re-shaping the marketplace in ways that are only just beginning to become apparent. Blockchain technology offers to maintain universal truth on deliveries, bring transparency and offer instant settlement opportunities.



Using XinFin Blockchain, multi-party smart contracts can be executed between the participants in the supply chain using smart contract with pre-defined payment terms. Delivery can be tracked using IoT and other real time monitoring technologies and status can be accessed real time. Upon successfully delivery, smart contract can simultaneously release payment to all supply chain participants as per agreed contractual milestones and payment terms. Using blockchain, all parties can

ensure certainty about delivery and payments.

Transportation cost can be minimized by transparent contracting and timely payment to the Logistics Services Providers. A rating system can be further clubbed with the smart contracting solution to track performance of supply chain participants over a period of time.

## 5.5 Private Sub-Networks

One of the disadvantages of the public Blockchain is the openness of the information. This means there is very little or no privacy for the transactions and governed by a weak security measure. Requirement of substantial computational power to achieve consensus is another disadvantage with the public Blockchain. These considerations make them unsuitable for the enterprise use cases, especially the ones involving payment and settlement transactions.

The Hybrid nature of XDC Blockchain allows users to create private sub-networks. By creating private sub networks, XinFin allows institutional users to connect securely and privately with the participating member. The transactions made under the private sub networks are not visible to the outside world thereby keeping sensitive financial information and transactions secure and confidential. The institutions interested in hosting private sub networks can subscribe to tier2 or tier3 membership and setup master nodes in order to start hosting private subnetwork.

For example, a consortium of banks willing to utilise Decentralized Ledger Technology for simplifying reconciliation and business processes can host a private sub network using permissions XDC protocol. The consortium can jointly host a master node with permissioned access to the participating member. While the copy of data and state change is recorded on the public network, any transactions between the participating members of the consortium are not visible to the outside world. The transactions in the private sub networks can be powered by a separate token that may have its own internal listing and inherent value pegged to the XDC token or a token that is just used as a messaging layer using the XDC protocol.

Using the private sub networking functionality of XDC protocol, new token launch can be powered for the institutions willing to launch their own token. Pegging of the token to the XDC token and use of permissioned hybrid Blockchain can ensure privacy of the transactions amongst the participating member. The underlying XDC fuel can provide a highly cost effective solution when compared to Ethereum gas while addressing privacy and security concern. Participating willing to launch their own tokens for reward point, utility bills, internal settlement systems etc. can all use this feature.

In this Business White Paper, we have covered just few of the solutions and that too not much in detail. Our blockchain Applications team will be happy to help you improve your business process efficiency using XinFin blockchain platform.

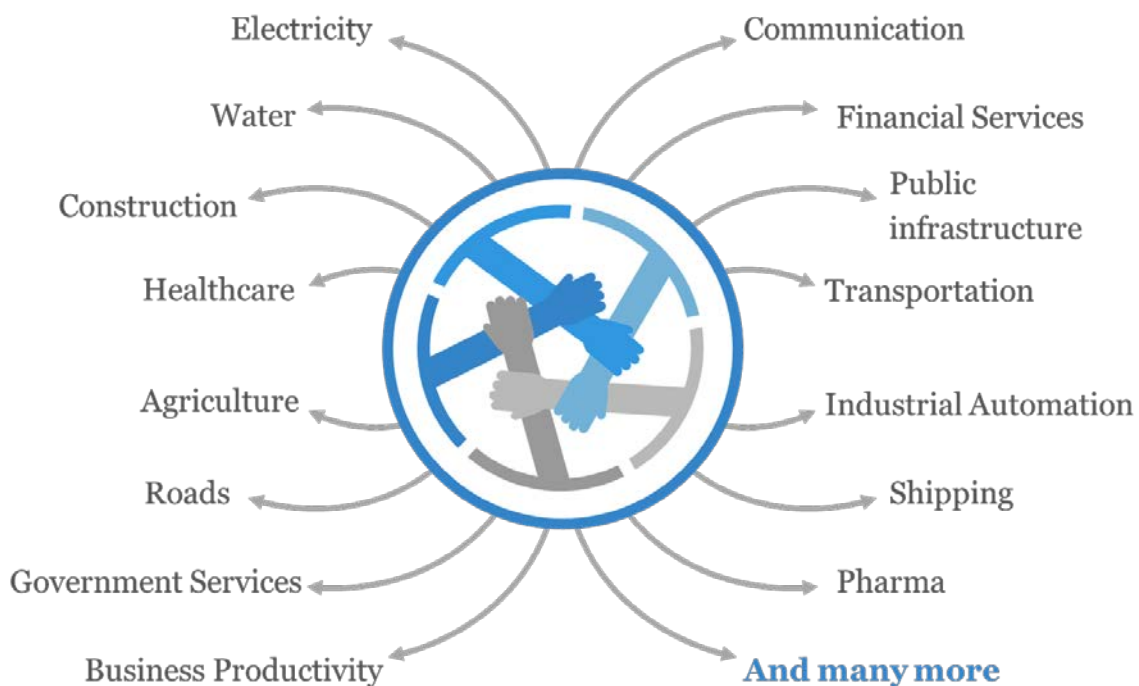


Figure 8: XinFin blockchain applications



## 6. XinFin Ecosystem Participants

XinFin aims to create a complete ecosystem to include and provide utility to all market participants. As the ecosystem grows the financing capability of our network increases and cost of capital for projects. More and more participants and projects start using XDC platform, the better it gets in terms of cost and efficiency. XinFin is committed to engage participants across industry and levels so that the spread goes wider and over time it will grow deeper.

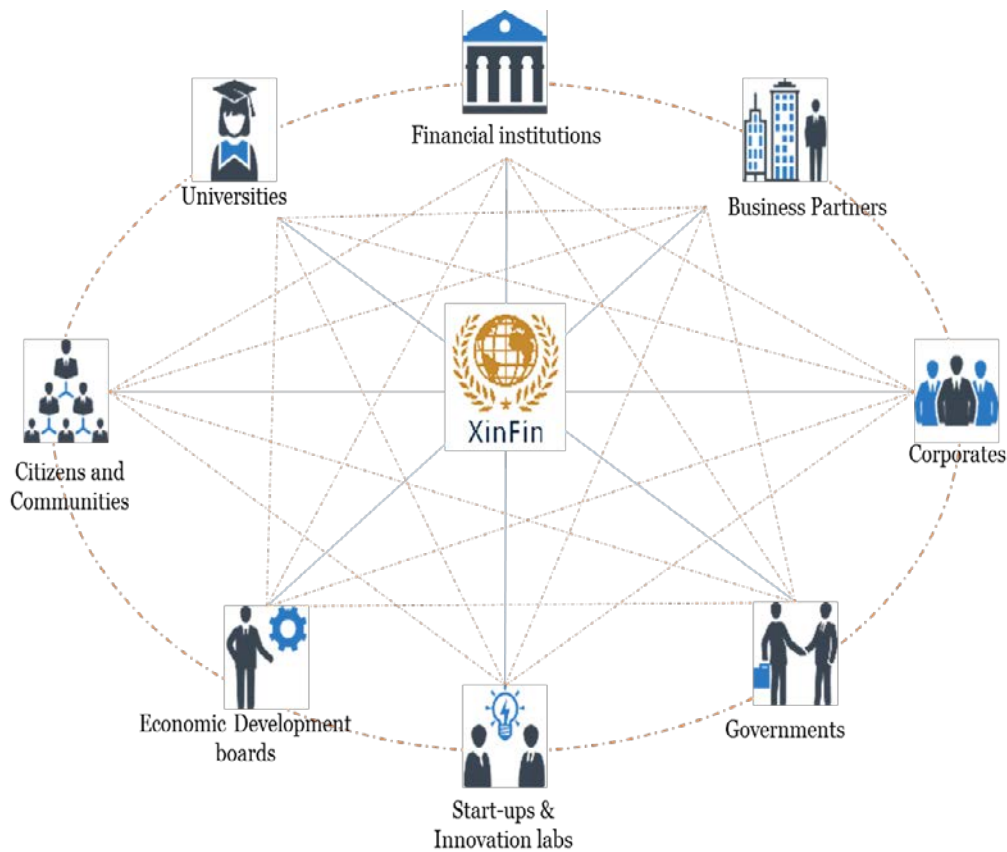


Figure 9: XinFin ecosystem

Hence, we invite all participants to join hands with us and contribute to bridge the global trade and finance deficit:

Governments and Regulators to lay foundation of strategic layer and in turn government gets benefit in faster execution of infrastructure projects of critical importance putting low burden on tax payers.

Trade Associations, Chamber of Commerce and Export Councils can achieve their objectives of supporting MSMEs and boosting economic growth. These associations gets opportunity to influence new system in making in order to uplift any specific business need of their region.

Financial Institutions, Banks and Investors are an integral part of the financial ecosystem and weight lift most of the trade. We enable them to explore attractive opportunities and help bridge the huge financing deficit that exists today. Various engagement opportunities are Payment Services, Financing loan portfolio, Asset Financing, Equity, Derivatives and other complex products. Such institutions can also leverage business efficiency improvement to drive several internal and compliance use cases such as KYC, reporting, reconciliation etc.

Corporates across industry are encouraged to come forward and participate as XinFin blockchain platform is sector agnostic and we are willing to customise solution per requirements of sectors. Corporates stand to benefit from our financing solution by getting a wider market, financing and borrowing mechanism and integrating their supply chain on our ecosystem to facilitate seamless trade and finance.

Universities, Start-Ups & Innovation Labs are considered as partners and we at XinFin believe in co-innovation and engaging with the entrepreneur community and hence start-ups and Innovation Labs are a vital part of our ecosystem. We are extensively engaged with the extensive Ethereum and Quorum community as well to benefit from the on-going blockchain development for futuristic vision.

## 7. XDC Economics

### 7.1 Token Allocation

A total of 100 Billion XDC tokens will ever be created on the XinFin platform. Thus, the total token supply is limited and locked which adds certainty on the XDC supply side. There is no concept of mining in case of XDC as all tokens are pre-mined. Hence, in case of XDC tokens, what matters at any point in time is what is the current 'available' supply of XDC on the market which is generally referred to as 'circulation' and how this supply will change over time.

The allocation of XDC tokens is designed for inclusive growth of entire ecosystem.

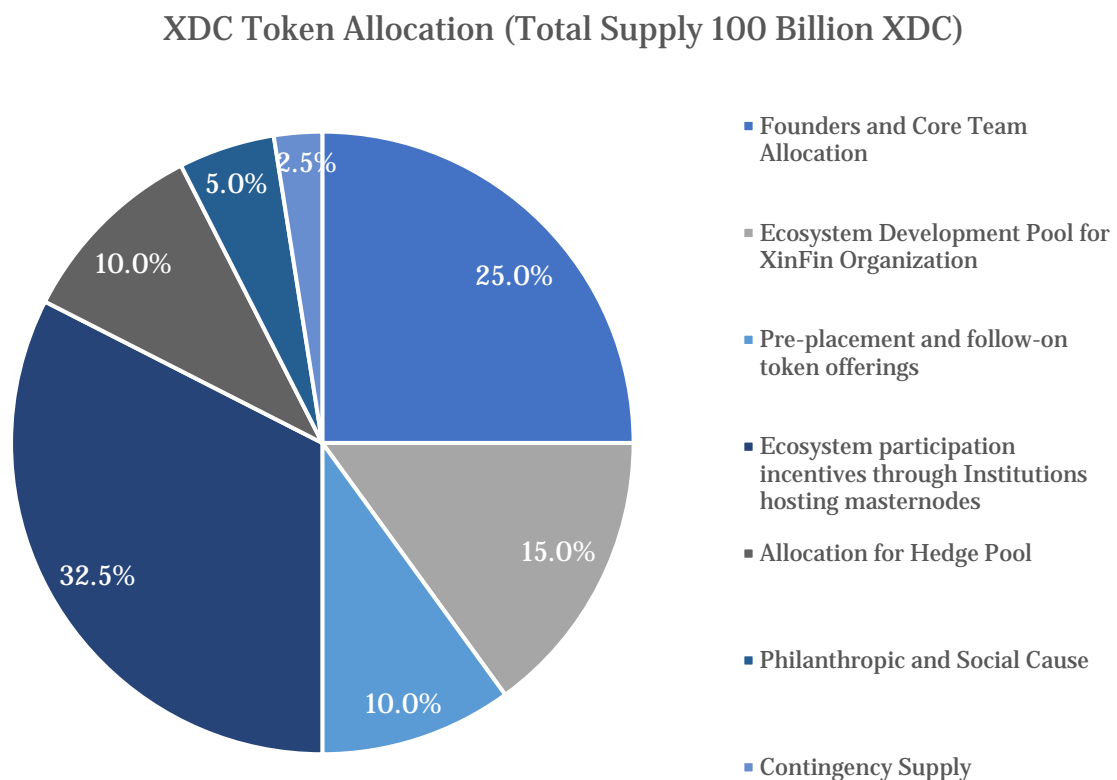


Figure 10: XDC token Allocation

The details of the allocation, lock-in periods for the XDC supply is as illustrated below

- **Founders and Core Team Allocation (25%):** This amount will be used as wage for the founding team responsible for making the XinFin XDC platform a reality. The XDC platform evolution has been a continuous product evolution with persistent effort from the founding team. This supply is locked and a maximum of 1% of the holder supply can be released every year.
- **Ecosystem Development Pool for Xinfm Organization (15%):** This amount will be used to run the organization. The tokens from this pool will be used to fund incorporations that support the ecosystem development for XinFin. This supply is locked and a maximum of 2.5% of this supply can be released every year.

- **Pre-placement and Follow-on token offering (10%):** XinFin completed Pre-placement sale of 3% XDC tokens to private investors during first half of 2017. The proceeds from this were used to develop XDC protocol, TradeFinex platform and other operating expenses. The next follow-on token sale of additional 3% will be conducted in early 2018. Any remainder will be used to support the subsequent follow-on token sale and liquidity requirements across participating exchanges. Utilisation of follow-on token sale will be largely used towards protocol enhancement, eco-system development, strengthening the network, operating expenses including POC development, business development, travel, legal and compliance spends, etc.
- **Ecosystem participation incentives (32.5%):** This part of the XDCs will serve as a reward for the Master node hosting institutions and incentives for the participants on the platform. Typically, reputed high stake holders, technology partners and authorized and regulated institutions are expected to host master nodes by staking in the predefined amount of XDCs and in turn they would be rewarded based for running and contributing towards the network consensus. Part of the supply will be used for reward scheme for the participants on the platform. The rewards amount will be determined depending on the project value, purpose and the participants involved. This supply is locked and a maximum of 10% of the XDC tokens held by the institution running the Master Node can be released every year.
- **Allocation for Hedge Pool (10%):** This token supply will be used to hedge the commerce between financiers, buyers and suppliers against changes in the XDC token value. As all the trade and financing transactions on TradeFinex for the end user will be represented in equivalent fiat amount, any settlement losses arising due to fall in the value of underlying XDC token will be taken care by the Hedge Pool. This supply is locked and a maximum of 5% of this supply will be released every year.
- **Philanthropic and Social Cause (5%):** XinFin strongly believes that giving back to the society is among the most important and valuable things. As part of its Corporate Social Responsibility, a portion of the XDC amount will be used for philanthropic activities and support various social causes to empower individuals, communities and building a sustainable future for all. The supply is locked and released on a need basis.
- **Contingency Fund (2.5%):** Contingency Fund is created as an imprest account to meet some unforeseen expenditure. This supply is locked and released strictly on a need basis.

*Note: The token allocation is subject to change based on the institutional participation to facilitate a seamless trade and financing capability and liquidity support.*

## **7.2 Hedge Pool functionality**

XinFin appreciates the volatility shown by utility of digital tokens in the recent past which makes it less attractive for long term trade and contracts. Procurement Office and CFO are unlikely to sign a token based trade agreement where there is a probability of lower payout due to drop in price of token. In order to protect its participants from fluctuations in the XDC token price, XinFin has developed a hedge pool that will come into picture at the time of procurement and settlement, especially for trade contracts where timeframe between contracting and settlement is high. Contracts set up through TradeFinex are agreed on fiat amounts such as the total loan amount, payment milestones etc. At the time of settlement, XinFin will ensure payment to the receiver as per the agreed fiat currency value. Thus, hedge pool ensures that participants receive agreed fiat currency value based on agreed conditions, irrespective of the XDC token fluctuation.



## 8. Addressing concerns

Looking at the global situation, experts have multiple views on blockchain solutions and tokens. Hence the readers may have some concerns in mind related to security, legal and compliance.

### 8.1 Security

Data security is utmost important for any blockchain solution as blocks contains critical and important transactions data which should not be compromised.

- **Audited and Secure Smart contracts**

The XDC blockchain provides a highly secure and robust hybrid blockchain protocol with interoperability with public blockchains. Since the XDC ecosystem belongs to the consortium blockchain paradigm, we plan to allow only comprehensively audited smart contracts. This will ensure not just the security of the XDC ecosystem, but also create a standardization that has secondary benefits in a number of fiduciary use cases. Permissioned nature of the Blockchain prevents unwanted elements from tampering with the contracts.

- **High Wallet Security**

XDC aims to provide high wallet security by implementing easily accessible light wallets that are uniquely associated with an account and securely connect to full network nodes within the XDC network. Each light wallet will have unique keys that are used to sign transactions from their associated account. Since the light wallet is a standalone application that serves only one account, the possibility of being hacked or losing the XDC tokens becomes highly unlikely.

- **Consortium Membership**

Since XDC is a permissioned hybrid blockchain, there are tiered membership rules for participation in the XDC network that allow for robust mechanisms in maintaining network integrity. The XDC blockchain has three kinds of membership. The first is the most accessible. If an individual or institution owns the XDC tokens, they are part of Tier 1 membership by default. Tier 2 and Tier 3 memberships are both obtained by holding a certain amount of the XDC subject to requisite vetting. These tiers allow institutions to host the XDC nodes and participate in the consensus mechanism of the XDC blockchain.

- **Punitive Smart Contracts**

XinFin will add punitive smart contracts that ensure those who stake the XDCs to run network infrastructure remain honest. There will be asset forfeiture rules written into the protocol that seize the XDC holdings of unscrupulous consortium members looking to undermine the integrity of the XDC blockchain.

- **Data Security and Privacy**

Since XDC is a hybrid blockchain supporting private sub-networks, sensitive data including financial transactions can be shielded from the public state of the blockchain thus providing enhanced cryptographic security on the private state. The public state allows for better transparency and auditability where data constraints and minimal.

## **8.2 Legal**

While blockchain based tokens currently fall in unregulated markets and have no regulatory clarity, some countries like Japan have legalised payments through Bitcoin and other cryptocurrencies. Many other countries have taken an open stand on cryptocurrencies and may regulate them in the future. Several mainstream exchanges in North America such as CBOE and CME have started trading derivatives on Bitcoin. The recent uptick in market value of several cryptocurrencies has made regulators all over the globe look more seriously at crypto-currencies. XinFin does not aim to be an end to end player in Banking and financial services industry but only aims to provide community driven tools to the existing or authorised entities to solve real problems. XinFin aims to be fully compliant with the laws of the land and work with authorized entities in various geographies. XinFin also plans to work with the Governments, regulators and lawmakers to define various aspects of the blockchain applicability to the financial sectors.

The readers are advised to read disclaimers, privacy statements, Terms and Conditions presented on the XinFin website.

## **8.3 KYC / AML / CFT**

XinFin will seek necessary user KYC information for the XDC wallets. The users on the TradeFinex platform (Beneficiaries, Suppliers & Financiers) will also be required to provide basic and sufficient identity information regarding the individual or institution details including contact details.

The messaging facility on our TradeFinex further allows all the entities including governments, financial and other institutions to securely exchange information regarding different contracts, transactions and the parties involved. We are ready to work with our collaborators and partners to enhance the platform and process while integrating themselves into the XDC ecosystem.

The entities that use the XDC platform would keep their regulatory and compliance procedures and other monitoring activities such as KYC, AML etc. as is. XinFin can collaborate with the respective entities to re-engineer their compliance process leveraging blockchain technology to drive further efficiencies.

We are in talks with several leading credit assessment agencies that can help industrialise the credit rating process quickly for the benefit of our platform users. We will be inviting leading project feasibility evaluators on the TradeFinex platform. The financiers may evaluate and shortlist one of them to carry out techno-commercial feasibility of any project, if they need. This will help them take an informed decision on investing in a project based on the risk appetite. For larger projects, government security will be sought. In general, we encourage our financiers to do their own due-diligence on the projects before taking any financing decision.

In phase one, Small-medium size projects of national infrastructure importance backed by government security will be undertaken. Participation of governments and leading corporates will get preference. Individual projects will be evaluated based on case to case basis. Beneficiaries can post projects on TradeFinex platform and reach out to global financiers for funding and global suppliers for procurement.

## **9. Conclusion**

Blockchain has raised enough interest around the world for its potential and it is now time to actually transform real world business scenarios. XinFin aims to bridge that gap wherein the investors can bid for different infrastructure projects and finance them in a smoother way, thereby avoiding all the issues and paperwork that arises during the process of allocating finance to an infrastructure project happening in a different country.

XinFin blockchain protocol is geared up to offer an innovative financing mechanism to the annual \$3.7 Trillion infrastructure financing market and annual \$1.6 Trillion of trade financing deficit. While we have laid all the building blocks and foundation, our efforts at strengthening the XDC01 protocol and its business applications is an ongoing endeavour. We are backed by a strong blockchain engineering and development team and a seasoned marketing, advisory and business team having experience in international project management, consulting, deal advisory, trade and financing. Through TradeFinex platform rollout, the idea is to leverage the features of blockchain platform to connect the Financiers and Suppliers with the Beneficiaries, in a secure environment thereby allowing them to transact trade and finances against certain secured digital assets, XDC.

By understanding the existing issues linked to public blockchain, XinFin offers futuristic solution through its proprietary XDC01 protocol which combines best of private and public blockchain network.

While globally the debate on the legality of tokens will continue, leveraging blockchain technology for business process improvement has inherent advantages. Backed by Hybrid Blockchain technology, Immutable, transparent & tamperproof nature, peer to peer contracting and settlement capability, auditability and high transaction speed coupled with smart contracting capability makes XinFin unique in the Blockchain space. XinFin has already delivered 10+ pilot projects for global clients and continuously focusing on technology enhancement and ecosystem development. XinFin aims to solve real-world problems both using tokenized and non-tokenized solutions and become the preferred choice of enterprise ready Blockchain.